Victoria University

The Capital Market Effect of the IFRS Mandate on IPO Underpricing and Long-term Performance: Evidence from Saudi Arabia

UPBA-Doctor of Philosophy

PhD Thesis

College of Business - Accounting

Supervisors:

Professor Colin Clark

Dr Maria Prokofieva

Manal Alidarous

2020

Abstract

Current accounting disclosure literature documents economic benefits for mandating International Financial Reporting Standards (IFRS) for European Union (EU) and developed non-EU countries. The critical question is whether there are economic benefits from mandating IFRS on accounting quality in emerging non-EU countries. From an emerging market perspective, this question has not yet been investigated. This thesis examines the economic benefits that IFRS mandating brings to the underpricing and long-term performance of Initial Public Offerings (IPO) firms in one of the largest emerging non-EU countries, Saudi Arabia, and provides the first empirical evidence of its effect. This is attained by investigating the singular effects of the IFRS mandate and intertemporal changes in transparency, and the joint impact of these two elements. This empirical investigation provides answers to four research questions:

1) What is the effect of the IFRS mandate on the underpricing of IPO firms in Saudi Arabia?

2) What is the effect of the IFRS mandate on the long-term performance of IPO firms in Saudi Arabia?

3) Is there a joint effect of the IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia?

4) Is there a joint effect of the IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia?

Data from January 2003 to December 2017 for 102 IPOs, covering 15 industries, is acquired from secondary sources. The quantitative techniques inherent in the Difference-in-Differences (DiD) research design are used to test the 9 research hypotheses, employing 174 balanced cross-sectional regression models and a battery of robustness tests. Findings show that while IFRS reduces the underpricing of IPO firms, it provides no benefits in relation to the aftermarket performance for those companies. Furthermore, although a significant joint effect on IPO underpricing in Saudi Arabia is seen from both IFRS mandating and intertemporal changes in transparency, this concurrent effect vanishes in the long-term. Intertemporal improvements in formal institutional quality are only relevant for IPO firms in the long-term and do not have any effect on underpricing.

Collectively, the findings reveal that IFRS mandating has only a short-lived effect and has no lasting influence on information asymmetry for IPO firms. A number of empirical contributions for researchers, policymakers, and local and international investors in emerging non-EU countries, especially Saudi Arabia, are provided.

Student Declaration

I, Manal Alidarous, declare that the PhD thesis titled 'The benefits of the IFRS mandate on accounting quality of IPO firms: evidence from Saudi Arabia' is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signature

March 2020

Acknowledgement

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
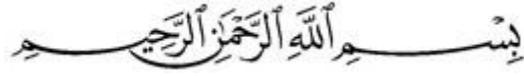
(In the name of Allah the most gracious and the most merciful)

يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ   [المجادلة: 11]

(Allah will exalt in degrees those of you who believe, and those who have been granted knowledge) [QS 58: 11]

First of all, praise and glory be to Allah the Almighty God, who provided me with the strength to accomplish this thesis. Sincere appreciation go to my principal supervisor, Professor Colin Clark, for his valuable support of my PhD candidature and his constructive feedback that allowed this thesis to be completed. It has been a privilege to produce this thesis under his caring supervision. Special thanks also go to my second supervisor, Dr Maria Prokofieva, for her professional guidance and effort in making sure that the content of this thesis is valid and coherent. The support and guidance from my supervisors were important for this thesis.

A lot of gratitude is extended to all my family members, especially my husband, and soul mate, Dr Fouad Jamaani, for his endless support, strong belief, and unconditional love. Also, my little two angels, my daughter Tala and son Alwaleed, who accompanied me on this journey of knowledge and generated the right atmosphere for my thesis to come to fruition. Their presence in my life softened some of the hardships encountered on this journey. The continuous prayers and support from my father, mother, sisters, brothers, and extended family are also acknowledged.

To my friends who have been compassionate enough to spare some of their valuable time to listen to my occasional complaints in rough times, share the laughter in happy moments, and give a helping hand when most wanted. My deepest appreciations go to Alaa Ghouth, Ola Alkaaf, Dr Hawazen khyiat, Dr Allah Ismaeal, Dr Yammam Abuzindah, and Dr Nahla Altaib. The professional and remarkable editing and proofreading work conducted by Mr Phillip Thomas and Mrs Meredith Spangler was also crucial in ensuring my thesis is cohesive and articulate.

To all of you, I will be constantly grateful.

Dedication

This thesis is ultimately dedicated to my country, the Kingdom of Saudi Arabia, and above all, to my sponsor, Taif University, for its substantial financial support and in entrusting me with this precious scholarship.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

BLUE	Best Linear Unbiased Estimator
CE	Cap Effect
CMA	Capital Market Authority
DiD	Difference-in-Differences
DMS	Domestic Market Size
EBF	Ethical Behaviour of Firms
ETFs	Exchange Traded Funds
EU	European Union
FDI	Foreign Direct Investment
FSAP	Financial Services Action Plan
FTLEM	Financing Through Local Equity Market
FVM	Fair Value Measurement
GAAP	Generally Accepted Accounting Principles
GCC	Gulf Cooperation Council
GDP	Gross Domestic Products
GFC	Global Financial Crisis
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
IFRS	International Financial Reporting Standards
IPO	Initial Public Offerings
MOC	Ministry of Commerce
OLS	Ordinary Least Squares
SAMA	Saudi Arabian Monetary Agency
SAPAO	Saudi Arabian Professional Accounting Organisation
SARS	Strength of Auditing and Reporting Standards
SAS	Saudi Arabian Accounting
SMEs	Small and Medium Entities
SOCPA	Saudi Organization for Certified Public Accountants
TGP	Transparency of Government Policymaking
VIF	Variance Inflation Factor
WR	Wealth Relatives

Chapter One

Introduction

1.1. Research Background and Problem

The International Financial Reporting Standards (IFRSs) constitute a set of globally accepted accounting procedures, rules, and applications developed by the International Accounting Standards Board (IASB). The aim of IFRS is to provide a single set of high-quality, understandable, enforceable and globally accepted financial reporting standards based upon clearly articulated accounting principles (IAS*Plus* 2019a). The adoption of this globally accepted accounting language is frequently claimed to accomplish two objectives: firstly, the enhancement of accounting comparability; and secondly, the enhancement of accounting quality, as shown in Figure 1 (Ball 2006; Soderstrom & Sun 2007; Ball 2016).

Figure 1. Objectives of IFRS Standards
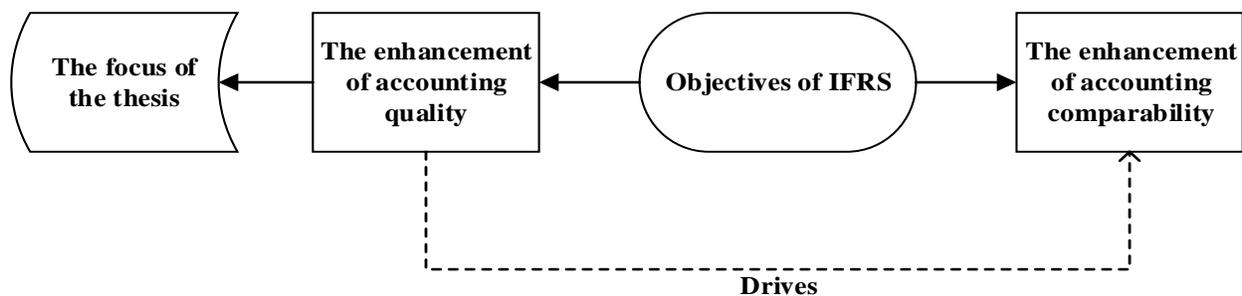
This figure is designed by the author of this thesis using information sourced from Ball (2016)

IFRS standards enhance comparability of financial statements across countries and markets, which is also a component of high-quality financial reporting (Bova & Pereira 2012). By using the same accounting principles in preparing financial statements across different countries,

global investors and financial analysts are less likely to face interpretation difficulties, thereby facilitating better information flow between capital markets and encouraging cross-border capital raising (Daske et al. 2008). Not restricted to this claimed advantage, IFRS implementation is expected to improve the quality of information contained within financial reports as follows: 1) IFRS rules can remove certain accounting alternatives; 2) IFRS standards can benefit users of financial reports with additional disclosure requirements; and 3) the application of IFRS ensures well-defined measurement and recognition rules in comparison to local GAAP (Ahmed et al. 2013b). Moreover, Li (2010), Yip and Young (2012) and Cascino and Gassen (2015) argue that information quality under IFRS is the likely driver of an improvement in comparability, as depicted in Figure 1. Thus, this thesis focuses on examining the economic benefits of adopting IFRS for accounting quality.

Proponents of IFRS mandating claim that adopting IFRS can generate economic benefits that exceed the economic costs of compliance (Daske et al. 2008; Bova & Pereira 2012; Persakis & Iatridis 2017). The economic costs of mandating IFRS are high. For example, switching to IFRS is estimated to cost around £360,000 for U.K. companies (Webb 2006), increase audit fees by 48% for New Zealand adopters (Griffin et al. 2009), and make first-time IFRS-compliant annual reports up to 60% longer than previous local Generally Accepted Accounting Principles (GAAP)-based reports (Webb 2006). Furthermore, Argaam (2018) reports a reduction of up to 5.2% in the value of shareholders' equity in the 2017 balance sheet for a number of firms listed on Saudi Arabia's stock market following the IFRS mandate. Moreover, Abdull Razak and Alqurashi (2019) cite recent evidence showing that approximately 46% of listed firms in the equity market in Saudi Arabia experienced income reduction following IFRS mandating due to employing the fair value accounting standard. Yaacob and Che-Ahmad (2012), Abu Risheh and Al-Saeed (2014), Lin and Yen (2016) and Pawsey (2017) also provide consistent evidence of a substantial increase in the economic cost of adopting IFRS, measured by a substantial increase in auditing fees in Malaysia, Jordan, China and Australia, respectively. However, if these economic costs provide economic benefits such as enhancing the information quality of financial reports, then these economic costs may be justified.

Previous disclosure literature on the economic benefits of mandating IFRS on accounting quality reveals mixed or ambiguous results. However, the overall evidence that shows that positive capital market benefits are primarily drawn from European Union (EU) and developed non-EU

countries (Ball 2006; Daske et al. 2008; Bova & Pereira 2012; Christensen et al. 2013; Hong et al. 2014; Persakis & Iatridis 2017). Nevertheless, there is much less evidence of the economic benefits of IFRS mandating in emerging non-EU countries[1] (Bova & Pereira 2012). According to IAS*Plus* (2019b), 166 countries have made public commitments to permit or mandate IFRS, of which 36% are emerging non-EU countries with a current mandate and 17% are emerging non-EU countries without, as shown in Figure 2. According to IAS*Plus* (2019b), countries within this 17% are in the early stages of introducing IFRS.

Figure 2. Global Adoption of IFRS Standards
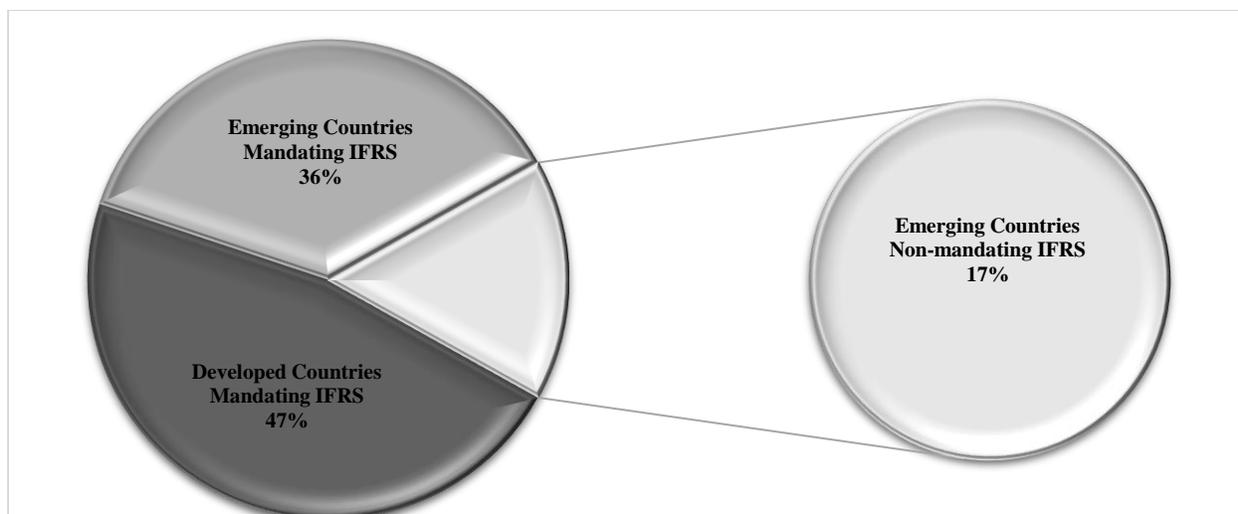
This figure is sourced from IAS*Plus* (2019b)

Emerging non-EU nations that have adopted IFRS include Brazil (mandated in 2011), Mexico (mandated in 2012), Saudi Arabia (mandated in 2008), Sri Lanka (mandated in 2012), Taiwan (mandated in 2013), Russia (mandated in 2012), Turkey (mandated in 2008), Ukraine (mandated in 2012), Argentina (mandated in 2012), Chile (mandated in 2009), Peru (mandated in 2012), Nigeria (mandated in 2012), Israel (mandated in 2008), and Morocco (mandated in 2008) (IAS *Plus* 2019). Emerging countries included in Figure 2 that have yet to implement the IFRS

---

[1] The use of the term ''developing countries or economies'' as used in the Ding et al. (2007) and Ahmed et al. (2013b) papers is consistent with the way this thesis uses the term ''emerging markets''. One strand of economics literature uses these terms interchangeably, although this definition follows the S&P Dow Jones Indices' classification of emerging markets.

standards fully are Cuba, China, Algeria, Bolivia, Thailand, Iran, Vietnam, Tajikistan, Uzbekistan, Egypt, Indonesia, and India (IAS *Plus* 2019).

Accounting practitioners and scholars have been encouraging emerging non-EU countries to surrender their local accounting standards in exchange for the better accounting standards offered by the IFRS to improve the quality of their accounting systems (Bova & Pereira 2012; Adibah Wan Ismail et al. 2013; Masoud 2014). The author of this thesis argues that as IFRS mandating comes at a cost, the lack of empirical evidence of any potential economic benefits of doing so places policymakers in emerging non-EU countries in a very difficult position. Furthermore, the lack of empirical research into capital market benefits compounds this situation. To illustrate this, the disclosure literature, including Daske et al. (2008), Christensen et al. (2013), and Hong et al. (2014), argues that the economic benefits of mandating IFRS on accounting quality are only observable in developed EU and non-EU countries. Hence, the critical question is whether there are economic benefits to be obtained from mandating IFRS in emerging non-EU countries.

Prior literature has mainly focused on quantifying the economic benefits of mandating IFRS in the secondary market (Ahmed et al. 2013b; Brüggemann et al. 2013; Christensen et al. 2013; Persakis & Iatridis 2017). The problem is that an examination of these economic benefits in the primary market such as the Initial Public Offerings (IPOs) market is neglected, particularly in emerging non-EU countries, as shown in Figure 3. Therefore, understanding the difference between the primary and secondary market is important in the context of this thesis. A primary market exists when a firm sells new stocks or bonds directly to investors. The IPO market is known as a primary market where a sale transaction takes place between investors and the underwriter of the issuer company (Shi et al. 2013). If those investors intend to sell their shares in the IPO firm, then the secondary market is the place to do so. Commonly known secondary markets include the New York Stock Exchange (NYSE), Australian Securities Exchange (ASX), and Tadawul All Share Index (Tadawul) of the Saudi Arabian Stock Exchange.

Figure 3. Research Problem in the Accounting Disclosure Literature
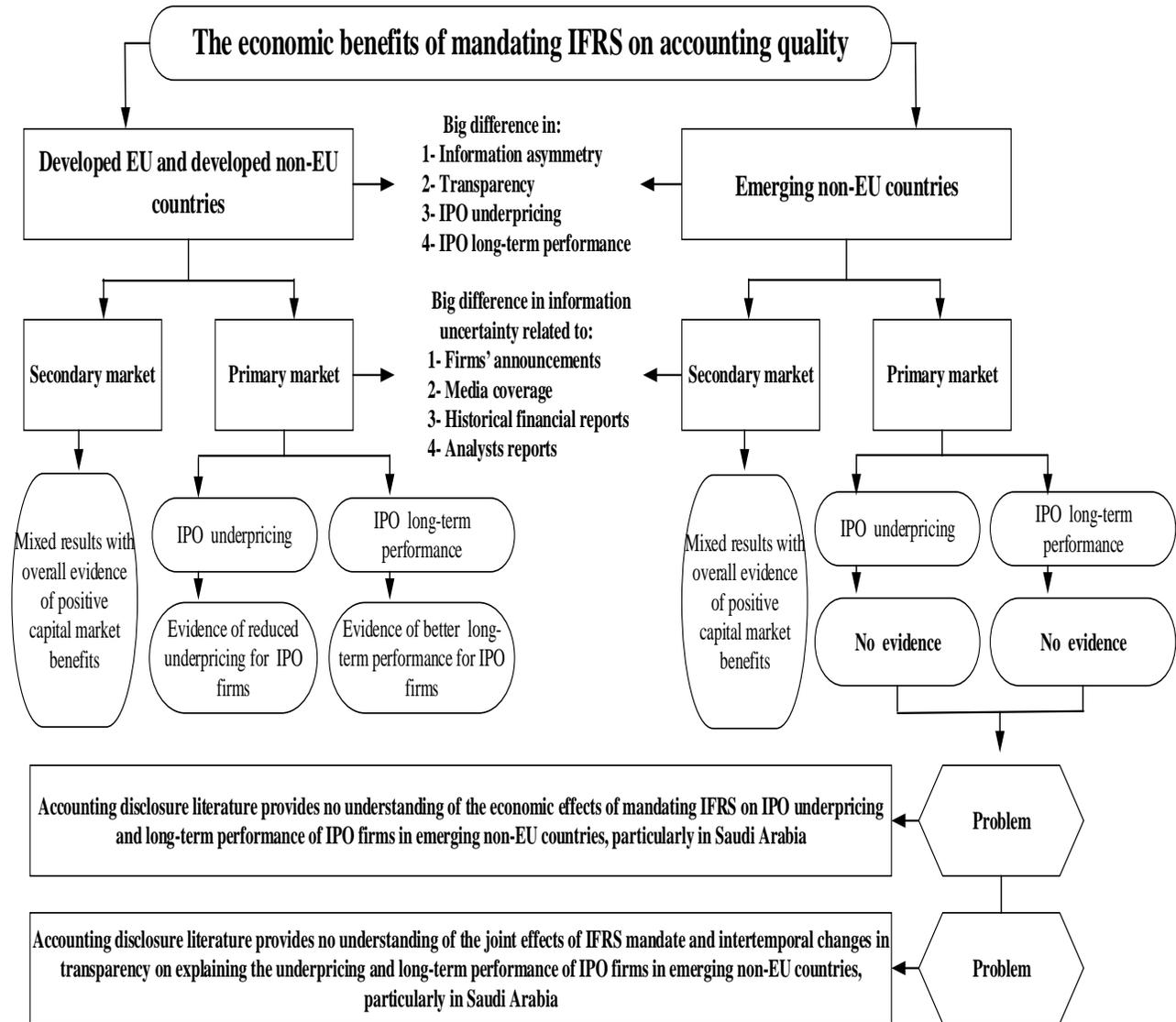
This figure is designed by the author of this thesis

In the secondary market, the degree of information uncertainty faced by market participants is less pronounced compared to the primary market for IPO firms, since investors in the former market can access different sources of information about the business including firms' announcements, media coverage, historical financial reports, and analysts reports to curtail information uncertainty (Habib & Ljungqvist 2001; Ritter & Welch 2002; Engelen & Van Essen 2010; Hong et al. 2014). Emerging non-EU countries suffer from significant information asymmetry, lack of transparency, high IPO underpricing, and long-term performance difference in

their stock markets (Lee et al. 1996; Teoh et al. 1998a; Chan et al. 2004; Boulton et al. 2011; Shi et al. 2013; Hong et al. 2014; Alanazi & Al-Zoubi 2015). In addition, emerging non-EU countries surrendered their local GAAP to mandate IFRSs so that the accounting quality of their listed firms would be enhanced. Consequently, an investigation of the benefits of IFRS mandate on the accounting quality for emerging non-EU countries is an important research topic but one that has received no attention in the literature.

The IPO literature documents two market phenomena occurring in the IPO market, including the short-term hereafter, "IPO underpricing" and the long-term performance difference. The underpricing of IPO firms occurs when the share prices of newly listed companies jump significantly on the first trading day from their offer price. The big difference between the offer price of the IPO firm and the closing price results in a widely-known phenomenon commonly called "IPO underpricing" (Shi et al. 2013). The second market phenomenon is the long-term performance gap of IPO firms and it refers to the empirical evidence showing that IPO firms tend to underperform a relative benchmark, commonly used as the general market index, in the long run including months and years (Aggarwal & Rivoli 1990; Ritter 1991; Loughran & Ritter 1995; Teoh et al. 1998a; Chan et al. 2004; Dorsman et al. 2010; Zattoni et al. 2017). Thus, the problem is that, in the current accounting disclosure literature, there is no current understanding of the economic effects of mandating IFRS on IPO underpricing and long-term performance of IPO firms in emerging non-EU countries, particularly in Saudi Arabia[2] as shown above in Figure 3.

Ball et al. (2003), Christensen et al. (2013), and Ball (2016) stress that the overall institutional settings of a country, including the legal, political, and transparency environment, govern its accounting quality beyond any existing accounting standards. Ding et al. (2007) and Daske et al. (2008) contend that a joint effect between IFRS mandate and country-level institutional environments can affect the accounting quality of financial reports in a country. Houqe et al. (2012b) and Persakis and Iatridis (2017) argue that this joint effect notion implies that countries could make other changes to the financial reporting system, simultaneously with the introduction of mandatory IFRS reporting such as enhancing the transparency of their public and private sectors to support the introduction of IFRS. Therefore, it could be this joint effect that is

---

[2] Please see Section 2.8. for a discussion of five characteristics that make Saudi Arabia the ideal testing ground that can provide generalisable outcomes to other emerging non-EU markets

responsible for the capital market effects (Brüggemann et al. 2013; Christensen et al. 2013). As a result, the problem is that this joint effect makes it challenging to attribute the observed capital market effects to IFRS mandate only or to the change to the overall transparency environment in a country or due to the introduction of both (Brüggemann et al. 2013; Louis & Urcan 2014; Persakis & Iatridis 2017). Currently, there is little or no understanding of the joint effect of IFRS mandate and intertemporal changes in transparency on explaining the underpricing and long-term performance of IPO firms in non-EU countries, particularly in Saudi Arabia as indicated above in Figure 3.

1.2.   Research Motivations and Objectives

This thesis is motivated by the unique empirical work of Daske (2006), Hail and Leuz (2006), Daske et al. (2008), Wang and Welker (2011), Houqe et al. (2012b), Ahmed et al. (2013a), Christensen et al. (2013), and Persakis and Iatridis (2017), and in particular the work done by Dorsman et al. (2010), Otero and Enríquez (2012), Shi et al. (2013), Hong et al. (2014), and Maglio et al. (2018). The latter authors pave the way in discovering four research gaps and the development of the four research objectives as illustrated in Figure 4. Shi et al. (2013) provide the first cross-country empirical attempt to fill a gap in the accounting mandatory disclosure literature by examining whether country-specific IPO disclosure requirements are related to IPO underpricing worldwide. They examine 6,025 IPOs from 34 countries for the years 1995 to 2002 and empirically conclude that IPO underpricing has a negative association with the stringency of IPO disclosure requirements. However, Shi et al. (2013) only measure the strength of a country's IPO disclosure regulation as developed by La Porta et al. (2006). The authors neither examine the economic consequences of mandating IFRS on accounting practices, nor contribute to the understanding of the economic benefits of mandating IFRS on the IPO underpricing relationship, as shown in Figure 4.

Figure 4. Development of the Research Motivations and Objectives of the Thesis

Research Motivations and Objectives

| Shi et al. (2013) | Hong et al. (2014) | Otero et al. (2012) | Dorsman et al. (2010) | Daske et al. (2008) and Christensen et al. (2013) |

Test whether country-specific IPO disclosure requirements are related to IPO underpricing around the world

Test the economic effects of the IFRS-IPO underpricing relationship around the world

Test the economic benefits of IFRS mandate on the underpricing of IPO firms in Spain

Test the effect of IFRS mandate on the long-term performance of IPO firms in Denmark

Made a research call to investigate the joint effect of IFRS mandate and intertemporal institutional changes on accounting quality

Limitation (×5)

No understanding of the economic benefits of IFRS mandate on the underpricing of IPO firms

The results lack credibility and generalisability due to the use of outdated and time-invariant measures and lack of representation to emerging non-EU IPOs

The results lack generalisability as they are not applicable to emerging non-EU countries due to differences in transparency and information disclosure requirements between emerging and developed countries.

Do not examine the joint effect of IFRS mandate and intertemporal institutional changes on explaining the underpricing and long-term performance of IPO firms

Objective of the thesis

To examine the economic benefits of IFRS mandate in explaining the underpricing of IPO firms listed in Saudi Arabia

To examine the economic benefits of IFRS mandate in explaining the long-term performance of IPO firms listed in Saudi Arabia

To examine the economic joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing of IPO firms listed in Saudi Arabia

To examine the economic joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms listed in Saudi Arabia

This figure is designed by the author of this thesis

However, in the second paper, Hong et al. (2014) capitalise on this gap in Shi et al.'s (2013) study and empirically conducted the first cross-country study that aims to examine the economic effects of the IFRS-IPO underpricing relationship. Hong et al. (2014) tested 20 countries that

mandated IFRS between 2003 and 2007, using accounting changes and implementation credibility as country-level proxies for country-level differences. The authors find a negative association between IPO underpricing and mandatory IFRS adoption in EU IPO firms only and find insignificant[3] results for non-EU IPO firms. Hong et al.'s (2014) study suffers from critical limitations, meaning that their results are subject to a lack of credibility and generalisability as depicted in Figure 4.

The work of Hong et al. (2014) has a problematic issue in one important aspect. The authors use outdated and time-invariant measures for accounting changes and implementation credibility to capture the effect of country-level differences in institutional factors on influencing the economic effect of the IFRS-IPO underpricing relationship. The use of outdated and time-invariant measures leads to the presence of omitted variable bias that is likely to make their results subject to a significant lack of credibility. Apart from this, the study is likely to lack generalisability since the results concerning the effect of IFRS mandate on IPO underpricing are driven by EU IPOs, and there is a lack of adequate representation of the emerging non-EU IPOs in their sample. This is because these emerging non-EU IPOs only account for approximately 1% of their total sample. Second, the authors' work also might be difficult to generalise to other markets particularly for emerging non-EU countries due to the employment of short length of IFRS experience, only two years, the factor that receives criticism from accounting disclosure literature (Ball 2016; Houqe & Monem 2016).

In the third paper, Otero and Enríquez (2012) provide the first single-country empirical attempt to examine the economic benefits of IFRS mandate on the underpricing of IPO firms in Spain using 40 IPO firms from 1998 to 2009. Otero and Enríquez (2012) found that IFRS enhances the quality of the accounting information of IPO firms as the underpricing of IPO firms reduced by 27.5% after the mandate in 2005. In the fourth paper, Dorsman et al. (2010) offer the first single-country empirical attempt that focused on the effect of IFRS mandate on the long-term performance of IPO firms in Denmark using 141 Dutch IPOs listed over the period 1990-2011. The authors find that IFRS improves the quality of IPO firms' accounting information, showing

---

[3] The results of the insignificant effect of the IFRS mandate on accounting quality for non-EU countries are also confirmed by Christensen et al. (2013). These authors provide empirical evidence showing increased liquidity associated with mandatory IFRS adoption in EU countries that does not extend to non-EU countries. In contrast, Louis and Urcan (2014) find that increased cross-border merger and acquisition do continue to hold in non-EU countries.

that Dutch IPO firms underperform the general market index, but this level of underperformance fell slightly after mandating IFRS in 2005. However, the conclusions reached by Dorsman et al. (2010) and Otero and Enríquez (2012) are based totally on IPO data from developed countries including Denmark and Spain[4] that have different information characteristics including varying levels of transparency and information disclosure requirements compared to emerging non-EU IPO countries.

Several scholars argue that informational environments between developed and emerging stock markets differ widely. The informational environment in emerging countries are characterised by having weak information disclosure practices and high degree of information asymmetry attributing to this information difference between developed and emerging economies (Harvey 1995; Domowitz et al. 1997; Koutmos 1999; Klapper & Love 2004; Chan & Hameed 2006; Chiang & Zheng 2010; Drobetz et al. 2010; Engelen & Van Essen 2010; Shi et al. 2013; Houqe & Monem 2016; Zattoni et al. 2017). Consequently, the results reported by Dorsman et al. (2010) and Otero and Enríquez (2012) lack generalisability as they are not applicable to emerging non-EU countries, as shown in Figure 4. Therefore, the current empirical research of IFRS-IPO is silent on whether there are economic benefits for mandating IFRS on IPO underpricing and long-term performance of IPO firms in emerging non-EU countries such as Saudi Arabia[5].

As shown in Figure 4, undertaking this thesis is also motivated by Daske et al. (2008) and Christensen et al. (2013)[6], who call for more research to investigate the joint effect of IFRS mandate and intertemporal institutional changes on the quality of accounting. Current IFRS-IPO literature including but not limited to Dorsman et al. (2010), Otero and Enríquez (2012), Hong et al. (2014), and Maglio et al. (2018) does not account for the joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing and long-term performance of IPO firms. Thus, there is an ongoing lack of understanding on how this joint effect might explain the

---

[4] Both Denmark and Spain are classified as developed IPO markets (United Nations 2012).

[5] Section 2.8 provides a discussion highlighting five reasons concerning why Saudi Arabia is selected as a suitable example of an emerging non-EU economy in relation to investigating the economic benefits of IFRS mandate on the accounting quality of IPO firms.

[6] In a comprehensive review of the intended and unintended consequences of mandating IFRS, Brüggemann et al. (2013) urged future research endeavours to focus on examining the impact of the concurrent "joint" effect of mandating IFRS and changes in country-level institutional environments on accounting quality. Persakis and Iatridis (2017) examine the joint effect of differences in investor protection and IFRS mandate on cost of equity and debt capital. The authors treat changes in the formal institutional quality as time-invariant but provide no understanding on the outcome of such a concurrent effect on the IPO market.

underpricing and long-term performance of IPO firms in non-EU countries, particularly in one of the largest emerging non-EU countries, Saudi Arabia. As a result, four objectives have been addressed in this thesis, as shown in Figure 4. The first objective is to examine the economic benefits of IFRS mandate in explaining IPO underpricing of IPO firms listed in Saudi Arabia. The second objective is to examine the economic benefits of IFRS mandate in explaining the long-term performance of IPO firms listed in Saudi Arabia. The third objective is to examine the joint effect of mandatory IFRS and intertemporal changes in transparency on the underpricing of IPO firms in Saudi Arabia. The fourth objective is to examine the joint effect of mandatory IFRS and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia.

1.3.   Contributions

The results of this research make a unique contribution to the intersection of information disclosure and IPO literature by examining not only the individual impacts of the IFRS mandate and intertemporal changes in transparency, but also examining the joint effect of these factors on accounting quality, which is measured by examining the underpricing and long-term performance of IPO firms in one of the largest non-EU emerging economies, Saudi Arabia. Numerous contributions are made to the growing body of accounting disclosure literature that examines the relationship between IFRS mandate and information quality of listed companies in the secondary market. The many notable studies on this subject include: Ball (2006), Daske (2006), Hail and Leuz (2006), Barth et al. (2008), Daske et al. (2008), Li (2010), Byard et al. (2011), Wang and Welker (2011), Houqe et al. (2012b), Ahmed et al. (2013b), Ahmed et al. (2013a), Christensen et al. (2013), Horton et al. (2013), DeFond et al. (2014), and Abad et al. (2018). More specifically, this research contributes to the existing literature concerning the relationship between IFRS mandate and IPO underpricing and long-term performance, which includes Dorsman et al. (2010), Otero and Enríquez (2012), Hong et al. (2014), and Maglio et al. (2018).

The author of this thesis contributes to these studies and the overall topic by filling the gap in our knowledge, specifically by providing the first empirical evidence of the economic benefits that IFRS would bring to the quality of accounting information of IPO firms in emerging non-EU

countries. Given the substantial proportion of such countries that mandate IFRS applications and the associated cost of IFRS mandate, there is no current understanding that emerging non-EU countries will benefit from mandating IFRS in order to provide economic benefits to the primary and secondary markets. In this section, a succinct summarisation of the findings of four empirical sections is presented first, followed by a discussion of several policy implications that are provided in this thesis.

The results for the first empirical section of this thesis confirm the existence of economic reduction in IPO underpricing for bank and insurance IPOs (mandating group) by up to 258% post-IFRS mandate. This important finding confirms the fact that IFRS is anticipated to enhance the quality of the accounting information in IPO reports, due to the following: 1) IFRS standards can eliminate certain accounting alternatives; 2) IFRS rules can assist users with additional disclosure requirements; and 3) IFRS application can render defined measurement and recognition rules in comparison to local GAAP (Ahmed et al. 2013b). Hence, the employment of IFRS by IPO firms considerably affected the degree of information asymmetry amongst market participants in the IPO market. This outcome allows the author to affirm that IFRS mandate indeed works as a quality "certification" signal for IPO issuers in Saudi Arabia, thus supporting the premise of IFRS as an application that improves the quality of accounts published in financial reports. The results confirm that the IFRS mandate reliably makes the accounting information of IPO firms more informative and publicly available to all market participants at no additional cost, therefore decreasing investors' *ex-ante* uncertainty in Saudi Arabia.

The author of this thesis attributes this finding to the 21 major accounting differences found to exist between the Saudi Arabian GAAP and IFRS (Iqbal 2012; IFRS Organisation 2016). Amongst those accounting differences, Nurunnabi (2017) identifies 15[7] IFRS standards that greatly influence the quality of accounting information and are expected to have implications for information asymmetry in the IPO market in Saudi Arabia. For instance, IAS 39 Financial Instruments: Recognition and Measurement is one of these important IFRS standards, that dictates

---

[7] These differecnes include IAS 1 Presentation of Financial Statements; IAS 7 Statement of Cash Flows; Zakat (Zakat is the concept of obligatory charity in Islam, and it is a mandatory payment made annually under Islamic law on certain kinds of property and used for charitable and religious purposes) and IAS 12 Income Tax; IAS 16 Property Plant and Equipment; IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors; IAS 17 Leases; IAS 19 Employee Benefits; IAS 21 The Effects of Changes in Foreign Exchange Rates; IAS 24 Related Party Disclosures; IAS 34 Interim Financial Reporting; IAS 36 Impairment of Assets; IAS 38 Intangible Assets; IAS 40 Investment Property; IAS 41 Agriculture; and IAS39 Financial instruments.

accounting managers employ fair value measurement (FVM), which is claimed to reduce information asymmetry amongst investors in stock markets. Horton and Serafeim (2010) and Firth and Gounopoulos (2017) find that the fair value method presented by the IFRS standards permits investors to improve their valuation precision in assessing the share prices of listed firms, including IPO firms.

The outcomes of the second empirical section document that no economic benefits are to be found for mandating firms, including bank and insurance IPO issuers, in the long-term in Saudi Arabia. This unanticipated result of IFRS mandating led this researcher to contend that IFRS has only a short-lived effect; it has no long-lived influence on information asymmetry in the IPO market. Stated differently, the results implied that IFRS thrives in alleviating asymmetric information hurdles in the primary market by rendering investors and analysts with additional and quality information related to IPO firms. Conversely, in the secondary market, where investors and analysts enjoy access to numerous sources of information to determine the ongoing market value of share prices of IPO firms, IFRS fails in providing any benefit to the customers of financial reports for IPO firms post-listing.

The findings of the third empirical section confirm the presence of a significant and negative joint effect of time-variant changes in transparency and IFRS mandate on IPO underpricing. Results show that this joint effect provided a large quantifiable economic benefit by alleviating underpricing for IPO firms in Saudi Arabia by up to 55%. However, the results also reveal that the IFRS mandate alone produced greater economic benefits by reducing IPO underpricing by up to 223%, even after controlling for time-variant changes in transparency. This section also finds no relationship between changes in transparency in Saudi Arabia and IPO underpricing, as measured by the ethical behaviour of firms (EBF), the strength of auditing and reporting standards (SARS), and transparency of government policymaking (TGP). This evidence is comparable in concept with Hearn (2014) and Dhamija and Arora (2017) who find no supportive results for the hypothesised negative relationship between the level of regulatory and auditing quality, and IPO underpricing in emerging countries, respectively. The author of this thesis attributes this insignificant finding to the existence of a weak level of ethical practice in Saudi Arabia and emerging countries; signalling what is probably a weak commitment by management to quality and transparent financial reporting (Felo 2001).

Lastly, the results of the fourth empirical section of this research show that IFRS does not provide tangible economic benefits to the long-term performance of IPO firms in Saudi Arabia, even after controlling for time-variant changes in transparency. Consistent with what is achieved in the second empirical section, this finding confirms that IFRS mandating does not offer long-lasting effects. In contrast, IFRS maintains only a short-lived impact on the problem of asymmetric information in the IPO market. The non-appearance of IFRS influence in the aftermarket performance of IPO firms led this researcher to posit that the quality of formal institutions is the key player in influencing long-term performance in Saudi Arabia. This thesis documents that an improvement in EBF, SARS, and TGP by one point, increases the long-term performance of IPO firms by up to 65%, 43%, and 84%, respectively. The results find that a joint effect of changes in formal institutional quality proxies and IFRS mandate on the aftermarket performance of IPO firms does not, in fact, exist. Consequently, the conclusion reached in this thesis confirms that IFRS does not provide a long-lived effect for IPO firms post-listing. It is only intertemporal enhancements in the level of formal institutional quality that matter to the aftermarket performance of IPO firms in Saudi Arabia. A battery of sensitivity tests is integrated into the process of generating the findings of this thesis, ensuring the trustworthiness of the attained conclusions in the four empirical sections.

Capitalising on the unique characteristics offered by the Saudi Arabian adoption of IFRS and the transparency and cultural similarity with a wide spectrum of emerging non-EU economies, this thesis provides empirical contributions for researchers, policymakers, local and international investors in emerging non-EU countries and particularly Saudi Arabia in several ways.

Researchers in accounting disclosure and IPO literature can benefit from the robust results of this thesis in two ways. Firstly, this thesis contributes to existing knowledge by proposing a theoretical framework that can be employed to explain the certification role of IFRS, both in reducing the *ex-ante* uncertainty of IPO investors that contributes to the underpricing of IPO firms, and in alleviating the fading effect attributed to the long-term performance gap of IPO firms. The availability of such a framework could surely aid those scholars in understanding the relationship between IFRS mandate and its expected benefits on the quality of IPO firms in the primary and secondary markets. This is because Ball (2016) highlights that the unavailability of a well-established and tested conceptual framework in the accounting disclosure literature in relation to

the economic benefits of IFRS mandate on capital markets outcomes leads to heterogeneity in realising the benefits of IFRS mandate.

Second, the findings of this thesis with reference to the short-lived effect and the absence of the long-lived effect of IFRS mandate on the underpricing and aftermarket performance of IPO firms, respectively, should benefit IFRS research. This is because the current understanding in IFRS-IPO research, represented by the distinguished work of Hong et al. (2014), argues that IFRS provides no economic benefits to IPO firms outside the European countries. If such evidence is to be generalised to emerging non-EU countries where they represent more than half of IFRS adopters, then there is no economic rationale for adopting IFRS in the first place. The findings of this thesis provide significant evidence that IFRS mandate adoption reduces IPO underpricing in Saudi Arabia, a country that shares many formal and informal institutional features that prevail in emerging non-EU economies. In contrast, IFRS mandate is found to provide no benefits to IPO firms post-listing. Hence, the findings of this thesis would make IFRS scholars revise their expectations about the role of IFRS mandate in emerging non-EU countries. This is because the empirical evidence uncovered showed, for example, that the economic benefits IFRS mandate can bring to emerging non-EU economies such as Saudi Arabia are very much larger than what is observed in European economies[8].

Moreover, researchers in the accounting disclosure and IPO fields may also take advantage of the results of the joint effect notion. This is related to whether the potential economic effect on IPO underpricing and long-term performance is solely due to either the IFRS mandate or intertemporal changes in transparency or is due to the joint effect of these two factors. This is because Saudi Arabia's adoption of IFRS is dissimilarly motivated by the European harmonisation efforts that took place jointly with the mandatory adoption of IFRS in 2005 (Daske et al. 2008; Christensen et al. 2013; Persakis & Iatridis 2017). In fact, Saudi Arabia, like many other emerging non-EU countries, implemented notable improvements to its formal institutions simultaneously when IFRS was adopted in 2008. For example, the World Economic Forum (2017) reveals that a number of emerging non-EU economies including Saudi Arabia, Brazil, China, India, Indonesia, Mexico, and Russia have improved the enforcement of their security regulations, where the

---

[8] The results of Section 6.2. are consistent with Hong et al. (2014) who only find economic benefits for IFRS mandate for European IPO firms but are economically larger than their results. This is because they found IFRS mandate reduces IPO underpricing by only 7.6% while this thesis documents a reduction in IPO underpricing by up to 258% post-IFRS mandate.

majority of these countries mandated IFRS after 2008, by nearly 37%, 30%, 32%, 42%, 40%, 43.5%, and 10%, between 2008 and 2016, respectively. The similarity in the overall changes in the level of enforcement of security regulations in Saudi Arabia and the wide spectrum of emerging non-EU economies could make any extracted results from the Saudi Arabian data highly relevant to other emerging countries.

To the best of the author's knowledge, no current research has attempted to formally address the joint effect notion of IFRS mandate and intertemporal changes in transparency. This thesis pioneers the IFRS research by finding that IFRS only matters for reducing the underpricing of IPO firms while it provides no benefits in relation to the aftermarket performance for those companies. Although this thesis uncovers a significant joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia, this concurrent effect vanishes in the secondary market. Remarkably, this research reveals that intertemporal improvements in formal institutional quality only matter in the long-term concerning the performance of IPO firms post-listing while they do not add any value to the underpricing of such firms. Thus, the results of this thesis will lead to a better understanding of the concurrent effect problem that is under-addressed in the information disclosure and IPO literature.

Since the objective of scholarly research is to provide empirical evidence that can be utilised by policymakers and investors, the findings of this thesis provide a number of policy implications for those parties. Legislators in Saudi Arabia will now be able to use the results of this thesis as reliable empirical evidence to evaluate the actual economic effect of IFRS mandate on the quality of financial reports for listed banking and insurance IPO firms, compared to the remaining non-mandated sectors. The authorities in Saudi Arabia can employ the results of this thesis to better promote the sale of the world's largest oil state-owned enterprise, Aramco, in late 2019. This is because disclosure literature including Yunxia and Liansheng (2008), Albu et al. (2014), and Procházka (2017) finds that state-owned enterprises in emerging countries such as China and Romania tend to be involved in earnings management practices when privatising their government-owned firms. This surely will make international investors uncertain about the reliability of accounting information and the accuracy of financial information related to the share valuations of state-owned enterprises in emerging countries. Thus, since IFRS literature, including Jeanjean and Stolowy (2008) and Ugrin et al. (2017), document evidence of reducing earnings management practices post IFRS mandate, the Saudi Arabian government can use the results of

this thesis as reliable evidence to certify the quality of accounting information in the IPO prospectus for their state-owned oil enterprise, Aramco. This is because the author of this thesis finds a significant effect of IFRS mandate in enhancing the quality of financial reporting for IPO firms in Saudi Arabia, post IFRS mandate.

This certifying effect indeed resulted in reducing the problem of information asymmetry that has been compromising the functionality of the IPO market. In turn, IFRS can work as an effective certification tool to reduce the *ex-ante* uncertainty of international investors who wish to invest in the Kingdom's IPO market, in particular, the Aramco offering. Local and international investors who are interested in investing in Saudi Arabia's IPO market will now benefit from the results of this thesis. They can have much more confidence in the quality of accounting information in the IPO prospectus in exchange for reducing their expected investment return. This is because the results show that - due to the enhancement in accounting quality of IPO prospectuses after IFRS mandate - IPO underpricing fell by up to 258%. This may alter the attractiveness of the expected investment return observed in the IPO market in Saudi Arabia, yet it will not deter investors because this research shows that average underpricing from 2003 to 2016 is equivalent to a staggering underpricing value of 213%.

There have been many calls urging emerging non-EU countries to surrender their local accounting standards in exchange for better accounting standards provided by IFRS in order to enhance the quality of their accounting systems (Bova & Pereira 2012; Adibah Wan Ismail et al. 2013; Masoud 2014). Since mandating IFRS does have an economic cost, authorities in emerging non-EU countries who either mandate or in the process of considering IFRS standards are no longer left in the dark[9] with no hard evidence that outweighs those costs with quantifiable economic benefits. Consequently, the findings documented in this study are likely to allow policymakers in those countries to closely observe the economic effect that IFRS mandate will bring to the quality of accounting disclosure of listed IPO companies. The results of this thesis provide conclusive evidence that can be used by promoters of IFRS to justify its economic cost; hence, this is likely to encourage non-IFRS mandating countries to surrender their local GAAP in exchange for quality international standards. IFRS mandate and its role in enhancing the quality

---

[9] Daske et al. (2008), Christensen et al. (2013), and Hong et al. (2014) argue that the economic benefits of mandating IFRS to improve accounting quality are only observable in EU and non-EU developed countries.

of financial reports in emerging non-EU countries can be also used as a marketing instrument to encourage foreign investors who demand quality accounting information to invest in those countries to enhance their local economic growth (Schleicher et al. 2010; Florou & Pope 2012; Gordon et al. 2012). This makes policymakers in emerging non-EU economies, generally more concerned about improving the information quality of their local stock markets to attract foreign capital inflows. Moreover, the development of the IPO market supports the goal for local economic growth in which higher frequency of IPO listings is perceived as an imperative supporting tool in guaranteeing an uninterrupted expansion of equity markets in emerging non-EU economies (Tian 2011; Jamaani & Roca 2015).

In this regard, the outcomes of this thesis are aligned with the goals of policymakers in emerging non-EU economies. This is because the findings affirm that IFRS mandate indeed works as a quality "certification" signal for entrepreneur founders since the premise of IFRS is to improve the accounting quality of financial reports. This demand for quality certification is due to added disclosure requirements of IFRS that can be compared to local GAAP (Ball 2016). Results reported in this thesis confirm that IFRS mandate decreases the *ex-ante* uncertainty of IPO investors, resulting in less information asymmetry in the IPO market. This, in turn, leads to reducing the cost of going public for IPO issuers who suffer from a large discount when they sell part of their shareholdings to the public. That is, IFRS mandate will reduce the cost of going public, which, in turn, increases the incentive for entrepreneur founders of IPO firms to expand their operations by raising equity through their local stock markets. As a result, this accelerates the growth of IPO markets and ensures sustainable economic growth in emerging non-EU economies.

1.4.   Outline of the Thesis

To accommodate the motivations, objectives, and contributions of this thesis, it is organised into seven chapters. Chapter One is the introduction and explains the research background, the problem being investigated and research motivations and objectives. The contributions to research in the accounting disclosure and IPO field, policymakers, and investors are highlighted. Chapter Two presents an overview of the IFRS standards, the objectives of IFRS

standards, a comparison between IFRS and SOCPA, an overview of Saudi Arabia's economy, the stock market, the country's IPO market, and justifies the selection of Saudi Arabia as the study site of this research. Chapter Three renders a brief literature review on the voluntary and mandatory adoption of IFRS, the impact of mandatory IFRS adoption on IPO underpricing and the long-term performance of IPO firms, and the joint effect of mandatory IFRS adoption and intertemporal changes in transparency on IPO underpricing and the long-term performance of IPO firms. The conceptual framework, research questions, and hypotheses development of this thesis are articulated in Chapter Four. Chapter Five describes the research design for this study, data and methodology related to the four empirical sections. Chapter Six articulates the results and offers a discussion on the findings; this chapter is divided into a number of sub-sections that address the four empirical questions. Finally, Chapter Seven concludes the thesis and summarises the main themes.

Chapter Two

Overview of IFRS Standards, SAS Standards, and the Saudi Arabian Financial Market

2.1. Introduction

In this chapter, a description of the IFRS standards, the Saudi Organization for Certified Public Accountants (SOCPA), and the Saudi Arabian market is provided. Seven sections are included in the chapter. In the first section, an overview of IFRS standards and a succinct history of the IFRS organisation and the status of compliance are presented. In addition, the two main objectives of IFRS standards are provided here. In the second section, a comparison between the IFRS and Saudi Accounting Standards (SAS) is made. The aim of this comparison is to inform readers about the historical development and objectives of SOCPA. Differences and similarities between IFRS standards and SAS are also concisely outlined here.

In the third section, an overview of Saudi Arabia's economy, providing an interregional comparative analysis of the country's financial market development, the size of the economy, and institutions to demonstrate the importance of Saudi Arabia to the region is presented. A description of the Saudi Arabian Stock Exchange (Tadawul) including its establishment and an analysis of stock market capitalisation, and the composition of stock market sectors is provided in the fourth section. In the fifth section, an examination for Saudi Arabia's IPO market with an examination of the expected returns for investors, wealth losses for issuers, price movement patterns, market participants, allotment regulations, and regulatory restrictions on price movements is provided. Then in Section 2.8, a discussion of why Saudi Arabia is a suitable testing ground for IFRS mandate in developing non-EU nations is provided. The last section concludes the chapter.

2.2. Overview of IFRS Standards

IFRS are international accounting standards developed by the IASB, which is an autonomous institution based in the United Kingdom (IAS*Plus* 2019a). The aim of the IASB is to offer a unified and equal set of accounting standards that publicly listed firms, and other reporting entities, can use to generate their financial reports worldwide (IFRS Foundation 2018). The IASB originated in April 2001 after further developments concerning the International Accounting Standards (IAS). IASs are governed by the International Accounting Standards Committee (IASC), which was established in 1973 (IFRS Foundation 2016). IASC represents an international co-operation of professional accountancy entities involving many countries including the United States, Ireland, the United Kingdom, the Netherlands, Mexico, Japan, Germany, France, Canada, and Australia.

The IASB is recognised as an independent organisation that possesses superior financial and human capital infrastructure than its predecessor, the IASC. IASB publishes its accounting rules under the IFRS label that replaced the rules of IAS (De George et al. 2016). IFRS standards are widely implemented by many jurisdictions. According to Pacter (2017), there are 150 countries using the IFRS standards, of which 93% (140/150 countries) have made it a public commitment. While 84% (126/150 countries) require their publicly listed firms to use IFRS standards, the remaining countries permit the use of IFRS. Furthermore, 57% (85/150 countries) either mandate or permit their Small and Medium Entities (SMEs) to use the IFRS standards (IAS Plus 2017). Across the 150 jurisdictions, 70 countries are classified as non-EU nations where 67 of the 70 are classified as emerging non-EU countries that have mandated IFRS. The combined GDP of countries that either mandate or permit the use of IFRS standards represents $46 trillion, accounting for more than 62% of the global GDP in 2017 (Pacter 2017). The combined GDP of adopting countries outside the EU region constitutes $27 trillion[10], while the combined GDP of all EU mandating jurisdictions is $19 trillion (Pacter 2017).

---

[10] In this thesis all the amounts indicated are in US dollars.

2.3. Objectives of IFRS Standards

IFRS standards aim to provide a single set of high-quality, understandable, enforceable and globally accepted financial reporting standards based on clearly articulated principles (IAS*Plus* 2019a). IFRS is generally thought to be more comprehensive than the domestic GAAP of most countries where the two most frequently claimed benefits associated with IFRS adoption are: (i) an increase in accounting quality; and (ii) an increase in accounting comparability (Ball 2006; Soderstrom & Sun 2007; De George et al. 2016). IFRS standards enhance comparability of financial statements across countries and markets, which is also a component of high-quality financial reporting (Burgstahler et al. 2006). By using the same accounting language in preparing financial statements for different countries, global investors and financial analysts are less likely to face interpretation difficulties, thereby facilitating information flow between capital markets and encouraging the cross-border raising of capital (Byard et al. 2011). However, Li (2010), Yip and Young (2012) and Cascino and Gassen (2015) argue that IFRS improves information quality of financial reports which in turn leads to an improvement in the comparability of financial statements. Consequently, this thesis focuses on examining the economic benefits of adopting IFRS on accounting quality.

2.4. Comparison between IFRS and SOCPA

The Saudi Arabian Professional Accounting Organisation (SAPAO) was established less than three decades ago, although the legal recognition of the auditing profession started in 1974. This specifically refers to the Accountants Law, including 35 articles, which is presented by Royal Decree No. 43 (SOCPA 2016a). In November 1991, Royal Decree No. M12 announced the introduction of the Certified Public Accountants' Regulation, which superseded the Public Accountants' Regulation introduced in 1974. The new regulation includes 38 articles consisting of four categories: requirements and procedures to register accountants, responsibilities of public accountants, the establishment of the Professional Accounting Organisation (PAO), and general

guiding rules. The significant landmark of the 1991 regulation was setting up SOCPA in 1992 (SOCPA 2016b). SOCPA is the primary PAO in Saudi Arabia, and it is supervised by the Ministry of Commerce (MOC). The main objectives of SOCPA (2016a) are listed in Table 1 below.

Table 1. The Main Objectives of SOCPA

	Objectives
1.	Reviewing, developing, and approving accounting and auditing standards.
2.	Providing policies and regulations for fellowship certified examination (for example, Certified Public Accountants (CPA)).
3.	Organising constant accounting and auditing educational programs which include conducting research in accounting, auditing and other related topics.
4.	Establishing proper quality review programs to confirm that CPA holders effectively apply professional standards and obey the provisions of CPA regulations.
5.	Publishing journals, bulletins, and books related to accounting and auditing subjects.
6.	Participating in both domestic and global committees and conferences related to accounting and auditing profession.

This table is sourced from SOCPA (2016a)

Since the establishment of SOCPA, 21 Saudi Accounting Standards (SAS) have now been issued covering numerous business transactions relevant to public firms (SOCPA 2016b). Although SOCPA is the only regulatory body of the accounting profession in Saudi Arabia, there are two other government organisations that administer other regulatory matters, as shown in Figure 5. These are the Saudi Arabian Monetary Agency (SAMA) and the Capital Market Authority (CMA), that monitor and enforce regulations and policies related to reporting and disclosures standards of public firms in the kingdom (AlMotairy & Stainbank 2014). SAMA is the Central Bank, which regulates the banking and insurance industry, financial institutions, and insurance companies in Saudi Arabia (SAMA 2016). SAMA requires all listed banking and insurance, and financial institutions on the Saudi Stock Exchange (Tadawul) to prepare their financial reports in compliance with IFRS standards, as shown in Figure 5. The remaining listed firms in Tadawul are required to prepare their financial reports in compliance with SAS.

CMA regulates and monitors the Saudi Arabian capital market, including all listed firms in Tadawul and ensures full compliance with IFRS standards starting from 2017 (CMA 2016). Since its establishment in 2003, the responsibilities of the CMA include legislating rules and regulations, ensuring compliance with these rules and regulations, settling financial disputes, and helping develop the capital market in the kingdom (CMA 2016).

Figure 5. Role of Saudi Arabian Governmental Bodies in the Implementation of IFRS Standards

SOCPA	SAMA	CMA
Regulatory body of the accounting profession in Saudi Arabia	Central bank which regulates the banking and insurance companies, And financial institutions in Saudi Arabia	Regulates and monitors the Saudi Arabian capital market including all listed firms in Tadawul.
Role in IFRS	**Role in IFRS**	**Role in IFRS**
SOCPA manages and supervises the ongoing convergence plans of SAS with IFRS but with no legal authority over listed Saudi Arabian firms	SAMA legally requires all listed banking and insurance firms on Tadawul to comply with IFRS standards	CMA regulates and monitors the Saudi Arabian capital market including all listed firms in Tadawul and ensure full compliance with IFRS standards starting from 2017

This figure is sourced from CMA (2016), SAMA (2016), and SOCPA (2016b)

In addition, CMA ensures that all listed firms comply with reporting and disclosure requirements. The role of SOCPA is to regulate the reporting and disclosure standards for listed firms while it has no legal authority over listed Saudi Arabian firms (AlMotairy & Stainbank 2014). This means that SOCPA has no role in monitoring and enforcing compliance with reporting and disclosure requirements by the listed firms in the country. However, SOCPA manages and supervises the ongoing convergence plans of SAS with IFRS. SOCPA supervises the transition from SAS to IFRS standards by listed insurance and banking firms in Tadawul.

Recently, SOCPA has worked on facilitating IFRS compliance of all listed firms in Tadawul by 2017 and SMEs by 2018 (IAS Plus 2016). Currently, SAS fully complies with 18 effective IFRS standards and partially complies with seven IFRS standards. There are 11 IFRS standards that do not have equivalent SAS standards while there are three SAS standards having no equivalent IFRS standards, as shown in Table 2 (IFRS Organisation 2016).

Table 2. Comparison between SAS and IFRS Standards

IFRS directly corresponding with SAS Standards

1. Presentation of Financial Statements (IAS 1)
2. Inventories (IAS 2)
3. Construction Contracts (IAS 11)
4. Income Taxes (IAS 12)
5. Property Plant and Equipment (IAS16)
6. Leases (IAS 17)
7. Revenue (IAS 18)
8. Accounting for Government Grants (IAS 20)
9. Foreign Currency (IAS 21)
10. Related Party Disclosures (IAS 24)
11. Consolidated and Separate Financial Statements (IAS 27)
12. Investments in Associates (IAS 28)
13. Earnings Per Share (IAS 33)
14. Interim Financial Reporting (IAS 34)
15. Impairment of Assets (IAS36)
16. Intangible Assets (IAS 38)
17. Operating Segments (IFRS 8)
18. Business Combinations (IFRS 3)

IFRS partially corresponding with SAS Standards

1. Cash Flow Statements (IAS 7)
2. Accounting Policies, Changes in Accounting Estimates and Errors (IAS 8)
3. Events After the Balance Sheet Date (IAS 10)
4. Borrowing Costs (IAS 23)
5. Provisions, Contingent Liabilities and Contingent Assets (IAS 37)
6. Financial Instruments -Recognition and measurement (IAS 39)
7. Non-Current Assets Held for Sale and Discontinued Operations (IFRS 5)

IFRS not corresponding with SAS Standards

1. Employee Benefits (IAS 19)
2. Accounting and Reporting by Retirement Benefit Plans (IAS 26)
3. Financial Reporting in Hyperinflationary Economies (IAS 29)
4. Interests in Joint Ventures (IAS31)
5. Financial Instruments -Presentation (IAS 32)
6. Investment Property (IAS 40)
7. First-time Adoption of IFRSs (IFRS 1)
8. Insurance Contracts (IFRS 4)
9. Exploration for and Evaluation of Mineral Resources (IFRS 6)

10.	IFRS 7
11.	IFRS 9

SAS Standards not corresponding with IFRSs

1.	Research and Development Costs
2.	Accounting for Zakat
3.	Administrative and Marketing Expenses

This table is sourced from Iqbal (2012) and IFRS Organisation (2016)

There are key differences between SAS and IFRS standards in the labelling of principal statements (Iqbal 2012). Table 3 below summarises those key labelling differences.

Table 3. Comparison between SAS and IFRS Principal Statements

SAS Principal Statements	IFRS Principal Statements
Balance Sheet	Statement of Financial Position
Statement of Income	Statement of Comprehensive Income
Statement of Cash Flows	Statement of changes in equity
Statement of Changes in Shareholders' Equity	Statement of Cash Flows
Notes to the financial statements	Notes to the financial statements

This table is sourced from Iqbal (2012)

As well, SAS differs from IFRS standards in the following key areas, namely general, balance sheet, income statement, cash flow statement, and special topics as displayed in Table 4 (Iqbal 2012).

Table 4. Key Differences between IFRS and SAS

	SAS	IFRS
	Fair presentation	
General	No such presumption.	There is a presumption that application of IFRS would lead to fair presentation.
	Departure from IFRS	
	Not required.	IAS 1 requires specific disclosure for departures from IFRS.
	Critical accounting judgments	

	Not required.	IAS 1 requires disclosure of critical judgments made by management in applying accounting policies.
	Statement of unreserved compliance with IFRS	
	Not required.	IAS 1 requires specific disclosure for explicit and unreserved statement of compliance with IFRS.
	Presentation of financial statements (Classification of liabilities)	
	Liabilities for which contractual arrangements have been made for their settlement from other than current assets should be removed from current liabilities before issuing the financial statements. Examples of these liabilities are Short-term loans which will be paid by the proceeds from long-term loans. Commercial debts agreed to be settled by issuing capital stocks.	Liabilities are classified as non-current only if refinancing is completed before the end of the reporting period.
	Presentation of Balance Sheet (Current Vs. Non-current)	
	Deferred taxes are presented as current or non-current based on the nature of the related asset or liability.	Deferred taxes are presented as non-current. (Note: In the joint convergence project on income taxes, IFRS is expected to converge with US GAAP and hence present deferred tax as current or non-current based on the nature of the related asset or liability).
	Presentation of financial statements (Extraordinary items)	
	Saudi GAAP specifically requires disclosure for Extra-ordinary items.	IAS1 prohibits any items from being disclosed as extraordinary items.
	Presentation of financial statements (Income statement expense classification)	
	Required to present expenses based on function (for example, cost of sales, administrative). Note: There is a separate SOCPA standard on "Administrative and Marketing Expenses".	Entities may present expenses based on either function or nature (for example, salaries, depreciation). However, if function is selected, certain disclosures about the nature of expenses must be included in the notes.
Balance sheet	**Inventories (Measurement method)**	
	Weighted average method is a preferable method for similar items. However, FIFO or LIFO methods may be used, provided reasons and quantifying the difference with weighted average is disclosed. Consistent cost formula for all inventories similar in nature is not explicitly required.	LIFO is prohibited; however, the entity can choose FIFO or weighted average cost method for valuing its inventories. Same cost formula must be applied to all inventories similar in nature or use to the entity.
	Inventories (Reversal of inventory write-downs)	
	Not covered.	Previously recognised impairment losses are reversed, up to the amount of the original impairment loss when the reasons for the impairment no longer exist.

Inventories (Measuring inventory at net realisable value even if above cost)	
Permitted, but based on a specific product (precious metals).	Permitted only for producers' inventories of agricultural and forest products and mineral ores and for broker-dealers' inventories of commodities.
Property plant and equipment (Measurement after initial recognition)	
Measured at cost less accumulated depreciation and impairment losses. Revaluation is prohibited.	Benchmark treatment–measure the asset at cost less accumulated depreciation and impairment losses. Allowed alternative treatment– measure assets at their fair values with the changes in fair values being credited to a revaluation reserve shown under equity of the entity.
Property plant and equipment (Capitalization of Dismantling and Site Restoration Costs)	
No guidance in the standard.	Provision for on-site restoration and dismantling is mandatory. To the extent it relates to the fixed asset, the changes are added/deducted (after discounting) from the asset in the relevant period.
Property plant and equipment (Depreciation on components of an asset)	
Not covered	Components of an asset with differing patterns of benefits must be depreciated separately.
Property plant and equipment (Depreciation on idle asset)	
Depreciation is not calculated on the fixed assets that were determined to be disposed of immediately upon taking that decision. However, there is no mention of idle assets. Opinion issued by SOCPA assets that were permanently idle and still in the entity's possession, if material, should be separated from other assets and their depreciation should be suspended.	Should be depreciated even if it is idle, but not if it is held for sale.
Property plant and equipment (Government Grants)	
Not covered. The Saudi standard on Government Grants requires it to be accounted for as owner's equity.	Government grants received for acquisition of PPE may be offset against the cost.
Property plant and equipment (Reassessment of useful life, residual value and depreciation method)	
Reviewed only when events or changes in circumstances indicate. Opinion issued by SOCPA	Required annually.
Property plant and equipment (Measurement of self-constructed asset)	
Fixed asset that is self-constructed shall be recognised at the lower of cost or fair value when it is ready for use. The difference between the cost of the asset and its fair value shall be	On the same basis as an acquired asset.

charged to the fiscal period in which such asset is ready for use.	
Property plant and equipment (Compensation for impairment)	
Only losses are recognised when becoming receivable. Unrealised gains are not recognised.	Compensation from third parties for impairment or loss of items of PPE are included in the profit and loss account when the compensation becomes receivable.
Property plant and equipment (Revenue during commissioning period)	
Covered only to the extent of capitalising pre-operating costs. No mention of incidental revenue.	Costs of testing whether the asset is functioning properly, after deducting the net proceeds from selling any items produced while bringing the asset to that location and condition (such as samples produced when testing equipment) should be capitalised.
Property plant and equipment (Impairment assessment)	
SOCPA also lists various factors; however, initially, the impairment is assessed by comparing the gross undiscounted cash flows from the assets with its carrying value. If gross cash flows are higher than carrying amount, then no impairment. If gross cash flows are lower than carrying amount, then impairment is recognised based on discounted cash flows.	IAS 36 has a list of external and internal indicators of impairment. If there is an indication that an asset may be impaired, then the asset's recoverable amount is calculated- which is higher of assets net selling price or value in use. The difference between the recoverable amount and the carrying value is impairment.
Investment properties (Accounting for investment properties)	
Shall be valued at cost. SOCPA allows only disclosure of the fair value information in the explanatory notes to the financial statements.	Investment property shall be measured at its cost or fair value.
Financial instruments (General)	
SOCPA has issued a separate standard dealing with investment in securities; however, the guidance is limited, and detailed aspects are not covered. Practically, companies are applying IFRS where guidance in SOCPA is not available. No guidance is available regarding accounting for derivatives. No guidance on hedge accounting.	Separate standards for accounting and disclosure of financial instruments have been issued, which contain extensive guidance. The standards are being further enhanced and consider all aspects of financial instruments like classification, recognition and measurement, impairment etc. Detailed guidance is available for accounting for derivatives and hedges.
Financial instruments (Classification)	
Financial instruments can be classified as Trade Securities, Available for Sale, Held to Maturity. Loans and receivables are specifically not mentioned as the SOCPA standard deals with Investment insecurities only. Transfers between classes are ordinarily permissible.	Financial instruments can be classified as at Fair Value through profit or loss (which includes trading and designated instruments), Available for sale, Held to Maturity, Loans and receivables. Transfer between classes is permissible if certain conditions are met.
Financial instruments (Measurement)	

	On acquisition, Securities shall be measured and recorded at cost. The cost includes the purchase price and all the expenses incurred by the enterprise for acquiring the securities. Determination of FV: Securities which have no active market and there are no sufficient indicators to allow determination of market value objectively (e.g. Equity securities) then the cost is considered as most appropriate objective and reliable measurement of the fair value of securities.	Initially, financial assets and liabilities should be measured at fair value (including transaction costs, for assets and liabilities not measured at fair value through profit or loss). Determination of FV IAS 39 provides a hierarchy to be used in determining the fair value for a financial instrument and assumes that this cannot be determined in only rare cases.
	Financial instruments (Impairment)	
	Decline in fair value is considered other than temporary if there are certain indicators proving its continuity or these indicators could indicate the nature of the decline. Significance of the decline and period should be considered when determining whether the decline in fair value is to be considered as impairment.	Decline in fair value is considered permanent, and the security is considered impaired if the decline in its fair value below cost is significant or prolonged. Other qualitative factors are also to be considered.
	Intangible Assets (Incorporation Costs)	
	May be capitalised.	Not allowed to be capitalised.
	Intangible Assets (Measurement after initial recognition)	
	Should be measured at its historical cost less accumulated amortisation.	Can be held at cost or at fair value.
	Borrowing Costs (Qualifying Assets)	
	Limited to fixed assets that take a substantial period of time to get ready for its intended use or sale.	Includes inventories that require a substantial period of time to bring them to a saleable condition.
Income statement	**Foreign Currency**	
	Foreign currency transactions are recognised and reported in Saudi Riyals only.	A foreign currency transaction shall be recorded on initial recognition in the functional currency, which may be other than the presentation currency.
Cash flow statement	**Direct versus indirect method**	
	Only specifies the format of the indirect method in the presentation standard	Financial statement preparers have a choice between the direct and the indirect method in presenting the operating activities section of the statement of cash flows. IAS 7 recommends the direct method.

Cash and Cash Equivalents	
SOCPA Standard for "Cash Flow Statement" does not refer to a specific period regarding cash equivalents.	IAS 7 gives guidance to state that cash equivalents should be excluded from the Statement of Cash Flows and disclosed elsewhere in the financial statements "when it has a short maturity of, say, three months or less from the date of acquisition."
Employee benefits (Post-employment benefits)	
Limited guidance available; however, the standards do require long term obligations to be discounted to reflect the current costs. Practically, companies are accounting for the End of Service Benefits (EOSB) obligations based actual payments that the Company would require to make–few companies are using the actuarial valuations also.	Detailed guidance is available under IAS 19 for post-employment benefits. The accounting requires the Companies to discount their obligation under the defined benefit plans and reflect the current costs in their financial statements–the present obligation is usually determined based on actuarial advice.
Taxation and Zakat	
Zakat is charged to income statement if the Company is wholly owned by Saudi shareholders; otherwise, it is charged to equity. Income tax is charged to the income statement if the Company is wholly owned by non-local shareholders; otherwise, it is charged to equity. Deferred tax requirements are like IFRS; however, IFRS is much more detailed.	Income tax is covered and is a charge to the income statement. No separate standard is available to deal with Zakat. Deferred tax is provided for all temporary differences.
Leases (Criteria for classification as finance lease)	
Prescriptive should satisfy one of the following four conditions to be classified as a finance lease: – To have 90% of the value of the assets – To have 75% of the life of the assets – To have a bargain purchase option – To have transfer of ownership at the end of the lease term.	Principle based-substance over form requirement–transfer of substantially all risks and rewards incident to ownership is to be considered while deciding the classification of the lease.
Interim financial reporting (Minimum contents)	
•Minimum contents – Balance Sheet – Income statement – Cash flows statement – Selected explanatory notes. •A statement that results for the interim period may not give an accurate indicator of the annual operating results is required to be included.	•Minimum contents – Condensed statement of financial position – Condensed comprehensive income – Condensed statement of changes in equity – Condensed cash flow statement – Selected explanatory notes. •No such statement required.

Special Topics

Interim financial reporting (Integral vs discrete approach)	
Requires the totality approach, which considers that each period of the fiscal year is an integral part of the whole fiscal year.	Generally, it allows the integral approach but also allows discrete approach in certain cases like changes in estimates.
Interim financial reporting (Comparatives)	
The comparative balance sheet reflects the balances as at the end of the corresponding period. For example, in the financial statements for the interim period ended 30 June 2010, the balance sheet comparative should show the balance sheet as at 30 June 2009.	The comparative balance sheet reflects the balances as at the end of the last financial year. For example, in the financial statements for the interim period ended 30 June 2010, the balance sheet comparative should show the balance sheet as at 31 December 2009.
Consolidated and separate financial statements (Minority interest)	
Shall be presented as a separate component of the equity section.	Shall be presented within equity separately from the parent shareholders' equity.
Related Parties	
Transaction oriented; e.g., disclosure to identify controlling party not needed as long as there were no transactions. External auditor is also a related party. No mention of disclosure for management compensation.	Relationships between a parent and its subsidiaries shall be disclosed irrespective of whether there have been transactions between them. External auditor is not a related party. Detailed disclosures required for all types of management compensation.
Agriculture	
Does not allow the same through one of its opinions.	Measure biological assets/producing cattle (non-current assets) at fair value.

This table is sourced from Iqbal (2012)

2.5. Overview of the Economy of Saudi Arabia

Saudi Arabia is one of the largest economies of the Middle East. It is the world's largest oil exporter, and the government derives more than 90% of its income from oil revenues (Aghimien 2016). The substantial upsurges in oil prices, which increased from less than $30 per barrel in 2003 to a steady peak revolving around $110 per barrel from 2011 to 2013 before plummeting down to below $50 in 2014, doubled the kingdom's GDP during the decade (McKinsey & Company 2016). When the global financial crisis erupted in 2008 and the major advanced and developing economies experienced mounting and potentially catastrophic indebtedness, the economy of Saudi Arabia is a rare exception. In fact, it managed to eliminate

its national debt and boosted its reserve of assets to \$732 billion, accounting for almost 100% of 2014 GDP.

The substantial increase in oil revenues greatly helped the Saudi economy move up to the 19th largest economy in 2014 after being the 27th world's largest in 2003, allowing the kingdom to join the G20 group (McKinsey & Company 2016). To have a comparable cross-country meaning, the nominal GDP of the kingdom in 2014 was about \$750 billion, which is bigger than the nominal GDP of either Switzerland or Sweden. In addition, on a per capita basis, the nominal GDP of the kingdom is about \$24,000 which is slightly behind the nominal GDP of South Korea and far ahead of the nominal GDP of Portugal in 2014 (The World Bank 2019).

Before moving on to discuss the stock market characteristics of Saudi Arabia, this section presents a distinct interregional comparative analysis of Saudi Arabia's financial market development, the size of its economy, and its institutional environment, to demonstrate the country's importance. The 2015 Global Competitiveness Report[11] (GCR) published by World Economic Forum (2017), provides cross-country measures to quantify countries' financial market development including the availability of financial services, regulation of securities exchanges, and prevalence of foreign ownership. The availability of financial services measures to what extent the finance industry in a country provides a wide range of products and services to businesses. Regulation of securities exchanges gauges the effectiveness of regulation and supervision of securities exchanges in a country. Prevalence of foreign ownership measures the prevalence of foreign ownership in a country. In this regard, in 2015, Saudi Arabia is ranked 47th, 30th, and 107th in terms of availability of financial services, regulation of securities exchanges, and prevalence of foreign ownership, respectively (World Economic Forum 2017).

Moreover, the size of the economy measure includes three variables: GDP, total tax rate as a percentage of profits, and domestic market size provided by the 2015 GCR (World Economic Forum 2017). GDP measures the gross domestic product valued at purchasing power parity in billions of dollars in a country. The total tax rate as a percentage of profits measures a

---

[11] Since 1979, The Global Competitiveness Network publishes yearly reports to measure a country's competitiveness. The report now covers 148 economies in 2016. The data contained in the report are derived from important international sources and the World Economic Forum's annual Executive Opinion Survey to capture the perceptions of more than 13,000 professionals in the field on subjects associated with national competitiveness (World Economic Forum 2017).

combination of profit tax, labour tax and contribution, and other taxes. Domestic market size measures the sum of the gross domestic product plus the value of imports of goods and services, minus the value of exports of goods and services in a country. In this regard, Saudi Arabia's GDP, total tax rate as a percentage of profits, and domestic market size are ranked, respectively, amongst the best at 14th, 6th, and 17th globally in 2015 (World Economic Forum 2017).

Measurements to assess the quality of a country's institutional environment include the strength of auditing and reporting standards, ethical behaviour of firms, judicial independence, and protection of minority shareholders' interests (World Economic Forum 2017). The auditing and reporting standards measure the strength of the financial auditing and reporting standards in a country. Ethical behaviour of firms measures the extent of corporate ethics, including ethical behaviour in interactions with public officials, politicians, and other businesses. Judicial independence measures the judiciary's independence from government members or ministers, citizens, or firms in a country. Protection of minority shareholders' interests measures the extent to which such shareholders and their interests are protected by a country's legal system. In this regard, in 2015, Saudi Arabia is ranked 29th, 25th, 25th, and 21st in terms of strength of auditing and reporting standards, ethical behaviour of firms, judicial independence, and protection of minority shareholders' interests, respectively (World Economic Forum 2017).

All these notable economic improvements that the kingdom achieved allowed the Saudi government to deploy its oil revenues to invest nearly $450 billion in programs to advance education, health, social welfare, infrastructure, and transport over the last decade. However, the market shifts in oil prices in 2014 caused the Kingdom's budget to swing from a surplus of 6.5% of GDP in 2013 to record a deficit of 2.3% (McKinsey & Company 2016). In reaction to those economic challenges facing Saudi Arabia, King Salman Bin Abdulaziz Al Saud introduced the 2030 Vision of Saudi Arabia which aims to make the kingdom's economy more modern and rely less on oil revenues (Saudi Vision 2030 2016).

One of the ambitious targets set forth by the 2030 Vision, is to encourage the Foreign Direct Investment (FDI) from 3.8% in 2015 to reach the average global level of 5.7% of GDP in 2030. The small contribution of FDI to Saudi Arabia's GDP in 2015 is consistent with the 107th global rank of Saudi Arabia in terms of the prevalence of foreign ownership that measures the financial development of countries (World Economic Forum 2017). The low contribution of FDI

to the kingdom's GDP and the prevalence of foreign ownership is likely due to the lack of adequate disclosure regulations. These constitute a disincentive for foreign investors to invest in Saudi Arabia.

Prior studies claim that foreign investors often demand more information disclosure and effective accounting and auditing standards in order to be active participants in stock markets (Jiang & Kim 2004; Choi et al. 2013). On this note, Jamaani and Roca (2015) indicate that in 2012 foreign investors are permitted to own up to 25% of listed firms in Tadawul through mutual funds, equity swaps, and Exchange Traded Funds (ETFs). In 2012, the actual percentage of foreign ownership in Saudi Arabia was only 3.3%. The authors conclude that this ownership gap is likely due to the presence of an asymmetric information environment caused by the presence of weak disclosure regulations in Tadawul. The aforementioned 2030 Vision aims to reduce information asymmetry amongst market participants in Tadawul by improving disclosure regulations (Saudi Vision 2030 2016). Consistent with the 2030 Vision, CMA announced its continuing support for the efforts of SOCPA regarding the conversion to IFRS. The specific aim is to: firstly, enhance the quality of disclosure regulations of listed companies; and secondly, improve information transparency, accountability, and efficiency with respect to how Tadawul operates (CMA 2015; Pacter 2017).

2.6. Overview of the Stock Exchange of Saudi Arabia

Saudi Arabia's stock market was officially established in 1990[12] with a handful of listed firms that traded over the counter. In 2001, the kingdom's capital stock market introduced a new electronic trading system called "Tadawul" that is currently supervised and controlled by the SAMA (GulfBase 2016). The new electronic trading platform offers traders greater efficiency, accuracy, quick trading cycle, and prompt transaction settlement (Jamaani & Roca 2015). With the establishment of the CMA in 2003 as an official organisation that monitors and enforces

---

[12] In the 1990s the trading of all listed stocks is supervised and controlled by SAMA and the Saudi government authorised local banks to act as brokers (GulfBase 2016).

regulations and policies related to the listing, reporting, and disclosures standards of public firms in the kingdom, supervision and control duties of Tadawul were shifted to the CMA by the Saudi government (CMA 2016).

Tadawul is considered to be the largest stock market in the MENA region in terms of market capitalisation; this is because the total market value of all listed firms was $442 billion in 2015 (Tadawul 2015). It is almost twice the size of the Turkey and UAE stock markets combined and slightly larger than those of Russia and South Africa in 2015 (Khatoun & Shamma 2015). Since the inception of Tadawul, the total market capitalisation of all listed firms rose considerably from $73 billion in 2001 to $442 billion in 2015 (Tadawul 2015). During this period, Tadawul reached its peak in 2005 with a total market capitalisation of $650 billion before it dropped to $327 billion due to the GCC's financial crisis in 2006, as shown in Figure 6. Tadawul quickly recovered from this crisis, and its market capitalisation grew to $519 billion in 2007 before the worldwide near economic collapse in 2008. It lost more than half of the value of its market capitalisation. From 2008, Tadawul continued to steadily grow to reach a total market capitalisation of $442 billion in 2015, as depicted in Figure 6.

Figure 6. Stock Market Capitalisation of Tadawul

This figure is sourced from Tadawul (2015)

In 2015, Tadawul had 175 listed companies in 15 various market sectors in which the banks and financial services sector represents the largest one contributing 18% of the market

capitalisation (Tadawul 2015). This is followed by the petrochemical industry, insurance, real estate development, and industrial investment sectors, as illustrated in Figure 7.

Figure 7. Composition of Market Sectors in Tadawul in 2015

- Banks & F. Services **IFRS Complied**
- Petrochemical Indust.
- Insurance **IFRS Complied**
- Real Estate Development
- Industrial Investment
- Telecom. & Info. Tech.
- Building & Construction
- Agri. & Food Indust.
- Retail
- Transport
- Cement
- Multi-Investment
- Hotel & Tourism
- Media & Publishing
- Energy & Utilities
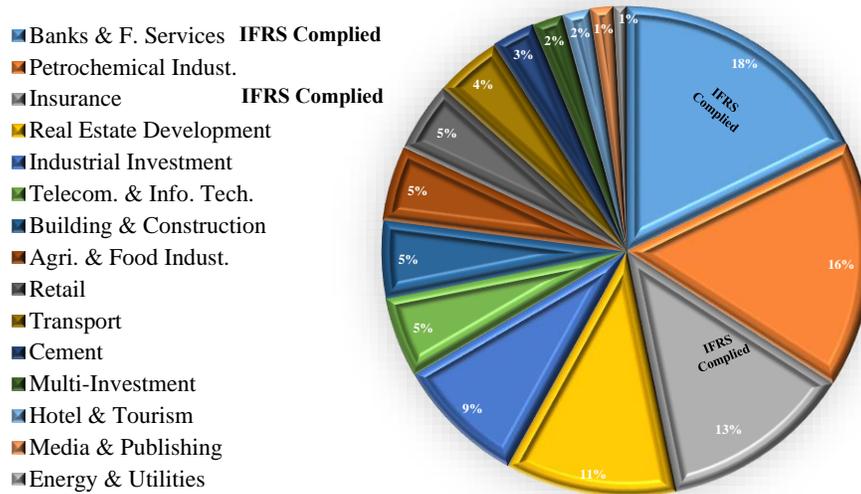
This figure is sourced from Tadawul (2015)

Among the 15 market sectors of Tadawul, the banks and financial services and insurance sectors are the only ones that are mandated to use IFRS standards in preparing their financial reports (IAS Plus 2016). They have been doing this since 2008. Both the banks and financial services and insurance sectors contributes to 31% of the market capitalisations as shown in Figure 7. The other 13 sectors are required to prepare their financial reports in compliance with SAS standards governed by SOCPA, and they are not permitted to use IFRS standards. However, those 13 sectors were required to fully comply with IFRS standards beginning in 2017 when IFRS standards became mandatory for all listed firms in Tadawul (IAS Plus 2016). Table 5 indicates that Insurance represents the largest sector, while the Energy and Utility sector represents the smallest in terms of the number of listed companies. This is because the former has 35 listed firms and the latter only two listed companies in 2016 (Tadawul 2016).

37

Table 5. Number of Listed Companies in Every Market Sector in Tadawul in 2016

Sector	Companies	Sector	Companies	Sector	Companies
Insurance	35	Petrochemical Industry	14	Transport	5
Building & Construction	18	Cement	14	Telecom. & Info. Tech.	4
Retail	17	Banks & Financial Services	12	Hotel & Tourism	4
Agri. & Food Industry	16	Real Estate Development	9	Media & Publishing	3
Industrial Investment	15	Multi-Investment	7	Energy & Utilities	2

This table is sourced from (Tadawul 2016)

2.7. Overview of the IPO Market of Saudi Arabia

The IPO market of Saudi Arabia is quite exceptional in terms of the expected returns for investors, wealth losses for issuers, price movement pattern, market participants, allotment regulations, and regulatory restriction on price movement. Investing in the Saudi IPO market provides virtually guaranteed high returns for investors. For example, from 2003 to 2014, the average expected returns on IPO firms listed in Tadawul are almost 266.7% (Alqahtani & Mayes 2014). This considerable first-day return is 13, 10, 6, and 4 times higher than the expected returns observed in the U.S., Australia, Sub-Saharan African countries, and Brazil, respectively (Leal 2005; Bayley et al. 2006; An & Chan 2008; Hearn 2012). This significant first-day return on IPO firms in Tadawul seems to be persistent even during the 2006 GCC stock market crisis, and the 2008 GFC as average returns are 190% and 154%, respectively (Al Kadi 2014).

The IPO gains made by investors are also wealth losses made by IPO issuers, indicating that Saudi owners of IPO firms lose a large part of their wealth due to underpricing when they go public. However, the unique feature of Saudi Arabia's IPO performance is that IPO issuers tend to recover their lost wealth, due to a sustainable increase in the share price of their listed firms for a couple of weeks after listing (Alqahtani & Mayes 2014; Alanazi & Al-Zoubi 2015). Al Kadi (2014) shows that the market share price of listed IPOs in Tadawul recorded an average increase of approximately 190% four weeks after listing from 2003 to 2014. The underpricing

38

of IPO firms shows a price movement pattern of sustainable increase in share price for the first trading day; normally lasts up to four weeks after listing. Although all IPO firms listed in all market sectors exhibit this underpricing phenomenon, insurance IPOs show a distinct price movement pattern of sustainable underpricing averaging around 415% (Boulanouar et al. 2016). Saudi insurance IPOs share similar underpricing patterns to the US Internet IPOs listed in the 2000s (Ljungqvist & Wilhelm 2003). When the underpricing of the insurance sector is excluded, average underpricing of 110% (Boulanouar et al. 2016).

Participants in the Saudi Arabian IPO market include issuers, underwriters, retail investors, and institutional investors (Alanazi & Al-Zoubi 2015). Issuers are the owners of IPO firms who aim to sell part of their company, either to finance new investment opportunities or to cash-out on profits. Underwriters are investment banks that underwrite the offering and take care of preparing the IPO prospectus of the issuer in compliance with CMA's listing requirements (Alanazi et al. 2011). Retail investors are individual Saudi citizens who subscribe to the IPO firm mainly to make an immediate gain from selling the IPO share on the first trading day or by holding the share for long term investment purposes (Al Kadi 2014). In contrast, institutional investors represent professional investors such as investment banks, investment companies, and mutual investments. The main difference between Saudi retail and institutional investors is that the former employ limited financial knowledge, bid indiscriminately for underpriced and overpriced IPOs, and normally receive a low allocation in underpriced IPOs. On the other hand, Saudi institutional investors apply sophisticated financial knowledge, bid aggressively for underpriced IPOs, and receive full allocations in underpriced IPOs (Alanazi et al. 2011; Mayes & Alqahtani 2015).

The CMA applies an allotment rule for all Saudi IPOs in which Saudi Arabian retail investors subscribe up to 30% of the offering while the remaining 70% is offered to Saudi institutional investors (Tadawul 2015). CMA a few years ago announced the liberalisation of the Saudi IPO market, thereby allowing foreign investors to participate in Saudi IPOs since 2017 (Bloomberg 2016). Al Kadi (2014) argues that in underpriced offerings, retail investors normally receive a share allocation of fewer than three shares, thus creating high demand for underpriced IPOs on the first trading day. In contrast, institutional investors receive a higher allotment, regularly with a lockup period mentioned in the prospectus. In 2006, as a reflection of that year's GCC stock market crisis, CMA introduced a new regulatory framework to restrict daily price

oscillation at ten percent for all trading stocks with an exception to the first trading day of IPO shares (Al Kadi 2014). Later in mid-2013, CMA imposed a first-day price movement limit of ten percent on all IPO shares (Reuters 2013). This regulatory move by the CMA aimed to stabilise the post-market volatility of IPO stocks, the aim being to protect retail investors from large losses. The regulatory change altered the dynamics of Saudi IPO returns. This means in effect that IPO returns will need more time to reach their peak compared to prior IPOs. In this way, the considerable record of first day underpricing will be eliminated, and prices will require more time to reach their fair value (Reuters 2013).

2.8. Why Saudi Arabia?

This section discusses why Saudi Arabia is chosen as an ideal laboratory to examine the economic effect of the IFRS mandate on accounting quality in its IPO market. Firstly, accounting disclosure literature asserts that accounting standards are shaped by the prevailing formal and informal institutional features (Cieslewicz 2014; Houqe & Monem 2016; Ugrin et al. 2017; Wu & Zhang 2019). This literature also argues that IFRS standards ensure a good level of comparability and quality of accounting information between countries (Daske et al. 2013; Christensen et al. 2015; Beuselinck et al. 2017). Thus, it should be expected that the similarity between country A and B in terms of the level of formal and informal institutional aspects would make any attained outcomes from nation A reasonably applicable to nation B. In this case, Saudi Arabia shares similar formal and informal institutional characteristics to a wide spectrum of emerging non-EU countries. This can be seen in Figure 8, which presents the average levels of formal institutional quality measured by the level of control of corruption[13] between 2005 and 2016 for selected emerging and developed countries. The figure shows that Saudi Arabia shares a comparable level of control of corruption to Brazil, China, India, Indonesia, Mexico, and Russia. Here, Kaufmann et al. (2017) report the average level of control of corruption in Saudi Arabia to be -0.08 on a scale ranging from -2.5 for the worst, to 2.5 for the best practices in

---

[13] Kaufmann et al. (2017) define weak control of corruption as a weak government practice in deterring the misuse of public authority by connected members of the society in country to attain personal gains at the expense of the general public.

deterring corruption. The authors also report the average negative values for control of corruption for a number of emerging countries, including Brazil, China, India, Indonesia, Mexico, and Russia, at -0.09, -0.50, -0.46, -0.69, -0.47, and -0.93, respectively.

Figure 8. Average Level of Control of Corruption between 2005 and 2016
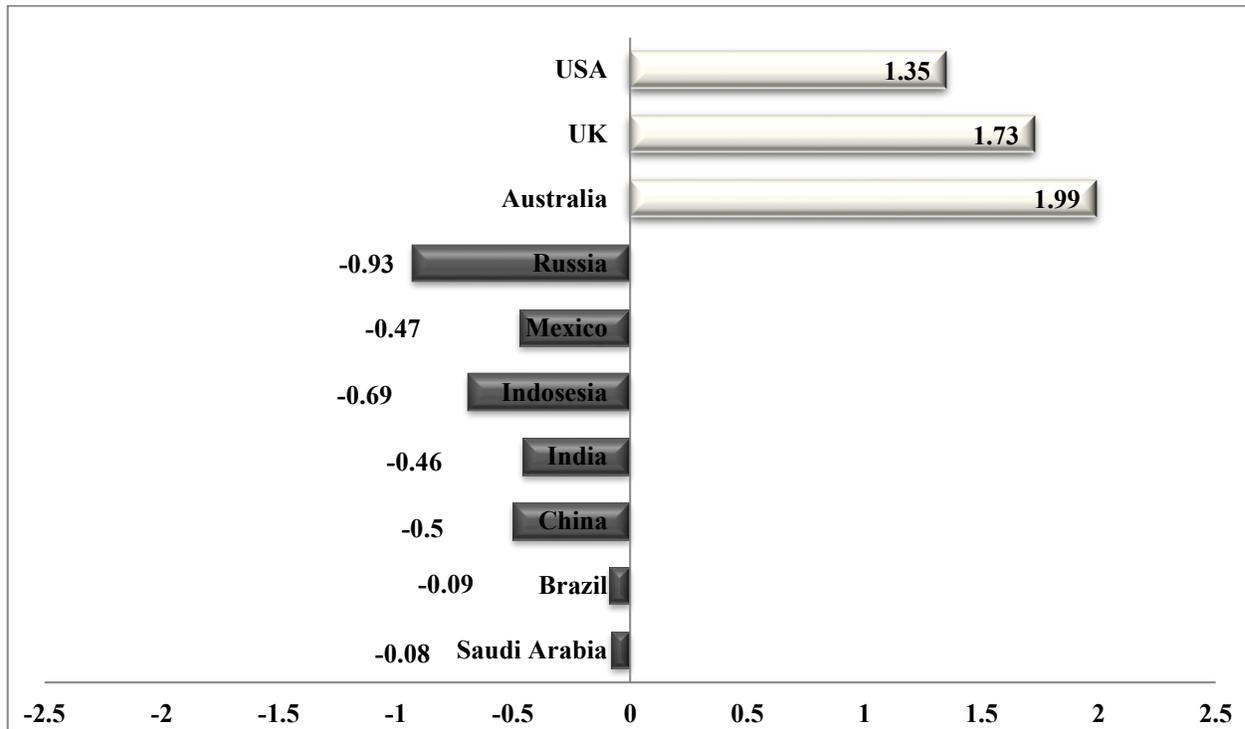
The close similarity of the low level of control of corruption in Saudi Arabia to that observed in emerging non-EU countries becomes clearer when looking at the average level of control of corruption in developed nations. For example, in developed nations such as Australia, the United Kingdom, and the United States, Kaufmann et al. (2017) show that these countries maintain positive averages for control of corruption, being 1.99, 1.73, and 1.35, as also shown in Figure 8. Apart from the illustrated similarity in formal institutional quality between Saudi Arabia and other emerging non-EU countries, the kingdom also shares comparable informal

institutional quality when measured, for example, by its cultural dimension value of power distance[14], as shown in Figure 9.

Figure 9. Comparison of Cultural Dimension Value of Power Distance
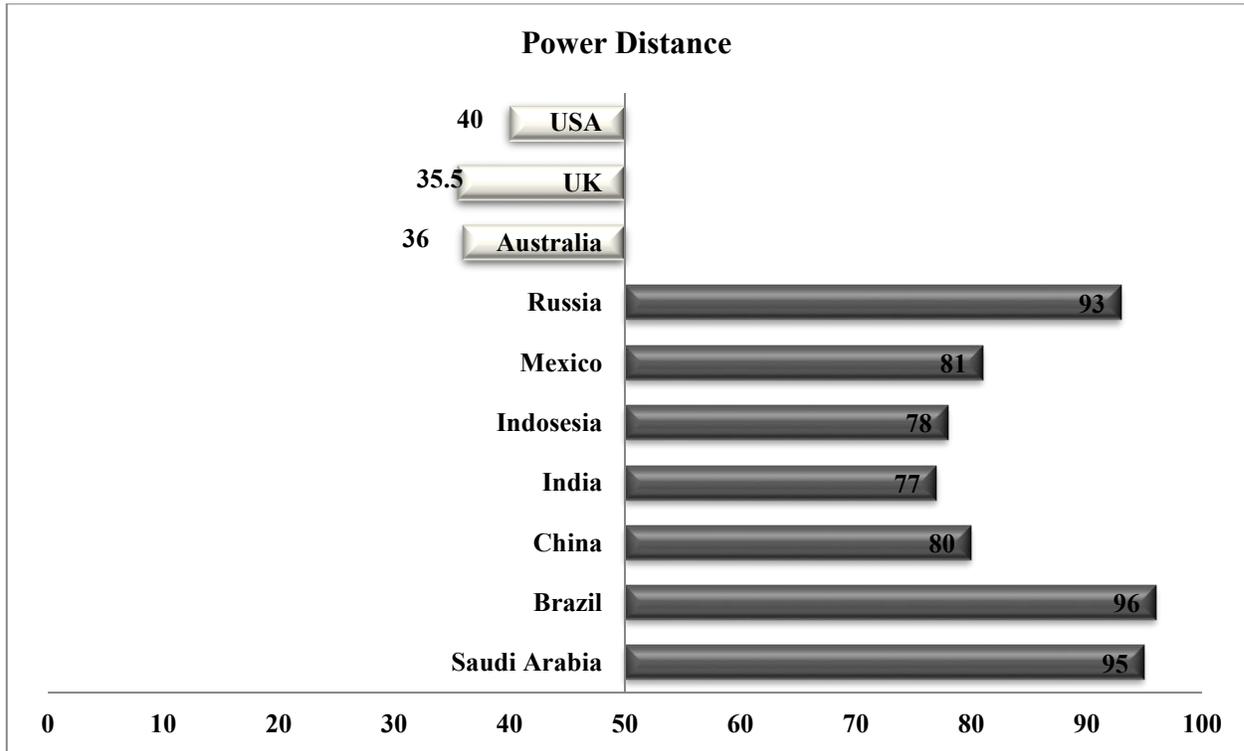
As Figure 9 illustrates, Hofstede (2011) scores the culture of Saudi Arabia as 95 out of 100 on the dimension of power distance, while the emerging non-EU cultures of Brazil, China, India, Indonesia, Mexico, and Russia have scores of 69, 80, 77, 78, 81, and 93, respectively. In contrast, the author scores the developed cultures of Australia, the UK and the US as having low power distance scores of 36, 35.5 and 40 out of 100, respectively. Piecing together the differences and similarities of the scores between Saudi Arabia, the selected emerging non-EU nations, and

---

[14] Hofstede (2011) defines power distance as the unequal distribution of authority amongst people in a specific society. The author indicates that when a culture admits the uneven distribution of power between its members, this culture develops a hierarchy of authority. Hence, people are divided into different groups of power separating the society into less-powerful and controlling groups where the former group concentrates its rule and authority and effortlessly controls the flow of information (Cieslewicz 2014).

the three developed nations, the close cultural ties between Saudi Arabia and emerging non-EU economies can clearly be observed. Hence, this is likely to make any results derived from Saudi Arabia in relation to IFRS mandating easily generalisable to other emerging non-EU countries.

Secondly, Saudi Arabia has used IFRS for a longer period of time compared to other emerging non-EU countries (IFRS Organisation 2016; IFRS Foundation 2017). For example, IFRS was adopted in 2008 in Saudi Arabia, so it has been in effect for almost 10^{15} years. In contrast, the average length of IFRS experience in emerging non-EU countries is around 7 years. For example, IFRS was mandated in Brazil in 2011, Mexico in 2012, Sri Lanka in 2012, Taiwan in 2013, Russia in 2012, Ukraine in 2012, Argentina in 2012, Chile in 2009, Peru in 2012, and Nigeria in 2012 (IAS *Plus* 2019). Previous accounting disclosure literature criticises the reliability of outcomes derived from IFRS research when the experience of using IFRS has been fairly short (Ball 2016; Houqe & Monem 2016). Hence, the long timespan of utilising IFRS would make the IPO market of Saudi Arabia attractive for observing the long-term effects and results of the IFRS mandate.

Thirdly, Saudi Arabia is a non-EU emerging country and, unlike the European countries, is characterised by a highly asymmetric information environment and major differences between IFRS and its local GAAP (Alqahtani & Boulanouar 2017; Nurunnabi 2017). This makes it an ideal testing ground in which to examine the role of IFRS in reducing information asymmetry in an emerging non-EU country where significant differences between its local GAAP and IFRS are evident. Hong et al. (2014) argue that in many developed countries, there are very few differences between existing accounting standards and IFRS suggesting that IFRS plays only a weak role in improving accounting quality and resolving informational asymmetry in such a situation. Moreover, Houqe et al. (2012a), Hong et al. (2014), and Abad et al. (2018) contend that the fragmented results in relation to the effect of the IFRS mandate on capital market outcomes in developed countries could be attributed to the inclusion of countries with low asymmetric information problems in their markets and small differences between their local accounting standards and IFRS. Hong et al. (2014) classify countries as having large differences

---

[15] The data of this thesis ranges from 2003 to 2017 where IFRS is mandated in 2008 in Saudi Arbaia, in turn, it offers five years pre-IFRS and nine years post-IFRS experience. Since IFRS is mandated in 2008, this means that Saudi Arbai has 10 years total post-IFRS exaprience. This is almost five times what is used by Hong et al. (2014) who only provide two years of IFRS experience.

between IFRS and local GAAP when there are more than 15 differences between the two. The listed companies in Saudi Arabia's stock market not only suffer from a great deal of information asymmetry but also from large discrepancies between accounting rules and IFRS standards. For example, Iqbal (2012) and IFRS Organisation (2016) discuss 21 major differences between IFRS standards and the Saudi Arabian GAAP, and Nurunnabi (2017) discovers 15 IFRS standards that are likely to greatly influence the quality of accounting information and disclosure asymmetry in the IPO market in Saudi Arabia. This, again, makes Saudi Arabia an ideal testing arena for the effect of the IFRS mandate.

Fourthly, Saudi Arabia only mandated IFRS for banking and insurance firms from 2008, while other listed companies are not permitted to adopt IFRS voluntarily (IAS*Plus* 2019b). Since 2017, all other companies have been preparing their annual financial reports in compliance with the Saudi Accounting Standards (SAS) that are issued by the Saudi Organization for Certified Public Accountants (SOCPA) (CMA 2015). This means that the Saudi Arabian IPO market is free from the self-selection bias that affected the results of voluntary studies. For example, Ball et al. (2003), Daske et al. (2008), Li (2010), Chua et al. (2012), and Christensen et al. (2013) argue that voluntary IFRS adopters, who choose IFRS after assessing its benefits and costs, in contrast to mandatory adopters who are obligated to use IFRS by a "one size fits all" regulation, suffer from self-selection bias affecting the credibility of their results. Hence, the IPO market of Saudi Arabia makes it possible to accurately quantify the economic effects of the IFRS mandate on the quality of IPO firms.

Lastly, the improved formal institutional climate in Saudi Arabia over the last decade seems to follow a similar pattern to that which occurred in Europe when IFRS was mandated in 2005. Daske et al. (2008) and Christensen et al. (2013) argue that European countries used the introduction of IFRS as an opportunity to improve the quality of their institutional environment by enhancing rules related to the legal enforcement of financial reporting. In 2008, Saudi Arabia mandated IFRS adoption to bank and insurance firms listed in Tadawul, seeking to enhance accounting quality and thereby encourage the participation of global investors demanding a higher quality of accounting information and disclosure regulations (IFRS Organisation 2016). Mandating IFRS and opening up the country's stock market to international investors are a part of the broader reform plans of the Kingdom 2030 Vision strategy (CMA 2015; Pacter 2017).

King Salman bin Abdulaziz Al Saud introduced the 2030 Vision to modernise the Kingdom's economy and have less reliance on oil revenues (Saudi Vision 2030 2016).

One of the ambitious targets set forth by the 2030 Vision is to increase Foreign Direct Investment (FDI) from 3.8% in 2015 to 5.7% of the Gross Domestic Product (GDP) by 2030. These reforming goals seek to enhance the quality of accounting information of listed firms, to increase stock market growth, and to improve global ranking in transparency so that alternative sources of local economic growth can prosper, thereby significantly reducing dependence on oil revenues (Alanazi et al. 2011; The National Center for Performance Measurement 2018). The World Economic Forum (2017) states that Saudi Arabia improved its enforcement of security regulations by nearly 37% between 2008, when IFRS was mandated, and 2016. Consistently, the World Economic Forum (2017) also reports similar improvements for the same period in the overall enforcement of security regulations in a number of emerging non-EU countries: 30% in Brazil, 32% in China, 42% in India, 40% in Indonesia, 43.5% in Mexico, and 10% in Russia. The similarity in the overall changes in the enforcement of security regulations in Saudi Arabia with these other emerging non-EU nations could make any results extracted from the Saudi Arabian data highly relevant to other emerging countries. Hence, the IPO market of Saudi Arabia provides a good testing environment to capture the individual effect of the IFRS mandate, the individual effects of changes in the country's transparency, and the outcomes these two elements create. Therefore, taking into consideration the five above characteristics of Saudi Arabia, the Kingdom presents an ideal case to test if the IFRS mandate can enhance the quality of financial reports of IPO companies in emerging non-EU economies.

2.9. Conclusion

This chapter described in detail information on the foundation and objective of IFRS standards, the devolvement and function of SOCPA, and the key features of Saudi Arabia's finance industry and how Tadawul works. The first section presented an overview of IFRS standards showing a brief history of the IFRS organisation, and the status of IFRS compliance. Moreover, this section identified the two main objectives of IFRS standards with a discussion

about why IFRS may or may not improve the accounting quality of listed companies. The second section looked at differences and similarities between IFRS and the SAS standards. The historical development and objectives of SOCPA were also noted. The third section described Saudi Arabia's economy and provided a comparative analysis of the country's financial market development, size of the economy, and its institutional environment. The fourth section outlined the origins of Tadawul with an analysis of stock market capitalisation, and the composition of market sectors. Fifthly, an overview of Saudi Arabia's IPO market was provided, including a discussion of the expected returns for investors, wealth losses for issuers, price movement patterns, market participants, allotment regulations, and regulatory restrictions on price movement. Lastly, a discussion of why Saudi Arabia was chosen as a testing ground for IFRS mandate in developing non-EU nations is provided.

Chapter Three

Literature Review

3.1. Introduction

Consistent with the long-term objective of the IASB, IFRS is claimed to be a set of high-quality and articulated accounting principles that may be used consistently by the capital markets around the globe (IFRS Foundation 2018). Although there is no agreement as to what establishes high-quality and articulated accounting principles, IFRS is widely considered to be high-quality accounting standards because it: firstly, embodies a combination of the best accounting practices worldwide; and secondly, is considered to be more capital market-oriented than many local GAAP (Ding et al. 2007; Chua et al. 2012; Ball 2016; Wu & Zhang 2019). Numerous jurisdictions have adopted IFRS in the expectation that it should benefit the users of financial statements (Barth et al. 2008; Cotter et al. 2012; Houqe & Monem 2016; Abad et al. 2018). However, it is uncertain whether adopting IFRS delivers better reporting quality compared with local GAAP (Chua & Taylor 2008; Ahmed et al. 2013a; Horton et al. 2013; Krishnan & Zhang 2019). This chapter aims to evaluate the current empirical literature with specific reference to the economic benefits of IFRS mandate on capital market outcomes, and also seeks to identify a number of research gaps that motivate this research.

This chapter is organised into six sections. The first section reviews existing literature on the impact of IFRS on accounting quality, presenting reasons why the adoption of IFRS may improve accounting quality but also undermine it. The second and third sections provide brief literature reviews of voluntary and mandatory adoption of IFRS, respectively. The fourth section reviews the literature on the impact of mandatory IFRS adoption on IPO underpricing and the long-term performance of IPO firms. The fifth section reviews the literature on the joint effect of mandatory IFRS adoption and intertemporal changes in transparency on IPO underpricing and the long-term performance of IPO firms. The conclusion of the chapter is provided in the last section.

3.2. The Impact of IFRS on Accounting Quality

There are reasons presented in the literature as to why the adoption of IFRS may improve accounting quality but also undermine it (Ball 2006; Daske et al. 2008; Houqe et al. 2012b; Ahmed et al. 2013a; Ahmed et al. 2013b; Ball 2016; Wu & Zhang 2019)[16]. The literature on why IFRS may enhance accounting quality will be summarised first. Then the reasons discussed in the information disclosure literature as to why IFRS may not improve accounting quality will be presented afterwards. First, Ahmed et al. (2013b) argue that IFRS may improve accounting quality by eliminating certain accounting alternatives, provide users with additional disclosure requirements, and specifies measurement and recognition rules, thereby reducing managerial discretion. This could reduce the extent of opportunistic earnings management and thus improve accounting quality (Ewert & Wagenhofer 2005). For example, Barth et al. (2008) find that firms adopting IFRS engage in fewer earnings management, exhibit more timely loss recognition, and provide more value relevance of earnings. The authors interpret these findings as evidence of higher financial reporting quality. Other fairly recent studies have shown that IFRS can improve accounting quality by enhancing analysts' information environment (Byard et al. 2011; Stecher & Suijs 2012; Kim et al. 2016; Beuselinck et al. 2017; Chu et al. 2019).

Second, Carmona and Trombetta (2008) and Ahmed et al. (2013a) contend that IFRS are viewed as principles-based standards that encourage firms to report accounting information that better reflects the economic substance over form. Thus, IFRSs are potentially more difficult to circumvent and therefore promote greater transparency (Maines et al. 2003). For example, under a principles-based standard, it should be more difficult to avoid recognition of a liability through transaction structuring (e.g. avoiding capitalisation of a lease transaction). Accordingly, it is posited that the adoption of IFRS is associated with high accounting quality (Chua et al. 2012).

Third, IFRS permits the use of fair value accounting[17], where traditional historical cost accounting methods are replaced by rules[18] that measure assets and liabilities at their fair values

---

[16] Among others, see Ball (2006) and Ball (2016) for a comprehensive review of advantages and disadvantages of adopting IFRS.

[17] Fair value is defined as: "The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IAS Plus 2015).

[18] Fair value measurements are incorporated in IAS 16 (Property, Plant and Equipment), IAS 22 or IFRS 3 (Business Combinations), IAS 36 (Impairment of Assets), IAS 37 (Provisions, Contingent Liabilities and Contingent Assets),

(Ball 2006, 2016). Ball et al. (2014) and Ahmed et al. (2013b) assert that the fundamental case in favour of fair value accounting seems obvious to most economists: fair value incorporates more information into the financial statements. Thus, it contains more relevant information than historical costs whenever observable market prices exist that managers cannot materially influence due to less than perfect market liquidity. Alternatively, independently observable, accurate estimates of liquid market prices became available. Ball (2006; 2016) argues that if liquid market prices are available, fair value accounting reduces opportunities for self-interested managers to influence the financial statements by exercising their discretion over realising gains and losses through the timing of asset sales. Therefore, IFRS may better reflect the underlying economics than domestic standards, thus improving accounting quality.

Fourth, Li (2010) and Houqe et al. (2012b) assert that IFRS typically requires greater disclosure than local accounting standards leading to improved accounting quality of publicly listed firms. The accounting disclosure and information asymmetry literatures also suggest that greater disclosure mitigates the adverse selection problem and enhances liquidity, thereby reducing the cost of capital through lower transaction costs and/or stronger demand for a firm's securities (Amihud & Mendelson 1986; Diamond & Verrecchia 1991; Easley & O'hara 2004; Houqe et al. 2016; Turki et al. 2017; Vergauwe & Gaeremynck 2019). Moreover, the estimation risk literature predicts that firms with greater information disclosure have lower forward-looking betas, which lead to equity costing less (Barry & Brown 1985; Lambert et al. 2007; Gordon et al. 2012). These conceptual predictions find support in several empirical studies, including Botosan (1997), Leuz and Verrecchia (2000), Francis et al. (2005), and Bova and Pereira (2012), who show that greater disclosure reduces adverse selection costs and estimation risks, thus contributing to a lower cost of capital. Other empirical studies have provided evidence that adopting IFRS enhances information disclosure, subsequently leading to improved information quality. This subsequently results in reduced information processing costs associated with FDI as argued by Gordon et al. (2012). Furthermore, following IFRS adoption some scholars document increased transparency that works as an alleviating mechanism to reduce the risk of a stock market 'crash' by curtailing managers' ability to withhold bad news as argued by Hutton

---

IAS 38 (Intangible Assets), IAS 39 and IFRS 9 (Financial Instruments: Recognition and Measurement), IAS 40 (Investment Property), IAS 41 (Agriculture), IFRS 2 (Share-based Payment), IFRS 4 (Insurance Contracts), IFRS 5 (Noncurrent Assets Held for Sale and Discontinued Operations), and IFRS 13 (Fair Value Measurement) (Ball 2006; IAS Plus 2015).

et al. (2009) and DeFond et al. (2014). The authors also find that post-IFRS adoption synchronicity is reduced. In turn, the additional quality information provided by IFRS standards facilities the flow of higher-quality firm-specific information into the market. All these derived benefits from the adoption of IFRS can occur at no additional cost as reported by Bissessur and Hodgson (2012). Finally, scholars also find that by removing certain accounting alternatives and specifying clear measurement and recognition rules, IFRS standards can work as a noise-filtering device that reduces analysts' forecast errors, according to Horton et al. (2013) and Wu and Zhang (2019).

On the other hand, there are several reasons discussed in the information disclosure literature concerning why IFRS may not enhance accounting quality. First, Barth et al. (2008) argue that IFRS could eliminate accounting alternatives that are most appropriate for communicating the underlying economics of a business, thus forcing managers of these firms to use less appropriate alternatives, resulting in a reduction in accounting quality. For example, companies that adopt IFRS will not have alternatives in choosing alternative measurement methods related to the measurement of awards granted to employees by non-public companies (e.g. equity-based compensation). In contrast, US GAAP permits non-public companies to have the choice of measuring stock-based-compensation awards using the fair-value method or the calculated-value (fair-value method, calculated-value method, or intrinsic-value) method that is classified as equity (liability). IFRS in the meanwhile requires the employment of the fair-value method in all circumstances (PWC 2012). McAnally et al. (2010) empirically examine the impact of IFRS adoption on accounting quality resulting from measuring equity-based compensation for the financial statements of US firms. The authors find that reported tax benefits from equity-based compensation become more volatile under IFRS and these outcomes become more pronounced for firms with greater option use and stock price volatility. Consequently, Barth et al. (2008), Rajgopal and Venkatachalam (2011), Singleton-Green (2015) and Castro and Santana (2018) contend there is a positive association between stock price volatility and worsening accounting quality.

Secondly, Ball et al. (2003), Nobes (2006), and Ahmed et al. (2013a) assert that because IFRS are principles-based, they inherently lack detailed implementation guidance and are looser, on average, than domestic standards and thus may be more difficult to enforce. The authors, thus, argue that this situation affords managers greater discretion leading to poorer accounting quality.

For some important areas such as revenue recognition for multiple deliverables, the absence of implementation guidance of IFRS would significantly increase discretion and allowable treatments depending on how they are interpreted and implemented (Jermakowicz & Gornik-Tomaszewski 2006). Given managers' incentives to exploit accounting discretion to their own advantage as has been documented in prior studies, for instance Leuz et al. (2003), the rising level of discretion due to lack of implementation guidance is likely to lead to more earnings management and thus inferior accounting quality (Horton et al. 2013). Consistent with the above, Ahmed et al. (2013a) find empirical evidence that accounting quality deteriorates following the adoption of IFRS in 2005. They argue that principles-based IFRS increases opportunities for managers to exercise discretion rather than faithfully report underlying firm value. Ahmed et al. (2013a) demonstrate that firms mandating IFRS experience an increase in income smoothing, aggressive accruals, and a decline in timely loss recognition.

Third, Ball (2006; 2016) notes that the fair value orientation of IFRS could add volatility to firms' financial statements leading to inferior accounting quality. This volatility takes the form of both good and bad information; the latter consisting of noise that arises from inherent estimation error and possible managerial manipulation. Landsman (2007) and DeFond et al. (2014) argue that if fair value accounting introduces measurement errors that reduce investors' ability to observe firms' true underlying value and performance, then it should increase opacity, thereby increasing the volatility of firms' stock prices. This leads to an increased risk of a stock market crash. Ball (2006) and Ball (2016) also add that when liquid market prices are not available, fair value accounting becomes 'mark to model' accounting. That is, firms report estimates of market prices, not actual arm's length market prices. This introduces 'model noise,' due to imperfect pricing models and imperfect estimates of model parameters (Ball 2006). 'Mark to model' fair value accounting can add volatility to the financial statements in the form of both information (a 'good') and noise arising from inherent estimation error and managerial manipulation (a 'bad'); thus the use of fair value orientation of IFRS could lead to poorer accounting quality (Horton et al. 2013).

Given the competing arguments and mixed results, whether IFRS adoption leads to an increase or a decrease in accounting quality is still an empirical question. It is one that depends on the nature of the research question (e.g. testing the economic effect of adopting IFRS for mandatory compared to voluntary adopters), methodology employed, and the research sample

used by previous studies (Ball 2006; Daske 2006; Barth et al. 2008; Daske et al. 2008; Li 2010; Byard et al. 2011; Houqe et al. 2012b; Ahmed et al. 2013a; Ahmed et al. 2013b; Christensen et al. 2013; Horton et al. 2013; Ball 2016; Vergauwe & Gaeremynck 2019; Wu & Zhang 2019). Hence, the next section discusses voluntary IFRS adopter studies followed by mandatory IFRS studies.

3.3. Voluntary Adoption of IFRS

Much research commenced by concentrating on examining the economic benefits of adopting IFRS voluntarily (Ashbaugh & Pincus 2001; Ball et al. 2003; Burgstahler et al. 2006; Soderstrom & Sun 2007; Barth et al. 2008; Christensen et al. 2015). Overall, positive evidence of adopting IFRS voluntarily is widely documented by prior empirical literature. Part of this consensus is related to the claim that IFRS adoption reduces the cost of capital, as suggested in Botosan (1997), Leuz and Verrecchia (2000), Hail (2002), Hope et al. (2006). In contrast, Daske (2006) finds evidence of the increased cost of capital for German firms after adopting IFRS voluntarily. Barth et al. (2008) also find evidence consistent with Daske (2006), through using a global sample consisting of 21 countries, that adopting IFRS voluntarily does not reduce the cost of equity capital. Moreover, positive evidence of adopting IFRS voluntarily in enhancing analyst forecast accuracy is documented by Ashbaugh and Pincus (2001), Bae et al. (2008), Ernstberger et al. (2008), and Hodgdon et al. (2008). The positive evidence is also empirically observed in reducing earnings management, as stipulated by Barth et al. (2008), Paananen (2008), and Christensen et al. (2015). In contrast, Van Tendeloo and Vanstraelen (2005) and Paananen and Lin (2009) provide empirical results of increasing earnings management practices for German firms that adopted IFRS voluntarily. Finally, adopting IFRS voluntarily proved to enhance the reaction of equity market investors to news, according to Armstrong et al. (2010). In contrast, Pae et al. (2008) find weak evidence of positive market reaction after the voluntary adoption of IFRS.

Collectively, the overall findings of this strand of voluntary IFRS research emphasise that improved accounting quality is due to the voluntary adoption of the high-quality and

articulated accounting standards that are provided by IFRS. However, these findings are not necessarily generalisable to mandatory IFRS adopters due to the presence of self-selection bias, as argued by Ball et al. (2003), Daske et al. (2008), Li (2010), Chua et al. (2012), and Christensen et al. (2013). In contrast to voluntary IFRS adopters who self-select to apply IFRS after assessing its benefits and costs, mandatory adopters are obligated to apply IFRS by a "one size fits all" regulation (Li 2010). In sum, the self-selection bias in prior empirical disclosure literature of voluntary IFRS adoption may overemphasise the positive economic benefits of adopting IFRS. Thus, the results of these empirical studies cannot be generalised to the current mandatory adoption research without caution.

3.4.   Mandatory Adoption of IFRS

To date, numerous empirical studies have documented enhanced accounting quality after the mandatory switch to IFRS reporting (Ball 2006; Soderstrom & Sun 2007; Daske et al. 2008; Armstrong et al. 2010; Li 2010; Brüggemann et al. 2013; Christensen et al. 2013; Hong et al. 2014; De George et al. 2016; Abad et al. 2018; Wu & Zhang 2019). Supporting evidence is provided by a wide range of studies that document positive economic benefits of mandatory IFRS adoption on accounting quality through the following: enhancing capital investment efficiency, as claimed in Schleicher et al. (2010) and Biddle et al. (2013); reducing the cost of capital, as reported in Daske et al. (2008), Hail et al. (2010), Li (2010), and Florou and Kosi (2015); lowering analyst forecast errors, as documented in Byard et al. (2011), Cotter et al. (2012), Glaum et al. (2013), and Horton et al. (2013); improving value relevance of accounting numbers[19] in equity and debt markets, as shown in Aharony et al. (2010), Brüggemann et al. (2013), and Barth et al. (2014); enhancing the reaction of equity market investors to news, as commented on by Christensen et al. (2007) and Armstrong et al. (2010); and reducing information asymmetry in equity markets, as recently documented by Abad et al. (2018).

---

[19] In contrast, Bhat et al. (2011) show that evidence related to value relevance in debt markets is less clear.

Based on the findings of the wide spectrum of the above-mentioned studies, a general conclusion is that mandating IFRS enhances the accounting quality of financial reports and decreases information asymmetries among market participants, leading to a higher information transparency environment. This IFRS mandate strand of research attributes such benefits of IFRS standards to the ability of IFRS to eliminate particular accounting alternatives, provide users with additional disclosure requirements, and clearly specify measurement and recognition rules compared to local GAAP.

However, this general conclusion is premature for several reasons. Firstly, it is not clear conceptually why the IFRS mandate should be expected to yield considerable capital market benefits. In this context, Christensen et al. (2013) note that jurisdictions had their existing local accounting rules prior to IFRS, whereby IFRS does not introduce accounting rules for the first time. They argue that these existing local accounting rules are very similar to the accounting rules of IFRS in developed countries, for instance in the UK, the Netherlands, and Norway (Bae et al. 2008).

Secondly, Armstrong et al. (2010) and Chua et al. (2012) argue that most studies focused on examining the economic benefits of mandating IFRS on accounting quality have particularly clustered on the EU countries. This included Capkun et al. (2008), Callao and Jarne (2010), Chen et al. (2010), Devalle et al. (2010), Schleicher et al. (2010), Agostino et al. (2011), Byard et al. (2011), Narktabtee and Patpanichchot (2011), Jiao et al. (2012), and Chen et al. (2013). Empirically, Christensen et al. (2012) argue that this clustering in calendar time makes isolating the effects of IFRS challenging because the EU's IFRS adoption coincided with a bundle of concurrent legal acts that had similar objectives. For example, these acts include the Financial Services Action Plan (FSAP) in 1999, the Abuse Directive (Directive 2003/6/EC), and the Transparency Directive (Directive 2004/109/EC) (Brüggemann et al. 2013). Upon the introduction of IFRS in the EU region in 2005, a bundle of harmonisation efforts took place aimed at strengthening the legislation on financial reporting, securities regulation, and corporate governance (Brüggemann et al. 2013). The joint introduction of the IFRS mandate and this bundle of harmonisation efforts or "institutional changes" in the EU region is claimed by Daske et al. (2008) to potentially explain why prior disclosure literature observes capital market benefits in the EU but not elsewhere. Consequently, it is difficult to generalise the findings of these EU studies to non-EU adopting countries, since harmonisation efforts within the EU may have driven

the results of these EU studies, and the same circumstances may not apply to non-EU countries (Christensen et al. 2013).

Thirdly, Chua et al. (2012), Ahmed et al. (2013b), and Abad et al. (2018) argue that the findings of previous IFRS cross-sectional studies should be tempered by the fact that they do not account for country-level differences in institutional environments. Landsman et al. (2012), Ball et al. (2014), Wu and Zhang (2019), and Rahman et al. (2019) argue that the mixed findings documented by prior studies also highlight that the effect of mandating IFRS on accounting quality could vary across different countries; for example, due to differences in institutional environments between and within EU countries and non-EU countries. This is because the prior literature suggests that countries' institutional structures play an important role in determining accounting quality through the countries' legal, cultural and political systems (Burgstahler et al. 2006; Ding et al. 2007; Soderstrom & Sun 2007; Holthausen 2009; Abad et al. 2018). Therefore, their results should be interpreted with caution as they are difficult to be generalised to other jurisdictions.

Fourthly, the literature on accounting disclosure, including Daske (2006), Hail and Leuz (2006), Daske et al. (2008), Wang and Welker (2011), Houqe et al. (2012b), Christensen et al. (2013), and Abad et al. (2018), mainly focuses on the secondary market to derive their results for the capital market benefits of IFRS mandate adoption. This thesis argues that the above literature has generally neglected the implications of IFRS adoption for the primary market, such as the IPO market, which is the focus of discussion in the next section.

3.5. The Impact of Mandatory IFRS Adoption on IPO Underpricing and the Long-term Performance of IPO Firms

Understanding the difference between the primary and secondary market is important in the context of the disclosure literature as well as this thesis. For example, a primary market exists when a firm issues stocks or bonds by directly selling those securities for the first time to investors (Ritter & Welch 2002). Initial Public Offerings (IPOs) market is known as a primary

market where a sale transaction takes place between buying investors and the underwriter of the issuer company (Dorsman et al. 2010). The role of the underwriter is to prepare the issuing firm to be listed by ensuring compliance with the listing regulations. If those buying investors intend to sell all or part of their shareholdings in the IPO firm, then the secondary market is the place to do so (Ritter & Welch 2002). That is, the secondary market exists when a sale and buy transaction of stocks or bonds are already owned by investors of IPO firms (Shi et al. 2013). Normally, the proceeds from the sale on the primary market go to the owners of the firm, while on the secondary market[20], the proceeds go to the selling investors (Huyghebaert & Van Hulle 2006). Shi et al. (2013) and Hong et al. (2014) argue that the economic benefits of mandatory disclosure are problematic in cross-country environments, due to the interactions of institutional factors with disclosure regulation and by the IPO market. The IPO market possesses unique institutional features. For example, unlike the secondary market, where all investors can participate in the trading of shares, in the primary market, the allocation of IPO shares is typically controlled by underwriters (Mauer & Senbet 1992). In addition, the primary market offers limited investor access to pre-IPO information that plays a significant role in the pricing of IPOs (Shi et al. 2013). Hence, these characteristics of the IPO market are likely to lead to information environments that are very different from those of the secondary market (Habib & Ljungqvist 2001; Ritter 2003; Loughran & Ritter 2004; Liu & Ritter 2011).

IPOs are a landmark corporate event and for several decades have been the focus of intense and extensive research (Ibbotson 1975; Beatty & Ritter 1986; Rock 1986; Ruud 1993; Carter et al. 1998; Stehle et al. 2000; Lowry & Shu 2002; Boulton et al. 2010; Shi et al. 2013; Hong et al. 2014; Kamaludin & Zakaria 2018). The IPO literature documents two stock market phenomena occurring in the IPO market, these being the short-term "hereafter, IPO underpricing" and the long-term performance. The underpricing of IPO firms occurs when the share prices of newly listed companies tend to jump significantly on the first trading day, resulting in a widely-known phenomenon commonly called "IPO underpricing" (Shi et al. 2013). This phenomenon is called IPO underpricing because IPO issuers frequently sell part of their shareholdings during the "primary market" offering stage at an offer price that is lower than the first opening price of the IPO firms on its first listing day in the secondary market. This

---

[20] Commonly known secondary markets include the New York Stock Exchange (NYSE), Australian Securities Exchange (ASX), and Tadawul All Share Index (Tadawul) of the Saudi Arabian Stock Exchange.

underpricing causes wealth losses to owners of IPO firms while it provides a lucrative investment opportunity for IPO investors. To put the underpricing of IPO firms into perspective, Ritter (2018) shows that from 1980 to 2018, "money left on the table"[21] from the US IPO market alone is almost \$165.37 billion. The second phenomenon is the long-term performance difference of IPO firms and this refers to the empirical evidence showing that IPO firms tend to underperform to a relative benchmark, commonly used as general market index, in the long run including weeks, months, and years (Aggarwal & Rivoli 1990; Ritter 1991; Loughran & Ritter 1995; Teoh et al. 1998a; Chan et al. 2004; Dorsman et al. 2010; Zattoni et al. 2017).

Shi et al. (2013) and Hong et al. (2014) argue that IPO underpricing represents the actual amount of money initial owners leave on the table for new shareholders. Hence, IPO underpricing constitutes an "actual" cost of new equity financing, resulting in a meaningful quantification of the economic benefits of mandating IFRS on accounting quality. Secondary market studies, such as Daske (2006), Hail and Leuz (2006), Daske et al. (2008), and Persakis and Iatridis (2017) employ proxies for estimating the cost of capital, applying diverse accounting-based valuation models, to attain only "estimates" of the cost of capital due to the complexity of estimating these costs. Also, Wang and Welker (2011) document the presence of measurement error in the proxies employed for measuring information asymmetry derived from firms that are already listed and publicly traded. Thus, this thesis argues that using the actual amount of money that initial owners "leave on the table" for new shareholders represents an accurate measure for examining the exact economic benefit of mandatory IFRS adoption on accounting quality.

Importantly, despite the considerable disclosure requirements for IPO firms, the IPO underpricing literature reveals that the presence of information asymmetry among IPO participants is the causal driver that explains IPO underpricing (Beatty & Ritter 1986; Rock 1986; Allen & Faulhaber 1989; Ritter & Welch 2002; Ritter 2003; Liu & Ritter 2011; Maglio et al. 2018). Since the shares of IPO firms have never been listed before, and the performance of IPO firms has also never been observed by investors and analysts, the only information available

---

[21] The money left on the table is well-known financial terminology in the IPO literature and defined as the difference between the closing price on the first day of trading and the offer price of a newly listed firm, multiplied by the number of shares sold. In other words, this is the first-day profit received by investors who are allocated shares at the offer price. It represents a wealth transfer from the shareholders of the issuing firm to these investors (Ritter 2018).

to them in order to assess the quality of accounting information is contained in the prospectuses provided by the issuers (Leone et al. 2007; Hanley & Hoberg 2010). Therefore, the IPO market represents a unique setting that contains substantial information uncertainty and may be predominantly vulnerable to earnings management (Teoh et al. 1998a; Kao et al. 2009).

However, in the secondary market, the degree of information uncertainty faced by market participants concerning IPO firms is less pronounced than in the primary market. This is because secondary market investors and analysts can access a variety of information, including firms' announcements, media coverage, historical financial reports, and analysts' reports, to reduce information uncertainty (Habib & Ljungqvist 2001; Ritter & Welch 2002; Engelen & Van Essen 2010; Hong et al. 2014). Such information privilege would make it reasonable to expect the secondary market to suffer from less information asymmetry compared to the primary market (Jenkinson & Ljungqvist 2001). Thus, given the aforementioned characteristics of the primary IPO market, Shi et al. (2013) and Hong et al. (2014) contend that the results derived from secondary market studies are difficult to be generalised to primary markets, constituting a lack of understanding of the economic benefits of mandating IFRS on accounting quality for IPO firms.

Shi et al. (2013) provide the first cross-country empirical attempt to fill a gap in the disclosure literature by examining whether country-specific IPO disclosure requirements, as governed by each jurisdiction's securities laws, are associated with information asymmetries between IPO market participants and consequently the level of underpricing around the globe. They use 6,025 IPOs from 34 countries for the period 1995 to 2002, in order to empirically conclude that IPO underpricing is negatively linked to the strictness of IPO disclosure requirements. However, Shi et al. (2013) only measure the strength of a country's IPO disclosure regulation using the disclosure index from the new securities law dataset developed by La Porta et al. (2006), based on a survey of securities law attorneys from 49 countries in 2000. Shi et al. (2013) do not examine the economic benefits of mandating IFRS on accounting quality and are thus silent on two issues: firstly, understanding the economic benefits of the IFRS-IPO underpricing; and secondly, long-term performance relationships.

Dorsman et al. (2010) provide the first single-country empirical attempt to examine the effect of IFRS mandate on the underpricing and long-term performance of IPO firms in

Denmark. The authors examine 141 Dutch IPOs listed over the period 1990-2011 showing that IFRS brings better quality to the accounting information of IPO firms as the underpricing of IPO firms decreased by roughly 15% after the mandate in 2005. The authors find that Dutch IPO firms underperform the general market index, but this level of underperformance is slightly reduced after mandating IFRS in 2005. Although Dorsman et al. (2010) aim to examine the IPO underpricing and long-term performance in the Dutch market; they do not formulate a related hypothesis that explicitly examined any empirical relationship between IPO underpricing and the introduction of IFRS. They derive their conclusion about the reduction of IPO underpricing pre- to post-IFRS based on only descriptive statistical results without providing regression testing to assess the impact of IFRS mandate on IPO underpricing. Instead, they focus their empirical testing on the long-term performance difference between IPO firms and the general market index in Demark.

Otero and Enríquez (2012) capitalise on the limitation of Dorsman et al.'s (2010) study by examining the economic benefits of IFRS mandate on the underpricing of IPO firms in Spain using 40 IPO firms from 1998 to 2009. Otero and Enríquez (2012) find that IFRS enhances the quality of the accounting information of IPO firms as the underpricing of IPO firms reduced by 27.5% after the mandate in 2005. Recently, Maglio et al. (2018) find no relationship between IFRS mandate and IPO underpricing in Italy using 142 IPO firms listed between 2000 and 2012. In contrast, Firth and Gounopoulos (2017) employ 282 listed IPO firms from 2001 to 2009 to document the increased level of IPO underpricing after IFRS mandate in Australia. However, the conclusion drawn from the analysis of prior IFRS-IPO underpricing literature suffers from a lack of generalisability and credibility.

The lack of generalisability is explained by the existence of completely fragmented outcomes about the true nature of IFRS mandate and IPO underpricing relationship within developed countries' stock markets. This is because this IFRS-IPO underpricing literature produces inconsistent evidence ranging from negative to positive and shows no relationship between IFRS mandate and IPO underpricing. For example, Otero and Enríquez (2012) report a significant and negative relationship in Spain, while in contrast, Firth and Gounopoulos (2017) confirm the existence of a significant and positive association in Australia. Meanwhile, Maglio et al. (2018) refute there is any relationship between IFRS mandate and IPO underpricing in Italy. This suggests there is a lack of understanding about the true relationship between IFRS

mandate and IPO underpricing within developed capital markets and the complete absence of the understanding of such a relationship in emerging non-EU countries. Spain, Italy, and Australia are all classified as developed countries with information environments that are widely different from those in emerging non-EU countries (The World Bank 2019). This is due to differences in formal institutional characteristics (Bova & Pereira 2012; Hong et al. 2014) and the historical processes that created them. Hence, such results are limited to be generalised to emerging non-EU countries.

The lack of credibility arises from the use of unsuitable econometric model estimation by the IFRS-IPO underpricing literature. For instance, the results of Otero and Enríquez (2012) are likely to suffer from a multicollinearity problem, hence affecting the credibility of the results. This is because the authors used an interaction term between two independent variables including book value and the dichotomous IFRS variables of which they included this interaction term in the model without testing its multicollinearity with the rest of the independent variables. This can be a severe problem because multicollinearity affects the statistical power of the employed model (Cohen et al. 2013). Jaccard et al. (1990) argue that the multicollinearity problem occurs from the use of collinear interaction terms with other independent variables which may cause the coefficients estimates to be unstable, hence, this may cause the results to switch signs resulting in drawing a biased conclusion from the employed model. Consequently, the results provided by Otero and Enríquez (2012) are likely to be not statistically reliable.

Hong et al. (2014) capitalise on this deficiency and lack of consensus regarding the IFRS-IPO research. The authors empirically conduct the first comprehensive cross-country study that aims to examine the economic benefits of the IFRS-IPO underpricing relationship for 20 countries that mandated IFRS between 2003 and 2007. The authors find a negative association between IPO underpricing and mandatory IFRS adoption in EU IPO firms only and find no statistically significant results for non-EU IPO firms including Australia, Hong Kong, the Philippines, and South Africa. The results of Hong et al. (2014) are likely to suffer from a lack of generalisability, as their results for the effect of the IFRS mandate on IPO underpricing are apparently driven by EU IPOs. Furthermore, there is inadequate representation of non-EU IPOs

in their sample, with these accounting for approximately 37% of the total[22].

To some extent, this proportion of non-EU IPOs may not appear to be unreasonable. However, when the substantial degree of IPO underpricing observed in emerging non-EU IPO markets compared to both EU and non-EU developed IPO markets is taken into consideration, a different picture arises. For example, prior IPO underpricing literature documents a low degree of IPO underpricing in developed IPO markets, including 6.4% in Canada (Clarkson and Merkley (1994), 14.4% in Belgium (Engelen (2003), 17.9% in Singapore (Reber and Fong (2006), 22.7% in France (Chahine (2008), 22% in the US (An and Chan (2008), 26.7% in Australia (Bayley et al. (2006), and 29.6% in the UK (Filatotchev and Bishop (2002). On average, IPO underpricing for those developed EU and non-EU developed countries is approximately 19.9%. Conversely, the documented IPO underpricing, for example in emerging non-EU IPO markets, accounted for: 948.6% in China (Su and Fleisher (1999), 74.1% in Brazil (Leal (2005), 108% in Bangladesh Hasan and Quayes (2008), 266.7% in Saudi Arabia (Alqahtani and Mayes (2014), 290% in Gulf Cooperation Council countries (Al-Hassan et al. (2010), 40.8% in Mexico (Hensler et al. (2000), and lastly, 47.3% in sub-Saharan African countries (Hearn (2012). On average, IPO underpricing for those emerging non-EU IPO markets is approximately 353.6%, which is about 13 times the average underpricing observed in both the EU and non-EU developed IPO markets.

The problem is that in Hong et al.'s (2014) study, the proportion of emerging non-EU IPOs that mandate IFRS is less than 1% (10^{23} out of 1,025 IPOs). Consequently, their study suffers from a considerable lack of representation of emerging non-EU IPOs, thereby not having much generalisability. In addition, the distinguished work of Hong et al. (2014) only covers two years of IFRS experience since their data ranges from 2003 to 2007, where IFRS was mandated in 2005. This makes it difficult for IPO markets in Hong et al.'s (2014) study, including both developed and emerging countries to enjoy a longer IFRS experience. Hence, the brevity of IFRS experience in Hong et al.'s (2014) work might make it difficult to generalise their results to other markets, particularly for emerging non-EU countries. In this regard, Houqe et al. (2012b) and

---

[22] This percentage is calculated by dividing the number of domestic IPOs in Australia (334), Hong Kong (33), South Africa (1), and the Philippines (9), totalling 377 IPOs divided by the total domestic IPOs included in the study of 1,025.

[23] Nine IPOs are listed in the Philippines stock market and one in the South African stock market.

Ball (2016) attribute weakness in current IFRS research to the employment of a short time span of IFRS experience. The authors argue that the longer the IFRS experience, the better are the expected outcomes to be observed from IFRS application on capital market results. Recently, Houqe and Monem (2016) find strong empirical evidence documenting the existence of a positive relationship between the length of IFRS experience and positive capital market outcomes measured by a reduction in the level of corruption across 104 countries. The authors uncover important results showing that when compared to developed equity markets, emerging economies benefit more from lengthier IFRS experience in alleviating observed corruption.

There is a large strand of literature arguing for the presence of different informational environments between developed and emerging stock markets. Of these the emerging countries are characterised by having a weak institutional environment, feeble information disclosure practices, and a high degree of information asymmetry, which may explain this difference between developed and emerging economies (Harvey 1995; Domowitz et al. 1997; Koutmos 1999; Klapper & Love 2004; Chan & Hameed 2006; Chiang & Zheng 2010; Drobetz et al. 2010; Engelen & Van Essen 2010; Shi et al. 2013; Houqe & Monem 2016; Zattoni et al. 2017; Eng et al. 2019). Thus, the results of previous IFRS-IPO underpricing literature including Dorsman et al. (2010), Otero and Enríquez (2012), Hong et al. (2014), Firth and Gounopoulos (2017), and Maglio et al. (2018) are silent on whether there are economic benefits for mandating IFRS on IPO underpricing and long-term performance in emerging non-EU countries such as Saudi Arabia.

Since the mandatory adoption of IFRS in Saudi Arabia in 2008, only a few IPO studies have attempted to explain the underpricing and long-term performance of IPO firms in that country (Alanazi et al. 2011; Al Kadi 2014; Mayes & Alqahtani 2015). For example, Al Kadi (2014) shows that the average underpricing of listed IPOs in Tadawul was 190% from 2003 to 2014. Mayes and Alqahtani (2015) argue that the underpricing of Saudi Arabian IPO firms shows a price movement pattern of a sustainable increase in share price for the first trading day, which normally lasts up to four weeks after listing. Boulanouar et al. (2016) show that although all IPO firms listed in all market sectors in Saudi Arabia exhibit high underpricing phenomenon, insurance IPOs show a distinct price movement pattern of sustainable underpricing averaging around 455%. Moreover, Alanazi and Al-Zoubi (2015) investigate underpricing and long-term performance in GCC countries, including Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab

Emirates (UAE) and Oman, using 139 listed firms from 2003 and 2010. The authors document that the level of underpricing of IPO firms in these countries is a staggering 227.36%, of which IPOs listed in Saudi Arabia have an underpricing record of 265.5%. The authors also find that in the long-run, IPO firms largely underperform their local market index. For example, Alanazi and Al-Zoubi (2015) find that Saudi Arabian IPO firms underperform the Saudi Arabian all shares index, Tadawul, by 8.92%, 24.17%, and 28.15% in a one-, two-, and three-year window, respectively. In contrast, AlShiab (2018) and Kamaludin and Zakaria (2018) document recent empirical evidence showing that IPO firms listed in Saudi Arabia outperform Tadawul by 22% and 8.5% in a 12-month period, respectively.

However, none of these studies has examined the economic benefits or effects of IFRS mandate adoption on the underpricing and long-term performance of IPO firms in emerging non-EU countries and in Saudi Arabia, in particular, which is one of the largest emerging non-EU countries. This reveals that there are two research gaps in the disclosure literature, which this researcher aims to study. Therefore, by undertaking this thesis, the author aims to investigate the economic benefits of mandating IFRS on the quality of accounting information of IPO firms, measured by examining the effect of IFRS mandate adoption on the underpricing and long-term performance of IPO firms in Saudi Arabia.

3.6. The Joint Effects of Mandatory IFRS Adoption and Intertemporal Changes in Transparency on IPO Underpricing and the Long-term Performance of IPO Firms

The empirical investigation of the economic effects of IFRS mandate on accounting quality is further extended by Christensen et al. (2013) and Persakis and Iatridis (2017), who argue that IFRS studies face a potential correlated omitted variable and identification problem. They argue that countries could make other changes to the financial reporting system at the same time they introduce mandatory IFRS reporting. This includes making intertemporal enforcement changes to support the introduction of IFRS, and it is this "bundle" that is responsible for the capital market effects. Moreover, these changes could be associated with the strength of a

country's pre-existing legal and institutional systems, explaining the heterogeneous results of the economic benefits of IFRS mandate on accounting quality of listed firms in previous analyses (Daske et al. 2008; Christensen et al. 2013; Ball 2016; Rahman et al. 2019).

This bundling makes it even harder to attribute the observed capital-market effects to the IFRS mandate alone (Brüggemann et al. 2013; Louis & Urcan 2014; Ball 2016). If the switch to IFRS and the change in enforcement are complementary, then the change in standards and intertemporal enforcement changes have a joint effect (Houqe et al. 2012b; Christensen et al. 2013; Persakis & Iatridis 2017). It is also possible that the effects are additive in that both elements contribute independently to the capital market effects, or it could be that only the intertemporal enforcement changes matter. Differentiating between these cases is difficult, especially considering that changes in the elements are unlikely to be independent or randomly assigned (Houqe et al. 2012b; Brüggemann et al. 2013; Christensen et al. 2013).

Daske et al. (2008) and Christensen et al. (2013) focus on the potential liquidity effect of IFRS and only highlight the joint effect problem; they do not analyse the effect of the bundling of intertemporal enforcement changes with mandating IFRS. The authors also note that their study does not examine the costs of changing standards or enforcement, and hence are silent on the net effects of these regulatory initiatives. Daske et al. (2008) call for more research on this by stating: "Investigating this conjecture and the role of countries' enforcement regimes, which still differ considerably across IFRS countries, is an interesting avenue for future research". Furthermore, Christensen et al. (2013) explicitly assert the need for more research to assess whether the results of the economic benefits of mandating IFRS extend to another capital market; for example, the IPO market. The authors also highlight the need for further investigation to consider the joint effect of IFRS mandate and intertemporal changes in country-level institutional quality on capital market outcomes.

However, before digging deep into understanding the joint effect notion, it is necessary to comprehend the relationship between institutional quality and the IPO market. Disclosure literature classifies the institutional environment of a country both formally, such as its legal system, and informally, such as the national culture (Cieslewicz 2014; Houqe & Monem 2016; Ugrin et al. 2017). La Porta et al. (1998), La Porta et al. (2000), and Porta et al. (2002) have established and demonstrated the vital impact of formal institutional environments such as

transparency on disclosure practices. This, in turn, enables the IPO literature to account for the impact of country-specific transparency characteristics on IPO underpricing and long-term performance in the global market (Boulton et al. 2010; Engelen & Van Essen 2010; Boulton et al. 2011; Zattoni et al. 2017). This literature emphasises that besides the characteristics of IPO firms that might cause the problem of asymmetric information between IPO parties, underpricing and long-term performance can be alleviated or utterly compromised by the predominant formal and informal institutional settings within countries (Banerjee et al. 2011; Judge et al. 2015; Zattoni et al. 2017; Chourou et al. 2018; Gupta et al. 2018). Consequently, variations in the quality of country-level transparency and national cultures can impact on the perceived level of information asymmetry in the IPO market, accordingly influencing the observed level of IPO underpricing and aftermarket performance from country to country (Engelen & Van Essen 2010; Zattoni et al. 2017).

Disclosure literature contends that the formal institutional environment such as country-level transparency has a time-variant nature within and between countries while culture has only a time-invariant nature between countries (Cieslewicz 2014; Houqe & Monem 2016; Ugrin et al. 2017). Hence, in the context of this thesis, the relationship between the quality of the informal institutional environment and IFRS mandate is purposely disregarded. This is because culture does not change over time and can only be captured in cross-country settings while this thesis focuses on examining the economic benefits of IFRS mandate in one of the largest emerging non-EU counties, Saudi Arabia. For example, Hofstede (2011) argues that cultures do not change significantly over the course of time and, in fact, national cultures are not time-variant. Therefore, it is necessary to understand the joint association between IFRS mandate and formal institutional quality.

Houqe et al. (2012b) wrote the first study that empirically accounts for the joint effect of IFRS mandate and changes in country-level institutional quality on capital market outcomes. The authors examine the effects of mandatory IFRS adoption and investor protection on the quality of accounting earnings using different proxies of earnings management in 46 countries around the globe. In a recent study, Persakis and Iatridis (2017) examine the joint effects of IFRS mandate and investors protection on the cost of capital in 11 Eurozone and 8 Asian countries between 2000 and 2014. The authors find that either the implementation of IFRS or improvements in investor protection reduces the cost of equity and debt capital but uncover

controversial results for the joint effect. However, Houqe et al. (2012b) and Persakis and Iatridis (2017) only focus on the secondary market and do not examine the primary market; i.e., the IPO market. Moreover, Houqe et al. (2012b) explicitly acknowledge the limitation of their assertion, assuming that the level of investor protection within and between countries is time-invariant[24] in the sense that the degree of investor protection in a country does not increase or decrease over time. For example, Houqe et al. (2012b) treat judicial independence for Chile, Brazil, Bangladesh, and South Korea as a time-invariant variable, while the World Economic Forum (2014) shows that from 2006 to 2014, mean (standard deviation) values for these countries is 4.9 (0.55), 3.54 (0.32), 2.88 (0.45), and 4.07 (0.56), respectively. In other words, Houqe et al. (2012b) failed to recognise a 56% variance in South Korea's judicial independence, meaning their results suffer from omitted variable bias, which affects the internal validity of their study.

Hong et al. (2014) indirectly examined the possibility of a concurrent effect of changes in the level of institutional environments in countries and IFRS mandate on IPO underpricing for 20 countries that mandated IFRS between 2003 and 2007. The authors detect a negative relationship between IPO underpricing and mandatory IFRS adoption in EU IPO firms only and find no statistically significant results for non-EU IPO firms[25]. The authors measured the change of country-level institutional environments by observing accounting changes using the number of additional disclosures required by IFRS relative to the local GAAP, and the number of inconsistencies between local GAAP and IFRS developed through a comprehensive survey done by Nobes (2001). They also measure country-level implementation credibility using the 2005 rule of law index from Kaufmann et al. (2007). The rule of law index measures the overall transparency in a country by showing the degree of confidence that a country's citizens have in the quality of its law enforcement mechanisms (Kaufmann et al. 2007).

The problem is that Nobes (2001) develop the index on the number of additional disclosures required by IFRS relative to local GAAP, and the number of inconsistencies between local GAAP and IFRS, based only on 53 countries and for "only 2001". Hong et al. (2014) treat Nobes (2001) index as a time-invariant index, and they overlooked "changes" in additional

---

[24] Persakis and Iatridis (2017) also treated formal institutional quality proxy as a time-invariant factor as they use arithmetic mean for investor protection for every country.
[25] Including Australia, Hong Kong, the Philippines, and South Africa.

disclosures required by IFRS relative to local GAAP, and the number of inconsistencies between local GAAP and IFRS, for those 53 countries from 2002 onwards.

In this critical matter, IAS *Plus* (2019) cautions against using the out-dated information of the survey conducted by Nobes (2001) with the following cautionary statement: "Note: IFRSs and national GAAP have changed significantly since this survey is done. Consequently, the overview of national GAAP and comparisons with IFRSs are out-dated (IAS *Plus* 2019)". Furthermore, Hong et al. (2014) treat the rule of law index as a time-invariant variable where they equated the value of the rule of law for each country used in their study to the median value between 2003 and 2007, ignoring changes over time in these values. For example, they used median values of 0.65, 0.53, -0.44, and 1.98 for Greece, Italy, the Philippines, and Swaziland for the rule of law, while standard deviation values of the rule of law for these four countries from 2002 to 2007 are 0.07, 0.14, 0.08, and 0.08, respectively[26] (Kaufmann et al. 2011).

Thus, this use of out-dated and time-invariant measures for accounting changes and implementation credibility by Hong et al. (2014) to capture the effect of country-level differences in institutional factors on influencing the economic benefits of IFRS-IPO underpricing relationship, leads to the presence of omitted variable bias. This, in turn, makes their results lack a great deal of credibility. Additionally, the results of Hong et al. (2014) are likely to be driven by EU IPOs, as when they dropped the non-EU IPOs from their sample, the results become insignificant[27], meaning that mandating IFRS for non-EU IPO firms will have no impact on underpricing. The authors attribute the results of their non-EU sample as being due to having small accounting changes for those countries. However, as noted above, Hong et al. (2014) measure of accounting changes is not credible because it is based on an out-dated measurement, as stated by IAS *Plus* (2019).

---

[26] When the measure of the rule of law index is extended to include values from 2002 to 2013 for both mean and standard deviation values, the mean and (standard deviation) values of rule of law for Greece, Italy, the Philippines, and Swaziland changed considerably to show 0.70 (0.17), 0.46 (0.12), -0.50 (0.08), and -0.64 (0.15), respectively (Kaufmann et al. 2017).

[27] The results of the insignificant effect of the IFRS mandate on accounting quality for non-EU countries are also confirmed by Christensen et al. (2013), as the authors provide empirical evidence showing increased liquidity associated with mandatory IFRS adoption in EU countries that does not extend to non-EU countries. In contrast, Louis and Urcan (2014) find that increased cross-border merger and acquisition does continue to hold in non-EU countries.

Building upon the above-mentioned reasoning, this thesis argues that the initial research call by Daske et al. (2008) and Christensen et al. (2013) to investigate the joint effects of IFRS mandate and intertemporal institutional changes on the accounting quality is still an unfolding research gap for the primary market. Current IFRS-IPO literature including Dorsman et al. (2010), Otero and Enríquez (2012), Hong et al. (2014), Firth and Gounopoulos (2017), and Maglio et al. (2018) is silent on the joint effects of IFRS and intertemporal country-level institutional changes on the accounting quality in the IPO market. To the best of this thesis author's knowledge, the unpublished research by Louis and Urcan (2014) is the only work that accounts for the joint effects of IFRS mandate and intertemporal institutional changes on accounting quality. However, Louis and Urcan (2014) only examine the effect of IFRS on cross-border acquisitions using a similar sample to Dorsman et al. (2010), Otero and Enríquez (2012), and Hong et al. (2014) that suffers from a lack of representation of emerging non-EU countries, thus affecting the generalisability of their results.

In addition, Louis and Urcan (2014) only examine the joint effect of IFRS mandate and intertemporal institutional changes on accounting quality in the secondary market. This casts an ongoing lack of understanding of how this joint effect might explain the underpricing and long-term performance in the IPO market, particularly in emerging non-EU countries. Therefore, this thesis contends that there is no current understanding of the joint effects of IFRS mandate and intertemporal institutional changes on explaining the underpricing and long-term performance of IPO firms in non-EU countries, particularly in one of the largest emerging non-EU countries, Saudi Arabia. This suggests that there are another two research gaps in the disclosure and finance literature of which this thesis aims to examine; the joint effects of mandatory IFRS and intertemporal changes in transparency on the underpricing and long-term performance in Saudi Arabia.

3.7. Conclusion

This chapter presents a brief review of the disclosure literature concerning the benefits of mandating the application of IFRS on capital markets outcomes, which is divided into five

sections, as shown below in Figure 10. Covering these five areas in the literature allows this thesis to identify four research gaps. In the first section, this chapter discusses a number of prior reasons why the adoption of IFRS may improve accounting quality but also undermine it. In the second section, this chapter presents a succinct literature review related to voluntary IFRS studies, concluding that prior voluntary IFRS studies overemphasise the positive economic benefits of adopting IFRS due to the presence of self-selection bias. This section argues that the results of prior voluntary IFRS studies can only be generalised to the current mandatory adoption research with caution. The third section provides a concise literature review of mandatory adoption of IFRS. Although this section concludes that the mandatory adoption of IFRS has a positive effect on accounting quality, it also highlights four reasons in which this conclusion can be premature.

The fourth section presents the literature that described the impact of mandatory IFRS adoption on IPO underpricing and long-term performance of IPO firms. This section also argues that prior IFRS-IPO literature is premature and suffers from a lack of credibility and generalisability. Due to the identified limitations, the author of this thesis reaches a conclusion asserting that it is virtually impossible to understand how the IFRS mandate can affect IPO underpricing and long-term performance in non-EU countries, particularly in Saudi Arabia's IPO market providing the first and second research gaps. The fifth section presents the literature on the joint effects of mandatory IFRS adoption and intertemporal changes in transparency on IPO underpricing and the long-term performance of IPO firms. In this section, it is stressed that the initial call by Daske et al. (2008) and Christensen et al. (2013) for research in the future to investigate the joint effects of IFRS mandate and intertemporal institutional changes on the accounting quality, is still relevant, particularly in the primary market. Hence, this chapter develops its third and fourth research gaps to examine the joint effects of mandatory IFRS and intertemporal changes in transparency on the underpricing and long-term performance in Saudi Arabia.

Figure 10. Summary of IFRS Literature and Development of Research Gaps

| The Impact of IFRS on Accounting Quality | → | This literature provides evidence of IFRS documenting an improvement of accounting quality | → | The mixed evidence depend on the nature of the research question, methodology employed, and research sample used by previous studies |
| | | This literature provides evidence of IFRS documenting an undermining of accounting quality | | |

The Impact of IFRS on Accounting Quality → This literature provides evidence of IFRS documenting an improvement of accounting quality / This literature provides evidence of IFRS documenting an undermining of accounting quality → The mixed evidence depend on the nature of the research question, methodology employed, and research sample used by previous studies

Voluntary Adaption of IFRS → This literature provides an overall evidence documenting that voluntary adoption of IFRS improves accounting quality resulting in positive capital market outcomes → The evidence is difficult to be generalised to mandatory IFRS adapters due to the presence of self-selection bias

Mandatory Adoption of IFRS → This literature provides an overall evidence concluding that IFRS mandate enhances the accounting quality of financial reports and reduces information asymmetry among market participants

The evidence of this school of thought is challenged due to the followings:

1- The evidence does not show a clear explanation why the IFRS Mandate should be expected to yield considerable capital market benefits
2- The evidence of the economic benefits of mandating IFRS on accounting quality is primarily clustered in the EU countries
3- This evidence ignores intertemporal changes in countries' institutional quality
4- The evidence focusses on the secondary market to derive results of the capital market benefits of IFRS mandate while neglects the importance of IFRS mandate to the primary market such as the IPO market

The Impact of IFRS Mandate on IPO Underpricing and the Long-term Performance of IPO Firms → This literature provides an overall evidence concluding that IFRS mandate enhances the accounting quality of financial reports and reduces information asymmetry among market participants

The evidence of this literature has number of limitations concerning credibility and generalisability. Importantly, the evidence is silent on whether there are economic benefits for mandating IFRS on IPO underpricing and long term performance of IPO firms in emerging non-EU countries such as Saudi Arabia → **First and second research gaps**

The Joint Effect of IFRS Mandate and Intertemporal Changes in Transparency on IPO Underpricing and the Long-term Performance of IPO Firms → This literature only examines the joint effect of IFRS mandate and time-invariant institutional changes on accounting quality in the secondary markets → There is a lack of understanding on the joint effect of IFRS mandate and time-variant institutional changes on the underpricing and long term performance in the IPO market, particularly, in in emerging non-EU countries such as Saudi Arabia → **Third and fourth research gaps**

This figure is designed by the author of this thesis

Chapter Four

Conceptual Framework, Research Questions, and Hypotheses Development

4.1. Introduction

This chapter presents the conceptual framework employed to develop research hypotheses to answer four research questions concerning the identified four research gaps. By capitalising on the limitations of information disclosure and IPO literature, four research objectives are addressed. The first objective is to investigate the economic benefits of IFRS mandate in elucidating IPO underpricing of IPO firms listed in Saudi Arabia. The second objective examines the economic benefits of IFRS mandate in elucidating the long-term performance of IPO firms listed in Saudi Arabia. The third objective sets out to study the joint effect of mandatory IFRS and intertemporal changes in transparency on the underpricing of IPO firms in Saudi Arabia. Finally, the fourth objective examines the joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia. To address these objectives, the first section of this chapter outlines the conceptual framework that this thesis employs to explain the certification role of the IFRS mandate in reducing the *ex-ante* uncertainty of IPO investors, which lowers IPO underpricing and alleviates poor long-term performance in Saudi Arabia. An extension of this conceptual paradigm is also presented in order to evaluate the concurrent effect of differences in formal institutional quality and IFRS mandate on IPO underpricing and long-term performance of IPO companies. The second section provides a discussion that leads to the development of nine research hypotheses, developed to answer the proposed four research questions. The third section concludes this chapter.

4.2. Conceptual Framework

Ball (2016) renders an excellent 10-year review following the introduction of IFRS in 2005; discussing conceptual and empirical issues encountered by IFRS standards. Ball (2016) shows that IFRS scholars perceive the cost and benefits of IFRS adoption in the context of two areas of research, including value relevance and cost of capital studies. In both research areas, Houqe et al. (2012a) and Ball (2016) suggest the employment of a range of theoretical models in order to conceptualise the relationship between costs and benefits of IFRS adoption and capital market outcomes. These theoretical models, including agency, signalling, institutional, and information asymmetry models, were employed to infer the impact of IFRS application on capital market outcomes (Bonsón et al. 2009; Houqe et al. 2012a; Hong et al. 2014). However, for IFRS-IPO research, scholars employ asymmetric information theories because IPO literature claims that the presence of the asymmetric information problem between IPO parties is usually blamed for affecting IPO firms' performance (Hong et al. 2014; Firth & Gounopoulos 2017; Maglio et al. 2018). Consequently, this thesis relies on employing an asymmetric information conceptual framework to build its hypotheses.

There are various theoretical explanations for IPO underpricing and long-term performance based on the asymmetric information problem between issuers and investors (Habib & Ljungqvist 2001; Jenkinson & Ljungqvist 2001; Shi et al. 2013). For example, Booth and Smith (1986) introduce the "certification" hypothesis as a response to the presence of information asymmetry between issuers and investors, arguing that IPO issuers can employ a reputable underwriter as the "certification" signal. This reputable underwriter can certify the quality of the issuer to reduce information asymmetry, thus lowering underpricing and improving long-term performance. In general, the IPO literature employs different certification signals or strategies including the following: employing a reputable auditor as noted in Beatty and Ritter (1986); employing a reputable underwriter as documented in Carter et al. (1998); attracting a venture capitalist with a recognised track record as stated in Barry et al. (1990); associating with strong institutional affiliation as written in Hamao et al. (2000); and employing a professional management team as suggested in Chemmanur and Paeglis (2005).

Beatty and Ritter (1986) introduce the "*ex-ante* uncertainty" hypothesis as a response to the presence of information asymmetry between issuers and investors. They argue that underpricing of IPOs should increase in response to an increase in *ex-ante* uncertainty surrounding[28] an IPO. Zahn et al. (2007) argue that when the level of *ex-ante* uncertainty increases, then the overreaction of IPO investors post-IPO increases. For example, when there is a high degree of uncertainty about the future performance of IPO firms, investors become anxious about their investment. Thus, investors incur higher costs to obtain information about their future investments in IPO firms when the issuers disclose inadequate information about their businesses. Due to this lack of information disclosure, investors' uncertainty becomes acute leading to higher IPO underpricing to compensate for this information uncertainty.

Aggarwal and Rivoli (1990) provide the 'fads' theory, explaining the long-term underperformance of IPO firms is due to their temporary overvaluation at the offering date. This model is developed to understand why the return on investment for IPO firms tends to underperform a benchmark, usually the general market index, in the long-term, including a time-window of months to years from the date of listing (Ritter 1991; DuCharme et al. 2001; Zattoni et al. 2017; Fedyk & Khimich 2018; Lizińska & Czapiewski 2018). Aggarwal and Rivoli (1990) argue that IPO investors tend to be influenced by the positive financial information surrounding the IPO firm at the time of offering. This positive information encourages investors to react optimistically to the share price of IPO firms on the first trading day, leading to a substantial increase in the share price. Over time, much less positive financial information about the IPO firm finds its way into the market, causing investors to shed their over-optimism about the actual value of the new stock and leading to a downwardly adjusted share price. Ritter (1991) progressively extends the fads theory, arguing that IPO companies that are characterised by a high level of uncertainty or have a high-risk profile, such as small, young, and technology firms, have higher shareholder sentiment. Thus, Aggarwal and Rivoli (1990) and Ritter (1991) indicate that IPO firms characterised by high underpricing tend to underperform their comparable benchmarked firms and typically use the general market index in the long-term.

An example of the 'fad' phenomenon is the technology ride-hailing company, Lyft, that went public in March 2019 with an offering price of $72 a share. Positive expectations about the

---

[28] For example, uncertainty related to historical profitability or use of IPO proceeds or pre-IPO market conditions or the quality of disclosure.

firm's future financial prosperity found its way to IPO investors. This information raised investors' sentiment and resulted in the first-day closing price increasing by 8.7% to $78.29 a share, giving the ride-hailing pioneer a $26.6 billion valuation (Furtune 2019). However, several items of negative news came to the market months after listing, including fraud lawsuits concerning misleading financial information in the prospectus and poor first quarter financial results (CNBC 2019; The New York Times 2019). This information corrected IPO investors over-optimism about the initial valuation and future stability of Lyft, causing the share price of Lyft to drop to $54 per share in May 2019.

This thesis applies a combined theoretical explanation to IPO underpricing and long-term performance of IPO firms, based on the "certification", "*ex-ante* uncertainty", and "fad" hypotheses, as shown in Figure 11. Therefore, as shown in the figure, this thesis contends that mandatory IFRS adoption should work as a quality "certification" signal or strategy for IPO issuers, especially since the premise of IFRS is to enhance the accounting quality of financial reports. This demand for quality documentation is due to the additional disclosure requirements of IFRS compared to local GAAP (Ball 2006). According to Ahmed et al. (2013b), compared to local GAAP, IFRS is likely to enhance accounting quality by removing certain accounting alternatives, providing users of financial reports with additional disclosure requirements, and defining clear measurement and recognition rules. Consequently, mandating IFRS enhances the quality of accounting information in IPO prospectuses and reduces the *ex-ante* uncertainty of IPO investors, which leads to lower information asymmetry in the IPO market and lower IPO underpricing (Shi et al. 2013; Hong et al. 2014). Moreover, this higher quality accounting information and reduced *ex-ante* uncertainty lessen the overreaction to IPO shares by investors on the first trading day, which improves the long-term performance of IPO firms, as illustrated in Figure 11.

Figure 11. Theoretical Frameworks
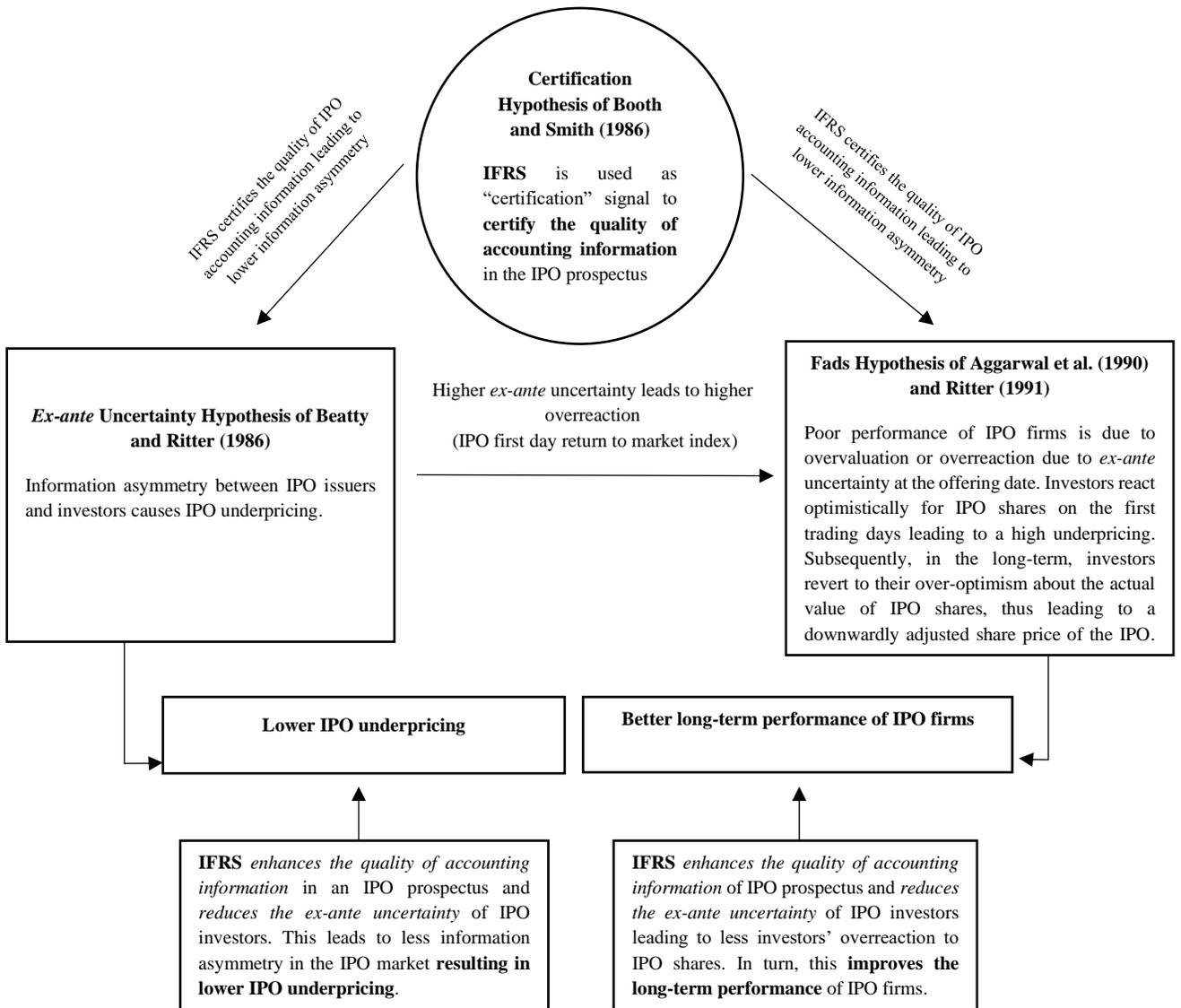
This figure is designed by the author of this thesis by combining models developed by Booth and Smith (1986), Beatty and Ritter (1986), Aggarwal and Rivoli (1990), and Ritter (1991).

The proposed theoretical combination in Figure 11 is further extended in Figure 12 to capture the effect of differences in formal institutional quality, such as the extant level of country-level transparency in the country. This is because the observed level of IPO underpricing and long-term performance of IPO firms may possibly exhibit a joint function of the level of transparency and the quality of accounting standards in a nation, as proxied by IFRS mandate.

This viewpoint is based on the well-accepted accounting concept that accounting does not exist in a vacuum (Christensen 2010; Ahmed et al. 2013a). As a substitute, a nation's accounting system is 'a product of its environment' (Armstrong et al. 2010; Houqe et al. 2012b). If mandating IFRS and improvements in the level of formal institutional quality are counterparts; for example, because IFRS is easier to implement, then a joint effect between the change in standards and transparency is expected (Houqe et al. 2012b; Christensen et al. 2013).

Figure 12. Extended Theoretical Framework

Scenario 1:
Only IFRS has effect

Scenario 3:
IFRS and change in transparency jointly affect

IPO underpricing and long-term performance

Scenario 2:
Only change in transparency has effect
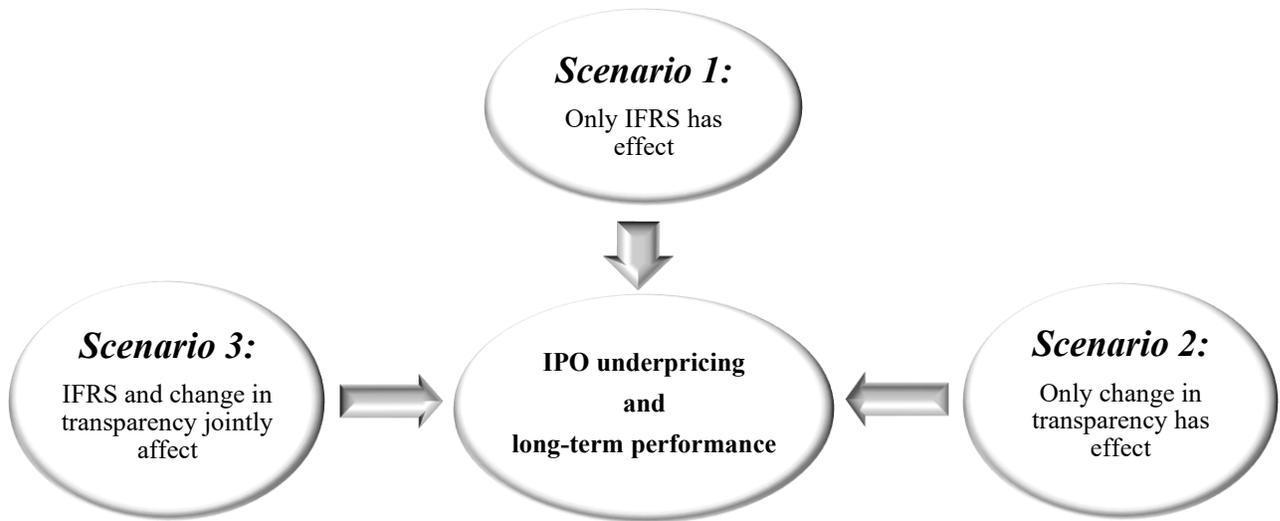
This figure is designed by the author of this thesis.

This suggests that the proposed theoretical framework in Figure 11 should be extended to include three possible scenarios, as shown above in Figure 12. The first scenario is one where it is only the application of IFRS that influences capital market outcomes, including IPO underpricing and long-term performance of IPO firms. In this regard, Hong et al. (2014) and Maglio et al. (2018) assert that the IFRS mandate improves the level of information quality of IPO companies. This happens by enhancing the transparency of IPO prospectuses leading to better information symmetry among IPO participants, which reduces IPO underpricing. Moreover, recall that the fads theory expects a positive association between IPO underpricing and the long-term underperformance of IPO firms. This expectation rests on the rationale that IPOs experience great discounting, possibly because their share price is enthusiastically

overvalued by investors. This overvaluation is also possibly influenced by managers' discretion to self-select accounting methods that affect investors' valuation sentiment; in turn, such IPOs shall experience poor aftermarket performance. Since disclosure literature argues for the positive role of IFRS in deterring managers' discretion to self-select accounting methods, it is acceptable to assume that IFRS will have an effect on the aftermarket performance of IPO firms (Ahmed et al. 2013b; Horton et al. 2013; Hong et al. 2014; Pacter 2017).

The second scenario is one where intertemporal change in transparency[29] enhance the overall institutional quality of a country proxy, and it is this alone that has a positive effect on lowering IPO underpricing and improving the long-term performance of IPO firms. This notion is built on the observations of the IPO underpricing and long-term performance literature, which argues that these two stock market phenomena of IPO firms can be affected by the existent country-level transparency environment (Boulton et al. 2017; Zattoni et al. 2017). This viewpoint suggests that asymmetry in the quality of country-level transparency can influence the observed level of information asymmetry in the IPO market, therefore affecting the perceived level of IPO underpricing and long-term performance in that country. The argument is that a country with a weak country-level transparency environment is anticipated to maintain an information environment characterised by a weak legal system, allowing information asymmetry to increase unchecked amid market participants (Kaufmann et al. 2017). Therefore, in such a country with a poor country-level transparency environment, investment uncertainty is likely to increase. This results in a higher tendency for underpricing, affecting the long-term aftermarket performance of IPO firms in order to compensate (Boulton et al. 2017; Zattoni et al. 2017).

The third scenario is that a positive effect on IPO underpricing and long-term performance of IPO firms is exerted by the combined effect of IFRS mandating and improvements in overall formal institutional quality. This situation leans toward supporting the argument that an accounting system does not exist in a vacuum (Christensen 2010; Ahmed et al. 2013a), and that the accounting system developed in a nation is 'a product of its environment' (Armstrong et al. 2010; Houqe et al. 2012b). In this framework, Gupta et al. (2018) contend that IPO investors have to orbit between two problematic types of information asymmetry in a

---

[29] Intertemporal change in transparency refers to the time-variant changes in the status of transparency over the course of time.

country. The first is an interior type linked to the characteristics of IPO firms, including firms who mandate IFRS application, and the second is an exterior type of information asymmetry linked to the characteristics of the country-level transparency environment. Hence, this researcher argues that a positive effect on IPO underpricing and long-term performance of IPO firms could be the result of the combined effect of an increase in the level of transparency and increased quality of accounting standards in a country, as mandated by IFRS.

4.3. Research Questions and Hypotheses Development

In order to address the four research gaps identified in the literature review chapter, this thesis proposes four research questions, each followed by the relevant hypothesis. The first research question is:

Q1: What is the effect of IFRS mandate on the underpricing of IPO firms in Saudi Arabia?

The relationship between increased quality of accounting information provided by IFRS application and the problem of information asymmetry in capital markets has been documented in the literature (Wang & Welker 2011; García et al. 2017; Fontes et al. 2018; Vergauwe & Gaeremynck 2019). This relationship is built on the assumption that financial statement information offered in capital markets are likely to be influenced by the quality of accounting information. This is because an improvement in financial statement disclosure can bring benefits to users of financial reports even when no new information is produced. For example, Abad et al. (2018) argue that IFRS renders quality accounting disclosure that facilitates the conversion of private information into public information. Consequently, the authors contend that this process diminishes the information gap between informed and uninformed investors, subsequently leading to the development of a financial environment where asymmetric information does not thrive. Once this quality information climate develops in a capital market, accounting information becomes relevant, timely, accurate, comparable and able to be utilised

by market participants to formulate efficient investment decisions (Wang & Welker 2011). Therefore, when IFRS is implemented, it provides quality accounting information that reduces information asymmetry. Once the problem of asymmetric information is alleviated, investors are expected to demand a lower risk premium as their *ex-ante* uncertainty about any forthcoming investment decision also reduces (Lee et al. 2010).

Proponents of IFRS, therefore, assert that it is a set of high-quality financial reporting standards that shall surely increase reporting transparency leading to lower information asymmetry (Tweedie 2007; Shi et al. 2013; Hong et al. 2014). According to their claim, the quality of IFRS standards reduces the *ex-ante* uncertainty of investors even in a market environment where information asymmetry is a predominant characteristic such as for IPO firms in the primary market. Despite the substantial disclosure requirements for IPO firms, prior research indicates that a significant factor explaining IPO underpricing for such firms is information asymmetry among IPO participants (Beatty & Ritter 1986; Wang & Welker 2011; Barth et al. 2017). The IPO market presents a distinctive setting that involves considerable information uncertainty leading to high information asymmetry, and that may be especially sensitive to earnings management (Teoh et al. 1998a; Kao et al. 2009). This is because IPOs' shares have never been listed previously, and the performance of IPO firms also has never been observed by investors and analysts; the only information available to investors and analysts in order to assess the quality of accounting information is that contained in the prospectuses provided by the issuers (Leone et al. 2007; Hanley & Hoberg 2010). Hence, IPO underpricing is perceived as reasonable compensation offered by IPO issuers to IPO investors to alleviate their information uncertainty (Shi et al. 2013; Maglio et al. 2018). Recall that Ahmed et al. (2013b) show that IFRS can improve accounting quality by eradicating particular accounting alternatives, offering beneficiaries of financial reports with additional disclosure requirements, and stating defined measurement and recognition rules, consequently alleviating managerial discretion. This in turn could decrease the extent of opportunistic earnings management resulting in improved accounting quality (Ewert & Wagenhofer 2005). For instance, Barth et al. (2008) uncover evidence showing that firms mandating IFRS are involved in less earnings management, show more timely loss recognition, and provide more value relevance of earnings. Consequently, it is not irrational to expect a linkage between IFRS mandate and improvement of accounting quality of IPO firms.

In this context, previous IFRS-IPO research argues that the use of IFRS rather than domestic GAAP by IPO firms affects the degree of information asymmetry amongst market participants in the IPO market leading to better reporting quality in financial reports or statements (Dorsman et al. 2010; Otero & Enríquez 2012; Hong et al. 2014). This school of thought finds that the difference between IFRS standards and prior local GAAP is negatively related to the information asymmetry problem in the IPO market. The central argument of this line of research is that adoption of the IFRS mandate makes it harder for IPO managers to employ favourable accounting alternatives, renders IPO investors and analysts with additional disclosure requirements, and defines rigid measurement and recognition rules that decrease information asymmetry for IPO investors. This leads to higher quality accounting information. Consequently, IFRS lowers IPO discount in countries with large accounting changes required by IFRS relative to local GAAP. For instance, Hong et al. (2014) find lower IPO underpricing in nations who have more than 15 differences in accounting changes and inconsistencies between local GAAP and IFRS. In contrast, the authors discover no IFRS effect on the underpricing of IPO firms for non-EU firms attributing this finding to the fact that most non-EU countries experience small accounting changes between their local GAAP and IFRS.

Saudi Arabia is a non-EU emerging economy with a highly asymmetric information environment and major differences between IFRS and local GAAP (Alqahtani & Boulanouar 2017; Nurunnabi 2017). Hence, based on the existence of these two elements, IFRS mandating is expected to have a negative effect on the asymmetric information problem in the IPO market. As previously mentioned, Iqbal (2012) and IFRS Organisation (2016) list 21 major differences between the Saudi Arabian GAAP and IFRS[30], of which 15[31] are found by Nurunnabi (2017) to exert a great impact on the quality of accounting information. This may have implications for disclosure asymmetry in the IPO market in Saudi Arabia; for example, IAS 39 Financial Instruments: Recognition and Measurement, one of these influential IFRS standards, forces

---

[30] Panel B, C, and D in Table 2 and Table 4 provide lists of key differences and inconsicnaintes between local Saudi GAAP and IFRS.

[31] These differecnes include IAS 1 Presentation of Financial Statements; IAS 7 Statement of Cash Flows; Zakat and IAS 12 Income Tax; IAS 16 Property Plant and Equipment; IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors; IAS 17 Leases; IAS 19 Employee Benefits; IAS 21 The Effects of Changes in Foreign Exchange Rates; IAS 24 Related Party Disclosures; IAS 34 Interim Financial Reporting; IAS 36 Impairment of Assets; IAS 38 Intangible Assets; IAS 40 Investment Property; IAS 41 Agriculture; and IAS39 Financial instruments.

managers to employ fair value measurement (FVM) that is claimed to alleviate information asymmetry amongst equity investors. Horton and Serafeim (2010) and Firth and Gounopoulos (2017) contend that application of the fair value method offered by IFRS allows investors to increase their accuracy in evaluating the share prices of listed firms, including IPO firms.

Similarly, Fontes et al. (2018) examine the role the FVM plays, when applied to banks' assets, in reducing the issue of asymmetric information between equity investors, measured by the bid-ask spread[32]. The authors find that the fair value method offered by IAS 39 markedly reduces information asymmetry because investors are more informed and less uncertain about the current asset value prior to conducting equity valuation. Ryan (2008) and Duh et al. (2012) also confirm that the FVM orchestrated by IFRS minimises the volatility of earnings caused by estimation error, thus making the reporting of financial information more transparent.

Not limited to a single IFRS standard IAS 39 per se, Iqbal (2012) and Nurunnabi (2017) show that IAS 7 and IAS 19, for example, can moderate information uncertainty in financial reports. This occurs by reducing managers' freedom to choose accounting methods that produce over-optimistic news in the stock market in Saudi Arabia. For example, IAS 7 Cash and Cash Equivalents (CCE) provide a flawless guide in stating that cash equivalents must be removed from the statement on cash flows and must be revealed elsewhere in the financial statements "when it has a short maturity of three months or less from the date of acquisition". In contrast, the equivalent Saudi GAAP for "Cash Flow Statement" does not refer to a specific period regarding cash and cash equivalents, leaving such accounting decisions to managers' judgement. Furthermore, IAS 19 Employee Benefits renders detailed guidance for post-employment benefits. The standard requires companies to discount their obligation under the defined benefit plans and reflect the current costs in their financial statements; the present obligation is usually determined based on actuarial advice. In contrast, the equivalent Saudi GAAP related to employee benefits provides inadequate guidance. Finally, Iqbal (2012) and Nurunnabi (2017) elaborate that Saudi GAAP offers firms more discretion about the accounting treatment of intangible assets, either by considering the capitalisation of intangible assets or not. This accounting discretion leaves investors uncertain about the assessment of intangible assets when

---

[32] The bid-ask spread of share prices is equivalent to the difference between the offer price and first listing price of the IPO firm that is attributed to IPO underpricing (Firth & Gounopoulos 2017).

they embark on determining the fair value of firms, especially IPO firms. Meanwhile, IAS 38 that deals with the accounting treatment of intangible assets does not permit firms to capitalise intangible assets. Hence, when IFRS rolls out incorporation costs of intangible assets, IFRS restricts managers' discretion to capitalise such costs for IPO firms. This, in turn, reduces IPO investors' uncertainty in relation to the evaluation of intangible assets in the IPO prospectuses.

Since the IPO discount is largely connected to the information uncertainty embedded in accounting numbers prepared by IPO firms' managers, the process of IPO pricing is heavily influenced by *ex-ante* investor uncertainty. However, this *ex-ante* uncertainty can possibly be alleviated by employing a certification signal such as IFRS application. This certification tool is likely to provide a positive signal to investors that financial reports are prepared following high-quality accounting standards that promote transparency and deter managers' discretion. This thesis, therefore, contends that the additional and quality disclosure changes offered by IFRS ought to improve the information quality of IPO firms by increasing transparency of IPO prospectuses, which in turn should lead to less information asymmetry and lower IPO underpricing in Saudi Arabia. Based on the above discussion, the first hypothesis is posited as follows:

Hypothesis 1:

There is a negative relationship between IFRS mandate and IPO underpricing in Saudi Arabia.

The second research question is as follows:

Q2: What is the effect of the IFRS mandate on the long-term performance of IPO firms in Saudi Arabia?

There is much global evidence concerning the long-term underperformance of IPO firms (Ritter 1991; DuCharme et al. 2001; Zattoni et al. 2017; Fedyk & Khimich 2018; Lizińska &

Czapiewski 2018). The long-term underperformance occurs when the long-term return of IPO firms, frequently measured in a one-year window, shows a smaller return than the return of a designated benchmark (Zattoni et al. 2017). The association between long-term underperformance of IPO firms and poor accounting practices caused by opportunistic earnings management is established in the literature (Teoh et al. 1998a; Zahn et al. 2007; Ahmad-Zaluki et al. 2011; Lizińska & Czapiewski 2018). The conceptual argument endorsed by the disclosure-IPO literature is that companies engage in opportunistic earnings management practice to positively influence the value of IPO firms. For example, Aharony et al. (1993) provide early evidence documenting earnings manipulation by firms when they decide to go public by selecting accounting methods to report optimistic earnings. Additionally, Teoh et al. (1998a), Teoh et al. (1998b), and DuCharme et al. (2001) confirm the hypothesis that some IPO issuers indeed mislead IPO analysts and investors by taking advantage of accounting discretion to choose accounting methods that facilitate income-increasing adjustments to inflate the valuation of IPO firms. The authors also attribute the existence of poor long-term performance of IPO firms to extended earnings manipulation around going public, which causes information asymmetry to form between IPO participants. Recently, Lizińska and Czapiewski (2018) find consistent empirical evidence showing that IPO firms involved in earnings management perform worse when compared with conservative IPO issuers.

On the other hand, disclosure literature argues that mandating IFRS could restrict opportunistic earnings management by not allowing managers to have greater flexibility and discretion to self-select accounting methods that transit good financial news while blocking bad financial news. For instance, Chen et al. (2010) observe an improvement in accounting quality after IFRS mandate as they document lower frequency of bad news blocking caused by a decrease in the standard deviation of unexplained accruals. Similar evidence for the positive effect of IFRS mandate on reducing earnings management practices that are responsible for manipulating investors and analysts' optimism is reported by Jeanjean and Stolowy (2008), Armstrong et al. (2010), and Ahmed et al. (2013a).

Collectively, the above evidence implies that IFRS mandate could provide quality accounting information for IPO firms in Saudi Arabia, hence alleviating long-term underperformance or improving long-term performance. This effect occurs when IPO investors and analysts' optimism becomes subject to less accounting manipulation. It is recalled from

previous sections that the current empirical evidence shows IPO markets in Saudi Arabia suffering from large IPO underpricing (Alanazi & Al-Zoubi 2015; AlShiab 2018; Kamaludin & Zakaria 2018). However, these scholars provide a lack of consensus with reference to the long-term performance of Saudi IPO firms. Hence, if IFRS standards can truly moderate poor accounting practices and lead to lower information uncertainty about the value of IPO firms, not only lower IPO underpricing but also better long-term performance in Saudi Arabia would be expected. Such a conceptualisation is not quite straightforward. This is due to the lack of an existing theoretical paradigm that links the interaction between the benefit of IFRS mandate, IPO underpricing, and long-term performance of IPO firms. The source of this complexity is due to intertwining in the observed empirical association between the short "IPO underpricing" and long-term performance of IPO firms and the effect of IFRS mandate on them. In fact, Ball (2016, p. 562) notes a similar concern referring to the short- and long-term benefits of IFRS mandate:

"The short- and long-run effects of innovations can differ, sometimes substantially. One process is diffusion, in which an innovation spreads over time. At the other extreme is correction, in which initial enthusiasm wanes and consequently adoption effects fall over time. Which model applies to IFRS adoption? How representative are the initial effects of long-run effects?"

Since a theoretical framework that relates the association between IFRS mandate and the issue of long-run performance is not yet established in the literature, this thesis builds its second hypothesis based on the interaction of IFRS effect and the fads theory. This might provide a better understanding of the interaction between the benefit of IFRS mandate, IPO underpricing, and long-term performance of IPO firms.

Aggarwal and Rivoli (1990) devise the fads theory in an effort to explain the long-term underperformance of IPO firms as being due to a temporary overvaluation of the IPO firm at the offering date. The authors argue that investors react optimistically to the share price of IPO firms on the first trading days leading to a substantial increase in the share price. Subsequently, weeks or months after the listing day, investors start to lose their over-optimism about the actual value of the new stock leading to a downwardly adjusted share price of the IPO firm. Ritter (1991) progressively extend the fads theory, arguing that IPO companies that are characterised by a high level of uncertainty or high-risk profile such as small, young, and technology firms have higher

shareholder sentiment. Thus, Aggarwal and Rivoli (1990) and Ritter (1991) show that IPO firms with high underpricing tend to underperform their comparable benchmark, commonly using the general market index in the long-term.

In this context, disclosure and IPO underpricing literature including Hong et al. (2014) and Maglio et al. (2018) claims that IFRS mandate enhances the level of information quality of IPO firms. This occurs by improving the transparency of IPO prospectuses resulting in less information asymmetry amongst IPO parties, and in turn, lower IPO underpricing. In order to conceptualise this claim, the fads theory predicts a positive relationship between IPO underpricing and the long-term underperformance of IPO firms. Stated differently, IPOs that experience significant underpricing, perhaps because their share price is optimistically overvalued by investors and analysts due to IPO managers self-selecting accounting methods to influence such initial enthusiasm, shall experience poor performance in the long-run. Since there is an overall consensus in the literature leaning towards the positive role of IFRS in hindering managers' discretion to self-select accounting methods, it is generally agreed that IFRS can have an effect on the long-run performance of IPO firms (Ahmed et al. 2013b; Horton et al. 2013; Hong et al. 2014; Pacter 2017). This effect materialises since IFRS offers better information disclosure that deters managers' discretion, and so increases IPO investors' and analysts' information certainty. Dorsman et al. (2010) provide the only empirical work that examines the association between IFRS mandate and aftermarket performance of Dutch IPO firms. The authors find that Dutch IPOs underperform the Dutch general market index, but this level of underperformance is moderately alleviated post-IFRS mandate in 2005. Consequently, it is reasonable to expect IFRS mandate to have a positive effect on the long-term performance of IPO firms in Saudi Arabia. Moreover, recall that the fads theory attributes long-term underperformance of IPO firms to the initial over-optimism of IPO investors about the value of IPO firms in which this over-optimism drives demand for IPO shares on the first trading day. Consequently, this high demand triggers high first-day investment returns observed for IPO firms, in turn, causes IPO underpricing in the first place. Alanazi and Al-Zoubi (2015) uncover empirical evidence documenting a negative relationship between IPO underpricing and the long-term performance of IPO firms in the GCC countries, including Saudi Arabia. Sehgal and Singh (2008) Mudambi et al. (2012), and Zhao et al. (2018) also find supporting empirical results documenting the existence of a negative association between initial IPO return and poor

aftermarket performance. The authors blame IPO investors' initial over-optimism for being the influential factor in explaining the poor aftermarket performance in emerging countries' IPO markets. Based on the above discussion, two hypotheses are developed as follows:

Hypothesis 2-1:

There is a positive relationship between IFRS mandate and the long-term performance of IPO firms in Saudi Arabia.

Hypothesis 2-2:

There is a negative relationship between IPO underpricing and the long-term performance of IPO firms in Saudi Arabia after controlling for IFRS mandate.

The third and fourth research questions are as follows:

Q3: Is there a joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia?

Q4: Is there a joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia?

In order to answer these two questions, the following discussion is provided. Besides accounting standards, a country's overall institutional settings determine its accounting quality (Ball et al. 2003; Ball 2016). In this regard, Ding et al. (2007) and Wysocki (2011) investigate how a country's legal systems, culture, economic development, stock markets, and ownership concentration shape its accounting standards, which in turn affect the quality of its financial reporting. Soderstrom and Sun (2007) argue that country differences in accounting quality remained following IFRS adoption, as a function of a firm's overall institutional setting, including its country's legal and political system. This implies the existence of possible country effect arising from the status of its institutional quality on either assisting or hindering IFRS to deliver its promised benefits to users of financial reports in capital markets. Daske et al. (2008)

are the first to introduce the notion of joint effect between IFRS mandate and country-level institutional environments[33] on affecting accounting quality.

This joint effect concept means that countries could make other changes to the financial reporting system at the same time they introduce mandatory IFRS reporting, such as enhancing transparency to support the introduction of IFRS, and it is this "bundle" that is responsible for the capital market effects (Brüggemann et al. 2013). Moreover, these enhancements could be associated with the strength of countries' pre-existing legal and institutional systems (Daske et al. 2008; Christensen et al. 2013). For instance, countries could use the introduction of IFRS as an opportunity to improve their overall transparency to ensure transparency in financial reporting, leading to improving accounting quality. This bundling makes it even harder to isolate the observed capital market effects that can be attributed solely to adopting the IFRS mandate (Brüggemann et al. 2013; Louis & Urcan 2014). If the switch to IFRS and the change in the level of transparency in a country are complementary; for example, because IFRS is easier to enforce, then the changes in standards and transparency have a joint effect (Houqe et al. 2012b; Christensen et al. 2013). It is also possible that the effect is additive, in that each element contributes independently to the capital market effects, or it could be that only the change in the level of transparency is responsible. This implies that three outcomes could be anticipated. Firstly, it could be that the adoption of IFRS alone affects capital market outcomes, including the IPO market. Secondly, it could solely be an improvement in the overall institutional quality of a country that has a positive effect. Thirdly, the predictable effect on capital markets, including the IPO market, is the product of a combined effect of IFRS mandating and changes in transparency.

Building on the discussion of the previous two hypotheses, IFRS is perceived as a tool that reduces the asymmetric information problem in capital markets, particularly in the IPO

---

[33] Disclosure literature classifies the institutional environment of a country into formal such as legal system and informal such as culture (Cieslewicz 2014; Houqe & Monem 2016; Ugrin et al. 2017). This school of thought contends that the formal institutional environment has a time-variant nature within and between countries while the latter has only time-invariant nature between countries. Hence, in this thesis the relationship between the quality of informal institutional environment and IFRS mandate is ignored. This is because culture does not change over time and can only be captured in cross-country settings. For example, Hofstede (2011) argues that cultures do not change significantly over the course of time and in fact, variances in national cultures are not time-variant. For this reason, this chapter builds its joint effect hypotheses to capture the effect of IFRS mandate and intertemporal changes in transparency in Saudi Arabia.

market of which a positive effect is expected in moderating IPO underpricing and improving long-term performance of IPO firms (Dorsman et al. 2010; Hong et al. 2014). However, what is unknown to date is the effect of changes in institutional quality such as changes in country-level transparency on the issue of IPO underpricing and long-term performance in order to comprehend such joint effects between IFRS and institutional changes.

IPO underpricing and long-term performance literature emphasises that besides the characteristics of firms that may initiate the problem of asymmetric information between IPO parties, underpricing and long-term performance of IPO firms can be alleviated or utterly compromised by the predominant formal institutional environment; i.e., legal, governance and transparency frameworks, in a country (Boulton et al. 2017; Zattoni et al. 2017). In other words, asymmetry in the quality of formal institutions can impact on the perceived level of information asymmetry in the IPO market, thus influencing the observed level of IPO underpricing and long-term performance. This literature contends that a country with a feeble legal system is expected to sustain an information atmosphere characterised by a poor level of transparency, allowing information asymmetry to easily develop amongst market participants (Zattoni et al. 2017). This sequentially results in a market environment that suffers from a growing *ex-ante* uncertainty problem linked to the value and the perceived future performance of IPO companies by various stakeholders. For example, the rule of law in a nation mirrors how market players believe in the enforcement of the law in business transactions and other aspects of life (Kaufmann et al. 2017). IPO literature documents the existence of a positive effect of rule of law on the asymmetric information problem and the formation of *ex-ante* uncertainty atmosphere between investors (Hopp & Dreher 2013; Hearn 2014). In their claim, those scholars stress that when IPO analysts and investors possess a high level of assurance in and adhere to the rules of society, particularly regarding the quality of property rights, enforcement of contracts, the honesty of police, and the independence of courts, then the market environment becomes transparent and fair.

Engelen and Van Essen (2010) and Hopp and Dreher (2013) also relate that the manifestation of a transparent and fair business atmosphere is due to a strong system of rule of law operating. They assert that a poor system of rule of law is responsible for causing an elevated level of uncertainty about company valuation, earnings management practices, and the effectiveness of information disclosure regulations. Another example illustrating the effect of poor formal institutional quality on IPO firms is offered by Liu and Ritter (2010). These authors

contend that some underwriters of IPO firms exploit the presence of a feeble legal system in their nations to deliberately underprice IPO companies. Such practice occurs to benefit themselves and profit buy-side institutional investors who are loyal clients. Recently, Chen et al. (2017) provide additional support for this reasoning. The authors find that in China where a non-transparent market environment is tolerated, large underwriting banks repeatedly exploit IPO firms. The authors find that IPO firms underwritten by reputable underwriters who tend to maintain strong political connections and alliances with government authorities, charge larger underwriting fees compared with non-reputable underwriters for a similar service. Consequently, such a market where inferior institutional quality is very evident, increases investment uncertainty which is likely to have a higher propensity for underpricing and this scenario affects long-term performance to compensate for legal risk. Given the negative relationship established between IPO underpricing and long-term performance of IPO firms that are discussed in previous hypotheses, IPOs that suffer from a lack of transparency are expected to underperform their benchmark (Alanazi & Al-Zoubi 2015).

This thesis argues that IPO underpricing and long-term performance of IPO firms could be a joint function of the level of transparency and the quality of accounting standards in a country, as proxied by IFRS mandate. This view is based on the argument that accounting does not exist in a vacuum (Christensen 2010; Ahmed et al. 2013a). Instead, the accounting system practised in a country is 'a product of its environment' (Armstrong et al. 2010; Houqe et al. 2012b). In this context, Gupta et al. (2018) argue that IPO investors have to circumnavigate between two challenging categories of information asymmetry in a nation. These are: firstly, inner type of information asymmetry linked to the characteristics of IPO firms; and secondly, an external type of information asymmetry related to the characteristics of the formal institutional environment within the country. Prior disclosure and IPO literature measure the level of country-level transparency by the quality of transparency of government regulations in maintaining a market climate that, for example, deters connected business bodies to obtain private information about changes in government policies and regulations that influence the marketplace (Houqe & Monem 2016; Zattoni et al. 2017).

The World Economic Forum (2017) shows that Saudi Arabia, for example, manages to improve its overall government transparency index by 21% from 2005 to 2016. The National Center for Performance Measurement (2018) explains that Saudi Arabia undertakes these

transparency reforming initiatives to improve the quality of accounting information of listed firms and enhance the quality of their legal system. Adopting the application of IFRS is an integral part of these reforming efforts (Saudi Vision 2030 2016; The National Center for Performance Measurement 2018; Abdull Razak & Alqurashi 2019). The aim of these transparency reforming endeavours has been to attract FDI inflows into the equity market of Saudi Arabia in order to induce stock market growth, so that alternative sources of local economic growth can flourish to reduce dependence on oil revenues (Alanazi et al. 2011; The National Center for Performance Measurement 2018).

Such an enhancement in the formal institutional quality of Saudi Arabia probably supports the expected benefits from IFRS application or overpowers the effect of IFRS or simply exhibits no role in the IPO market. Thus, this thesis hypothesises that a low level of transparency in a country such as Saudi Arabia breeds high levels of information asymmetry between IPO parties, including issuing firms, underwriters, and investors. There is a well-established stream of literature that relates a manifestation of information asymmetry amongst IPO market participants and deterioration in country-level transparency resulting in higher underpricing and poor aftermarket performance for IPO firms (Boulton et al. 2010; Hopp & Dreher 2013; Hearn 2014; Zattoni et al. 2017). The scenario of having poor formal institutional quality in a country impedes the production of high-quality accounting numbers, despite the implementation of high-quality accounting standards such as IFRS (Daske et al. 2008; Ball 2016). It could also be implied that for IFRS to deliver what it promises; it needs a strong transparency environment to exist (Christensen et al. 2013). This could ensure that they jointly can bring better information quality to the IPO firms resulting in lower underpricing and better long-term performance for IPO firms. Based on the above discussion, several hypotheses are developed where hypotheses 3-1 to 3-3 address the third research question and hypotheses 4-1 to 4-3 address the fourth research question as follows:

Hypothesis 3-1:

There is a negative relationship between IFRS mandate and IPO underpricing when controlling for intertemporal changes in transparency in Saudi Arabia.

Hypothesis 3-2:

There is a negative relationship between intertemporal changes in transparency and IPO underpricing when controlling for IFRS mandate in Saudi Arabia.

Hypothesis 3-3:

The joint effect between IFRS mandate and intertemporal changes in transparency have a negative relationship with IPO underpricing in Saudi Arabia.

Hypothesis 4-1:

There is a positive relationship between IFRS mandate and the long-term performance of IPO firms when controlling for intertemporal changes in transparency in Saudi Arabia.

Hypothesis 4-2:

There is a positive relationship between intertemporal changes in transparency and the long-term performance of IPO firms when controlling for IFRS mandate in Saudi Arabia.

Hypothesis 4-3:

The joint effect between IFRS mandate and intertemporal changes in transparency have a positive relationship with the long-term performance of IPO firms in Saudi Arabia

4.4. Conclusion

This chapter articulates the conceptual framework and hypothesis development, in order to establish a theoretical link between IFRS mandate, IPO underpricing, and the long-term performance of IPO firms. This construct is extended further to incorporate the relationship between IFRS mandate and changes in the formal institutional quality. In the first section, a

negative association is theoretically identified between IFRS mandate and information asymmetry, where the quality application of the former plays an important role in reducing the effect of the latter in the IPO market. Provided here is a theoretical explanation for IPO underpricing and long-term performance of IPO firms based on "certification", "*ex-ante* uncertainty", and "fad" hypotheses in which these models deal with the problem of information asymmetry in the IPO market.

The development of this conceptual platform has established a hypothetical connection where IFRS mandate is perceived as a quality "certification" signal for IPO issuers since the premise of IFRS is to improve the accounting quality of financial reports. IFRS is expected to deliver such an effect on information quality of IPO reports due to the ability of IFRS standards to offer the following: firstly, IFRS can eliminate certain accounting alternatives; secondly, the IFRS system can provide users with additional disclosure requirements; and thirdly, IFRS application specifies a clear measurement and recognition rules in comparison to local GAAP. Consequently, mandating the quality applications of IFRS is seen as a certification tool that reduces the *ex-ante* uncertainty of IPO investors, thereby resulting in lower information asymmetry in the IPO market. This, in turn, leads to lower IPO underpricing. Since a positive relationship is already established in the IPO literature between IPO underpricing and long-term underperformance of IPO firms, the achieved reduction of *ex-ante* uncertainty brought by IFRS is theorised to reduce investors' overreaction to IPO shares on the first trading day. As a result, sustained long-term performance of IPO firms is an expected outcome of IFRS application. To understand the connection between IFRS mandate and changes in the quality of the formal institutional environment, an extended rationale is developed yielding three projected outcomes. While the first outcome predicts that the quality of IFRS application only drives the observed effect on IPO underpricing and long-term performance of IPO firms, the second outcome attributes this effect solely to improvements in transparency in Saudi Arabia. The third scenario anticipates a joint effect function where the effect on IPO underpricing and long-term performance of IPO firms is a concurrent effect of IFRS mandate and enhancements in the overall transparency of financial operations in Saudi Arabia.

In the second section, a research hypothesis related to the first research question is developed. The hypothesis predicted a negative relationship between IFRS mandate and IPO underpricing in Saudi Arabia. Two research hypotheses emerge to address the second research

question. While the first theorises a positive connection between IFRS mandate and the long-term performance of IPO firms in Saudi Arabia, the second hypothesis projects a negative association between IPO underpricing and the long-term performance of IPO firms in Saudi Arabia after controlling for IFRS mandate. Subsequently, six research hypotheses related to testing the joint effect of IFRS mandate and changes in transparency on IPO underpricing and long-rem performance in Saudi Arabia are constructed to address the third and fourth questions.

Chapter Five

Research Data and Method

5.1. Introduction

In this chapter, the methodological structure which this thesis employs to carry out its empirical examination is presented. A discussion of the chosen scientific research design to determine a suitable research approach is also presented. A presentation of the research data and method employed is also rendered in order to design a suitable testing platform to address the proposed research hypotheses and answer the related research questions. This chapter is organised into seven sections. After this introduction, Section 5.2 describes the ontological paradigm, epistemological position, research approach, and research strategy.

The data and method are divided into four subsections because four different datasets and methods are employed that are related to the four independent research questions. For example, the data and method connected with the empirical testing for the impact of IFRS mandate on the underpricing and long-term performance of IPO firms in Saudi Arabia are offered in Sections 5.3 and 5.4, respectively. Likewise, in Sections 5.5 and 5.6 the data and methodology developed in order to examine the joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing and long-term performance of Saudi Arabian IPO firms, are outlined. Section 5.7 presents the battery of robustness and sensitivity tests in order to increase the confidence and reliability of the results from potential model misspecification. Finally, in Section 5.8, the conclusion of this chapter is presented.

5.2. Scientific Research Design

The research design employed for this thesis is illustrated in Figure 13. The research design adopts an objectivistic ontological paradigm, positivist epistemological position, deductive research approach, and quantitative research strategy. The aim is to study the impact of the IFRS mandate on the quality of accounting information in the primary and secondary markets, particularly on the underpricing and long-term performance of IPO firms. Hence, this thesis adopts an objectivistic ontological paradigm. On the other hand, epistemology focuses on the method of gathering knowledge, in particular, emphasising and creating new models or developing existing ones by encapsulating two positions of gathering this knowledge, these being positivism and interpretivism (Cooper et al. 2006).

Figure 13. Scientific Research Design
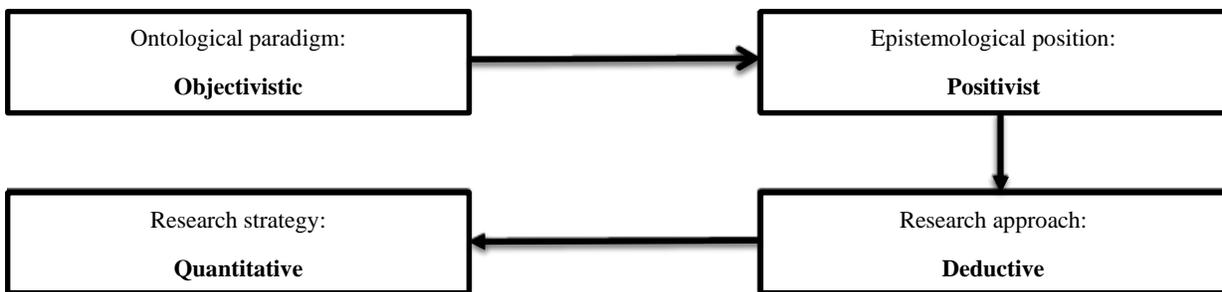
This figure is sourced from Cooper et al. (2006) and Saunders et al. (2015).

In this regard, positivist researchers conduct their research in the structural approach by primarily recognising a research topic, constructing a suitable research question and its related hypothesis, and by employing an appropriate research methodology (Cooper et al. 2006). In contrast, an interpretivism researcher accepts differences exist between the world of social sciences and natural sciences, arguing against the viability of the structural approach when conducting social scientific research (Cooper et al. 2006). This thesis follows a structural research strategy that commences with choosing a topic that investigates the effect of IFRS mandate on capital market outcomes with an emphasis on effects exerted on the short- and long-term performance of IPO firms. This is followed by identifying a number of research gaps, asking a number of questions, and developing a number of hypotheses to be tested. Hence, this thesis holds a positivist, epistemological position, the commonly applied methodological approaches

95

that researchers employ seek to address the association between existing theories and their research. This includes using either a deductive or inductive research approach (Saunders et al. 2015).

The deductive research approach sequentially begins with identifying a theory and its related hypotheses. Then it is followed by collecting data to examine the hypotheses of the theory, producing findings of the examination, accepting or rejecting the hypotheses of the theory, and finally providing a revision of the theory (Saunders et al. 2015). Conversely, the inductive research approach reverses the deductive research process. Consequently, given the nature of this thesis, a deductive research approach is adopted. Finally, the methodological toolbox for empirically conducting research is its research strategy, which comprises either quantitative or qualitative material or a mixture of both, referring to the type of data employed in the research (Cooper et al. 2006). Given the archival research nature of IPO data which is obtained from secondary data sources such as DataStream database, Eikon database, the Tadawul (2017) website, and the GulfBase (2017) website, then the thesis's research strategy is considered to be of a quantitative nature.

5.3. Data and Method for the Effect of IFRS Mandate on the Underpricing of IPO Firms

Table 6 shows the criteria for sample selection employed in this section, following the accounting disclosure and IPO literature, including DuCharme et al. (2001), Shi et al. (2013), Hong et al. (2014), and Boulton et al. (2017). The table indicates that after following the six-step selection process, the total sample comprises 102 Saudi IPO firms operating in 15 different industries from January 2003 to December 2016. Although the sample might seem moderately small, it is considerably larger and more comprehensive compared to the recent empirical studies on this subject. For example, the total sample of this thesis is almost 42% and 34% larger than Mayes and Alqahtani (2015) and Alanazi and Al-Zoubi (2015), who use a sample of 72 and 76 IPOs in Saudi Arabia between 2004 and 2010, and between 2003 and 2010, respectively. Moreover, the sample is approximately 28%, 232%, and 226% bigger than Alqahtani and

Boulanouar (2017), AlShiab (2018), and Kamaludin and Zakaria (2018), who employ 80, 44, and 45 IPO firms listed in Tadawul between 2004-2011, 2001-2015, and 2000-2017, respectively.

Table 6. Sample Selection Criteria for IPO Data

Selected search criteria	Description	Number of IPOs Matches
Exclusion non-trading IPOs	Only IPO firms from January 2003 to December 2016 that are already traded at the time of inclusion; therefore, all pending, withdrawn, postponed, and rejected IPOs are excluded since they are beyond the research interest of this study (13 IPOs are excluded).	176
Exclusion of non-initial public offering data	REITs, ADRs, units offer, close-end-funds, and stock with warrants are excluded (16 IPOs are excluded).	163
Exclusion of IPO data with no records	30 IPOs that have no records prior to 2003. Saudi Arabia's stock market was officially established in 1990 with a handful of listed firms that traded over the counter, and these are excluded. In 2003, the kingdom's capital stock market had 70 listed firms and introduced a new electronic trading system called "Tadawul" that is now currently supervised and controlled by the CMA (CMA 2016; The World Bank 2019) (30 IPOs are excluded).	147
Exclusion of IPO data with missing values for the dependent variable	IPOs with missing values of the underpricing variable are excluded (8 IPOs excluded).	117
Exclusion of IPO data with missing values for all explanatory variables	IPOs with missing values needed to calculate all explanatory variables are excluded (7 IPOs are excluded).	109
Total available data	Total available sample after all exclusions	102

The mandatory adoption of IFRS in Saudi Arabia has undergone two stages (IFRS Foundation 2019). In the first stage, the insurance and banking sectors in Tadawul have been preparing their financial reports in compliance with IFRS since 2008 while the remaining 13 sectors prepare their reports in compliance with Saudi Accounting Standards (SASs) up to 2017. Voluntarily adoption of IFRS is not permitted for all listed firms in all market sectors of Tadawul

(IFRS Foundation 2019). Beginning in January 2017, the remaining 13 sectors commence the second stage of mandatory adoption where they fully comply with IFRS standards. This provides an ideal laboratory for testing the effects of IFRS mandate on the performance of IPO firms in the primary and secondary markets before and after IFRS mandate; a comparison can also be made to the remaining non-adopting firms.

In this way the Saudi Arabian IPO market is free from self-selection bias that largely influences the outcomes of voluntary studies as argued by Ball et al. (2003), Daske et al. (2008), Li (2010), Chua et al. (2012), and Christensen et al. (2013). In their argument, the authors contend that voluntary IFRS adopters are indeed subject to self-selection bias because they have the choice to partially or fully implement IFRS standards after assessing its advantages and disadvantages. Hence, the authors conclude that this self-selection bias is likely to influence the credibility of voluntary studies' results. In contrast, mandatory adopters are obliged to apply IFRS by a "one size fits all" regulation (Ball 2016).

To examine the hypotheses, a number of Difference-in-Differences (DiD) models are employed, following Hong et al. (2014). The DiD model is a statistical method employed in quantitative research. This method attempts to mimic an experimental research design which uses observational study data to examine the differential effect of treatment (mandating IFRS) on a treatment group (IPO firms which mandate IFRS) versus a control group (IPO firms which do not mandate IFRS) (Slaughter 2001). By applying the DiD design, it is possible to analyse the effect of treatment on the dependent variable (e.g. underpricing and long-term performance of IPO firms) and then compare the average change in the dependent variable for the treatment group with the average change for the control group (Hong et al. 2014). This method has been widely used in the disclosure literature concerning the examination of the impact of IFRS adoption on capital market outcomes (Daske et al. 2008; Sun et al. 2011; Florou & Pope 2012; Ahmed et al. 2013a; Barth & Israeli 2013; Hong et al. 2014; Wu & Zhang 2019).

The treatment sample consists of 36 Saudi Arabian IPO firms listed in two sectors, specifically insurance and banking firms, while the control sample consists of 66 IPO firms from 13 industries. Both samples are divided into pre-IFRS (2003 to 2007) and post-IFRS (2009 to 2016) mandating periods. Observations related to the year 2008 are excluded to eliminate the possible confounding effects in the transition year following Hong et al. (2014). To test

Hypothesis 1, Equation (1) employs unbalanced[34] cross-sectional regression[35], with the model having the following form:

$$
\begin{aligned}
UP_i = {} & \beta_{0i} + \beta_1 \, Post_i + \beta_2 \, Treatment_i + \beta_3 \, IFRS_i + \beta_4 \, Underwriter \; Reputation \; Dummy \left(URD \right)_i \\
& + \beta_5 \, Technology \; Firm \; Dummy \left(TFD \right)_i + \beta_6 \, Pre-IPO \; Market \; Volatility \left(PMV \right)_i + \beta_7 \, Offer \; Size \left(OS \right)_i \\
& + \beta_8 \, Integer \; Offer \; Price \; Dummy \left(IOPD \right)_i + \beta_9 \, Private \; Firm \; Dummy \left(PFD \right)_i + \beta_{10} \, Offer \; Price \left(OP \right)_i \\
& + \beta_{11} \, Elapsed \; Time \left(ET \right)_i + \sum_{a=1}^{A} \beta_{12} \, Year \; Effect \left(YE \right)_i + \sum_{b=1}^{B} \beta_{13} \, Industry \; Effect \left(IE \right)_i + \varepsilon_i
\end{aligned}
\tag{1}
$$

In Equation (1), Shi et al. (2013) are followed to construct the dependent variable, UP_i, IPO underpricing which is defined as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. IPO underpricing is calculated, as shown in Equation (2):

$$
UP_i = \left(\frac{\text{First-day Closing Price}_i - \text{Offer Price}_i}{\text{Offer Price}_i} \right)
\tag{2}
$$

As shown in Equation (1), Hong et al. (2014) are followed to construct three main independent variables, namely $\beta_1 Post_i$, $\beta_2 Treatment_i$, and $\beta_3 IFRS_i$ to examine the effect of IFRS mandate on the accounting quality of listed IPO firms in Saudi Arabia. This is done by measuring the change in UP_i; IPO underpricing pre- and post-IFRS mandate in 2008. The $\beta_1 Post_i$ variable refers to the control group, including all firms in the post-mandating period from 2009 to 2016 since IFRS is only mandated for bank and insurance firms in the Saudi Arabian stock market in 2008. The $\beta_1 Post_i$ variable aims to capture: firstly, the overall change in underpricing in the IPO market after the introduction of IFRS; and secondly, a time trend effect in underpricing after the IFRS mandate is introduced. IPO underpricing literature tends to account for trends over time in

---

[34] Unbalanced cross-sectional regression is applied because the distribution of IPO data is not balanced across industries.
[35] The functional form of the model is linear, residuals are normally distributed, residual variance is constant, and observations are independent of each other.

underpricing because some markets tend to experience high periods of underpricing while others witness steady or volatile periods (Boulton et al. 2011; Shi et al. 2013; Hong et al. 2014). A trend in reduced IPO underpricing over time is frequently observed in emerging countries. For example, between 1987 and 1995, Su and Fleisher (1999) document average underpricing in China at 948.6%. In contrast, between 1994 and 1999, Su (2004) again document a considerable drop in average underpricing in China to 124.2%. Similarly, In Brazil, Leal (2005) and Saito and Maciel (2006) document a great reduction in underpricing from 74% to 6% between 1979 and 2006. For Africa, Hearn (2011) and Hearn (2014) detect a large fall in underpricing in four North African countries from 32.2% to 17.1% between 2000 and 2013. Thus, a similar reducing trend in IPO underpricing is expected in Saudi Arabia, suggesting that $\beta_1 Post_i$ is likely to provide a negative coefficient.

The $\beta_2 Treatment_i$ variable refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. It works as a group-specific effect in the DiD design (Slaughter 2001). The reason for including all bank and insurance IPO firms before and after the IFRS mandate period is to examine the difference in UP_i, IPO underpricing in these firms for the entire sector over the entire period compared to the IFRS group. This makes it possible to capture the level of underpricing for IPO firms only in banking and insurance compared to the remaining IPO firms in the 13 industries. For example, Boulanouar et al. (2016) show that although all IPO firms listed in all market sectors in Saudi Arabia exhibit high underpricing, in contrast, bank and insurance IPOs demonstrate substantial underpricing, averaging at around 455%. Therefore, $\beta_2 Treatment_i$ is expected to provide a coefficient with a positive sign indicating that being an IPO firm in the bank and insurance industries attracts large underpricing.

The $\beta_3 IFRS_i$ variable refers to the interaction term, Post*Treatment, which captures the change in underpricing for only bank and insurance firms post-IFRS mandate period from 2009 to 2016 but excluding 2008 to avoid any confounding effect as suggested by Hong *et al*. (2014). If the IFRS mandate sets out to increase accounting quality of the treatment group and thereby lend support to the prediction of Hypothesis 1, then $\beta_3 IFRS_i$ should be statistically negative. This approach facilitates accurate quantification of how much IFRS mandate contributes to enhancing the quality of accounting information of bank and insurance IPO firms and, in turn,

affects their perceived underpricing by IPO investors. Obtaining a negative and significant coefficient for $\beta_3 IFRS_i$ renders strong support for Hypothesis 1.

As exhibited in Equation (1), Dorsman et al. (2010), Shi et al. (2013) and Hong *et al.* (2014) are followed, by having a number of controlling firm- and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). Market-specific variable includes pre-IPO market volatility (PMV). Also, fixed effects (FE) variables are included, these being year effect (YE) and industry effect (IE). These variables are all secondary data sourced from DataStream database, Eikon database, the Tadawul (2017) website, and the GulfBase (2017) website. Any missing data is obtained manually from the IPO prospectus. Definition, relevance to literature, and expected coefficient sign for control variables are presented in Table 7.

Table 7. Definition, Relevance to Literature, and Expected Coefficient Sign of Control Variables

Variables	Expected Coefficient Signs
Underwriter Reputation Dummy (URD) is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero (Beatty & Ritter 1986; Shi et al. 2013). Hong et al. (2014) assert that the use of a reputable underwriter by IPO firms could reduce the *ex-ante* uncertainty about the firm's value, providing a certification signal to investors, in turn, mitigating underpricing. However, this negative relationship between reputable underwriters and IPO underpricing is exclusive for IPO issued before the 1990s and has changed to be positive for IPOs issued after the 1990s (Loughran & Ritter 2004; Shi et al. 2013). One reasonable interpretation of this change is offered by the changing issuer objective function hypothesis offered by Loughran and Ritter (2004). The authors argue that IPO issuers accept high underpricing by reputable underwriters in exchange for positive analysts' coverage for their firm's post-IPO stage. Following Shi et al. (2013), a positive relationship between underwriter reputation and IPO underpricing is expected.	**Positive**
Technology Firm Dummy (TFD) is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. Ljungqvist et al. (2003) discover that the degree of underpricing varies from industry to industry due to the presence of different levels of information asymmetry, where a higher degree of *ex-ante* uncertainty tends to be inherited in	**Positive**

high technology firms due to a valuation uncertainty problem. Thus, Boulton et al. (2010) are followed, to contend that IPOs in the technology sector[36] are expected to be underpriced more.

Pre-IPO Market Volatility (PMV) is measured by the standard deviation of local market return 15 days prior to the first trading date of an IPO firm. Derrien (2005) shows that pre-IPO market volatility becomes high in a bullish market compared to a bearish[37] one. The author finds that on average, IPO underpricing is low during bearish market periods and high in bullish ones. Therefore, a positive relationship is expected to emerge between pre-IPO market volatility and underpricing.

Positive

Offer Size (OS) indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPO shares. Beatty and Ritter (1986) use IPO proceedings to proxy for *ex-ante* uncertainty, where they find that large IPOs are normally offered by established firms, while small IPOs are offered by unknown firms offering large *ex-ante* uncertainty to investors. Consequently, Beatty and Ritter (1986) have been followed in assuming the presence of a negative relationship between the gross proceeds of IPO firms and underpricing.

Negative

Private Firm Dummy (PFD) equals one if a firm is a family-owned company; otherwise, it equals zero. Privatised IPOs often involve older firms and those well-known, but private firm IPOs tend to be young, small, and relatively unknown, thus offering large uncertainty to investors (Jones et al. 1999). This means that *ex-ante* uncertainty and its role in underpricing should be higher for private sector firm IPOs than for privatised IPOs.

Positive

Integer Offer Price Dummy (IOPD) equals one if the offer price is with an integer value; otherwise, it equals zero. According to Bradley et al. (2004), IOPD indicates a negotiation between the underwriter and issuer. This negotiation process happens because of a valuation uncertainty related to the true value of the company, implying that IPOs with an integer offer price experience higher *ex-ante* uncertainty leading to higher underpricing.

Positive

Offer Price (OP) is used in underpricing literature that reports a negative relationship between IPO firms' offer prices and the degree of underpricing, where IPOs with a high offer price tend to be less underpriced than those with a low offer price (Ibbotson & Jaffe 1975). Thus, a negative relationship is expected to exist between the offer price and IPO underpricing.

Negative

Elapsed Time (ET) indicates the length of time between the setting of the offering price and the first trading date. Su and Fleisher (1999) find that the greater the amount of elapsed time between the first trading day and IPO announcement day, the higher is the *ex-ante* uncertainty and the greater the underpricing. Thus, a positive relationship is expected to exist between elapsed time and IPO underpricing.

Positive

---

[36] Ljungqvist and Wilhelm (2002) have been followed to classify technology firms as businesses operating in biotech, pharmaceuticals, medical instruments, software and hardware development, communications technology, advanced electronics, and chemicals industries.

[37] Derrien (2005) asserts that bullish (bearish) market periods are denominated in the IPO literature as "hot" ("cold") market periods.

5.4. Data and Method for the Effect of IFRS Mandate on the Long-term Performance of IPO Firms

The dataset for this section is relatively similar to that used in Section 5.3 in relation to the data range, independent, and control variables while the dependent variable is different. There is only one difference made, concerning the addition of UP_i: IPO underpricing as an additional independent variable that captures the relationship between the initial underpricing level and aftermarket performance, following Alanazi and Al-Zoubi (2015). The total number of IPO firms is 102 listed companies in 15 industries between 2003 and 2017[38], where bank and insurance IPOs mandate IFRS while the remaining 13 sectors do not. To test Hypotheses 2-1 and 2-2, Equation (3) employs unbalanced cross-sectional regression, with the model having the following form:

$$
\begin{aligned}
BHAR_{i,t} ={}& \beta_{0i} + \beta_1\, Post_i + \beta_2\, Treatment_i + \beta_3\, IFRS_i + \beta_4\, IPO\ Underpricing\ (UP)_i \\
& + \beta_5\, Underwriter\ Reputation\ Dummy\ (URD)_i + \beta_6\, Technology\ Firm\ Dummy\ (TFD)_i \\
& + \beta_7\, Pre-IPO\ Market\ Volatility\ (PMV)_i + \beta_8\, Offer\ Size\ (OS)_i + \beta_9\, Integer\ Offer\ Price\ Dummy\ (IOPD)_i \\
& + \beta_{10}\, Private\ Firm\ Dummy\ (PFD)_i + \beta_{11}\, Offer\ Price\ (OP)_i + \beta_{12}\, Elapsed\ Time\ (ET)_i \\
& + \sum_{a=1}^{A} \beta_{13}\, Year\ Effect\ (YE)_i + \sum_{b=1}^{B} \beta_{14}\, Industry\ Effect\ (IE)_i + \varepsilon_i
\end{aligned}
\tag{3}
$$

In Equation (3), the dependent variable is the long-term performance of listed IPO firms, and it refers to the buy and hold excess returns $BHAR_{i,m}$ of stock i relative to benchmark m. IPO literature provides no agreement in relation to the ideal proxy for measuring the long-term performance of IPO firms (Alanazi & Al-Zoubi 2015; Zattoni et al. 2017). However, the authors argue that BHAR produces less measurement error compared to other measures such as cumulative abnormal return. Ritter (1991) and Alanazi and Al-Zoubi (2015) also employ a wealth-relative ratio to gauge the long-term performance of IPO firms, with this ratio employed

---

[38] The data range is extended to 2017 as the dependent variable measures the one-year return performance difference between the year 2003 and the year 2004 and so forth up to the one-year return performance difference between the year 2016 and 2017.

here as a robustness test for an alternative dependent variable proxy. In Equation (4), Zattoni et al. (2017) have been followed to calculate $BHAR_{i,t}$ as follows;

$$BHAR_{i,t} = [\![\prod_{t=1}^{\min(T)}(1+r_{it})-1)]\!] - [\![\prod_{t=1}^{\min(T)}(1+r_{mt})-1)]\!] , \text{ T=12 months} \tag{4}$$

Where $BHAR_{i,t}$ is the market-adjusted buy-and-hold return of firm i in event month t, r_{it} is the monthly raw return on firm i in event month t, and r_{mt} is the benchmark specific monthly raw returns of the market index designated as the Tadawul All Share Index. Following Ritter (1991) and Alanazi and Al-Zoubi (2015), the calculation of $BHAR_{i,t}$ begins with the closing price of an IPO firm on its first listing date and extends to its closing price 12 months post-listing, where a month equals 21 business days. Disclosure and IPO literature provide no consensus concerning the ideal length of time to proxy for long-term performance, as it ranges from a few weeks up to three years (Dorsman et al. 2010; Alanazi & Al-Zoubi 2015; AlShiab 2018; Kamaludin & Zakaria 2018). Due to the use of different time-windows to capture the aftermarket performance of IPO firms, this literature produces widely fragmented results. To overcome this, Zattoni et al. (2017) apply only a one-year window to capture the long-term performance of IPO firms because it allows sufficient time for all related IPO news to be incorporated into the secondary market. This thesis, thus, follows Zattoni et al. (2017) to apply a one-year window as its definition of long-term timeframe. This timeframe is likely to allow market participants in Saudi Arabia's stock market to observe and reflect on the IPO firm's accounting and financial announcements and performance. When $BHAR_{i,t}$ provides positive and significant values, then it means that IPO firms outperform their benchmark, Tadawul, in the 12 months window, while a negative and significant value indicates the opposite. The presence of an insignificant value of $BHAR_{i,t}$ indicates no performance difference between IPO firms and Tadawul.

As indicated in Equation (3), three main independent DiD variables, namely $\beta_1 Post_i$, $\beta_2 Treatment_i$, and $\beta_3 IFRS_i$ have been used to test the effect of IFRS mandate on the accounting quality of listed IPO firms in the long-run in Saudi Arabia. By doing this, the change in $BHAR_{i,t}$

pre- and post-IFRS mandate in 2008 has been measured. As defined previously, the $\beta_1 Post_i$ variable denotes the control group, including all firms in the post-mandating period from 2009 to 2016. This is because IFRS was only mandated for bank and insurance firms in the Saudi Arabian stock market in 2008. The $\beta_1 Post_i$ variable captures any possible changes in the 12-month, post-IPO listening. Given the evidence in the IPO literature that documents a positive relationship between initial IPO return and long-term performance, along with the observation of a reducing trend in initial return over time, it is expected that the variable $\beta_1 Post_i$ will produce a positive coefficient.

The $\beta_2 Treatment_i$ factor denotes all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2017. This variable captures the group-specific effect in the DiD design (Slaughter 2001). Stated differently, this variable allows the change in $BHAR_{i,t}$ to be observed for only bank and insurance IPO firms from 2003 to 2017 compared to the remaining IPO firms in the 13 industries. It is expected that the variable $\beta_2 Treatment_i$ to yield a negative coefficient, meaning that bank and insurance IPO firms are likely to underperform Tadawul in the 12-month window. This anticipation is made following Boulanouar et al. (2016) who find that bank and insurance IPO firms in Saudi Arabia experience large underpricing, averaging around 455%. Hence, IPO firms that suffer from large underpricing are likely to underperform in the long run.

In Equation (3), the $\beta_3 IFRS_i$ variable denotes to the interaction term, Post*Treatment, capturing the change in $BHAR_{i,t}$ for only bank and insurance firms after IFRS mandate period from 2009 to 2017. As stated previously, observations related to the year 2008 are excluded to avoid any confounding effect as proposed by Hong *et al*. (2014). If the IFRS mandate provides its promise to improve accounting quality of the treatment group, then $\beta_3 IFRS_i$ should be statistically positive. Attaining a positive and significant coefficient for $\beta_3 IFRS_i$ provides sound support to Hypothesis 2-1. To address Hypothesis 2-2, the coefficient $\beta_4 IPO\ Underpricing\ (UP)_i$ in Equation (3) should provide an answer to the prediction of this hypothesis. It is expected that $\beta_4 IPO\ Underpricing\ (UP)_i$ produces a negative and significant

coefficient. As discussed in the hypothesis development section, the fads theory forecasts that IPO firms that suffer from great underpricing possibly due to the overvaluation of shares by eager investors and analysts shall perform poorly in the long run. Firm- and market-specific variables are all the same as in Section 5.3 and as defined previously in Table 7.

5.5. Data and Method for the Joint Effect of IFRS Mandate and Transparency on the Underpricing of IPO Firms

The dataset used in this section is employed for the same selection criteria stated in Table 6, with one exception. Prior to 2005, formal institutional data for Saudi Arabia, which is now prepared by the World Economic Forum (2017), is not available. Hence, after applying the six-step selection method in Table 6, the total sample drops from 102 to 100 Saudi IPO firms listed in 15 different industries from January 2005 to December 2016. However, the same dependent, independent, and control variables are employed as in Section 5.3. In addition, this section includes three independent variables to capture the intertemporal changes in the transparency of Saudi Arabia, as shown below in Table 8. They include ethical behaviour of firms, the strength of auditing and reporting standards, and transparency of government policymaking. The reason for employing three time-variant transparency proxies is to avoid measurement error. Therefore, this thesis argues that if consistent results can be achieved using these three proxies, then the results render better assurance about the effect of transparency on the underpricing and long-term performance of IPO firms in Saudi Arabia (Boulton et al. 2010; Banerjee et al. 2011; Houqe et al. 2012b). Although the three employed transparency indicators have the purpose of measuring the overall status of intertemporal changes in governance, each one of them focuses on a specific aspect of the transparency level in Saudi Arabia.

Table 8. Definitions, Relevance to Literature, and Expected Coefficient Sign of Transparency Variables

Variables	Expected Coefficient Signs
Ethical Behaviour of Firms (EBF) is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. Entrepreneurship and ethics scholars, including Sethi (1994), Longenecker et al. (1989), Hannafey (2003), Howorth et al. (2004), Harris et al. (2009), Knill (2013) ,and Cumming et al. (2016) have documented the influence of corporate ethics on the information asymmetry problem. They infer ethics as the degree of trust or transparency existing between market participants, by which the more trustworthy or transparent a firm is, the more it is perceived by investors to be ethical, leading to mitigating the information asymmetry problem. Therefore, Habib and Ljungqvist (2001) and Ang and Brau (2002) views have been combined here to contend that the degree of perceived ethical behaviour of firms in Saudi Arabia is negatively associated with underpricing.	**Negative**
Strength of Auditing and Reporting Standards (SARS) is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. Healy and Palepu (2001), Holthausen and Watts (2001), and Alali and Foote (2012) argue for the presence of a negative association between reliable auditing and reporting standards and the information asymmetry problem. They contend that financial statements governed by sound reporting standards and certified by reliable auditors are regarded by investors as credible, in turn reducing investors' uncertainty and leading to better market value. Consistent with Habib and Ljungqvist (2001) and Hopp and Dreher (2013) understanding, it is expected that IPOs listed in Saudi Arabia when the strength of the auditing and reporting standards is weak on the listing year, then this IPO firm should experience higher investors' *ex-ante* uncertainty, in turn causing higher underpricing.	**Negative**
Transparency of Government Policymaking (TGP) is a time series index for the weight average ranking results of an opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. The influential impact of transparent government policymaking on the presence of the asymmetric information problem is documented in the literature (Gilligan & Krehbiel 1989; Zhao et al. 2003; Bénassy-Quéré et al. 2007; Cuillier & Piotrowski 2009; Relly & Sabharwal 2009; Jamaani & Roca 2015). These authors contend that when it becomes easy for a business or for a connected group of investors to obtain specific information, related to changes in government regulations and policies that may have an impact on their businesses before other affected parties, then lack of transparent government policymaking causes an asymmetric information problem. Thus, the views of Habib and Ljungqvist (2001), Howorth et al. (2004), and Jamaani and Roca (2015) have been combined here to contend that IPOs offered in Saudi Arabia, where the level of transparency of government policymaking is weak on the listing year, then this IPO firm suffers from greater investors' *ex-ante* uncertainty, in turn causing more investors' demand for underpricing.	**Negative**

For example, the first proxy, ethical behaviour of firms, measures the extent of corporate ethics of companies in Saudi Arabia, including ethical behaviour in interactions with public officials, politicians, and other businesses. Hence, this proxy gauges the overall transparency of the private

sector in Saudi Arabia. The second proxy, strength of auditing and reporting standards, measures the quality of financial auditing and reporting standards in Saudi Arabia. Therefore, this proxy measures the overall quality of the accounting profession, which constitutes an important part of the formal institutional quality in Saudi Arabia. The third and final proxy, transparency of government policymaking, measures the extent to which it becomes easy for some connected business bodies to acquire private information about changes in government policies and regulations that influence their business activities. Thus, this proxy gauges the overall institutional quality of the Saudi Arabian government.

These variables are time-variant proxies covering the period 2005 to 2016. As above-mentioned, this is because the formal institutional quality data before 2005 is not available for Saudi Arabia. The data related to these transparency proxies are publicly available, of a secondary nature, and are already sourced from the Global Competitiveness Report published by the World Economic Forum (2017). The Global Competitiveness Network has published reports measuring country competitiveness since 1979, reaching global coverage to 148 economies by 2017. The data used in the report are sourced from leading international sources as well as from the World Economic Forum's annual Executive Opinion Survey, a unique source that captures the perspectives of more than 13,000 business leaders on topics related to national competitiveness (World Economic Forum 2017).

This section employs similar DiD models as done in Section 5.3 in order to test Hypothesis 3-1, Hypothesis 3-2, and Hypothesis 3-3, where unbalanced cross-sectional regression has also been utilised, with the model taking the following form as shown in Equation (5):

$$
\begin{aligned}
UP_i ={}& \beta_{0i} + \beta_1\,Post_i + \beta_2\,Treatment_i + \beta_3\,IFRS_i + \beta_4\,Transparency_i + \beta_5\,Transparency_i * IFRS_i \\
& + \beta_6\,Underwriter\ Reputation\ Dummy\ (URD)_i + \beta_7\,Technology\ Firm\ Dummy\ (TFD)_i \\
& + \beta_8\,Pre-IPO\ Market\ Volatility\ (PMV)_i + \beta_9\,Offer\ Size\ (OS)_i + \beta_{10}\,Integer\ Offer\ Price\ Dummy\ (IOPD)_i \\
& + \beta_{11}\,Private\ Firm\ Dummy\ (PFD)_i + \beta_{12}\,OfferPrice\ (OP)_i + \beta_{13}\,Elapsed\ Time\ (ET)_i \\
& + \sum_{a=1}^{A} \beta_{14}\,Year\ Effect\ (YE)_i + \sum_{b=1}^{B} \beta_{15}\,Industry\ Effect\ (IE)_i + \varepsilon_i
\end{aligned}
\tag{5}
$$

Equation (5) is an extension of Equation (1) where Equation 5 differs from Equation 1 by incorporating the variables $\beta_4\,Transparency_i$ and $\beta_5\,Transparency_i * IFRS_i$. As projected in the hypothesis development section and defined above in Table 8, both coefficients are expected to

produce negative and significant coefficients. The interaction term $\beta_5 Transparency_i * IFRS_i$ captures the joint effect of the IFRS mandate and intertemporal changes in transparency in Saudi Arabia. Hence, the coefficient of $\beta_3 IFRS_i$ should provide an answer to Hypothesis 3-1 that aims to examine the existence of a negative relationship between IFRS mandate and IPO underpricing when controlling for intertemporal changes in transparency in Saudi Arabia. Likewise, the coefficient of $\beta_4 Transparency_i$ ought to render an answer to Hypothesis 3-2 that aims to test the presence of a negative relationship between intertemporal changes in transparency and IPO underpricing when controlling for IFRS mandate in Saudi Arabia. Finally, the third important coefficient, $\beta_5 Transparency_i * IFRS_i$, addresses Hypothesis 3-3 where the goal is to test the possibility of a joint effect between IFRS mandate and intertemporal changes in transparency having a negative relationship with IPO underpricing in Saudi Arabia. Other coefficients exhibited in Equation (5) are defined previously in Table 7, while the outcome variable, UP_i, IPO underpricing is also defined in Equation (2) in Section 5.3.

5.6. Data and Method for the Joint Effect of IFRS Mandate and Transparency on the Long-term Performance of IPO Firms

The dataset employed for this section applies similar selection criteria as stated previously in Table 6 in Section 5.4. with one difference. World Economic Forum (2017) does not provide data related to the formal institutional quality for Saudi Arabia before 2005. Therefore, the total sample reduces from 102 to 100 Saudi IPO firms listed in 15 different industries from January 2005 to December 2017[39] after applying the six-step selection method in Table 6. In this section, the empirical testing of Section 5.4 is extended by controlling for time-variant changes in the formal institutional quality in Saudi Arabia, and the data range. The dependent, independent, and control variables are similar to those used in Section 5.4, and EBF, SARS and TGP are the three independent variables

---

[39] The data range is extended to 2017 as the dependent variable measures the one-year return performance difference between the year 2003 and the year 2004 and so forth up to the one-year return performance difference between the year 2016 and 2017.

that capture the intertemporal changes in the transparency of Saudi Arabia. To provide answers to Hypothesis 4-1, Hypothesis 4-2, and Hypothesis 4-3, unbalanced cross-sectional regression has been employed in this section, with the model encapsulating the following form:

$$
\begin{aligned}
BHAR_{i,t} = {} & \beta_{0i} + \beta_1\, Post_i + \beta_2\, Treatment_i + \beta_3\, IFRS_i + \beta_4\, Transparency_i + \beta_5\, Transparency_i * IFRS_i \\
& + \beta_6\, IPO\ Underpricing\ (UP)_i + \beta_7\, Underwriter\ Reputation\ Dummy\ (URD)_i + \beta_8\, Technology\ Firm\ Dummy\ (TFD)_i \\
& + \beta_9\, Pre-IPO\ Market\ Volatility\ (PMV)_i + \beta_{10}\, Offer\ Size\ (OS)_i + \beta_{11}\, Integer\ Offer\ Price\ Dummy\ (IOPD)_i \\
& + \beta_{12}\, Private\ Firm\ Dummy\ (PFD)_i + \beta_{13}\, Offer\ Price\ (OP)_i + \beta_{14}\, Elapsed\ Time\ (ET)_i \\
& + \sum_{a=1}^{A} \beta_{15}\, Year\ Effect\ (YE)_i + \sum_{b=1}^{B} \beta_{16}\, Industry\ Effect\ (IE)_i + \varepsilon_i
\end{aligned}
\tag{6}
$$

Equation (6) is an extension of Equation (3). The Equation 6 differs from the Equation 3 in including the variables $\beta_4\, Transparency_i$ and $\beta_5\, Transparency_i * IFRS_i$. Following the proposed expectation in the hypothesis development section, the coefficient $\beta_3\, IFRS_i$ should accommodate Hypothesis 4-1 which tests the positive relationship between IFRS mandate and the long-term performance of IPO firms when controlling for intertemporal changes in transparency in Saudi Arabia. Similarly, the coefficient $\beta_4\, Transparency_i$ addresses Hypothesis 4-2 where the positive relationship between intertemporal changes in transparency is examined, as well as the long-term performance of IPO firms when controlling for IFRS mandate in Saudi Arabia. Lastly, the third key coefficient, $\beta_5\, Transparency_i * IFRS_i$, addresses Hypothesis 4-3 where the purpose is to investigate the likelihood of a joint effect between IFRS mandate and intertemporal changes in transparency having a positive relationship with the long-term performance of IPO firms in Saudi Arabia. The remaining coefficients displayed in Equation (6) are defined earlier in Tables 7 and 8, while the dependent variable, long-term performance ($BHAR_{i,t}$), is also defined in Equation (4) in Section 5.4.

5.7.   Robustness Tests

In order to check the consistency and sensitivity of the results, a series of robustness tests are performed in order to assure that the attained conclusions from empirical testing are not an artefact of model misspecification. Therefore, a number of important econometric issues have been controlled. Hence, the results' consistency are tested for possible influence caused by: ignoring the synthetic clustering in the DiD model; possible outliers; testing for the endogeneity and weak instrument in the OLS models; bootstrap estimation to account for the unbalanced distribution of IPO data the effect of small sample size; and the effect of omitting some economic and stock market variables related to the IPO market. Also included here is the employment of an alternative outcome variable measure for gauging the aftermarket performance of IPO firms.

5.7.1. Dealing with the Synthetic Clustering in the DiD Design

Bertrand et al. (2004) argue that employing the DiD design can create synthetic clustering, which makes residuals correlate within the clustered group, treatment versus the control group in this thesis. This might lead to biased standard errors and hence, biased statistical results. Isshaq and Faff (2016) claim that failure to empirically control for the effect of clustering in standard errors when they occur over policy intervention (IFRS mandate), years or industries can lead to overstating T-statistic values. Thus, Cameron and Miller (2015) argue that one way to overcome this serious econometric problem is by employing cluster-robust standard errors in DiD settings. Hence, to account for the probability of a clustering effect in the employed IPO data, a number of DiD models with cluster-robust standard errors estimation have been employed within IFRS versus non-IFRS groups, years, and industries, following Cameron and Miller (2015). These models are an extended test for the four empirical sections outlined above. This cluster-robust standard errors procedure is advanced and integrated into Stata 15 by Rogers (1994), who developed a comparison of three models using standard errors obtained from the variance estimators in OLS models including: default OLS model un-adjusted for heteroscedasticity; un-clustered OLS model adjusted for heteroscedasticity; and OLS model adjusted for heteroscedasticity and cluster standard errors.

5.7.2. Excluding Outliers

In statistical modelling, outliers arise when the distance between some observations to the rest of the observations is large. This results in producing distorted results and flawed conclusions (Barnett & Lewis 1994). Shi et al. (2013) and Song et al. (2014) emphasise that IPO data is likely to contain outlier observations. Thus, the consistency of the attained results after excluding outlier IPO observations have been re-tested here. This is done by adopting an outlier detection procedure to capture the existence of such observations as proposed by Rousseeuw and Leroy (2005). This method eliminates observations that have values of a Cook score bigger than an absolute value of 3.

5.7.3. Testing for Endogeneity and Weak Instruments

The existence of significant correlations between the residuals of a model and one of the explanatory variables can cause an endogeneity problem, as illustrated in Figure 14 (Maddala & Lahiri 1992).

Figure 14. Illustration of the Endogeneity Problem in OLS Modelling
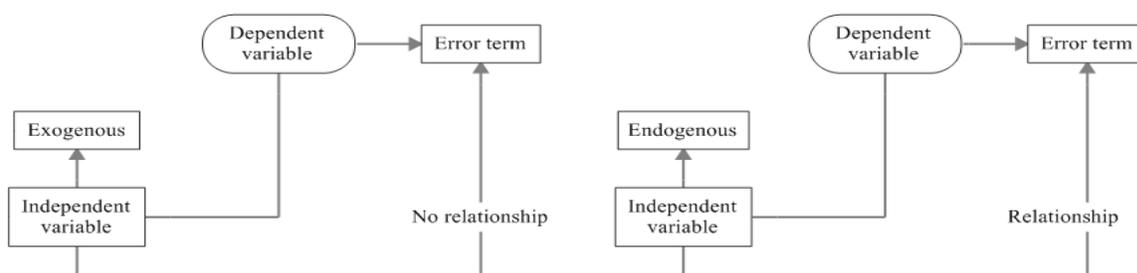
This figure is designed by the author of this thesis

Jones and Swaleheen (2010) argue that the existence of an endogenous variable is likely to bias the results of a model and lead to biased conclusions. IPO underpricing literature, including Habib and Ljungqvist (2001), asserts that the issuers of IPO firms are disadvantaged financially from

selling part of their firms at a discount. At the same time, those issuers have the unfettered choice to employ either reputable or non-reputable underwriters, in which case prestigious underwriters use their market reputation as a certification signal to reduce the *ex-ante* uncertainty of investors, leading to lower underpricing. Consequently, Habib and Ljungqvist (2001) argue that the decision to choose between either reputable or non-reputable underwriters is likely to be endogenously determined by the issuer, resulting in biased OLS coefficients. This specifies the likely existence of endogeneity between reputable underwriting banks and the error term of the IPO underpricing model. Moreover, previous research also discovers an association between the long-term performance of IPO firms and the quality of underwriters, finding that IPOs underwritten by non-reputable underwriters tend to underperform in the long-run (Dong et al. 2011; Paleari et al. 2014). This also indicates the possible presence of endogeneity between prestigious underwriters and the error term of the BHAR model.

Moreover, Glennerster and Shin (2008) examine the potential endogeneity link between the level of transparency measured by the quality and frequency of disclosed macroeconomic information to the public and the reduction of borrowing costs in sovereign bond markets. The authors document a statistically significant decline in the cost of borrowing when bond issuers decide endogenously to become more transparent. This implies that IPO issuers may endogenously decide to list their IPO firms when they observe the level of transparency in Saudi Arabia is high. IPO transparency literature, including Engelen and Van Essen (2010) and Judge et al. (2015), documents a negative relationship between transparency and IPO underpricing. Hence, Saudi IPO issuers may aim to reduce the underpricing of their IPO firms by endogenously choosing to list their firms when the observed level of transparency in Saudi Arabia is increasing.

The two-stage least squares (2SLS) technique was employed to control for these potential underwriter and transparency endogeneity problems, following Habib and Ljungqvist (2001), Glennerster and Shin (2008), and Paleari et al. (2014). This thesis employs Hausman (1978) Endogeneity Test to confirm the existence of endogeneity. The test examines the null hypothesis that underwriter reputation and IPO underpricing variables, underwriter reputation and long-term performance variables, and underwriter reputation and transparency variables are exogenous. This correction method makes it possible to check and correct this endogeneity problem using a robust instrumental variable. Hausman (1978) states that a robust instrument should be sufficiently correlated with the endogenous variable but must not be correlated with the error term of the model to successfully correct for the endogeneity. Consequently, this thesis uses Cragg and Donald (1993)

113

Weak Instruments Test to inspect the null hypothesis that the utilised instrument is, in fact, weak. A discussion of each employed instrument is provided in the results section related to the robustness testing.

5.7.4. Bootstrap Estimation to Account for Unbalanced Distribution of IPO Data

Efron and Tibshirani (1986) argue that conclusions drawn by employing asymptotic methods can differ significantly from the results provided by bootstrapping estimations. This is due to the existence of problems related to outliers, unbalanced distribution of data, and small sample size (Harris & Judge 1998; Dupret & Koda 2001). Hence, Efron and Tibshirani (1986) and Harris and Judge (1998) assert that bootstrapping estimation can provide a more accurate estimation of standard errors. The sample of this thesis comprises a relatively small sample size of 102 IPO firms that are unequally distributed over 15 industries. For this reason, the consistency of the results has been retested using additional DiD models with bootstrapping estimations.

5.7.5. Additional Economic, Stock Market Control Variables, and Alternative Outcome Variable Measure

The economy and stock market of Saudi Arabia have experienced a number of changes, including market economy-oriented reforms that coincide with the implementation of IFRS. These events include the effect of the GCC stock market crisis in 2006, the GFC in 2008, the introduction of a price cap for newly listed IPOs in 2013, rapid stock market growth from 2003 to 2016, and development in financing through the local equity market in Saudi Arabia over the last decade. For example, since the inception of Tadawul, the total market capitalisation of all listed firms climbed astonishingly from $73 billion in 2001 to $442 billion in 2015 (Tadawul 2015). During this period, Tadawul reached its peak in 2005 with a total market capitalisation of $650 billion before it dropped to $327 billion because of the GCC financial crisis in 2006. Tadawul quickly recovered from this crisis, and its market capitalisation grew to $519 billion in 2007 before it was hit by the GFC in 2008.

Tadawul lost more than half of its market capitalisation value. From 2008, Tadawul continued to steadily grow to reach a total market capitalisation of approximately $496 billion in 2018 (The World Bank 2019).

There has been a slight improvement in the index of financing through local equity market (FTLEM) in Saudi Arabia post-IFRS mandate. For example, according to World Economic Forum (2015), after mandating IFRS in 2008 the ability of companies in Saudi Arabia to raise money by issuing shares and/or bonds in Tadawul increased by 10% from 2009 to 2011. This suggests a slight improvement in the country's stock market. Moreover, as a reflection of the 2006 GCC stock market crash, CMA introduces a new regulatory framework to restrict daily price oscillation at 10% for all trading stocks with an exception to the first trading day of IPO shares (Al Kadi 2014). Later in 2013, the CMA imposes a "price cap" for a first-day price movement limit of 10% of all IPO shares (Reuters 2013). This regulatory move by the CMA aims to stabilise the post-market volatility of IPO stocks, the aim being to protect retail investors from large losses caused by too much volatility. The regulatory change alters the dynamics of Saudi IPO returns since 2013. This implies that IPO returns are likely to need more time to reach their peak compared to IPOs listed before 2013. In this way, the high level of underpricing on the first day is likely to be eliminated, and prices might require more time to reach fair value (Reuters 2013). Hence, those economic and stock market changes that occur in Saudi Arabia make it challenging to attribute the large reduction in IPO underpricing and the long-term performance difference for bank and insurance IPO firms to IFRS mandate only.

Also, the impact cannot be discounted of those above-mentioned specific changes in the economy and stock market of Saudi Arabia in affecting the large level of underpricing and long-term performance difference observed there (Al Kadi 2014). For example, upon the introduction of IFRS in the EU region in 2005, a number of harmonisation efforts took place to enhance the investment environment for many European countries (Chiapello & Medjad 2009; Brüggemann et al. 2013). In this regard, Christensen et al. (2013) examines the effect of IFRS mandate on liquidity improvement in 24 EU countries from 2001 to 2009, concluding that IFRS only provides liquidity improvement for five EU countries that undertook large economic and stock market reforms. Therefore, to control for those economic developments and stock market events in Saudi Arabia during the adoption of IFRS, the empirical tests here have been extended by including five macroeconomic and stock market variables to capture those effects. This includes capturing the effect of the two major market events including the GCC and GFC crises as well as controlling for the rapid growth of the size of the stock

market, the improvement of financing through local equity market, and the effect of the price cap reform when examining the economic benefits of IFRS mandate on the underpricing and aftermarket performance of IPO firms in Saudi Arabia. In addition, the Wealth Relatives (WR) ratio is employed in this thesis as an alternative dependent variable measure to capture the long-term performance of IPO firms in Saudi Arabia. Following the IPO literature WR is employed since this proxy is frequently used as a supplement to the BHAR measure in order to examine the results' sensitivity (Ritter 1991; Alanazi & Al-Zoubi 2015; Dang & Jolly 2017). The WR is defined as the adjusted return from all IPOs within 12 months of listing, divided by the adjusted return from the Tadawul "benchmark" over the same period. The WR ratio is interpreted as a value that is larger than one, meaning that an IPO firm outperforms Tadawul, while a WR value with less than one indicates that an IPO firm underperforms Tadawul (Alanazi & Al-Zoubi 2015).

5.8. Conclusion

In this chapter, the thematic methods applied in this thesis to execute its empirical investigation are presented. The employed scientific research design is described, and this resulted in adopting an objectivistic ontological paradigm, positivist epistemological position, deductive research approach, and quantitative research strategy. The required research data and method to address the nine research hypotheses related to the autonomous four questions are explained. In Sections 5.3 and 5.6 this thesis employed a DiD research design to examine the impact of IFRS mandate on accounting quality proxy by measuring the change in underpricing and long-term performance of Saudi IPO firms pre-and post-IFRS mandate in 2008. The DiD research design is chosen to replicate an experimental research method which employs observational study data to test the influence of treatment (mandating IFRS) on a treatment group (IPO firms who mandate IFRS) compared to a control group (IPO firms who do not mandate IFRS). By embracing this design, an analytical model to capture the influence of treatment on the dependent variable (e.g. underpricing and aftermarket performance of IPO firms) is developed and then compared to the average variation in the outcome variable for the treatment group with the average variation for the control group.

Following the proposed sample selection criteria used in this research, the total sample comprises 102 Saudi IPO firms listed in 15 different industries from January 2003 to December 2017. This thesis also uses a DiD research design to investigate the joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing and long-term performance of Saudi IPO firms before and after IFRS mandate in 2008. Because of data limitations related to the availability of formal institutional quality data for Saudi Arabia prior to 2005, the total sample for these subsequent two sections marginally drops from 102 to 100 Saudi IPO firms listed in 15 different industries from January 2005 to December 2016. Across the four sections, this thesis employs unbalanced cross-sectional regression estimation to accommodate the nature of the research enquiry and data. Apart from the three elements of the DiD design, this thesis employs eight controlling firm- and market-specific factors in order to derive reliable outcomes.

The outcome variable to capture the underpricing of IPO firms is a percentage return of the difference between the offer prices to the first closing price on the first trading day of the IPO firm. In contrast, the outcome variable to measure the long-term performance is the market-adjusted buy-and-hold return for the first 12 months post-listing. These variables are obtained from secondary data sources. In addition, the three time-variant formal institutional quality proxies EBF, SARS and TGP were included. These factors are used to capture changes in transparency from 2005 to 2016, where they are all publicly available. Finally, in this chapter, there is a discussion of the robustness tests to check the consistency of the results after accounting for possible synthetic clustering problem in the DiD design, outliers, endogeneity in the OLS estimation, small and unbalanced sample size, and other specific changes in the economy and stock market of Saudi Arabia.

Chapter Six

Results and Discussion

6.1. Introduction

In this chapter, the results and discussion for nine research hypotheses that are developed to answer four research questions are provided. This is in relation to the impact of IFRS mandate on accounting quality of IPO firms on two stock market phenomena, i.e. the perceived underpricing on the first listing day and post-listing performance difference in the long-term. The four research questions are interlinked because the empirical results for the first research question are further extended to capture three country-level transparency aspects in the third research question where the primary market is the focus. Likewise, the results related to the second research question are also extended further to account for three formal institutional quality characteristics when reporting the results for the fourth research question in the secondary market. The chapter is divided into four sections devoted to each of the four research questions.

Section 6.2 reports the results and discussion regarding the impact of IFRS mandate on the underpricing of IPO firms in the primary market. In this opening section, the first research hypothesis concerning the negative relationship between IFRS mandate and IPO underpricing in Saudi Arabia is tested. Successful results are likely to lead to providing a conclusive answer to the first research question that addresses the following: What is the effect of IFRS mandate on the underpricing of IPO firms in Saudi Arabia? In order to carry out this empirical testing, this section is further divided into three sub-sections. Sub-section 6.2.1 presents a range of descriptive statistics for the employed outcome and explanatory variables followed by a presentation of both yearly and industry distributions of the outcome variable. Sub-section 6.2.2 reports the results and discussion for the mean equality tests followed by multiple regression results. To ensure the reliability and trustworthiness of the attained conclusion about the results related to the first research question, sub-section 6.2.3 provides a range of robustness tests. These include capturing the synthetic clustering in the DiD model and IPO data; excluding of outliers; testing for the endogeneity in the OLS models; checking

bootstrap estimation to account for the unbalanced distribution of IPO data; and including additional control variables.

Section 6.3 is dedicated to presenting the results and discussion for the effect of IFRS mandate on the long-term performance of IPO firms in the secondary market. Here, two hypotheses are addressed where Hypothesis 2-1 examines the positive relationship between IFRS mandate and the long-term performance of IPO firms in Saudi Arabia. Then Hypothesis 2-2 studies the negative relationship between IPO underpricing and the long-term performance of IPO firms in Saudi Arabia after controlling for IFRS mandate. Obtaining a positive result for the second hypothesis helps the author to answer the second research question that investigates the following issue: What is the effect of IFRS mandate on the long-term performance of IPO firms in Saudi Arabia? This section is further organised into three sub-sections; 6.3.1 outlines a variety of descriptive statistics, while sub-section 6.3.2 presents the results and discussion for the mean equality tests, followed by a presentation of the results and discussion for the regression analysis. Finally, a series of robustness tests is provided in sub-section 6.3.4 to ensure the reliability of the attained results.

The fourth part of this chapter, Section 6.4, is devoted to the joint effects of IFRS mandate and time-variant changes in transparency on the underpricing of IPO firms. The objective of this section is to provide the results for three hypotheses. Hypothesis 3-1 examines the negative relationship between IFRS mandate and IPO underpricing when controlling for intertemporal changes in transparency in Saudi Arabia. Hypothesis 3-2 aims to capture the negative relationship between intertemporal changes in transparency and IPO underpricing when controlling for IFRS mandate in Saudi Arabia. Hypothesis 3-3 is introduced to test if a joint effect between IFRS mandate and intertemporal changes in transparency has a negative relationship with IPO underpricing in Saudi Arabia.

Testing these hypotheses will produce a positive answer to the third research question: Is there a joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia? A presentation of multiple descriptive statistics is offered in Section 6.4.1, including summary statistics for firm-, market-, and -formal institutional quality variables, IPO underpricing by year, and IPO underpricing by industry. Sections 6.4.2 reports the results and discussion for the mean equality tests. This incorporates a presentation of the results related to the mean equality tests of unequal variances between mandatory adopter, treatment group, (banks and insurance IPO firms) and

119

non-mandatory adopter, control group, (all IPO firms excluding banks and insurance) for pre- and post-IFRS mandate periods. It also documents the results associated with the means equality tests of unequal variances for the three formal institutional quality proxies for pre- and post-IFRS mandate periods. This section also includes a number of DiD OLS models to examine the research hypotheses, followed by the presentation of a battery of sensitivity tests in Section 6.4.3.

Presentation of the final part of the results and discussion appear in Section 6.5 to examine the joint effects of IFRS mandate and transparency on the long-term performance of IPO firms. The results of the three hypotheses are shown here. The first hypothesis, Hypothesis 4-1, investigates the positive relationship between IFRS mandate and the long-term performance of IPO firms when controlling for intertemporal changes in transparency in Saudi Arabia. The second hypothesis, Hypothesis 4-2, focuses on testing the positive relationship between intertemporal changes in transparency and the long-term performance of IPO firms when controlling for IFRS mandate in Saudi Arabia. The third and last hypothesis, Hypothesis 4-3, concentrates on examining if a joint effect between IFRS mandate and intertemporal changes in transparency has a positive relationship with the long-term performance of IPO firms in Saudi Arabia. Achieving successful answers helps the author to address the last research question of this thesis that seeks to answer the following query: Is there a joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia?

A similar testing structure to prior empirical sections is maintained in Section 6.5.1. Offered here is a presentation of numerous descriptive statistical analyses for the employed dependent and independent variables, followed by year and industry analysis of the outcome variable. The results and discussion for the mean equality tests and multiple regression analysis are reported in Section 6.5.2. A number of sensitivity tests are employed in Section 6.5.3 to provide confidence and assurance in the results. Finally, the conclusion of this chapter is provided in Section 6.6.

6.2. The Impact of IFRS Mandate on the Underpricing of IPO Firms in the Primary Market

6.2.1. Descriptive Statistics

Table 9 presents the descriptive statistics showing the mean and median of IPO underpricing of 102 listed IPO firms from 2003 to 2016 being 213% and 77%, respectively. The maximum record of underpricing is 1400% while the minimum record of underpricing is -18%, indicating that some IPOs are extremely underpriced while others are overpriced. The deviation of underpricing from the mean of Saudi Arabian IPOs is 309%. Alanazi and Al-Zoubi (2015) also report similar statistical results for GCC IPO firms, including Saudi Arabian IPO firms between 2003 and 2010. The authors find average underpricing of 227% while they report maximum, minimum and standard deviation 1768%, -37%, and 298%, respectively. The table also shows that almost 50% (Post) of Saudi Arabian IPOs are listed post-mandating IFRS in 2008, in which 15% (IFRS) of all listed firms mandated IFRS. The treatment group that includes banks and insurance IPO firms pre- and post-IFRS mandate from 2003 to 2016 represents 35% of all listed IPOs. The table shows that amongst 102 listed IPOs, 71% and 11% of them are underwritten by reputable underwriters and are classified as technology companies, respectively. Fifteen days prior to the listing of an IPO firm, the average standard deviation of Tadawul shows the volatility of 2% while the highest recorded volatility is 8%. The average and median offer size of Saudi Arabian IPOs are $263 and $87.4 million, respectively, while the largest IPO size recorded is $3.6 billion for the National Commercial Bank in 2014. Consistent with the results of Table 9, Boulanouar et al. (2016) also find average offer size for Saudi Arabian IPO firms that went public from 2007 to 2013 is $250 million.

According to Table 9, most Saudi Arabian IPOs accounting for 92% and 99% are private sector firms and have an integer offer price, respectively. Having high percentages for IPOs firms with an integer offer price experience imply that higher ex-ante uncertainty leading to higher underpricing. Table 9 shows that the average offer price of Saudi IPOs is $10.23, with a maximum and minimum recorded offer price of $136.5 and $2.29, respectively. The average time needed for a Saudi Arabian IPO to be listed from its announcement day is 113 days. For example, Saudi Integrated

Telecom Company represents the longest listing time in that it took 1114 days before the company began trading.

Table 9. Descriptive Statistics

This table provides summary statistics for firm- and market-specific variables for 102 IPO firms from 15 industries listed from 2003 to 2016. Underpricing (UP) is the dependent variable and calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm- and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm.

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	N
UP	2.13	0.77	14	-0.18	3.09	102
Post	0.50	0	1	0	0.50	102
Treatment	0.35	0	1	0	0.48	102
IFRS	0.15	0	1	0	0.36	102
URD	0.71	1	1	0	0.46	102
TFD	0.11	0	1	0	0.31	102
OS	$263.05	$87.40	$3600	$7.10	519.33	102
IOPD	0.99	1	1	0	0.10	102
PFD	0.92	1	1	0	0.27	102
OP	$10.23	$4.00	$136.53	$2.29	16.69	102
ET	113	48	1114	3	223	102
PMV	0.02	0.01	0.08	0	0.01	102

Table 10 summarises the average of IPO underpricing and sample distribution by year. It can be seen in the table that the highest recorded average underpricing of 434% and 23 IPO listings occurred in 2007. This may indicate the existence of a year clustering effect in the Saudi IPO market. The lowest average underpricing of 4% is recorded in 2016 while the fewest IPO listings are recorded in 2003, 2004, and 2016. The table also indicates the overall trend of underpricing experiences as a volatile pattern decreasing over time.

Table 10. Average IPO Underpricing and Sample Distribution by Year

Year	Average Underpricing	Number of IPOs
2003	0.50	1
2004	5.60	1
2005	4.26	4
2006	1.89	11
2007	4.34	23
2008	1.53	14
2009	2.29	11
2010	0.95	10
2011	0.24	5
2012	0.77	8
2013	1.04	4
2014	0.59	6
2015	0.60	3
2016	0.04	1

Table 11 shows the average of IPO underpricing and sample distribution by industry. According to the table, the commercial bank and insurance IPO firms experience high underpricing with an underpricing average of 498% and 414%, respectively. Consistent with the results of Table 11, Boulanouar et al. (2016) also find that average underpricing for 33 insurance IPO firms went public between 2007 and 2013 is 455%. Construction IPO firms demonstrate low underpricing when they are listed as they show average underpricing of 16%. The table also reveals that in 15 industries operating in Saudi Arabia, insurance and manufacturing have the largest number of IPO firms. Collectively, insurance and manufacturing industries have 66 listed IPO firms representing more than half of the listing in Saudi Arabia from 2003 to 2016, which may indicate the existence of an industry clustering effect.

Table 11. Average IPO Underpricing and Sample Distribution by Industry

Industries	Average Underpricing	Number of IPOs
Telephone Communications	0.51	3
Radio/TV/Telecom	2.03	3
Commercial Bank	4.98	3
Insurance	4.14	33
Manufacturing	1.15	33
Real Estate	0.75	6
Retail	0.55	5
Wholesale	0.48	3
Other Finance	0.32	1
Other Services	2.23	1
Transportation	1.45	3
Pers/Bus/Rep Svc	0.17	1
Construction	0.16	2
Healthcare	0.85	3
Restaurant/Hotel	0.46	2

6.2.2. Results and Discussion

6.2.2.1. Mean Equality Test

The results of the T-statistics test of the means equality test of unequal variances between mandatory adopter, treatment group (banks and insurance IPO firms) and non-mandatory adopter, control group (all IPO firms excluding banks and insurance) for pre- and post-IFRS mandate periods are reported in this section. Table 12 shows that the mean underpricing for the treatment group prior to mandating IFRS are 635% for 16 bank and insurance IPOs from 2003 to 2007[40], respectively. In contrast, the mean underpricing of the control group pre-IFRS mandate is considerably low. The difference in means between the two groups is 460% at 1% statistical significance. This outcome indicates that the average underpricing of bank and insurance IPOs is

---

[40] Observations from 2008 are excluded to remove the potential confounding effects in the transition year following Hong et al. (2014).

almost four times higher than the average underpricing of other IPO firms in the Saudi Arabian market prior to mandating IFRS.

The evidence provided in Table 12 is similar to the evidence found by Mayes and Alqahtani (2015) and Boulanouar et al. (2016), indicating that bank and insurance industries in the Saudi Arabian stock market suffer from great underpricing compared to other industries. That is, if mandating the application of IFRS creates better disclosure quality in the financial prospectuses of bank and insurance IPO firms, then this underpricing gap should be lower following the IFRS mandate's introduction. Furthermore, the mean underpricing between the bank and insurance IPO firms pre- and post-mandate periods should be lower and statistically significant, making it possible to claim the expected certifying impact of IFRS mandate on IPO underpricing is effective. Therefore, this evidence does lend support to Hypothesis 1 and confirms the negative relationship between IFRS mandating and IPO underpricing in Saudi Arabia. This also implies that IFRS works as a certification tool and delivers better information quality for the Saudi Arabian bank and insurance IPO firms, subsequently reducing the *ex-ante* uncertainty amongst IPO investors and leading to less underpricing.

Table 12. Means Equality Test of Unequal Variances

This table provides a means equality test of unequal variances for IPO underpricing for 102 IPO firms from 15 industries listed from 2003 to 2016. Mandatory adopter refers to the treatment group (banks and insurance IPO firms), and non-mandatory adopter refers to the control group (all IPO firms excluding banks and insurance). Pre-IFRS mandate period goes from 2003 to 2007 while post-IFRS mandate period goes from 2009 to 2016. T-statistics are at *** p<0.01, ** p<0.05, * p<0.1.

	Pre-IFRS		Post-IFRS		Difference in Means	T-statistic Test
	Mean	N	Mean	N		
Mandatory Adopters	6.35	16	2.38	15	-3.97	-3.2***
Non-mandatory Adopters	1.76	24	0.48	33	-1.28	-2.56***
Difference in Means	4.60		1.90			
T-statistic Test	4.19***		4.21***			

Following the introduction of IFRS mandate in 2008, Table 12 shows that the mean underpricing of mandatory adopters is 238%, while the mean underpricing of non-mandatory adopters is 48%. The difference in means between the two groups is 190%, and it is statistically significant at 1%. Although this large difference may indicate that mandating IFRS has not provided the expected economic benefits to the mandatory adopting IPO firms, comparing the change in the difference between the means amongst the mandatory and non-mandatory adopters before and after IFRS reveals a different picture. For example, mandating IFRS can be viewed as the main contributor to reducing the difference in means between mandatory and non-mandatory adopters by almost 270% (calculated as 460% - 190% =270%) compared to the pre-IFRS stage.

To make a robust comparison of the impact of IFRS on IPO underpricing in the Saudi Arabian IPOs, Table 12 also presents the mean equality tests for the mandatory group pre- and post-IFRS. The table shows that the mean underpricing of the bank and insurance IPOs largely dropped from a record of 635% in the pre-IFRS stage to 238% in the post-IFRS stage at the 1% level of significance, respectively. This result does clearly indicate that due to IFRS mandate, the difference in means of underpricing of bank and insurance IPOs significantly fell by 397%. These outcomes do strongly support the prediction of Hypothesis 1, thus demonstrating the application of IFRS enhances the disclosure quality of bank and insurance IPO firms, in turn reducing their underpricing. Among the non-mandatory IFRS-adopting IPO firms, the difference in means pre- and post-IFRS declined by 128%, mainly due to a time-trend decrease in the underpricing of the Saudi Arabian IPO market. The results for the mean equality test are consistent with Hong et al. (2014) but are economically larger than their results. This is because they found that the difference in the mean equality test in the treatment and control groups before and after IFRS mandate accounted only for -7.6% at 5% statistical significance.

It would, however, be premature to state that the evidence is conclusive for supporting Hypothesis 1 without controlling for firm- and market-specific factors that both accounting disclosure and IPO underpricing literature claim to influence the degree of underpricing (Boulton et al. 2010; Shi et al. 2013; Hong et al. 2014; Boulanouar et al. 2016). To further test if the observed, considerable underpricing reduction between bank and insurance IPOs post-IFRS mandate is not influenced by firm- and market-specific factors, for example, is not because of a changing trend in the underpricing of the Saudi Arabian IPO market or due to the effect of a specific industry.

6.2.2.2. Regression Analysis

Four DiD regression models concerning the effect of IFRS mandate on IPO underpricing in Saudi Arabia while controlling for firm- and market-specific factors are presented in Table 13.

Table 13. Difference in Differences OLS Regression Concerning the Effect of IFRS Mandate on IPO Underpricing in Saudi Arabia

This table provides the results of the DiD models for the effect of IFRS mandate on IPO underpricing in Saudi Arabia, including 102 IPO firms from 15 industries listed from 2003 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO Market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. Robust T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4
			Panel A: DiD Independent Variables					
Post	-1.01**	1.54	-1.92***	2.06	-0.24	6.01		
	[-2.30]		[-2.94]		[-0.25]			
Treatment	4.03***	1.82	3.68***	2.21	3.45***	2.67	3.50***	2.41
	[4.12]		[3.58]		[3.33]		[3.57]	
IFRS	-2.13**	2.24	-1.70*	2.47	-2.38**	2.81	-2.52***	1.77
	[-1.81]		[-1.42]		[-1.99]		[-2.47]	
			Panel B: Firm-level Control Variables					
URD			0.35	1.17	0.52	1.21	0.53	1.19
			[0.67]		[0.93]		[1.00]	
TFD			-0.14	1.21	-0.57	1.3	-0.61	1.23
			[-0.23]		[-0.88]		[-0.95]	
PMV			-0.39**	1.26	-0.37**	1.27	-0.36**	1.19
			[-1.74]		[-1.67]		[-1.72]	
OS			-0.01***	1.23	-0.01**	1.3	-0.01**	1.22
			[-2.52]		[-1.91]		[-1.94]	
IOPD			1.75***	1.07	2.12***	1.07	2.09***	1.07
			[2.38]		[2.49]		[2.47]	
PFD			1.53**	1.28	1.79**	1.31	1.81**	1.29
			[1.75]		[1.78]		[1.84]	
OP			-0.01	1.23	-0.01	1.29	-0.01	1.29
			[-0.52]		[-1.02]		[-1.03]	
ET			0.01*	1.31	0.01**	1.39	0.01**	1.39
			[1.51]		[1.91]		[1.92]	
Dummy Effects					YE & IE		YE & IE	
Constant	1.50***		-0.58		0.78		0.83	
	[3.45]		[-0.50]		[0.67]		[0.70]	
Observations	102		102		102		102	
Adjusted R^2	0.34		0.36		0.38		0.38	

Model 1 tabulates the regression results of a DiD model by regressing the dependent variable UP, IPO underpricing, on three independent variables related to the DiD model, including Post, Treatment, and IFRS. Model 1 shows that the coefficient of Post (β_1) is -1.01, and it is weakly significant at 10%. This result shows that the mean underpricing for all listed firms in Saudi Arabia post-IFRS mandate from 2009 to 2016 experiences decreasing trend of underpricing by 101% compared to the period before IFRS mandate from 2003 to 2007. This result is consistent with prior IPO underpricing literature in developed and emerging countries (Su 2004; Boulton et al. 2011; Shi et al. 2013; Hearn 2014). These studies confirm the existence of a trend in IPO underpricing over time in developed and emerging countries.

However, the results presented in Model 1 in Table 13 do not control for firm- and market-specific factors that are known to affect the level of underpricing as argued by Shi et al. (2013) and Hong et al. (2014). Therefore, depending on an examination of the economic effect of IFRS mandate on IPO underpricing without controlling for firm- and market-specific factors would be incomplete, as it may omit significant factors that elucidate the role of IFRS on underpricing. As such, Model 2 in Table 13 extends the empirical testing by including a number of firm- and market-specific factors that IPO underpricing literature considers (Habib & Ljungqvist 2001; Ritter & Welch 2002; Boulton et al. 2010; Engelen & Van Essen 2010). Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). Model 2 also adds pre-IPO market volatility (PMV) as a proxy for market-specific effect. The result regarding β_1 in Model 2 remained significant at a higher economic value equal to -192% at 1% statistical significance compared to Model 1.

In Table 10, the potential year effect is previously highlighted. This is in relation to the frequency of listing and underpricing of IPO firms as they seemed to be high in some years from 2005 to 2008; such years encompass both the GCC stock market crash in 2006 and GFC in 2008. For example, it is shown in Table 10 that the year 2007 experienced the highest number of IPO listings of 23 IPOs and the second highest average underpricing of 434%. The year 2007 came one year after the GCC stock market crash and a year before the GFC erupted. The Saudi stock market, Tadawul, reached its peak in 2005 with a total market capitalisation of $650 billion before it dropped alarmingly to $327 billion because of the 2006 GCC stock market crisis. Tadawul quickly recovered from this predicament, and its market capitalisation grew to $519 billion in 2007 before

131

it was hit by the GFC in 2008 (Tadawul 2015). From 2008, Tadawul continued to grow steadily and reached a total market capitalisation of $442 billion in 2015. Loughran and Ritter (2004), Boulton et al. (2010), and Engelen and Van Essen (2010) observe a similar year effect in the IPO market where underpricing of IPO firms seemed to peak around crisis periods. Consequently, the presence of such a pattern provides the necessity to control for this year effect. Furthermore, Table 11 also pinpointed the presence of potential industry effect, as IPO underpricing and the volume of IPO firms seem to be focused in some industries, including insurance and manufacturing industries. IPO underpricing scholars including Loughran and Ritter (2004), Boulton et al. (2010), and Engelen and Van Essen (2010) assert the importance of controlling for industry effects when testing the phenomenon of IPO underpricing. They argue that some industries possess specific uncertainty features that encourage investors to demand a higher discount, leading to higher underpricing.

However, once the year (YE) and industry (IE) fixed effects are controlled for as exhibited in Model 3 Table 13, β_1 becomes insignificant. The reason for β_1 losing its statistical significance is due to the existence of multicollinearity between β_1 and year fixed effect. This high correlation is made evident by the result of the variance inflation factor's (VIF) value of β_1, showing a value of 6.01. One possible explanation of the loss of significance for β_1 is due to the existence of a confounding effect caused by this multicollinearity between β_1 and year fixed effect. The coefficient for β_1 captures the overall trend of underpricing in the IPO market in Saudi Arabia after mandating IFRS from 2008 to 2016 while the year fixed effect captures the overall trend of underpricing from 2003 to 2016. This implies that there is an unobserved confounding effect between β_1 and year fixed effect in Model 3, hence questioning the reliability of Model 3. Liu and Ritter (2011) assert that a multicollinearity problem occurs if VIF exceeds a threshold value of 5, resulting in misleading T-statistic values and biased conclusions. The unreliable result of β_1 in Model 3 is consistent with the results obtained by Hong et al. (2014). These authors' models include two coefficients capturing two things: firstly, the overall trend of underpricing in the IPO market after mandating IFRS from 2005 to 2007; and secondly, the overall trend of underpricing from 2003 to 2007. The authors do not provide any outputs for multicollinearity testing. This points to the possibility that Hong et al.'s (2014) results might suffer from a multicollinearity problem affecting the credibility of their findings. To overcome this multicollinearity issue, β_1 is excluded

in Model 4. Therefore, Model 4 becomes the formal model as it controls for firm- and market-specific factors along with year and industry fixed effects.

Model 4 in Table 13 shows that the coefficient of the treatment group (β_2) is 3.50, and the coefficient of IFRS (β_3) is -2.52 and they are statistically significant at 1%. The result of β_2 clearly indicates that being a bank and insurance IPO firm in Saudi Arabia attracted average underpricing of 350% from 2003 to 2016. This outcome is similar to Boulanouar et al. (2016) who show that bank and insurance IPOs suffer from a considerable underpricing averaging at around 455%. The result of β_2 is three times larger than that of Hong et al. (2014), indicating large differences exist in IPO underpricing for firms who mandate IFRS in emerging non-EU versus EU countries. It is because the authors' sample is largely dominated by IPOs from EU countries. The result of β_2 remained quantitatively the same after controlling for firm- and market-specific factors along with both year and industry fixed effects.

The statistically significant negative coefficient of β_3 provides clear evidence supporting the early conclusion drawn from the results in Table 12. This confirms that mandating the application of IFRS enhances the disclosure quality of mandating firms and provides quantifiable economic benefits for bank and insurance IPO issuers in Saudi Arabia. The improvement of the quality of reporting quality post-IFRS mandate surely would lower the *ex-ante* uncertainty of IPO investor and analysts, hence, they would demand lower underpricing to compensate for uncertainty risk. This, in turn, makes IFRS to appear as a quality certification tool that contributes to reducing their underpricing by 252% at 1% statistical significance, providing strong support for Hypothesis 1. The result of β_3 supports what Hong et al. (2014) obtain but is economically and statistically larger as the authors found IFRS mandate reduces underpricing only by 6.1% at 10% statistical significance. One reason for this difference between the results reported here and those of Hong et al. (2014) could be due to the fact that Hong et al.'s (2014) study suffers from a multicollinearity problem and is driven by an EU-dominated sample, as discussed earlier. The finding of β_3 continued to be quantitatively similar in Models 2, 3, and 4 after accounting for firm- and market-specific variables along with both year and industry fixed effects.

Model 4 shows that IPO underpricing is statistically lower among large IPO firms, and when the pre-IPO market volatility increases. The results also reveal that IPO underpricing is statistically higher for private sector firms and as time elapses. Additionally, the results of Model

4 reveal that underwriter reputation, technology firms, integer offer price, and offer price have no predictive power in explaining IPO underpricing in the Saudi Arabian IPO market. Stated differently, Model 4 shows that an increase in the size of an IPO firm by US $1 million decreases underpricing of Saudi Arabian IPO firms by 1% at 10% statistical significance. Beatty and Ritter (1986) use the size of the IPO firm to proxy for *ex-ante* uncertainty and find that large IPOs are underpriced less than small IPOs, since large IPOs are normally offered by established firms. Meanwhile, small IPOs offered by unknown firms can create higher uncertainty for investors. The result for the statistically significant and negative coefficient of IPO firm size on underpricing of Saudi Arabian IPOs is consistent with prior studies (Shi et al. 2013; Hong et al. 2014; Mayes & Alqahtani 2015; Boulanouar et al. 2016).

Model 4 also shows that private Saudi Arabian IPO firms experience more underpricing compared to privatised IPOs by 181% at 5% statistical significance. This is explained by the fact that privatised IPOs often involve older and more well-known firms, while private sector IPOs tend to be young, small, and relatively unknown (Jones et al. 1999). This means that *ex-ante* uncertainty and its role in underpricing should be higher for private firm IPOs than for privatised IPOs. Furthermore, Model 4 suggests that when the elapsed time between the announcement day and the first trading date of Saudi Arabian IPO firms increases by one day, IPO underpricing increases by 1% at 5% statistical significance. To explain this finding, Su and Fleisher (1999) contend that the longer the elapsed time between the first trading day and IPO announcement day, the higher the *ex-ante* uncertainty and the higher the underpricing.

According to Bradley et al. (2004), the result of IOPD indicates a negotiation between the underwriter and issuer. This negotiation process happens because of a valuation uncertainty related to the true value of the company, implying that IPOs with integer offer price experience higher *ex-ante* uncertainty leading to higher underpricing. However, IOPD has no statistical significance in explaining IPO underpricing in Saudi Arabia. The result of the PMV variable provides a statistically negative coefficient indicating that when the level of stock market volatility is high 15 days before the listing of an IPO firm in Saudi Arabia, underpricing decreases. The finding contrasts very much with previous evidence reported by Derrien (2005), who documents that when pre-IPO market volatility is high, the average IPO underpricing increases. One explanation for this contrary finding could be differences in disclosure regulations and enforcement of securities exchange rules between developed and emerging countries (Boulton et al. 2010). For example,

Song et al. (2014) show that due to an overall weakness in emerging countries' transparency environment, issuers exploit the high demand of IPO investors and the upward trending market situation pre-IPO by over-valuing their IPOs. The consequence of this is lower underpricing. Table 13 also presents the results of the adjusted R-squared value and diagnostic analysis for residuals tests. The adjusted R-squared value for Model 4 indicates that the DiD design is successful in explaining 38% of the variations of IPO underpricing in the Saudi Arabian IPO market. The effect size of the adjusted R-squared value reported in Table 13 is almost four and six times bigger than what is attained by Hong et al. (2014) and Maglio et al. (2018), respectively. This significant difference can be attributed to the employment of DiD design by this thesis and the inclusion of 11 variables, including the DiD variables and firm-level control variables, which provides greater trustworthiness of the results attained and conclusions drawn.

6.2.3. Robustness Tests

In order to improve the assurance in the attained findings[41], a series of robustness tests are performed to make sure that the conclusion drawn in the previous section is not an artefact model misspecification. This includes not accounting for probable synthetic clustering in the DiD model, existence of outliers, endogeneity in the OLS model, the use of the unbalanced distribution of IPO data and small sample size and omitting related economic and stock market factors. Firstly, Bertrand et al. (2004) argue that employing the DiD design can create synthetic clustering, which

---

[41] For un-tabulated results, the author of this thesis presents the results of the diagnostic analysis for residuals to ensure the OLS models used are the Best Linear Unbiased Estimator (BLUE). This includes testing for multicollinearity amongst independent variables using Variance Inflation Factor (VIF) test, normality in the distribution of residuals using Jarque and Bera (1980) normality test, serial correlation in residuals using Durbin and Watson (1971) D-statistic test, and heteroscedasticity of residuals using Breusch and Pagan (1979) test. For the assessment of the multicollinearity test, the author of this thesis follows Liu et al. (2011) to argue that a multicollinearity problem exists when the value of VIF exceeds a threshold value of 5. The employed models have no multicollinearity problem since all VIF values are below the alarming threshold of 5 with exception to Model 3 where this thesis employs Model 4 to avoid this problem. Collectively, the diagnostic analysis for residuals shows that results across the four models comply with the BLUE. This is because the models have normally distributed residuals and no autocorrelations amongst residuals as this thesis fails to reject the null hypothesis of normality and serial correlation in residuals at 5% level of significance. However, the majority of the employed models reject the null hypothesis of homoscedasticity at 5% level of significance. This implies that the distribution of residuals is not homogeneous, hence the author of this thesis follows Habib and Ljungqvist (2001) to control for the heteroscedasticity issue using the White (1980) heteroscedastic-robust standard error in all models in Table 13 and in all remaining models.

makes residuals correlate within the clustered group, treatment versus the control group in the study. This leads to biased standard errors and hence, biased statistical results. Isshaq and Faff (2016) claim that failure to empirically control for the effect of clustering in standard errors when they occur over policy intervention (IFRS mandate), years or industries can lead to overstating T-statistic values. Furthermore, Ibbotson and Jaffe (1975) show evidence of year clustering effect in the IPO data in which years with few IPO offerings are regularly followed by periods of low activity in the IPO market. Likewise, Ritter and Welch (2002) argue that industry clustering can occur in the IPO market; the authors showed that IPO waves are recognised in some particular industries. Therefore, cluster-robust standard errors estimation is employed, following Cameron and Miller (2015), to control for the impact of this clustering effect within IFRS, years, and industries.

Secondly, recall that Table 9 reported some extreme IPO underpricing obviations that are likely to indicate the presence of outliers in the data. This is because Table 9 shows that maximum and minimum underpricing values of 1400% and -18%, respectively, where through the complete sample of the 102 IPOs presented in the table, the mean IPO underpricing is 213%. Therefore, it is evident that the employed IPO underpricing data contains outlier values. An outlier detection procedure proposed by Rousseeuw and Leroy (2005) is adopted to eliminate outlier values that have a Cook score bigger than an absolute value of 3. Thirdly, disclosure and IPO literature including Habib and Ljungqvist (2001) and Shi et al. (2013) caution from the presence of endogeneity in IPO underpricing models that could bias the results of OLS estimation when it is ignored. This cautionary note is related to the endogenous selection of reputable underwriting banks by IPO firms when they intend to sell a large percentage of their shares when they go public. If this endogenous relationship exists in the DiD model, then this indicates the existence of a relationship between the underwriter reputation variable and the error term of the underpricing model. Such a possibility can make the inference about the effect of IFRS mandate on the underpricing of IPO firms biased.

To deal with such an econometric problem, the two-stage least squares (2SLS) model is employed using a robust instrumental variable, following Habib and Ljungqvist (2001) and Shi et al. (2013). Hausman (1978) Endogeneity Test serves to test the null hypothesis that the prestigious underwriters variable is exogenous in order to check the existence of endogeneity. Consecutively, another check is performed to ensure that the employed instrument is indeed robust. This is done

by using Cragg and Donald (1993) Weak Instruments Test to test the null hypothesis that the used instrument is weak. IPO underpricing literature shows no unity about the ideal instrument to employ. For example, while earnings per share and return on assets are used by Habib and Ljungqvist (2001) and Alavi et al. (2008), gross proceeds and number of IPO firms are employed by Chahine (2008) and Jones and Swaleheen (2010), respectively. For all 102 Saudi Arabian IPO firms used, there is no adequate data for return on assets and earnings per share. In contrast, both gross proceeds and a number of IPO firms failed the Cragg and Donald (1993) Weak Instruments Test. Hence, a proportion that is equal to the median amount of IPO proceeds of all underwritten IPOs for every underwriter, divided by the median number of underwritten IPOs in Saudi Arabia as the instrumental variable, is employed here.

Fourthly, an additional test using bootstrapping estimation, following Efron and Tibshirani (1986) and Harris and Judge (1998), is implemented to temper the potentially biased results in previous DiD models. This is due to the fact that the sample size is small and has an unbalanced distribution over 15 industries. Finally, a further sensitivity check is included to monitor the consistency of the results after accounting for potential omitted variable bias. This bias perhaps is caused by not accounting for some economic and stock market factors that are known to affect the implementation of IFRS and IPO underpricing as well. For example, the stock market and economy of Saudi Arabia have been reformed, and the outcomes overlapped the introduction of IFRS in 2008. To control for a possible concurrent effect, further tests are employed to capture the effect of the GCC stock market crisis in 2006, the GFC in 2008, introduction of a price cap for newly listed IPOs in 2013, rapid stock market growth, and expanded financing through the local equity market in Saudi Arabia from 2003 to 2016.

Table 14 reports the results of nine DiD models that incorporate the five additional sensitivity tests. The results of Models 1, 2 and 3 in Table 13 support the prediction of the negative relationship between IFRS mandate and IPO underpricing even after controlling for two clusters, including IFRS versus non-IFRS, 14-year clusters, and 15 industry clusters. It should be noted that these three models indicate there is a sign of high correlations between residuals within IFRS versus non-IFRS, within years, and within industries. This is because most models report considerable changes in the T-statistic values compared to the formal model (Model 4 in Table 13). However, the econometric effect of these correlations is marginal as the statistical significance of β_3 in Models 1, 2, and 3 in Table 14 remains significant at 1%, consequently producing

137

consistent support for Hypothesis 1. Model 4 reports the outcomes after eliminating only two outlier observations where solid support remains for Hypothesis 1.

Model 5 presents the results for the DiD model using 2SLS estimator to adjust for the endogeneity between underwriter reputation and the error term of the OLS model. Model 5 renders supportive results confirming the statistically negative relationship between IFRS mandate and IPO underpricing in Saudi Arabia after treating the variable URD as the endogenous factor. Model 5 also presents the endogeneity test result using Hausman's Endogeneity Test to examine if the URD variable is not an exogenous variable. The result of the endogeneity test fails to reject the null hypothesis that the URD regressor is an exogenous variable. This suggests that there is no endogeneity problem in the IPO data. To check further that the variable instrument used is robust, Cragg and Donald's (1993) Weak Instruments Test reports a significant value at the 5% level of significance. This means that the null hypothesis of using a weak instrument is rejected and subsequently lends confidence to the result of Hypothesis 1.

Table 14. Sensitivity Tests

This table provides the results of the DiD models for the effect of IFRS mandate on IPO underpricing in Saudi Arabia, including 102 IPO firms from 15 industries listed from 2003 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include treatment and IFRS. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong *et al*. (2014). Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Additional control variables include GFC2008, GCC2006, Cap Effect , FTLE, and DMC. Global financial crisis (GFC) refers to every IPO firm listed during the 2008 GFC. It is a dummy variable, and it equals one if an IPO firm is listed in the GFC; otherwise, it equals zero. The Gulf Cooperation Council crisis (GCC) refers to every IPO firm listed during the 2006 stock market crash which occurred in the GCC countries. It is a dummy variable, and it equals one if an IPO firm is listed in the GCC; otherwise, it equals zero. Cap effect (CE) refers to IPOs listed in 2013 and onwards of which Tadawul applied a price fluctuation cap of 10% up or down for every traded IPO share. It is a dummy variable, and it equals one if an IPO firm was listed in 2013 and onwards, otherwise it equals zero. Financing through local equity market (FTLEM) is an annual index that measures the eases of accessing local equity by listed firms in Saudi Arabia. The index measures the extent companies can raise money by issuing shares and/or bonds on their capital market in which 1 = not at all; 7 = to a great extent from 2003 to 2016, sourced from World Economic Forum (2017). Domestic market size (DMS) is an annual index that sums the gross domestic product plus value of imports of goods and services, minus the value of exports of goods and services, normalised on a 1–7 (best) scale from 2003 to 2016 sourced from World Economic Forum (2017). Robust clustered T- and Z statistics in brackets are adjusted for heteroscedasticity at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
		Clustered Test		Excluding Outliers	2SLS Estimation	Bootstrap Estimation	Additional Control Variables + Clustered Test		
	by IFRS	by Years	by Industries				by IFRS	by Years	by Industries
Panel A: DiD Independent Variables									
Treatment	3.50**	3.50***	3.50***	3.68***	3.54***	3.50***	3.01**	3.01***	3.01***
	[12.5]	[4.68]	[5.04]	[4.52]	[3.87]	[3.42]	[6.45]	[3.47]	[3.19]
IFRS	-2.52***	-2.52***	-2.52***	-2.35**	-2.32**	-2.52***	-2.58***	-2.58***	-2.58***
	[-38.8]	[-2.75]	[-9.34]	[-2.37]	[-2.21]	[-2.79]	[-74.00]	[-3.68]	[-5.30]
Panel B: Firm-level Control Variables									
URD	0.53	0.53	0.53**	0.19	1.39	0.53	0.51	0.51	0.51*
	[2.37]	[0.97]	[1.88]	[0.40]	[0.90]	[0.96]	[1.34]	[0.96]	[1.66]

139

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
TFD	-0.61	-0.61	-0.61*	-0.29	-0.80	-0.61	-0.81*	-0.81*	-0.81*
	[-1.98]	[-1.01]	[-1.35]	[-0.51]	[-1.16]	[-0.91]	[-4.63]	[-1.71]	[-1.69]
PMV	-0.36**	-0.36	-0.36***	-0.23*	-0.39**	-0.36*	-0.41**	-0.41	-0.41**
	[-9.13]	[-1.07]	[-2.72]	[-1.41]	[-1.96]	[-1.62]	[-29.00]	[-1.11]	[-2.03]
OS	-0.01	-0.01*	-0.01***	-0.01**	-0.01**	-0.01*	-0.01	-0.01**	-0.01***
	[-2.27]	[-1.71]	[-3.87]	[-2.34]	[-1.96]	[-1.30]	[-2.96]	[-1.97]	[-3.66]
IOPD	2.09	2.09***	2.09***	1.29***	2.19***	2.09**	2.82	2.82***	2.82**
	[2.04]	[2.71]	[2.83]	[2.55]	[2.63]	[2.33]	[2.24]	[4.31]	[2.44]
PFD	1.81	1.81*	1.81***	1.40*	1.53*	1.81**	1.35	1.35	1.35**
	[2.43]	[1.74]	[2.63]	[1.62]	[1.41]	[1.91]	[1.84]	[1.15]	[2.20]
OP	-0.01**	-0.01*	-0.01	-0.01	-0.01	-0.01	-0.02**	-0.01*	-0.01*
	[-8.56]	[-1.36]	[-0.91]	[-1.14]	[-0.48]	[-0.66]	[-16.60]	[-1.40]	[-1.38]
ET	0.01	0.01*	0.01	0.01**	0.01**	0.01**	0.01	0.01*	0.01*
	[0.99]	[1.51]	[1.16]	[1.71]	[1.80]	[1.81]	[1.11]	[1.66]	[1.35]
Cap Effect							-0.41	-0.41	-0.41
							[-0.51]	[-0.90]	[-0.58]
GCC2006							-0.61*	-0.61	-0.61
							[-4.96]	[-0.52]	[-0.40]
GFC2008							-1.26**	-1.26**	-1.26*
							[-7.23]	[-2.47]	[-1.58]
FTLE							-4.52	-4.52**	-4.52**
							[-2.49]	[-2.33]	[-2.14]
DMC							1.10	1.10	1.10
							[1.17]	[0.48]	[0.32]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	0.83	0.83	0.83	0.59	0.50	0.83	18.50	18.50	18.50
	[0.64]	[0.57]	[1.25]	[0.56]	[0.41]	[0.59]	[1.65]	[1.18]	[0.97]
Observations	102	102	102	100	102	102	102	102	102
Adjusted R^2	0.38	0.38	0.38	0.45	0.37	0.38	0.41	0.41	0.41
N of Clusters	2	14	15	NA	NA	NA	2	14	15
P-value of Hausman's Endogeneity Test	NA	NA	NA	NA	0.45	NA	NA	NA	NA
P-value of Cragg and Donald's Weak Instruments Test	NA	NA	NA	NA	13**	NA	NA	NA	NA

Model 6, which employs bootstrap estimation to account for the small sample size and unbalanced distribution of data, consistently produces a quantitatively similar outcome to previous results, giving solid support to Hypothesis 1.

Finally, the results of three DiD models are inspected including Models 7 to 9 using clustered robust standard errors on IFRS, years, and industries along with controlling for five additional economic and stock market-specific factors to Saudi Arabia. Both crisis variables, including GFC2008 and GCC2006, provide a negative coefficient, indicating that when an IPO firm is listed during a financial or stock market crisis, it experiences less underpricing. One explanation for this effect is provided by Derrien (2005) who argues that during crisis periods investors become more pessimistic and risk-averse. IPO underpricing literature contends that a financial crisis deters investors from seeking risky investments with a high level of *ex-ante* uncertainty, including investing in IPO firms (Ibbotson & Jaffe 1975; Ritter & Welch 2002). Ahmad-Zaluki et al. (2011) contend that the IPO market becomes cold during a financial crisis period, hence underpricing of IPO firms declines due to lower demand from IPO investors. This is explained by the existence of high levels of uncertainty in stock markets. However, referring to Models 7, 8, and 9, the coefficient of GFC2008 shows a statistically significant impact on the underpricing of IPOs in Saudi Arabia, as IPOs offered during this period experience less underpricing by 126%. IPOs listed during the GCC2006 period experience less underpricing by 61% at 10% statistical significance once the standard errors are clustered by the two IFRS groups. The effect of the GCC2006 becomes statistically insignificant, once the effects of clustering in residuals over years and industries are captured.

Table 14 also shows that after Tadawul introduces a new rule curbing daily volatility of IPO share prices on the first trading day – the objective being to limit changes in prices to 10%, whether up or down – underpricing of IPO companies decreased by 41%. However, this new price limit had no statistical effect on IPO underpricing. Changes in Saudi Arabia's growing stock market presented by the variable DMS also have no predictive power in explaining IPO underpricing in that country. However, the ability of listed firms in Saudi Arabia to raise finance through the stock market has a negative relationship to IPO underpricing. An explanation for this is that when firms have greater access to equity financing due to the continuing growth in the size of Tadawul, new IPO issuers are thereafter reluctant to offer their firms at a larger discount; this results in lower underpricing. The effect of FTLEM becomes only statistically significant at 5%

after accounting for the effect of clustered standard errors by years and industries while it becomes insignificant after clustering by the two IFRS groups is implemented. Collectively, the results for the variable IFRS remained robust after controlling for those economic and stock market specific-effects, leading to the conclusion that mandating the application of IFRS decreases IPO underpricing for bank and insurance IPO firms by 258% at 1% statistical significance. This means that the trustworthiness for what the results infer is evident.

6.3. The Effect of IFRS Mandate on the Long-term Performance of IPO Firms in the Secondary Market

6.3.1. Descriptive Statistics

Table 15 reports the descriptive statistics showing the mean and median of the BHAR of 102 listed IPO firms from 2003 to 2017 being 4% and -5%, respectively. This means that IPO firms, on average, outperform Tadawul by 4% in the 12 months after listing. This finding contradicts the one-year BHAR results reported by Alanazi and Al-Zoubi (2015) for Saudi Araba. The authors show that IPO firms in Saudi Arabia underperform Tadawul by 8.92%. One possible explanation for this discrepancy could be related to the sample size and range. While Alanazi and Al-Zoubi's (2015) data contains only 76 IPO firms listed between 2003 and 2010, 102 IPO firms listed from 2003 to 2016 are employed by this thesis. However, the BHAR result is consistent with AlShiab (2018) who find that over the 12 months Saudi Arabian IPOs outperform their benchmark by almost 22% for 44 listed IPOs between 2001 to 2015. Recently, Kamaludin and Zakaria (2018) also report similar supporting results of BHAR and they indicate that IPO firms outperform Tadawul in 12 months period by approximately 8.5%.

The maximum record of long-term performance of IPO firms relative to its benchmark is 173% while the minimum record of BHAR is -163%. This perhaps suggests that some IPO firms significantly over-perform Tadawul while others seriously underperform over the 12-month period. The deviation of BHAR from the mean of Saudi Arabian IPOs is 52%. Table 15 also displays that almost 50% (Post) of Saudi Arabian IPOs are listed post-mandating IFRS in 2008, in which 15% (IFRS) of all listed firms mandated IFRS. The treatment group that contains banks and insurance IPO firms pre- and post-IFRS mandate from 2003 to 2016 accounts for 35% of all listed IPOs. Table 15 reports the mean and median of IPO underpricing showing evidence of underpricing for 211% and 77%, respectively. The table indicates that amongst 102 listed IPOs, 71% and 11% of them are underwritten by prestigious underwriters and are categorised as technology companies, respectively. Fifteen days prior to the listing of an IPO firm, the average standard deviation of Tadawul shows volatility of 2% while the highest recorded volatility is 8%.

The average and median offer size of Saudi Arabian IPOs are $263 and $87.4 million, respectively, while the largest IPO size recorded is $3.6 billion.

Table 15. Descriptive Statistics

This table provides summary statistics for firm- and market-specific variables for 102 IPO firms from 15 industries listed from 2003 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over 12 months' period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2017. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm.

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	N
BHAR	0.04	-0.05	1.73	-1.63	0.52	102
Post	0.50	0	1	0	0.50	102
Treatment	0.35	0	1	0	0.48	102
IFRS	0.15	0	1	0	0.36	102
UP	2.11	0.77	14	-0.18	3.09	102
URD	0.71	1	1	0	0.46	102
TFD	0.11	0	1	0	0.31	102
OS	263.05	87.40	3600	7.10	519.33	102
IOPD	0.99	1	1	0	0.10	102
PFD	0.92	1	1	0	0.27	102
OP	10.23	4	136.53	2.29	16.69	102
ET	113	48	1114	3	223	102
PMV	0.02	0.01	0.08	0	0.01	102

Table 16 shows yearly distributional statistics over the 12-month window for aftermarket performance of all IPOs in Saudi Arabia's stock market, commencing from the closing price of

the first trading day of listing. Across the 14-year window, IPO firms outperform Tadawul in eight of the years while Tadawul outperforms IPO firms in only six of the years. Before mandating IFRS in 2008, there is head-to-head performance between IPO companies and the general market index of which IPO firms and Tadawul outperform in two years equally. During 2008, on average, IPO firms underperform Tadawul by 7%. However, aftermarket participants start to observe the full effect of IFRS in the five subsequent years, IPO firms perform positively compared to Tadawul, ranging from 2% to 51% from 2009 to 2013. From 2014 to 2016, Tadawul retakes the lead by outperforming the IPO firms before Tadawul underperformed by 24% in 2017.

Table 16. IPO Long-term Performance Measures and Sample Distribution by Year

This table provides yearly statistics for long-term performance for 102 IPO firms listed from 2004 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over 12 months' period.

Year	BHAR	Number of IPOs
2004	-0.97	1
2005	-1.63	1
2006	0.13	4
2007	0.21	11
2008	-0.07	23
2009	0.03	14
2010	0.02	11
2011	0.33	10
2012	0.51	5
2013	0.15	8
2014	-0.29	4
2015	-0.09	6
2016	-0.18	3
2017	0.24	1

Table 17 reports the results regarding the aftermarket performance for the Saudi Arabian IPOs classified by industry. The table indicates that IPOs in Saudi Arabia tend to outperform Tadawul in 10 out of 15 industries. The three highest performing industries are other services, healthcare, and transportation, scoring BAHR of 52%, 43%, and 32% respectively over the 12-month window, compared to Tadawul. On the contrary, the worst performing industries are Pers/Bus/Rep Svc, telephone communications, and commercial bank with BAHR returns of -64%,

145

-17%, and 17%, respectively. IPO firms that mandate the application of IFRS include both outperforming and underperforming industries. This includes 3 IPOs related to the banking sector with BHAR return of -17 while 33 of IPOs related to the insurance sector outperform Tadawul by 5%. The considerable variations between industries reported in Table 17 are consistent with prior evidence reported in the US and GCC markets by Ritter (1991) and Alanazi and Al-Zoubi (2015), respectively.

Table 17. IPO Long-term Performance Measures and Sample Distribution by Industry

This table provides industry statistics for long-term performance for 102 IPO firms listed from 2003 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period.

Industries	BHAR	Number of IPOs
Telephone Communications	-0.17	3
Radio/TV/Telecom	0.15	3
Commercial Bank	-0.17	3
Insurance	0.05	33
Manufacturing	-0.04	33
Real Estate	0.19	6
Retail	0.03	5
Wholesale	0.04	3
Other Finance	-0.04	1
Other Services	0.52	1
Transportation	0.32	3
Pers/Bus/Rep Svc	-0.64	1
Construction	0.25	2
Healthcare	0.43	3
Restaurant/Hotel	0.31	2

6.3.2. Results and Discussion

6.3.2.1.   Mean Equality Test

Table 18 presents the means equality tests results for unequal variances between mandatory adopter, treatment group (banks and insurance IPO firms) and non-mandatory adopter, control group (all IPO firms excluding banks and insurance) for pre- and post-IFRS mandate periods. The change in BHAR is examined here before and after IFRS mandate in 2008 for the treatment and control samples. Observations for the year 2008 are excluded following Hong et al. (2014) to eliminate any confounding effects related to the mandated year. These tests are, however, conducted to observe the pure difference in long-term performance of IPO firms compared to the benchmark, Tadawul, in the 12-month window. Table 18 reports the mean BHAR for the treatment

group prior to mandating IFRS, showing an average return value of -11% for 16 bank and insurance IPOs from 2003 to 2007. On the contrary, the mean of BAHR for the control group pre-IFRS mandate is 1.5%, which is considerably high compared to the negative BHAR for the treatment group. It indicates that bank and insurance IPOs largely underperform their relative benchmark in the 12 months' window prior to mandating IFRS. Although the difference in mean between the two groups is -12.5%, it is not statistically significant.

Table 18. Means Equality Tests of Unequal Variances for IPO Long-term Performance Measured by BHAR

This table provides means equality tests of unequal variances for BHAR for 102 IPO firms from 15 industries listed from 2003 to 2017. Mandatory adopter refers to the treatment group (banks and insurance IPO firms), and non-mandatory adopter refers to the control group (all IPO firms excluding banks and insurance). Pre-IFRS mandate period goes from 2003 to 2007 while post-IFRS mandate period goes from 2009 to 2017. T-statistics are at *** p<0.01, ** p<0.05, * p<0.1.

	Pre-IFRS		Post-IFRS		Difference in	T-statistic Test
	Mean	N	Mean	N	Means	
Mandatory Adopters	-0.110	16	0.107	15	-0.003	-0.579
Non-mandatory Adopters	0.015	24	0.110	33	0.095	1.105
Difference in Means	-0.125		-0.003			
T-statistic Test	-0.728		-0.016			

However, if mandating the application of IFRS could improve the quality of disclosure in bank and insurance IPO firms, then this BAHR gap should be positive and statistically significant following the introduction of IFRS mandate. Such a finding would make it thinkable to claim the anticipated certifying effect of IFRS mandate on the long-term performance of IPO firms is effective. Following the introduction of IFRS mandate in 2008, Table 18 reports that the mean of BHAR for mandatory adopters is 10.7%, while the mean for BHAR of non-mandatory adopters is 11%. This very small difference may indicate that mandating IFRS has not delivered the projected economic benefits to the mandatory adopting IPO firms. Although the variance in means between the two groups is -0.3%, it is statistically insignificant. This implies no performance difference

between IPOs who mandate IFRS compared to IPO firms who do not mandate IFRS in the long-term in Saudi Arabia.

However, when the change in the difference between the means between the mandatory and non-mandatory adopters before and after IFRS is analysed, a slightly different picture emerges. For instance, IFRS mandate could be the key driver that reduces the BHAR difference in means between mandatory and non-mandatory adopters after IFRS mandate by -0.3% compared to the difference of -12.5% in BHAR pre-IFRS stage. To conduct a deep analysis of the influence of IFRS on the long-run performance of IPO firms in the Saudi Arabian IPO market, Table 18 reveals the mean equality tests for only the mandatory group pre- and post-IFRS. It reports that the means of BHAR for the bank and insurance IPOs shifted considerably from recording underperforming returns of -11% for the pre-IFRS stage to achieving an outperforming return of 10.7% in the post-IFRS stage. However, this difference in the long-term performance of IPO firms that mandated IFRS in the pre-IFRS compared to the post-IFRS stage is also not statistically significant. Thus, support is lacking for the prediction of Hypothesis 2-1 related to the positive impact of IFRS mandate on the long-term performance of IPO firms in Saudi Arabia. This outcome is consistent with a similar result documented by Dorsman et al. (2010). This is because the authors find that IFRS provides marginal and statistically insignificant economic benefit to the long-term performance of IPO firms in Denmark. Amongst the non-mandatory IFRS-adopting IPO firms, the difference in means pre- and post-IFRS largely improved by 9.5%, yet the performance change is statistically insignificant. The overall results of Table 18 indicate that the performance difference in BHAR between IPO firms and Tadawul is statistically insignificant. A similar insignificant BHAR finding for Saudi Arabian IPOs is reached recently by Kamaludin and Zakaria (2018) and Lizińska and Czapiewski (2018).

Based on the above outcomes, it would, however, be too early to claim that the evidence is inconclusive for rejecting the role of IFRS mandate in positively affecting the long-term performance of IPO firms in Saudi Arabia. This is because the mean equality test does not control for the firm- and market-specific determining factors that both accounting disclosure and IPO literature claims to affect the long-term performance of IPO firms (Dorsman et al. 2010; Ahmad-Zaluki et al. 2011; Lizińska & Czapiewski 2018). In the following sub-section, empirical testing is extended to regression analysis to examine if the detected shift in performance of IPO firms for

bank and insurance IPOs post-IFRS mandate, documented in Table 18, is not affected by omitting firm- and market-specific factors.

6.3.2.2.   Regression Analysis

Table 19 reports the four DiD regression models regarding the effect of IFRS mandate on the long-term performance of IPO firms in Saudi Arabia while correcting for firm- and market-specific factors. Model 1 in Table 19 presents the regression results of a DiD model by regressing the dependent variable BHAR, long-term performance over 12 months, on three explanatory variables associated to the DiD model, including Post, Treatment, and IFRS. Model 1 indicates that the coefficient of Post (β_1) is 0.120, and it is statistically insignificant. This outcome reveals that the mean of BHAR post-IFRS mandate from 2009 to 2017 does not experience an increasing trend in performance compared to the period before IFRS mandate, i.e. 2003 to 2007. This supports a similar finding obtained by Kamaludin and Zakaria (2018), who show that IPO firms do not tend to overperform their market index in the long-term.

However, the results reported in Model 1 in Table 19 do not control for firm- and market-specific factors. Consequently, Model 2 in Table 19 includes a number of these factors that disclosure and IPO literature consider (Dorsman et al. 2010; Ahmad-Zaluki et al. 2011; Lizińska & Czapiewski 2018). Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). Model 2 also incorporates pre-IPO market volatility (PMV) as a proxy for market-specific effect. Model 2 reports a consistently insignificant result for β_1 similar to Model 1. Consistently, in Model 3 where year (YE) and industry (IE) fixed effects are controlled for, β_1 continues to be insignificant. However, the existence of potential multicollinearity between β_1 and year fixed effect is noticed as the variance inflation factor's (VIF) value of β_1 shows a value of 6.02[42]. One possible explanation for the existence of such collinearity is due to a confounding effect existing between β_1 and year fixed effect. This is because β_1 captures the overall trend of long-term performance in

---

[42] Liu and Ritter (2011) assert that a multicollinearity problem occurs if VIF exceeds a threshold value of 5 resulting in misleading T-statistic values and biased conclusions.

the IPO market in Saudi Arabia after mandating IFRS from 2009 to 2017. The year fixed effect captures the overall trend of long-term performance in the IPO firms from 2003 to 2017. This suggests that there is an undetected confounding effect between β_1 and year fixed effect in Model 3; therefore, it questions the reliability of Model 3. This multicollinearity problem is avoided in Model 4 by discounting β_1. Model 4 becomes the formal model as it controls for both firm- and market-specific factors and year and industry fixed effects.

Table 19. Difference in Differences OLS Regression concerning the Effect of IFRS Mandate on IPO Performance in Saudi Arabia

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 102 IPO firms from 15 industries listed from 2003 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2017. IFRS refers to the interaction term, post*treatment, capturing the change in the long-term performance for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. Robust clustered T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4
Panel A: DiD Independent Variables								
Post	0.12	1.54	-0.05	2.23	0.07	6.02		
	[1.10]		[-0.34]		[0.36]			
Treatment	-0.01	1.82	0.03	2.78	0.01	3.19	-0.01	2.95
	[-0.08]		[0.14]		[0.07]		[-0.01]	
IFRS	0.01	2.24	0.01	2.54	-0.05	2.95	-0.01	1.93
	[0.03]		[0.02]		[-0.21]		[-0.04]	
Panel B: Firm-level Control Variables								
UP			-0.04*	1.76	-0.04**	1.84	-0.04**	1.84
			[-1.61]		[-1.73]		[-1.75]	
URD			-0.17*	1.18	-0.15*	1.22	-0.16*	1.20
			[-1.42]		[-1.30]		[-1.37]	
TFD			-0.08	1.21	-0.12	1.30	-0.10	1.24
			[-0.33]		[-0.47]		[-0.42]	
PMV			-1.55	1.30	-1.63	1.32	-1.96	1.23
			[-0.42]		[-0.41]		[-0.54]	
OS			-0.01*	1.28	-0.01*	1.34	-0.01*	1.25
			[-1.47]		[-1.30]		[-1.47]	
IOPD			0.21*	1.07	0.25**	1.08	0.26**	1.08
			[1.54]		[1.69]		[1.77]	
PFD			-0.01	1.31	0.02	1.35	0.01	1.33
			[-0.03]		[0.07]		[0.04]	
OP			-0.01	1.24	-0.01	1.29	-0.01	1.29
			[-0.51]		[-0.64]		[-0.63]	

152

ET			0.01**	1.33	0.01**	1.44	0.01**	1.44
			[2.15]		[2.30]		[2.31]	
Dummy Effects					YE & IE		YE & IE	
Constant	-0.01		0.06		0.17		0.15	
	[-0.16]		[0.18]		[0.50]		[0.45]	
Observations	102		102		102		102	
Adjusted R²	0.02		0.13		0.13		0.13	

The coefficients of Treatment group (β_2) and IFRS (β_3) report negative but insignificant results of -0.002 and -0.010 in Model 4 in Table 19, respectively. The β_2 result indicates that bank and insurance IPO firms in Saudi Arabia slightly underperform Tadawul by only 0.2%, yet this marginal underperformance is not statistically significant. The statistically insignificant and negative coefficient of β_3 renders evidence supporting the results reported in the mean equality test in Table 18. It infers that the IFRS mandate has no relationship with the disclosure quality of mandating firms and has no economic benefits for bank and insurance IPO issuers in the long-term in Saudi Arabia. This, in turn, provides a lack of support for Hypothesis 2-1, and it is consistent with Dorsman et al. (2010) who find that IFRS provides intangible economic benefits to the long-term performance of IPO firms in Denmark. However, the critical question is: how can such an opposing result of the impact of IFRS mandate on the long-term performance of IPO firms be interpreted?

In the previous result section, Section 6.2, significant empirical evidence finds a strong certification effect of IFRS mandating in reducing the *ex-ante* uncertainty of IPO investors, leading to lower IPO underpricing. This evidence is also noted in developed IPO markets (Dorsman et al. 2010; Hong et al. 2014). Piecing together the results of IFRS mandating on the short-term IPO underpricing and long-term performance of IPO firms, the following interpretation is provided. It can be argued that IFRS mandating has only a short-lived effect and has no long-lasting impact on information asymmetry in the IPO market. Stated differently, the result can infer that IFRS succeeds in reducing information asymmetry problems in the primary market by offering investors and analysts additional and quality information related to IPO firms. In the secondary market, however, IFRS fails to produce any benefits to users of financial reports for IPO firms post-listing. Thus, the author of this thesis contends that the superior market information that populates the secondary market significantly reduces the ability of IFRS to provide benefits to users of financial reports. This weakened role could be related to the informational nature of the secondary market, where relevant and reliable information about listed firms is readily available. This abundance of

information can perhaps help IPO parties to capture the fair market value of IPO stocks post-listing, which probably reflects on the aftermarket price performance. This inference is supported by prior studies that show a great asymmetric information gap between the primary and secondary markets (Mauer & Senbet 1992; Shi et al. 2013; Hong et al. 2014).

However, Model 4 provides a supportive outcome for Hypothesis 2-2, confirming that its prediction is correct. This is because β_4 shows a value of -0.042, and it is statistically significant at 5%. When IPO firms experience a high level of underpricing perhaps caused by IPOs' share prices being optimistically overvalued by investors and analysts on the first trading day of the IPO firm, these IPO underperform in the long-term. Such an overvaluation mistake will be gradually observed in the secondary market within the first 12 months of post-listing. Hence, once the initial enthusiasm about the performance of IPO firms fades away, investors are likely to review their valuation of IPO firms leading to poorer long-term performance compared to Tadawul. The result for Hypothesis 2-2 is consistent with Sehgal and Singh (2008) Mudambi et al. (2012), Alanazi and Al-Zoubi (2015), and Zhao et al. (2018) who discover a negative association between the initial over-optimism of IPO investors measured by the level of IPO underpricing and long-term performance of IPO firms. Table 19 shows that firm- and market-specific determining factors to the long-term performance of IPO firms are not all important. This is because significant results for only four indicators are found. The results report that IPOs underwritten by reputable underwriters and having a large offer size underperform the general market index in the 12-month period. In contrast, IPO firms that are characterised with an integer offer price and have longer elapsed time outperform their benchmark. These results are relatively consistent with prior studies including Ritter (1991), Dorsman et al. (2010), and Alanazi and Al-Zoubi (2015).

Table 19 also reports the results of the adjusted R-squared value for Model 4, indicating that the DiD design manages to explain 13% of the variations of long-term performance in the Saudi Arabian IPO market. When the adjusted R-squared results between the four models in Table 19 are compared, it can be seen that long-term performance is largely explained by firm- and market factors. It may appear that adjusted R-squared value is too low, yet this is common in similar studies. For instance, the adjusted R-squared values reported by Dorsman et al. (2010) (0.10; Table 6; Model 4), Alanazi and Al-Zoubi (2015) (0.09; Table 8; Model 1), and Lizińska and Czapiewski (2018) (0.02; Table 5; Model 6).

6.3.3. Robustness Tests

In this section, six series of robustness tests are conducted in Table 20 to maximise the reliability and confidence in the previous results[43] presented in Table 19. Firstly, a control for potential bias in the results caused by not controlling the synthetic clustering in the DiD model is accounted for.

---

[43] For un-tabulated results, the outcomes of the diagnostic analysis for residuals are provided to confirm the OLS models utilised comply with the BLUE. This includes examining for multicollinearity amid explanatory variables using VIF test, normality in the distribution of residuals using Jarque and Bera (1980) normality test, serial correlation in residuals using Durbin and Watson (1971) D-statistic test, and heteroscedasticity of residuals using Breusch and Pagan (1979) test. For the evaluation of the multicollinearity test, Liu et al. (2011) is followed to contend that a multicollinearity problem occurs when the value of VIF exceeds a threshold value of 5. The models used exhibit no multicollinearity problem since all VIF values are below the threshold of 5, excluding Model 3, where Model 4 is employed to circumvent this problem. Jointly, the diagnostic analysis for residuals demonstrates that outcomes for the four models fulfil the BLUE. This is due to the fact that this thesis fails to reject the null hypothesis of normality and serial correlation in residuals at 5% level of significance. However, the mainstream of the models used rejects the null hypothesis of homoscedasticity at 5% level of significance. This suggests that the distribution of residuals is heterogeneous, therefore the author of this thesis controls for the heteroscedasticity problem by employing the White (1980) heteroscedastic-robust standard error in all models in Table 19 and in all remaining models, following Habib and Ljungqvist (2001).

Table 20. Robustness Tests

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 102 IPO firms from 15 industries listed from 2003 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. WR is an alternative dependent variable used in Model 10 WR is wealth relatives measure, and it is defined as the IPOs holding period return over the 12 months' period, divided by the benchmark's "Tadawul" holding period return over the same period. A wealth relative larger than 1 points to the IPOs outperforming the benchmark, while a WR less than 1 can be understood as IPOs underperforming the benchmark. The DiD variables include post[44], treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2017. IFRS refers to the interaction term that captures the change in long-term performance for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Global financial crisis (GFC) refers to every IPO firm listed during the 2008 GFC. It is a dummy variable, and it equals one if an IPO firm is listed in the GFC; otherwise, it equals zero. The Gulf Cooperation Council crisis (GCC) refers to every IPO firm listed during the 2006 stock market crash which occurred in the GCC countries. It is a dummy variable, and it equals one if an IPO firm is listed in the GCCC; otherwise, it equals zero. Cap effect (CE) refers to IPOs listed in 2013 and onwards of which Tadawul applied a price fluctuation cap of 10% up or down for every traded IPO share. It is a dummy variable, and it equals one if an IPO firm was listed in 2013 and onwards, otherwise it equals zero. Financing through local equity market (FTLEM) is an annual index that measures the eases of accessing local equity by listed firms in Saudi Arabia. The index measures the extent companies can raise money by issuing shares and/or bonds on their capital market in which 1 = not at all; 7 = to a great extent from 2003 to 2016 sourced from World Economic Forum (2017). Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** $p<0.01$, ** $p<0.05$, * $p<0.1$ for one-tail.

Variables	Model 1 by IFRS	Model 2 by Years	Model 3 by Industries	Model 4 Excluding Outliers	Model 5 2SLS Estimation	Model 6 Bootstrap Estimation	Model 7 by IFRS	Model 8 by Years	Model 9 by Industries	Model 10 Additional Control Variables using WR
		Clustered Test					Additional Control Variables + Excluding Outliers + Clustered Test			
Panel A: DiD Independent Variables										
Treatment	-0.01	-0.01	-0.01	0.13	0.01	-0.01	0.06	0.06	0.06	0.12
	[-0.87]	[-0.01]	[-0.03]	[0.65]	[0.01]	[-0.01]	[1.90]	[0.47]	[0.59]	[0.59]
IFRS	-0.01	-0.01	-0.01	-0.08	0.01	-0.01	0.05	0.05	0.05	-0.02
	[-0.16]	[-0.04]	[-0.09]	[-0.35]	[0.01]	[-0.04]	[1.22]	[0.23]	[0.76]	[-0.06]
Panel B: Firm-level Control Variables										
UP	-0.04	-0.04**	-0.04**	-0.07***	-0.04**	-0.04*	-0.02	-0.02	-0.02*	-0.04*
	[-2.28]	[-1.85]	[-2.15]	[-2.43]	[-1.94]	[-1.62]	[-1.09]	[-0.97]	[-1.52]	[-1.64]
URD	-0.16	-0.16*	-0.16*	-0.17*	-0.10	-0.16*	-0.17	-0.17**	-0.17*	-0.17

---

[44] The variable Post is dropped because it has a strong multicollinearity the variable YE.

	[-0.83]	[-1.65]	[-1.55]	[-1.45]	[-0.77]	[-1.34]	[-1.03]	[-2.07]	[-1.73]	[-1.25]
TFD	-0.10***	-0.10	-0.10	-0.09	-0.12	-0.10	0.29*	0.29*	0.29**	0.061
	[-40.6]	[-0.44]	[-0.47]	[-0.40]	[-0.53]	[-0.37]	[6.24]	[1.75]	[1.95]	[0.36]
PMV	-0.02	-1.96	-1.96	-1.87	-2.23	-1.96	-2.56	-2.56	-2.56	-4.75
	[-2.32]	[-0.47]	[-0.68]	[-0.50]	[-0.66]	[-0.47]	[-2.59]	[-0.65]	[-0.95]	[-1.12]
OS	-0.01	-0.01	-0.01	-0.01**	-0.01**	-0.01	-0.01	-0.01	-0.01	-0.01
	[-2.83]	[-1.26]	[-1.04]	[-1.69]	[-1.70]	[-1.01]	[-0.36]	[-0.11]	[-0.12]	[-0.71]
IOPD	0.26	0.26*	0.26**	0.25**	0.27**	0.26*	0.06	0.06	0.06	0.05
	[1.78]	[1.41]	[2.16]	[1.67]	[1.94]	[1.62]	[0.43]	[0.32]	[0.55]	[0.25]
PFD	0.01	0.01	0.01	0.03	-0.01	0.01	-0.15	-0.15	-0.15	-0.02
	[0.07]	[0.05]	[0.04]	[0.12]	[-0.03]	[0.04]	[-1.06]	[-0.96]	[-0.75]	[-0.09]
OP	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.01	0.01	0.01
	[-0.88]	[-0.52]	[-1.05]	[-0.69]	[-0.54]	[-0.31]	[0.08]	[0.05]	[0.09]	[0.17]
ET	0.01	0.01**	0.01*	0.01**	0.01***	0.01**	0.01	0.01	0.01	0.01*
	[2.60]	[2.09]	[2.01]	[2.36]	[2.44]	[1.72]	[0.80]	[0.97]	[1.16]	[1.54]
Cap Effect							-0.27*	-0.27***	-0.27**	-0.23
							[-4.38]	[-3.67]	[-2.53]	[-1.10]
GCC2006							0.23*	0.23**	0.23**	-0.022
							[4.36]	[2.08]	[1.87]	[-0.15]
GFC2008							-0.07*	-0.07	-0.07	0.73**
							[-4.32]	[-0.89]	[-0.55]	[1.83]
FTLE							0.73*	0.73**	0.73***	0.43**
							[5.09]	[2.48]	[2.72]	[2.01]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	0.15**	0.15	0.15	0.15	0.13	0.15	-3.14*	-3.14**	-3.14***	-2.23
	[27.1]	[0.57]	[0.36]	[0.44]	[0.41]	[0.39]	[-5.18]	[-2.26]	[-2.90]	[-1.13]
Observations	102	102	102	100	102	102	100	100	100	102
Adjusted R^2	0.13	0.13	0.13	0.16	0.13	0.13	0.23	0.23	0.23	0.20
N of Clusters	2	14	15	NA	NA	NA	2	14	15	NA
P-value of Hausman's Endogeneity Test	NA	NA	NA	NA	0.48	NA	NA	NA	NA	NA
P-value of Cragg and Donald's Weak Instruments	NA	NA	NA	NA	0.05	NA	NA	NA	NA	NA

This is due to the nature of the DiD estimation that might cause an econometric problem. For instance, Bertrand et al. (2004) argue that a synthetic clustering can develop from using the DiD model. According to these authors, the DiD method can possibly cause error terms for the OLS model to correlate within two clustered groups, mandating versus non-mandating IFRS groups, leading to biased standard errors and flawed statistical results. Other forms of clustering can also exist in the IPO data, and these are caused by possible correlations in residuals within years or industries. For example, Ibbotson and Jaffe (1975) report that year clustering effect will occur in the IPO data in which years with big IPO listings are often followed by periods of great activity in the IPO market. Ritter and Welch (2002) also draw attention to potential industry clustering in the IPO market, where large volumes of IPO firms are concentrated in some specific industries. To deal with this potential econometric problem, this thesis follows Cameron and Miller (2015) in employing cluster-robust standard errors estimation. Secondly, previous tests are redone after controlling for potential outliers in the data. This is because Table 15 reported statistical results for the dependent variable, BHAR, indicating the probable appearance of outliers. The table documents maximum and minimum BHAR values of 173% and -163%, respectively, of which average BHAR is 4% throughout the listed 102 IPO firms from 2003 to 2017. The exclusion of these outliers is determined by using the outlier detection procedure following Rousseeuw and Leroy (2005) to drop outlier values that have a Cook score greater than an absolute value of 3.

Thirdly, potential endogeneity in the OLS model is taken into consideration following previous disclosure and IPO literature (Daske et al. 2013; Shi et al. 2013; Fontes et al. 2018). For example, Habib and Ljungqvist (2001) contend that the choice between prestigious or non-reputable underwriting banks is probably endogenously determined by the IPO firms, resulting in a biased OLS model. In this context, prior studies discover a relationship between the long-term performance of IPO firms and the quality of underwriters where they find that IPOs underwritten by reputable underwriters tend to perform better in the long-run (Dong et al. 2011; Paleari et al. 2014). This highlights the possible existence of endogeneity between underwriter reputation and the error term of the BHAR model. Paleari et al. (2014) are followed to correct for a potential prestigious underwriter endogeneity problem by employing the two-stage least squares (2SLS) technique using a robust instrumental variable. Furthermore, to confirm the existence of endogeneity, Hausman (1978) Endogeneity Test is employed to examine the null hypothesis that underwriter reputation is exogenous. Subsequently, Cragg and Donald (1993) Weak Instruments

Test examines the null hypothesis that the employed instrument is weak. The employed instrumental variable is defined as the percentage that equals the median amount of IPO proceeds of all underwritten IPOs for every underwriter, divided by the median number of underwritten IPOs in Saudi Arabia.

Fourthly, the unbalanced distribution of IPO data and the small sample size are controlled for by utilising bootstrapping estimation following Efron and Tibshirani (1986) and Harris and Judge (1998). This is because the authors caution that not employing interpretations derived from the use of uneven and a small number of observations as this could lead to inefficient and unreliable outcomes. Fifthly, incorporating additional economic and stock market factors is done to check the sensitivity of prior findings. These factors introduced the price cap for newly listed IPOs in 2013, GCC stock market crisis in 2006, the GFC in 2008, and improvement in financing through the local equity market in Saudi Arabia from 2005 to 2016. Lastly, a wealth relative (WR[45]) ratio is employed as an alternative measure for the dependent variable. This is because IPO literature tends to employ WR as a complement to the BHAR measure, to check the consistency of the results (Alanazi & Al-Zoubi 2015; Dang & Jolly 2017).

Table 20 presents 10 models of which Model 1, 2, and 3 capture the probable existence of clustering in error terms between IFRS versus non-IFRS group, within years, and within industries, respectively. Model 4 excludes two outliers found in the data while Model 5 presents the outputs of the 2SLS estimation along with the results derived from Hausman's (1978) Endogeneity Test and Cragg and Donald's (1993) Weak Instruments Test. Model 6 reports the results using bootstrap estimation while the results after incorporating additional control variables are presented in Models 7 to 9. Finally, Model 10 delivers the results after using wealth relative ratio as an alternative dependent variable. Collectively, the overall outputs of these 10 models provide consistent results rejecting the prediction of Hypothesis 2-1 while lending support for Hypothesis 2-2. These sensitivity checks confirm previous conclusions that IFRS mandate does not provide any economic benefits to the long-term performance of IPO firms in Saudi Arabia. In contrast, traditional determinants of long-term performance, such as the level of IPO underpricing, affect the

---

[45] The WR is defined as the adjusted return from all IPOs within 12 months of listing, divided by the adjusted return from the Tadawul "benchmark" over the same period. A WR larger than 1 means that the IPOs outperformed Tadawul, while a WR less than 1 indicates IPOs underperformed Tadawul (Alanazi & Al-Zoubi 2015).

aftermarket performance that could be perhaps driven by the initial over-optimism of IPO investors.

6.4. The Joint Effects of IFRS Mandate and Time-variant Changes in Transparency on the Underpricing of IPO Firms

6.4.1. Descriptive Statistics

Table 21 presents the descriptive statistics providing the mean and median of IPO underpricing of 100 listed IPO companies from 2005 to 2016 being 211% and 77%, respectively. The highest record level of underpricing is 1400% while the lowest record underpricing is -18%. This signifies that the data contains some IPO observations with extreme underpricing values, while others are overpriced. Table 21 shows that the standard deviation of IPO underpricing is 309%. The table also indicates that 48% (Post) of IPOs listed in the stock market of Saudi Arabia are floated post-IFRS mandate in 2008, and 15% (IFRS) of all listed firms had mandated IFRS. The treatment group that contains IPO firms in the banking and insurance industry before and after IFRS mandate from 2005 to 2016 represents 36% of all listed IPO firms. Moreover, the table exhibits that 71% and 9% of all listed IPO firms are underwritten by prestigious underwriters and are categorised as technology firms, respectively. The average and median for offer size of Saudi Arabian IPO firms are $225.05 and $83.3 million, respectively.

Table 21. Descriptive Statistics for Firm-, Market-, and Formal Institutional Quality Variables

This table provides summary statistics for firm - and market-specific variables for 102 IPO firms from 15 industries listed from 2003 to 2016. Underpricing (UP) is the dependent variable and calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm- and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2003 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Time-variant formal institutional proxies include EBF, SARS, and TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy].

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	N
UP	2.11	0.77	14	-0.18	3.09	100
Post	0.48	0	1	0	0.50	100
Treatment	0.36	0	1	0	0.48	100
IFRS	0.15	0	1	0	0.36	100
URD	0.71	1	1	0	0.46	100
TFD	0.09	0	1	0	0.29	100
OS	225.05	83.30	3600	7.10	512.72	100
IOPD	0.99	1	1	0	0.10	100
PFD	0.93	1	1	0	0.26	100
OP	9.84	2.97	136.57	2.29	16.47	100
ET	113	48	1114	3	225	100
PMV	0.02	0.01	0.08	0	0.01	100
EBF	4.86	4.94	5.34	4.43	0.28	12
SARS	5.17	5.35	5.34	4.72	0.33	12
TGP	4.52	4.56	4.99	4.20	0.21	12

Also evident in Table 21 is the fact that the majority of Saudi Arabian IPO firms accounting for 99% have an integer offer price, while 93% of them are classified as private sector firms. The table documents that the average offer price of IPO firms listed in Saudi Arabia is $9.84. The average time required for a Saudi Arabian IPO company to be listed from its announcement date is 113 days. Table 21 also demonstrates that the average standard deviation of Tadawul fifteen days before the listing of an IPO company is 2%. The average level of ethical behaviour of Saudi Arabian firms is 4.86 out of 7 from 2005 to 2016, with a standard deviation of 28%. Likewise, the average recorded level of strength of auditing and reporting standards in Saudi Arabia scores 5.17 out 7. The mean value of transparency of government policymaking is 4.52 out of 7 over 12 years, according to the table. The largest recorded intertemporal changes in the formal institutional quality in Saudi Arabia are recorded for the variable SARS with a deviation of 33%. This implies that the level of transparency in Saudi Arabia experienced reasonably substantial changes from 2005 to 2016.

Table 22 summarises the sample distribution of IPO data and average underpricing by year. It can be perceived that the largest attained average underpricing of 434% occurred in 2007. In the same year, 23 IPO firms were floated on the market, constituting the largest volume of IPO listings across the 12 years-window. This may point toward the possible occurrence of a year clustering effect in the IPO market of Saudi Arabia.

Table 22. Average IPO Underpricing and Sample Distribution by Year

Year	Average Underpricing	Number of IPOs
2005	4.26	4
2006	1.89	11
2007	4.34	23
2008	1.53	14
2009	2.29	11
2010	0.95	10
2011	0.24	5
2012	0.77	8
2013	1.04	4
2014	0.59	6
2015	0.60	3
2016	0.04	1

The table also documents that the smallest average underpricing and number of IPO listings are recorded in 2016 with an underpricing value of 4% and only one IPO firm being listed. Overall, it can be seen that the overall trend of IPO underpricing follows a volatile movement that is, however, declining sharply from 426% to 4% over the last 12 years. The average level of underpricing and sample distribution by industry is presented in Table 23. Across the 15 industries in the Saudi Arabian stock market, the table demonstrates that IPO firms listed from the commercial bank and insurance industries suffer from the largest level of underpricing scoring 498% and 414%, respectively.

Table 23. Average IPO Underpricing and Sample Distribution by Industry

Industries	Average Underpricing	Number of IPOs
Telephone Communications	0.52	2
Radio/TV/Telecom	0.25	2
Commercial Bank	4.98	3
Insurance	4.14	33
Manufacturing	1.15	33
Real Estate	0.75	6
Retail	0.55	5
Wholesale	0.48	3
Other Finance	0.32	1
Other Services	2.23	1
Transportation	1.45	3
Pers/Bus/Rep Svc	0.17	1
Construction	0.16	2
Healthcare	0.85	3
Restaurant/Hotel	0.46	2

The table illustrates that IPOs in the construction industry experience the lowest recovered underpricing of 16%. The table also reveals that amongst the 15 industry groups in the stock market of Saudi Arabia, the biggest number of IPO listings is recorded for insurance and manufacturing IPO firms. Jointly, there are 66 listed IPO companies only related to insurance and manufacturing industries, representing more than half of the listings in Saudi Arabia from 2005 to 2016. This finding may indicate the possible existence of an industry clustering effect.

6.4.2. Results and Discussion

6.4.2.1. Mean Equity Test for IPO Underpricing and Formal Institutional Quality

This section examines the outputs of the T-statistics for the means equality tests of unequal variances for IPO underpricing and proxies for formal institutional quality pre- and post-IFRS mandate. Table 24 aims to compare the level of IPO underpricing between two groups of data for pre- and post-IFRS mandate periods. The first group is the treatment group, specifically consisting of IFRS mandatory adopters such as banks and insurance IPO firms. In contrast, the second group is the control group, namely IFRS non-mandatory adopters, and it comprises all IPO firms except for banks and insurance businesses. Table 24 reveals that the mean underpricing for the treatment group before mandating IFRS is 635% for 16 bank and insurance IPOs from 2005 to 2007[46]. Conversely, the table indicates that the level of IPO underpricing for the control group is largely lower than the treatment group. This is because the mean underpricing of the control group pre-IFRS mandate is 164%. The difference in means between the two groups is 471% at the 1% level of significance. This finding shows that the average underpricing of bank and insurance IPOs is virtually four times greater than the average underpricing of other IPO companies listed in Tadawul before mandating the application of IFRS.

---

[46] Observations from 2008 are excluded to remove the potential confounding effects in the transition year following Hong et al. (2014).

Table 24. Means Equality Tests of Unequal Variances for IPO Underpricing

This table provides means equality tests of unequal variances regarding IPO underpricing for 100 IPO firms from 15 industries listed from 2005 to 2016. T-statistics are at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	Pre-IFRS		Post-IFRS		Difference in Means	T-statistic Test
	Mean	N	Mean	N		
Mandatory Adopters	6.35	16	2.38	15	-3.97	-2.86**
Non-mandatory Adopters	1.64	22	0.48	33	-1.16	-2.06*
Difference in Means	4.71		1.90			
T-statistic Test	3.94***		2.88**			

This remarkable evidence relating to the high underpricing figures for bank and insurance IPO firms in the Saudi Arabian stock market is consistent with comparable evidence attained by Mayes and Alqahtani (2015) and Boulanouar et al. (2016). Table 24 provides strong evidence of a large reduction in IPO underpricing following the 2008 IFRS mandate. This is because the mean underpricing of the treatment group is 238%. In contrast, the mean underpricing for the control group is 48%. The variance in means between the two groups is 190%, and it is significant at the 1% level. Nonetheless, this great underpricing variance could imply that the IFRS mandate does not provide the anticipated economic benefits to the treatment group, as comparing the change in the variance of the means between the two groups pre- and post-IFRS mandate discloses a remarkable change in perception. For instance, the significantly large reduction—281% (calculated as 471% - 190% =281%)—in the difference in means between the treatment and control groups compared to the pre-IFRS stage is likely to be attributed to IFRS. This important finding indicates that IFRS provides improved disclosure quality in the financial prospectuses of bank and insurance IPO companies. It also implies that IFRS works as a certification instrument and provides better quality information for the Saudi Arabian bank and insurance IPO firms. Consequently, the application of IFRS could be responsible for alleviating the *ex-ante* uncertainty amongst IPO investors, resulting in lower underpricing.

However, this early evidence is not conclusive as bank and insurance IPO firms in Saudi Arabia only mandate IFRS. Hence, a fair comparison is needed to be made within these two industries before and after the IFRS mandate, to comprehensively observe the effect of IFRS on IPO underpricing. The results of the mean equality tests for the mandatory group pre- and post-

IFRS shows that underpricing plunged from a record high of 635% in the pre-IFRS phase to 238% in the post-IFRS phase, at a 1% level of significance. In other words, the evidence provided in Table 24 documents that the significant drop in the average level of IPO underpricing for the treatment group by 397% is related to IFRS mandate.

These findings strongly lean towards supporting the expectation of Hypothesis 3-1, consequently signifying that the application of IFRS improves the disclosure quality of bank and insurance IPO firms and, in turn, decreases their underpricing. However, Hypothesis 3-1 conditions the impact of IFRS on IPO underpricing while controlling for intertemporal changes in transparency. Hence, the results in Table 24 are inclusive for this hypothesis. To fairly attribute the change in the level of IPO underpricing to IFRS, it is imperative to observe the intertemporal variances in the quality of the formal institutional environment in Saudi Arabia. If there is no significant change in the level of transparency in Saudi Arabia over the period from 2005 to 2016, then the observed significant reduction in underpricing for the treatment group might confidently be related to the IFRS mandate. Table 25 provides the outcomes of the mean equality test for three proxies for the formal institutional quality in Saudi Arabia from 2005 to 2016

Table 25. Means Equality Tests of Unequal Variances for Transparency Proxies

This table provides means equality tests of unequal variances for transparency for 100 IPO firms from 15 industries listed from 2005 to 2016. Time-variant formal institutional proxies include EBF, SARS, and TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. T-statistics are at *** p<0.01, ** p<0.05, * p<0.1.

	Pre-IFRS		Post-IFRS		Difference in Means	T-statistic Test
	Mean	N	Mean	N		
EBF	4.67	38	5.07	48	0.40	10.30***
SAR	4.98	38	5.39	48	0.41	7.78***
TGP	4.39	38	4.68	48	0.29	8.46***

6.4.2.2. Regression Analysis for the Joint Effects of IFRS Mandate and Transparency on the Underpricing of IPO Firms

In this section, a presentation for the results and a discussion for each country-level formal institutional proxy for Saudi Arabia are separately provided. Although the three employed transparency indicators are designed to measure the overall status of intertemporal changes in governance, each one of them focuses on a specific aspect of the transparency level in Saudi Arabia. For example, the first proxy, ethical behaviour of firms, measures the extent of corporate ethics of companies in Saudi Arabia, including ethical behaviour in interactions with public officials, politicians, and other firms. Hence, this proxy gauges the overall transparency of the private sector in Saudi Arabia. The second proxy, strength of auditing and reporting standards, measure the quality of financial auditing and reporting standards in Saudi Arabia. Therefore, this proxy measures the overall quality of the accounting profession, which constitutes an important part of the formal institutional quality in Saudi Arabia. The third and final proxy, transparency of government policymaking, measures the extent to which it becomes easy for some connected

business bodies to acquire private information about changes in government policies and regulations that influence their business activities. Thus, this proxy gauges the overall institutional quality of the Saudi Arabian government.

The Joint Effects of IFRS Mandate and Ethical Behaviour of Firms on the Underpricing of IPO Firms

Table 26 presents the results of seven DiD models to examine the three proposed research hypotheses all adjusted for heteroscedasticity. Model 1 in Table 26 shows the results of a DiD model by regressing the outcome variable UP, IPO underpricing, on three explanatory covariates related to the DiD model, including Post, Treatment, and IFRS. The results indicate that the coefficient of Post (β_1) is negative and significant (-0.91; Table 26; Model 1; p<0.05). This result illustrates that average underpricing for all listed IPO companies in Saudi Arabia post-IFRS mandate from 2009 to 2016 declines by 91% compared to the period before IFRS mandate from 2005 to 2007. This finding is also confirmed by previous IPO underpricing scholars in advanced and developing nations (Su 2004; Boulton et al. 2011; Shi et al. 2013; Hearn 2014). The coefficient for the Treatment group (β_2) is positive and significant (4.13; Table 26; Model 1; p<0.01). The result of β_2 evidently demonstrates that underpricing for bank and insurance IPO firms is significantly higher than other listed IPOs in different industries in Tadawul by 413%. This finding is consistent with a similar observation attained by Boulanouar et al. (2016) who find that average underpricing for bank and insurance IPOs in the stock market of Saudi Arabia is 455%.

The results show the coefficient of β_3 is significant and negative (-2.23; Table 26; Model 1; p<0.05), thus confirming that IFRS mandate works as certification tool that curtails the *ex-ante* uncertainty of IPO investors, hence, reduces underpricing for bank and insurance IPO firms by 223% after 2008. This evidence encourages support for Hypothesis 3-1. The result of β_3 concurs with a similar finding obtained by Hong et al. (2014) but is economically and statistically greater. This is because Hong et al. (2014) uncovered evidence showing that IFRS mandate curtails underpricing only by 7.6% (-0.076; Table 6; Model 1; p<0.05). The large difference between the economic significance obtained for the results in Table 26 compared to those reported by Hong et al. (2014) could be attributed to the differential impact of IFRS in developed versus emerging

economies. This is because Hong et al.'s (2014) study employs an EU-dominated and developed non-EU sample while this thesis utilises an emerging country sample, specifically Saudi Arabia. It means that the economic effect of IFRS mandate in the primary market in emerging non-EU countries is almost 32 times larger than what is observed in the EU and developed non-EU countries.

Table 26. Difference in Differences OLS Regression Concerning the Effect of Joint Effect on IPO Underpricing in Saudi Arabia Using Ethical Behaviour of Firms

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF and IFRS*EBF. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5	Model 6	VIF 6	Model 7	VIF 7
Panel A: DiD Independent Variables														
Post	-0.91** [-2.05]	1.56	-1.31* [-1.33]	2.12	-0.71 [-0.77]	2.46	-0.84 [-0.88]	2.52	-0.71 [-0.78]	2.45	0.01 [0.01]	7.83		
Treatment	4.13*** [4.21]	1.84	2.98*** [4.38]	1.15	4.01*** [3.76]	2.11	4.09*** [3.78]	2.13	4.04*** [3.77]	2.12	3.29*** [2.98]	2.97	3.29*** [3.00]	2.95
IFRS	-2.23** [-1.89]	2.25			-2.16** [-1.78]	2.31	25.1 [0.90]	1504.23						
Panel B: Transparency Independent Variables														
EBF			-1.01 [-0.55]	2.32	-0.57 [-0.31]	2.38	-0.2 [-0.10]	2.55	-0.53 [-0.29]	2.39	-0.73 [-0.38]	2.94	-0.72 [-0.44]	2.2

	M1	M2	M3	M4	VIF	M5	VIF	M6	VIF	M7	VIF
IFRS*EBF				-5.44 [-0.98]	1508.05	-0.44** [-1.81]	2.32	-0.49** [-1.97]	2.83	-0.49** [-1.96]	2.28
Panel C: Firm-level Control Variables											
URD								0.54 [0.97]	1.2	0.54 [0.96]	1.18
TFD								-1.26** [-2.24]	1.33	-1.26** [-2.17]	1.3
PMV								-36.80* [-1.61]	1.27	-36.80** [-1.79]	1.2
OS								-0.01** [-2.18]	1.32	-0.01** [-2.17]	1.27
IOPD								2.30*** [3.02]	1.11	2.30*** [3.00]	1.1
PFD								1.87** [1.67]	1.26	1.87** [1.68]	1.26
OP								-0.01 [-0.64]	1.34	-0.01 [-0.68]	1.33
ET								0.01*** [2.44]	1.48	0.01*** [2.46]	1.48
Dummy Effects								YE & IE		YE & IE	
Constant	1.39*** [3.18]	6.57 [0.78]	4.11 [0.49]	2.35 [0.26]		3.93 [0.46]		3.80 [0.43]		3.78 [0.51]	
Observations	100	100	100	100		100		100		100	
Adjusted R²	0.35	0.32	0.34	0.34		0.34		0.38		0.39	

Model 2 formally examines the prediction of Hypothesis 3-2 by incorporating the first proxy of formal institutional quality, EBF, into the equation. Results reveal that EBF is negative but insignificant, providing no support to Hypothesis 3-2 (-1.01; Table 26; Model 2; p>0.10). This finding implies that improvements in the overall quality of the private sector's transparency measured by the level of EBF in Saudi Arabia from 2005 to 2016 do not influence underpricing for listed IPO firms. This evidence is similar in concept with Hearn (2014) who discovers no supportive results for the hypothesised negative relationship between the level of regulatory quality and IPO underpricing in emerging countries (-1.06; Table 5; Model 12; p>0.10). The author uses regulatory quality to gauge the overall transparency in government regulations related to the growth of the private sector. Moving on, Model 3 progresses the empirical testing by simultaneously controlling for the effects of IFRS and EBF on IPO underpricing in Saudi Arabia. Consistent with the results obtained in Models 1 and 2, results here support the significant and negative effect of IFRS mandate on IPO underpricing, while insignificant and negative coefficients are attained for the variable EBF.

Model 4 examines the prediction of Hypothesis 3-3. The hypothesis tests if the joint effect between IFRS mandate and intertemporal changes in transparency has a negative relationship with IPO underpricing in Saudi Arabia. Surprisingly, Model 4 provides insignificant results for β_3, β_4, and β_5, rejecting Hypotheses 3-1, 3-2, and 3-3. This is attributable to the existence of a multicollinearity problem, as indicated by the VIF values of 1504.23 and 1508.05 for the variables IFRS and IFRS*EBF, respectively. To overcome this econometric challenge, the variable IFRS is dropped in Model 5 as the focus is on testing the joint effect hypothesis. Strong evidence shows that the joint effect of the IFRS mandate and intertemporal changes in the ethical behaviour of firms alleviates underpricing by 44% (-0.44; Table 26; Model 5; p<0.05).

However, the outcomes attained in Model 5 in Table 26 do not account for firm- and market-specific determinants that are recognised as influencing IPO underpricing, which is contended by Shi et al. (2013) and Hong et al. (2014). Model 6 extends the empirical examination by incorporating a number of controlling firm- and market-specific factors related to the IPO underpricing literature (Habib & Ljungqvist 2001; Ritter & Welch 2002; Boulton et al. 2010; Engelen & Van Essen 2010). Firm-specific variables contain underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). Model 6 also includes pre-IPO market

173

volatility (PMV) as a proxy for market-specific effect. The result concerning β_5 in Model 6 continued to be significant even after adding firm- and market-specific factors, along with year and industry dummies. However, the outputs of VIF6 indicate there is a multicollinearity problem caused by the variable Post because its VIF reads as a value of 7.83, exceeding the threshold of 5 for the variance inflation factor test. To overcome this issue, Model 7 re-examines Hypothesis 3-3 while dropping the variable Post as the year dummy replaces its role.

Consistently strong support is attained for β_5, proving that the joint effect of IFRS*EBF reduces underpricing for bank and insurance IPO firms by 49% (-0.49; Table 26; Model 7; $p<0.05$). Model 7 indicates that IPO underpricing is statistically lower for technology firms while pre-IPO market volatility increases for large IPO firms. The results also document that IPO underpricing is larger for integer offer priced IPO firms, private sector IPOs, and as time elapses. Moreover, the outcomes of Model 7 reveal that underwriter reputation and offer price have no relationship with IPO underpricing in Saudi Arabia. Overall, most firm- and market-specific factors provide similar results to previous IPO underpricing literature (Su & Fleisher 1999; Bradley et al. 2004; Song et al. 2014; Alanazi & Al-Zoubi 2015). The adjusted R-squared values for all of the DiD models are relatively high, ranging from 32% to 39%. It indicates that the DiD design is successful in clarifying up to 39% of the variability in IPO underpricing in Saudi Arabia.

The Joint Effects of IFRS Mandate and Strength of Auditing and Reporting Standards on the Underpricing of IPO Firms

Table 27 presents the outcomes of six DiD models similar to the previous table. It sets out to evaluate the three research hypotheses by focusing on the second formal institutional proxy SARS, the strength of auditing and reporting standards. Before checking the results related to Hypothesis 3-1, the outcomes of the first two components of the DiD model, including Post and Treatment, are inspected. The table indicates that the coefficient of Post (β_1) is negative and insignificant (-0.85; Table 27; Model 1; $p>0.10$). This result is consistent with what is documented in Table 26. However, a positive and significant coefficient for β_2 (4.08; Table 27; Model 1; $p<0.01$) is uncovered.

174

Table 27. Difference in Differences OLS Regression with Robust Standards Errors Estimation to Adjust for Heteroskedasticity concerning the Effect of Joint Effect on IPO Underpricing in Saudi Arabia using Strength of Auditing and Reporting Standards

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include SARS and IFRS*SARS. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. T-statistics in brackets are at *** p<0.01, ** p<0.05, * p<0.1 for one-tail.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5	Model 6	VIF 6
Panel A: DiD Independent Variables												
Post	-0.85	2.16	-1.60**	1.66	-1.12	2.27	-0.83	2.13	-0.52	6.21		
	[-1.04]		[-1.87]		[-1.28]		[-1.04]		[-0.56]			
Treatment	4.08***	2.06	3.06***	1.20	4.25***	2.10	4.15***	2.08	3.56***	2.84	3.64***	2.71
	[3.90]		[4.35]		[4.00]		[3.93]		[3.38]		[3.56]	
IFRS	-2.22**	2.26			23.00**	477.60						
	[-1.87]				[1.79]							
Panel B: Transparency Independent Variables												
SARS	-0.18	1.90	-0.27	1.90	0.55	2.24	-0.11	1.91	0.56	2.28	0.43	2.11
	[-0.13]		[-0.19]		[0.36]		[-0.08]		[0.37]		[0.30]	
IFRS*SARS					-4.81**	477.65	-0.44**	2.26	-0.50**	2.78	-0.55***	1.98
					[-1.98]		[-1.98]		[-2.17]		[-2.55]	
Panel C: Firm-level Control Variables												

175

URD					0.54	1.2	0.58	1.18
					[0.97]		[1.04]	
TFD					-1.26**	1.33	-1.33***	1.29
					[-2.27]		[-2.32]	
PMV					-37.80*	1.27	-35.50**	1.19
					[-1.65]		[-1.70]	
OS					-0.01**	1.32	-0.01**	1.24
					[-2.11]		[-2.02]	
IOPD					1.92***	1.09	1.91***	1.09
					[2.72]		[2.72]	
PFD					1.99**	1.25	2.02**	1.24
					[1.77]		[1.81]	
OP					-0.01	1.41	-0.01	1.4
					[-0.98]		[-0.97]	
ET					0.01***	1.47	0.01***	1.47
					[2.32]		[2.31]	
Dummy Effects					**YE & IE**		**YE & IE**	
Constant	2.30	3.16	-1.39	1.91	-2.21		-1.49	
	[0.35]	[0.47]	[-0.18]	[0.29]	[-0.32]		[-0.23]	
Observations	100	100	100	100	100		100	
Adjusted R^2	0.32	0.34	0.35	0.34	0.38		0.39	

The finding from Table 27 confirms what is revealed in Table 26 that underpricing for bank and insurance IPO firms is significantly greater than other listed IPOs in dissimilar industries by 408%. Table 27 presents the significant and negative coefficient for β_3 (-2.22; Table 27; Model 1; p<0.05). This outcome is the same as prior findings that IFRS significantly alleviates underpricing for bank and insurance companies by 222% post-IFRS mandate in 2008. This evidence supports the contention of Hypothesis 3-1.

The results in Models 1 and 2 in Table 27 also provide supportive outcomes for previous findings related to Hypothesis 3-2 using the second proxy of formal institutional quality SARS, the strength of auditing and reporting standards. This is because a negative but insignificant coefficient for β_4 (-0.18; Table 27; Model 1; p>0.10) is continuously attained. This result indicates that enhancements in the overall quality of the accounting profession's transparency measured by the level of SARS in Saudi Arabia from 2005 to 2016 have no relationship with underpricing in Tadawul. This finding disagrees with the results of Shi et al. (2013). These authors find a negative and significant relationship between the overall level of auditor quality across 34 countries and IPO underpricing between 1995 and 2002. The attribution of this difference between the insignificant result of SARS reported in Table 27 and that obtained by Shi et al. (2013) is likely due to a sample domination problem. This is because approximately 84% of the employed IPO sample in Shi et al.'s (2013) study is from developed countries. In fact, the authors state that their results related to the impact of auditors' quality on underpricing are only consistent with several studies that focused on developed countries, specifically concentrating on the US IPO market (Beatty 1989; Hogan 1997).

However, the SARS's results are in line with recent empirical evidence from emerging non-EU countries conducted by Dhamija and Arora (2017). Contrary to their hypothesis, the authors find an improvement in the level of auditing quality provides no underpricing benefits to IPO firms in India. Thus, the attribution of this insignificant effect of SARS on underpricing in emerging countries is due to the existence of a weak ethical behaviour environment within firms in those economies. The argument is that a weak level of ethical practice is likely to signal a weak commitment of management to quality and transparent financial reporting (Felo 2001). This means that in countries where the level of ethical behaviour of firms is low such as in Saudi Arabia, the quality of SARS will be inferior. Boolaky and Cooper (2015) uncover empirical evidence showing

that the level of SARS is positively and significantly affected by the level of ethics in emerging countries.

Models 3 to 6 aim to test the expectation of Hypothesis 3-3 concerning the negative joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia. Consistent with previous findings in Table 26, Model 3 in Table 27 illustrates insignificant outcomes for β_3 and β_4. Although Model 3 in Table 27 provides a negative and significant coefficient for β_5 bringing support to Hypothesis 3-3, the model is not reliable. This is completely related to the existence of a multicollinearity problem as pointed out by the substantial VIF values of 477.60 and 477.65 for the variables IFRS and IFRS*SARS. This multicollinearity problem is overcome in Models 4, 5, and 6. This is achieved by dropping the variables that have VIF results exceeding the threshold of 5 and also by adding a number of controlling factors related to firm- and market-specific variables. Model 6 offers the strongest support for the joint effect of the IFRS mandate and intertemporal changes in SARS in reducing the *ex-ante* uncertainty of IPO investors, resulting in a lower asymmetric information problem in the IPO market. Hence, the interaction of IFRS*SARS led to alleviating underpricing by 55% in Saudi Arabia's IPO market (-0.55; Table 27; Model 6; p<0.01). The results support similar findings attained by Shi et al. (2013). They find a simultaneous negative effect of better auditing and reporting standards and disclosure regulations in relieving the problem of information asymmetry in countries with weaker auditing practices.

Table 27 reports that the majority of the controlling firm- and market-specific covariates deliver comparable outcomes to the results in Table 26 and are consistent with prior IPO underpricing literature (Su & Fleisher 1999; Bradley et al. 2004; Song et al. 2014; Alanazi & Al-Zoubi 2015). The results associated with the adjusted R-squared for the six DiD models are comparatively high illuminating up to 39% of the changeability in IPO underpricing in the IPO market in Saudi Arabia.

The Joint Effects of IFRS Mandate and Transparency of Government Policymaking on the Underpricing of IPO Firms

A presentation of the results for the third proxy of country-level governance, transparency of government policymaking, is presented in Table 28. Similar to previous tables, six DiD models are tested to examine the three proposed research hypotheses, all of which are adjusted for heteroscedasticity. Consistent with the previously attained results in Tables 26 and 27, the first two elements of the DiD model, Post and Treatment, provide similar outcomes. The results indicate that the coefficient of Post (β_1) is negative and insignificant (-0.50; Table 28; Model 1; p>0.10). Likewise, a positive and significant coefficient result for β_2 (3.90; Table 28; Model 1; p<0.01) continues to be found. This outcome re-emphasises the earlier finding in Tables 26 and 27 that underpricing for bank and insurance IPO firms is significantly larger than other listed IPOs in the IPO market of Saudi Arabia by 390%.

Consistent with prior results, the significant and negative outcome of the coefficient β_3 lends support for Hypothesis 3-1, confirming that IFRS mandate diminishes bank and insurance IPO firms' underpricing by 208% (-2.08; Table 28; Model 1; p<0.05). The outcomes of the variable TGP from Models 1 to 6 in Table 28 are scrutinised to validate the result of β_4. Remarkably, weakly significant and negative results for β_4 are uncovered. These outcomes are consistent with the prediction for Hypothesis 3-2 only when the effect of IFRS in those models is captured, as shown in Models 1 and 3. For an illustration, the results show that time-variant changes in the transparency of government policymaking in Saudi Arabia post-2005, have a weakly significant and negative effect on IPO underpricing by 208% (-2.08; Table 28; Model 2; p<0.10). This finding is likely to point to the likelihood that a reduction in IPO underpricing in the IPO market is possibly influenced by the introduction of IFRS in 2008. This intuition is verified by the absence of significant results for TGP when IFRS is incorporated into the equation. This finding is, in fact, consistent with a similar empirical observation noted by Hong et al. (2014). The authors discover an insignificant effect of their rule of law proxy, which captures the overall quality of formal institutions similar to the TGP proxy when their IFRS variable is included in the model.

Table 28. Difference in Differences OLS Regression with Robust Standards Errors Estimation to Adjust for Heteroskedasticity concerning the Effect of Joint Effect on IPO Underpricing in Saudi Arabia using Transparency of Government Policymaking

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include TGP and IFRS*TGP. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5	Model 6	VIF 6
Panel A: DiD Independent Variables												
Post	-0.50 [-0.74]	2.16	-1.13* [-1.58]	1.75	-0.54 [-0.78]	2.20	-0.50 [-0.75]	2.15	0.50 [0.48]	7.20		
Treatment	3.90*** [3.85]	2.01	2.92*** [4.61]	1.09	3.92*** [3.84]	2.02	3.91*** [3.86]	2.01	3.01*** [2.75]	2.96	2.97*** [2.74]	2.92
IFRS	-2.08** [-1.75]	2.29			7.85 [0.29]	1640.84						
Panel B: Transparency Independent Variables												
TGP	-1.69 [-1.08]	1.90	-2.08* [-1.33]	1.87	-1.53 [-0.94]	2.05	-1.65 [-1.06]	1.90	-2.48* [-1.54]	2.32	-2.20* [-1.46]	1.89
IFRS*TGP					-2.14 [-0.37]	1643.95	-0.45** [-1.76]	2.3	-0.50** [-1.86]	2.84	-0.45** [-1.80]	2.2
Panel C: Firm-level Control Variables												
URD									0.56 [1.01]	1.2	0.53 [0.97]	1.18
TFD									-1.25** [-2.24]	1.33	-1.19** [-2.20]	1.3
PMV									-38.01** [-1.69]	1.27	-39.80** [-1.90]	1.21
OS									-0.01*** [-2.40]	1.32	-0.01*** [-2.53]	1.28
IOPD									2.71*** [3.22]	1.11	2.68*** [3.20]	1.1
PFD									1.59* [1.41]	1.3	1.59* [1.43]	1.3
OP									-0.01 [-0.66]	1.26	-0.01 [-0.68]	1.26
ET									0.01*** [2.65]	1.48	0.01*** [2.66]	1.48
Dummy Effects									YE & IE		YE & IE	
Constant	8.89* [1.31]		11.00* [1.61]		8.21 [1.16]		8.74 [1.28]		11.50* [1.62]		10.20* [1.51]	
Observations	100		100		100		100		100		100	
Adjusted R^2	0.34		0.33		0.35		0.34		0.40		0.40	

The corroboration of Hypothesis 3-3 is reported in Models 3 to 6. The hypothesis examines the existence of the negative joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia. Consistent with prior results in Table 26, β_3, β_4, and β_5 all provide insignificant results in Model 3 in Table 28. Again, the existence of a multicollinearity problem as reported by the large VIF values of 1640.84 and 1643.95 for the variables IFRS and IFRS*TGP, respectively, is the real cause of this insignificant outcome. Hence, to solve this problem, the variable IFRS in Models 4, 5, and 6 is dropped because the focus here is on testing Hypothesis 3-3 that is only captured by the interaction term IFRS*TGP. Robust evidence is realised and confirms the negative joint effect of IFRS mandate and time-variant variations in transparency in government policymaking in alleviating underpricing by 45% (-0.45; Table 28; Model 6; $p<0.05$). The results provided by Models 4 and 5 are disregarded because the former does not control for firm- and market-specific factors while the latter suffers from a multicollinearity problem. This is according to the VIF value of 7.2 related to the variable Post.

The results related to the interaction term of IFRS*TGP differ from the finding of Hong et al. (2014). The scholars tested the impact of IFRS mandate on IPO underpricing using partitioned IPO data, which was 99% dominated by the developed EU and non-EU country sample as discussed previously[47], between nations where low versus high rule of law is evident. Their results report a significant effect of IFRS mandate in reducing IPO underpricing by 7.6% only in countries with a high level of rule of law, which is a common characteristic for most developed nations. The results of this thesis, therefore, provide the first empirical evidence to prove the existence of a significant joint effect of IFRS mandate and time-variant changes in formal institutional quality in emerging non-EU economies. This finding implies that the application of IFRS reduces the problem of asymmetric information in the IPO market by providing trustworthy accounting information. Consequently, IFRS is shown to work as a quality certification tool that reduces the *ex-ante* uncertainty of IPO investors in the IPO market, even in countries with poor institutional quality, which is a shared characteristic in most emerging non-EU countries such as Saudi Arabia. However, the empirical evidence is far more important and economically significant than what is observed in developed EU and non-EU countries. This is because the coefficient result of 45% related to the interaction term of IFRS*TGP is almost seven times greater than the 7.6% associated

---

[47] Please see footnote 23.

with the coefficient of IFRS for developed EU and non-EU nations (see Hong et al. (2014). The finding related to the significant joint effect of changes in formal institutional quality proxies and IFRS mandate on the underpricing of IPO firms agrees with Houqe et al. (2012b), as these scholars reveal empirical evidence showing the existence of a joint effect between investor protection and IFRS mandate in enhancing earnings quality. Results related to firm- and market-specific determining factors presented in Table 28 show consistently similar results, as reported in Tables 26 and 27 and prior IPO underpricing literature. Across Tables 26, 27 and 28, the results of the adjusted R-squared indicate that up to 40% of the variance in IPO underpricing in Saudi Arabia is explained by the 18 DiD models. This attained R-squared value is consistent with comparable adjusted R-squared results of 36% and 24% found by Houqe et al. (2012b) and Persakis and Iatridis (2017), respectively.

6.4.2.3. Robustness Tests

In this section, five sensitivity tests are employed in order to increase the confidence in and trustworthiness of the attained results[48] in previous sections. This is to make sure that prior findings are not an artefact of not accounting for the synthetic clustering in the DiD model, outliers, potential endogeneity in the OLS model, the unbalanced distribution of IPO data and small sample size, and omission of some economic and stock market factors related to the IPO market.

---

[48] For un-tabulated results, the author of this thesis provides the results of the diagnostic analysis for residuals to ensure the OLS models employed are the BLUE. This contains checking for multicollinearity between independent variables using VIF test, normality in the distribution of residuals using Jarque and Bera (1980) normality test, serial correlation in residuals using Durbin and Watson (1971) D-statistic test, and heteroscedasticity of residuals using Breusch and Pagan (1979) test. For examining the multicollinearity status in the employed models, the author of this thesis follows the recommendation of Liu et al. (2011) to accept the presence of a multicollinearity problem when the value of VIF goes above a threshold value of 5. The author finds that the models used have no multicollinearity issue since all VIF values are lower than a value of 5 with exception to Models 6, 5, and 5 in Tables 26, 27, and 28, respectively. Alternatively, this thesis employs Models 7, 6, and 6 in Tables 26, 27, and 28, respectively, to avoid this econometric issue. Collectively, across the 19 models in the above three tables, the diagnostic analysis for residuals shows that results adhere with the BLUE. This is because this thesis fails to reject the null hypothesis of normality and serial correlation in residuals at 5% level of significance. However, most of the employed models refute the null hypothesis of homoscedasticity at 5% level of significance. This means that the distribution of residuals is not homogeneous, thus, the author of this thesis follows Habib and Ljungqvist (2001) to correct for this heteroscedasticity issue utilising the White (1980) heteroscedastic-robust standard error in all models in Tables 26, 27, and 28 and in all remaining models.

6.4.2.3.1. Problematic Synthetic Clustering Related to DiD Design and Nature of the IPO Data

Although the DiD design provides an efficient method for investigating the effects of IFRS mandate on the underpricing of IPO firms by comparing the change in the underpricing for the treatment group with the change for the control group (Hong et al. 2014), it creates an econometric problem. For example, Bertrand et al. (2004) provide evidence emphasising that the DiD model can cause synthetic clustering. The authors highlight that the DiD technique induces error terms for the OLS model to correlate within the clustered group, resulting in biased standard errors and erroneous statistical outcomes. In order to overcome this problematic econometric issue, a re-testing for the validity of the results using cluster-robust standard errors estimation, following Cameron and Miller (2015), is conducted. Table 29 extends previous empirical testing by reporting the results of 18 DiD models utilising cluster-robust standard errors estimation on three forms of clusters. The first form captures a potential synthetic clustering in error terms within two clusters, including treatment and control groups, namely IFRS versus non-IFRS cluster.

Table 29. Results for DiD Models Using Clustered Robust Standard Errors Estimation

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post[49], treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1

---

[49] The variable Post is dropped because it has a strong multicollinearity the variable YE.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
			Clustered on IFRS						Clustered on YE						Clustered on IE			
Panel A: DiD Independent Variables																		
Treatment	3.26**	3.51**	3.58**	3.53**	2.95**	3.50**	3.26***	3.51***	3.58***	3.53***	2.95***	3.50***	3.26**	3.51***	3.58***	3.53***	2.95**	3.50***
	[6.86]	[16.30]	[7.38]	[19.00]	[6.67]	[15.60]	[3.69]	[4.73]	[4.68]	[4.70]	[3.11]	[4.74]	[2.57]	[5.03]	[3.38]	[5.14]	[2.40]	[4.99]
IFRS	-2.41**		-2.78**		-2.06**		-2.41**		-2.78**		-2.06**		-2.41**		-2.78***		-2.06**	
	[-12.50]		[-19.40]		[-15.00]		[-2.05]		[-2.65]		[-1.79]		[-2.50]		[-4.74]		[-2.32]	
Panel B: Transparency Independent Variables																		
EBF	-0.77						-0.77						-0.77					
	[-1.01]						[-0.52]						[-0.39]					
IFRS*EBF		-0.54**						-0.54***						-0.54***				
		[-20.6]						[-2.93]						[-11.0]				
SARS			0.35						0.35						0.35			
			[0.42]						[0.35]						[0.23]			
IFRS*SARS				-0.52**						-0.52***						-0.52***		
				[-16.3]						[-2.97]						[-12.1]		
TGP					-2.24						-2.24*						-2.24	
					[-2.78]						[-1.37]						[-1.05]	
IFRS*TGP						-0.59**						-0.59***						-0.59***
						[-22.9]						[-2.93]						[-10.6]
Panel C: Firm-level Control Variables																		
URD	0.55	0.57	0.58	0.57	0.53	0.57	0.55	0.57	0.58	0.57	0.53	0.57	0.55*	0.57**	0.58**	0.57**	0.53**	0.57**
	[2.22]	[2.47]	[2.51]	[2.46]	[2.13]	[2.48]	[0.88]	[0.99]	[1.01]	[0.99]	[0.86]	[0.99]	[1.75]	[1.99]	[1.91]	[1.98]	[1.97]	[1.99]
TFD	-1.25*	-1.31*	-1.33*	-1.30*	-1.18*	-1.31*	-1.25**	-1.31**	-1.33**	-1.30**	-1.18**	-1.31**	-1.25***	-1.31**	-1.33**	-1.30**	-1.18***	-1.31**
	[-4.79]	[-4.12]	[-5.02]	[-4.14]	[-4.47]	[-4.12]	[-2.48]	[-2.60]	[-2.60]	[-2.59]	[-2.40]	[-2.60]	[-2.79]	[-2.35]	[-2.60]	[-2.34]	[-2.82]	[-2.36]
PMV	-36.70**	-35.50**	-35.30**	-35.50**	-39.70**	-35.50**	-36.70	-35.50	-35.30	-35.50	-39.70	-35.50	-36.70***	-35.50***	-35.30***	-35.50***	-39.70***	-35.50***
	[-13.1]	[-9.02]	[-8.08]	[-9.09]	[-15.80]	[-8.81]	[-1.12]	[-1.05]	[-1.03]	[-1.05]	[-1.31]	[-1.05]	[-2.78]	[-2.99]	[-2.85]	[-2.98]	[-3.06]	[-3.00]
OS	-0.01	-0.01	-0.01	-0.01	-0.01*	-0.01	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	[-2.83]	[-2.42]	[-2.51]	[-2.25]	[-3.35]	[-2.50]	[-2.01]	[-2.11]	[-2.01]	[-2.01]	[-2.26]	[-2.16]	[-3.12]	[-4.42]	[-3.69]	[-4.34]	[-3.27]	[-4.46]
IOPD	2.32	2.05	1.94	2.05	2.70	2.05	2.32***	2.05**	1.94***	2.05**	2.70***	2.05**	2.32**	2.05***	1.94**	2.05***	2.70**	2.05***
	[1.85]	[2.08]	[1.51]	[2.10]	[2.27]	[2.08]	[3.36]	[2.59]	[2.94]	[2.57]	[3.98]	[2.59]	[1.89]	[2.89]	[1.78]	[2.92]	[2.31]	[2.88]
PFD	1.86	1.97	1.99	1.98	1.58	1.97	1.86*	1.97*	1.99*	1.98*	1.58	1.97*	1.86**	1.97**	1.99**	1.98**	1.58*	1.97**
	[2.81]	[2.52]	[2.94]	[2.49]	[2.60]	[2.54]	[1.49]	[1.70]	[1.61]	[1.70]	[1.20]	[1.70]	[2.11]	[2.61]	[2.44]	[2.61]	[1.72]	[2.62]
OP	-0.01*	-0.01**	-0.01*	-0.01**	-0.01**	-0.01**	-0.01	-0.01*	-0.01	-0.01	-0.01	-0.01*	-0.01	-0.01	-0.01**	-0.00	-0.01	-0.01
	[-4.61]	[-7.48]	[-3.34]	[-10.20]	[-26.50]	[-7.01]	[-0.55]	[-1.39]	[-0.98]	[-1.35]	[-0.67]	[-1.40]	[-1.56]	[-0.85]	[-2.16]	[-0.85]	[-0.87]	[-0.85]
ET	0.01	0.01	0.01	0.01	0.01	0.01	0.01**	0.01**	0.01**	0.01**	0.01**	0.01**	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*
	[1.23]	[1.24]	[1.20]	[1.24]	[1.31]	[1.24]	[1.93]	[1.85]	[1.82]	[1.84]	[2.13]	[1.85]	[1.40]	[1.44]	[1.38]	[1.43]	[1.52]	[1.44]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	3.99	0.52	-1.08	0.48	10.40*	0.54	3.99	0.52	-1.08	0.48	10.40	0.54	3.99	0.52	-1.08	0.48	10.40	0.54
	[1.92]	[0.38]	[-0.43]	[0.34]	[4.60]	[0.40]	[0.55]	[0.33]	[-0.20]	[0.30]	[1.30]	[0.35]	[0.43]	[0.73]	[-0.14]	[0.66]	[1.05]	[0.76]
Observations	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted R²	0.39	0.40	0.39	0.40	0.40	0.4	0.39	0.40	0.39	0.40	0.40	0.40	0.39	0.40	0.39	0.40	0.40	0.40
N of Clusters	2	2	2	2	2	2	12	12	12	12	12	12	15	15	15	15	15	15

186

Models 1 to 6 in Table 29 report the results using robust standard errors clustered on IFRS versus no-IFRS groups to validate the findings of Hypotheses 3-1, 3-2 and 3-3. Consistent with previous outcomes in Tables 25, 26, and 27, the coefficient of IFRS is negative and significant at the 5% level, as shown in Models 1, 3, and 5, respectively. Likewise, the three proxies for time-variant changes in formal institutional quality in Saudi Arabia, including EBF, SARS, and TGP, report negative and insignificant coefficients. However, the three interaction terms, including IFRS*EBF, IFRS*SARS, and IFRS*TGP that capture the joint effect of IFRS mandate and changes in transparency, provide negative and significant results. These are consistent with prior results.

The second form of clustering captures the possible existence of clustering, and this is due to the nature of the IPO data. These correlations occur in residuals within years. This is because Ibbotson and Jaffe (1975) document evidence for the year clustering effect in the IPO data in which years with large IPO listings are frequently shadowed by periods of high activity in the IPO market. Models 7 to 12 report the results after controlling for 12 year-clusters. Across these six models, consistent overall outcomes are reported similar to previous findings. The third form of clustering in the IPO data is captured by controlling for probable correlations within error terms within industry clusters. Ritter and Welch (2002) highlight the possible occurrence of industry clustering in the IPO market, where large volumes of IPO firms are recognised in some specific industries. Models 13 to 18 account for the existence of correlations in residuals within 15 identified industry clusters in the IPO market of Saudi Arabia. Consistent with earlier results in Tables 25, 26, and 27, strong results are attained, confirming the prediction of Hypotheses 3-1 and 3-3 while rejecting Hypothesis 3-2. Overall, the results reported in Table 29 indicate some changes in the T-statistic values after capturing the effect of clustering in residuals within two clusters, IFRS versus non-IFRS group, within 12 year-clusters, and 15 industry clusters. Yet, the results reported in Table 29 provide robust and supportive outcomes for previous findings.

6.4.2.3.2. Dealing with Outliers, Endogeneity, and Unbalanced Distribution of Data

Reported outcomes related to descriptive statistics in Table 21 reveal the possible existence of outliers in the employed IPO data. This is because the table reports maximum and minimum underpricing observation of 1400% and -18% respectively, with average underpricing of 211% for the 100 listed IPO firms from 2005 to 2016. Therefore, an examination of the sensitivity of the previously obtained findings in Tables 25, 26, and 27 that contain outliers is undertaken. This is achieved by employing the outlier detection procedure following Rousseeuw and Leroy (2005) so that outliers in the IPO data that have a Cook score larger than an absolute value of 3 are eliminated. Models 1 to 6 in Table 30 report the results of six DiD models using robust standard errors estimation after excluding 3 IPO observations that caused an outlier threat. Consistently, similar results are acquired that generate strong support to prior findings that accepted Hypotheses 3-1 and 3-3 but refuted Hypothesis 3-2.

Moreover, Table 30 circumvents the problem of endogeneity in the OLS model. This problem can be caused by two things: firstly, the endogenous decision of IPO issuers to select reputable underwriters; and secondly, the issuers' decision to self-select a specific time where they observe an increase in the overall transparency in a given country. For example, IPO underpricing literature, including Habib and Ljungqvist (2001), argues that the decision to pick between either reputable or non-reputable underwriters is likely to be endogenously determined by the issuer, resulting in biased OLS coefficients. Glennerster and Shin (2008) also find an endogeneity link between the level of transparency measured by the quality and frequency of disclosed macroeconomic information to the public and the reduction of borrowing costs in sovereign bond markets. Therefore, Habib and Ljungqvist (2001) and Glennerster and Shin (2008) are followed to employ the two-stage least squares (2SLS) technique in order to deal with these problems. Table 30 presents the results of three models using robust standard errors estimation and 2SLS estimation, the aim being to adjust for endogeneity in the variables URD, EBF, SARS, and TGP.

The results of the Hausman's Endogeneity Test reported in Table 30 fail to reject exogeneity in the three models for the variables URD, EBF, SARS, and TGP. These outcomes suggest that IPO issuers neither endogenously choose prestigious underwriters when they go public nor correlate their decision to list their firms when the level of formal institutional quality

in Saudi Arabia changes. Moreover, the results of the Cragg and Donald Weak Instruments Test confirm that the instruments employed to correct for this endogeneity are indeed robust.

Table 30. Results for DiD Models Using Robust Standard Errors Estimation to Deal with Outliers, Endogeneity, and Unbalanced Distribution of Data

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post[50], treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value; otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

---

[50] The variable Post is dropped because it has a strong multicollinearity the variable YE.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
	Excluding Outliers						2SLS Endogeneity Estimation			Bootstrap Estimation					
							Panel A: DiD Independent Variables								
Treatment	3.12**	3.34***	3.45***	3.35***	2.81**	3.33***	3.07***	3.15***	3.10***	3.26***	3.51***	3.58***	3.53***	2.95***	3.50***
	[2.45]	[4.76]	[3.23]	[4.87]	[2.29]	[4.73]	[2.79]	[2.93]	[2.91]	[3.04]	[3.01]	[3.38]	[3.86]	[2.58]	[3.62]
IFRS	-2.38**		-2.74***		-2.02**		-1.88	-2.08*	-1.99*	-2.41**		-		-2.06**	
	[-2.49]		[-4.75]		[-2.32]		[-1.51]	[-1.79]	[-1.69]	[-1.90]		[-2.48]		[-1.75]	
							Panel B: Transparency Independent Variables								
EBF	-0.67						-1.54			-0.77					
	[-0.33]						[-1.02]			[-0.47]					
IFRS*EBF		-0.53***										-			
		[-10.6]										[-2.57]			
SARS			0.51					-1.47				0.35			
			[0.32]					[-1.00]				[0.27]			
IFRS*SARS				-0.51***									-0.52***		
				[-11.6]									[-2.89]		
TGP					-2.15				-1.75					-2.24*	
					[-0.98]				[-1.04]					[-1.53]	
IFRS*TGP						-0.57***									-0.59***
						[-10.2]									[-2.68]
							Panel C: Firm-level Control Variables								
URD	0.60**	0.62**	0.63**	0.62**	0.59**	0.62**	1.65	1.70	1.53	0.55	0.57	0.58	0.57	0.53	0.57
	[1.77]	[1.94]	[1.89]	[1.93]	[2.00]	[1.94]	[1.19]	[1.23]	[1.09]	[0.99]	[0.96]	[1.02]	[1.11]	[0.96]	[0.92]
TFD	-1.35***	-1.39**	-1.42***	-1.39**	-1.27***	-1.40**	-1.53**	-1.55**	-1.49**	-1.25**	-1.31*	-1.33**	-1.30**	-1.18**	-1.31**
	[-2.99]	[-2.52]	[-2.77]	[-2.51]	[-3.03]	[-2.53]	[-2.27]	[-2.23]	[-2.27]	[-2.06]	[-1.58]	[-1.92]	[-2.31]	[-1.83]	[-1.95]
PMV	-37.80***	-36.80***	-36.70***	-36.80***	-40.80***	-36.80***	-41.60**	-39.10*	-41.80**	-36.70*	-35.50*	-35.30*	-35.50*	-39.70**	-35.50**
	[-2.75]	[-2.85]	[-2.67]	[-2.85]	[-3.09]	[-2.85]	[-2.02]	[-1.90]	[-2.06]	[-1.62]	[-1.55]	[-1.55]	[-1.46]	[-1.72]	[-1.74]
OS	-0.01***	-0.01***	-0.01***	-0.01**	-0.01***	-0.01***	-0.01**	-0.01**	-0.01**	-0.01*	-0.01	-0.01*	-0.01*	-0.01*	-0.01*
	[-2.79]	[-4.09]	[-3.17]	[-4.02]	[-3.01]	[-4.12]	[-2.48]	[-2.34]	[-2.53]	[-1.32]	[-1.19]	[-1.55]	[-1.38]	[-1.65]	[-1.41]
IOPD	2.49**	2.25***	2.10**	2.25***	2.86**	2.25***	2.74***	2.67***	2.68***	2.32***	2.05**	1.94**	2.05**	2.70***	2.05**
	[2.02]	[3.08]	[1.90]	[3.11]	[2.46]	[3.08]	[2.97]	[2.93]	[3.02]	[2.45]	[2.01]	[2.11]	[2.28]	[3.33]	[2.26]
PFD	1.91**	2.02***	2.06**	2.02***	1.63*	2.01***	1.47	1.53	1.41	1.86*	1.97*	1.99*	1.98*	1.58	1.97**
	[2.12]	[2.69]	[2.50]	[2.68]	[1.72]	[2.69]	[1.32]	[1.39]	[1.25]	[1.48]	[1.56]	[1.59]	[1.50]	[0.86]	[1.74]
OP	-0.01**	-0.01	-0.01***	-0.01	-0.01	-0.01	0.01	0.01	-0.01	-0.0!	-0.0!	-0.01	-0.01	-0.001	-0.01
	[-2.00]	[-1.00]	[-2.68]	[-0.99]	[-1.09]	[-1.00]	[0.14]	[0.44]	[-0.24]	[-0.33]	[-0.40]	[-0.46]	[-0.45]	[-0.25]	[-0.30]
ET	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.01**	0.01**	0.01**	0.01**	0.01*	0.01*	0.01**	0.01**	0.01**
	[1.37]	[1.44]	[1.35]	[1.43]	[1.50]	[1.44]	[2.42]	[2.29]	[2.50]	[1.88]	[1.56]	[1.31]	[1.88]	[2.22]	[2.00]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	3.63	0.6	-1.72	0.56	10.1	0.62	6.97	6.69	7.76	3.99	0.52	-1.08	0.48	10.4*	0.54
	[0.38]	[0.83]	[-0.22]	[0.76]	[1.00]	[0.85]	[0.96]	[0.94]	[0.99]	[0.51]	[0.31]	[-0.17]	[0.30]	[1.51]	[0.34]
Observations	97	97	97	97	97	97	100	100	100	100	100	100	100	100	100
Adjusted R²	0.39	0.4	0.39	0.4	0.4	0.4	0.44	0.43	0.46	0.39	0.40	0.39	0.40	0.40	0.40
P-value of Hausman's Endogeneity	NA	NA	NA	NA	NA	NA	0.40	0.11	0.77	NA	NA	NA	NA	NA	NA
P-value of Cragg and Donald's Weak Instruments Test	NA	NA	NA	NA	NA	NA	0.05	0.05	0.05	NA	NA	NA	NA	NA	NA

This re-emphasises the absence of an endogeneity problem in the previously employed DiD models utilising OLS modelling. Hence, the reported coefficient results in Models 7, 8, and 9 in Table 30 are not reliable. This is because employing 2SLS estimation can only be reliable when there is an endogeneity effect; otherwise, the 2SLS estimation would provide inferior results compared to the OLS estimation (Habib & Ljungqvist 2001). Consequently, this indeed preserves the reliability of and confidence in the reported results using OLS estimation in Tables 26, 27, and 28.

Now, the empirical testing progresses to account for the effect of an unbalanced distribution of data and the small sample size of the employed IPO data on the sensitivity of prior findings. This is because Efron and Tibshirani (1986) contend that inferences obtained by using an uneven and small number of observations can produce inefficient and unreliable results. The IPO data of this section has only observations that are unequally distributed over 15 industries and 12 years. To overcome this potential problem in the IPO data, Table 30 reports the results of six DiD models after using bootstrapping estimation following Efron and Tibshirani (1986) and Harris and Judge (1998). Jointly, the results of Table 30 yield quantitively comparable outcomes to the previous results. These findings confirm that IFRS mandate decreases underpricing for bank and insurance IPO firms by up to 278% (-2.78; Table 30; Model 15; $p<0.01$). This evidence supports Hypothesis 3-1. The results also reveal that time-variant changes in the three proxies of formal institutional quality, including EBT, SARS, and TGP, are negative but insignificant, thereby providing no support to Hypothesis 3-2. It means that enhancements in the overall quality of transparency in Saudi Arabia from 2005 to 2016 do not impact on underpricing for listed IPO firms. The table also documents strong evidence re-confirming that the joint effect between IFRS mandate and intertemporal changes in transparency in Saudi Arabia alleviates underpricing by up to -59% (-0.59; Table 30; Model 18; $p<0.01$). This evidence simply reconfirms the prediction of Hypothesis 3-3. Together, these results re-emphasise the reliability and stability of prior results reported in Tables 26, 27, and 28.

6.4.2.3.3. Additional Economic and Stock Market Control Variables

The final sensitivity check is presented in Table 31. The table reports the results of 18 DiD models employing clustered robust standard errors on IFRS, years, and industries along with controlling for four additional economic and stock market-specific factors in Saudi Arabia. The aim here is to validate the consistency of the three research hypotheses after the inclusion of these factors. These variables include the introduction of a price cap for newly listed IPOs in 2013, GCC stock market crisis in 2006, the GFC in 2008, and improvement in financing through the local equity market in Saudi Arabia from 2005 to 2016. Across the 18 models, consistently supportive results are attained similar to what is reported previously with reference to the findings for Hypothesis 3-1. After controlling for these additional factors, a greater effect for the coefficient IFRS is observed, documenting a reduction in IPO underpricing by up to 305% (-3.05; Table 31; Models 3, 9, and 15; p<0.01). Similarly, all interaction terms that capture the joint effect of IFRS mandate and changes in transparency report negative and significant results documenting a large decline in underpricing by up to 78% as shown in Models 6, 12, and 18. Therefore, Hypothesis 3-3 is re-confirmed.

However, once those additional controlling factors are added while accounting for clustered error terms, a weak significance at only the 10% level is found for most transparency proxies. This finding provides weak support for Hypothesis 3-2. Overall, the five employed robustness tests offer consistently supportive results to the empirical findings in Tables 26, 27, and 28. This indeed reinforces the conclusions in confirming the direct effect of IFRS mandate (Hypothesis 3-1), no effect of transparency (Hypothesis 3-2), and joint effect of IFRS mandate and time-variant changes in transparency on IPO underpricing in Saudi Arabia (Hypothesis 3-3). These conclusions remained intact and therefore there is no doubt that the empirical findings in this section are an artefact of not controlling for the following: the problematic clustering in the DiD model and IPO data, outliers, possible endogeneity in the OLS model, the uneven distribution of IPO data and small sample size, and additional economic and stock market factors.

Table 31. Results for DiD Models Using Clustered Robust Standard Errors Estimation after Including Additional Control Variables

This table provides the results of the DiD models for 100 IPO firms from 15 industries listed from 2005 to 2016. IPO underpricing is the dependent variable, and it is calculated as the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. The DiD variables include post[51], treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2016 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2016. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2016 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Global financial crisis (GFC) refers to every IPO firm listed during the 2008 GFC. It is a dummy variable, and it equals one if an IPO firm is listed in the GFC; otherwise, it equals zero. The Gulf Cooperation Council crisis (GCC) refers to every IPO firm listed during the 2006 stock market crash which occurred in the GCC countries. It is a dummy variable, and it equals one if an IPO firm is listed in the GCCC; otherwise, it equals zero. Cap effect (CE) refers to IPOs listed in 2013 and onwards of which Tadawul applied a price fluctuation cap of 10% up or down for every traded IPO share. It is a dummy variable, and it equals one if an IPO firm is listed in 2013 and onwards, otherwise it equals zero. Financing through local equity market (FTLEM) is an annual index that measures the eases of accessing local equity by listed firms in Saudi Arabia. The index measures the extent companies can raise money by issuing shares and/or bonds on their capital market in which 1 = not at all; 7 = to a great extent from 2003 to 2016 sourced from World Economic Forum (2017). Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
	Clustered on IFRS						Clustered on YE						Clustered on IE					
	Panel A: DiD Independent Variables																	
Treatment	3.45*	4.18**	3.67**	4.21**	3.49**	4.18**	3.45***	4.18***	3.67***	4.21***	3.49***	4.18***	3.45**	4.18***	3.67***	4.21***	3.49***	4.18***
	[6.29]	[10.3]	[6.70]	[11.3]	[6.72]	[10.0]	[3.18]	[4.34]	[3.66]	[4.32]	[3.26]	[4.36]	[2.58]	[5.60]	[3.10]	[5.71]	[2.74]	[5.55]
IFRS	-2.57**		-3.05***		-2.58***		-2.57**		-3.05***		-2.58**		-2.57**		-3.05***		-2.58**	
	[-23.2]		[-39.7]		[-48.9]		[-1.89]		[-2.90]		[-1.87]		[-2.03]		[-3.55]		[-2.18]	
	Panel B: Transparency Independent Variables																	
EBF	-2.60*						-2.60*						-2.60					

194

	G1(1)	G1(2)	G1(3)	G1(4)	G1(5)	G1(6)	G2(1)	G2(2)	G2(3)	G2(4)	G2(5)	G2(6)	G3(1)	G3(2)	G3(3)	G3(4)	G3(5)	G3(6)
	[-6.35]						[-1.66]						[-1.24]					
IFRS*EBF	-0.73***						-0.73***						-0.73***					
	[-44.4]						[-3.70]						[-10.7]					
SARS		-1.74*						-1.74*						-1.74				
		[-3.57]						[-1.70]						[-1.13]				
IFRS*SARS			-0.70***						-0.70***						-0.70***			
			[-32.2]						[-3.77]						[-11.4]			
TGP				-3.39**						-3.39*						-3.39*		
				[-12.2]						[-1.63]						[-1.35]		
IFRS*TGP					-0.78***						-0.78***						-0.78***	
					[-49.8]						[-3.69]						[-10.4]	
Panel C: Firm-level Control Variables																		
URD	0.52	0.42	0.54	0.42	0.55	0.42	0.52	0.42	0.54	0.42	0.55	0.42	0.52*	0.42*	0.54*	0.42*	0.55**	0.42*
	[1.44]	[1.27]	[1.54]	[1.28]	[1.48]	[1.26]	[0.90]	[0.73]	[0.93]	[0.73]	[0.96]	[0.72]	[1.74]	[1.42]	[1.72]	[1.42]	[1.87]	[1.42]
TFD	-1.17*	-1.26*	-1.23*	-1.25*	-1.14*	-1.26*	-1.17**	-1.26**	-1.23**	-1.25**	-1.14**	-1.26**	-1.17***	-1.26**	-1.23***	-1.25**	-1.14***	-1.26**
	[-3.95]	[-3.20]	[-3.99]	[-3.20]	[-3.66]	[-3.22]	[-2.55]	[-2.43]	[-2.58]	[-2.43]	[-2.47]	[-2.43]	[-2.72]	[-2.47]	[-2.68]	[-2.44]	[-2.77]	[-2.49]
PMV	-48.10***	-39.90***	-44.90***	-40.00***	-47.20***	-39.90***	-48.10*	-39.90	-44.90	-40.01	-47.21*	-39.91	-48.10***	-39.90***	-44.90***	-40.01***	-47.20***	-39.90***
	[-189]	[-49.1]	[-139]	[-75.0]	[-45.0]	[-47.2]	[-1.44]	[-1.18]	[-1.30]	[-1.19]	[-1.40]	[-1.18]	[-3.21]	[-3.73]	[-3.15]	[-3.69]	[-3.42]	[-3.74]
OS	-0.01***	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	[-118]	[-9.00]	[-19.4]	[-12.5]	[-15.8]	[-8.11]	[-3.04]	[-3.36]	[-2.90]	[-3.10]	[-3.14]	[-3.48]	[-3.64]	[-3.31]	[-3.86]	[-3.31]	[-3.48]	[-3.31]
IOPD	2.24	1.2	2.02	1.21	2.11	1.19	2.24***	1.20*	2.02***	1.21**	2.11***	1.19**	2.24**	1.2	2.02*	1.21*	2.11**	1.19*
	[2.14]	[1.45]	[1.79]	[1.44]	[2.25]	[1.45]	[4.57]	[1.94]	[4.59]	[1.96]	[4.95]	[1.93]	[1.82]	[1.64]	[1.74]	[1.67]	[1.87]	[1.63]
PFD	1.11	1.48	1.22	1.49	1.03	1.47	1.11	1.48	1.22	1.49	1.03	1.47	1.11*	1.48**	1.22*	1.49***	1.03	1.47***
	[1.80]	[2.25]	[1.92]	[2.20]	[1.70]	[2.28]	[0.84]	[1.21]	[0.96]	[1.22]	[0.76]	[1.20]	[1.35]	[2.74]	[1.57]	[2.73]	[1.25]	[2.75]
OP	0.01**	-0.01	0.01**	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01	-0.01
	[10.2]	[-1.17]	[12.7]	[-1.21]	[2.65]	[-1.13]	[0.65]	[-0.20]	[0.58]	[-0.19]	[0.45]	[-0.21]	[0.61]	[-0.100]	[0.53]	[-0.097]	[0.38]	[-0.10]
ET	0.01	0.01	0.01	0.01	0.01	0.01	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01	0.01*	0.01	0.01*	0.01
	[1.07]	[0.97]	[1.05]	[0.97]	[1.02]	[0.97]	[1.77]	[1.52]	[1.65]	[1.50]	[1.66]	[1.52]	[1.40]	[1.29]	[1.36]	[1.28]	[1.37]	[1.29]
Cap Effect	-0.51	-1.22	-0.53	-1.18	-0.7	-1.25	-0.51	-1.22**	-0.53	-1.18**	-0.7*	-1.25**	-0.51	-1.22	-0.53	-1.18	-0.71	-1.25
	[-0.46]	[-1.20]	[-0.61]	[-1.26]	[-0.57]	[-1.18]	[-0.90]	[-2.29]	[-1.00]	[-2.22]	[-1.49]	[-2.34]	[-0.52]	[-1.25]	[-0.58]	[-1.26]	[-0.73]	[-1.25]
GCC2006	2.02**	1.55***	1.97**	1.55**	1.87***	1.55***	2.02***	1.55***	1.97***	1.55***	1.87***	1.55***	2.02**	1.55***	1.97**	1.55***	1.87**	1.55***
	[25.70]	[32.70]	[14.40]	[30.10]	[69.40]	[35.00]	[3.02]	[3.02]	[2.97]	[3.01]	[2.99]	[3.02]	[2.58]	[3.03]	[2.51]	[3.00]	[2.88]	[3.03]
GFC2008	-1.07**	-0.64	-1.09**	-0.65	-0.74*	-0.64	-1.07***	-0.64**	-1.09***	-0.65**	-0.74**	-0.64**	-1.07*	-0.64	-1.09*	-0.65	-0.74	-0.64
	[-7.03]	[-2.72]	[-13.0]	[-2.95]	[-3.11]	[-2.66]	[-4.08]	[-1.81]	[-3.23]	[-1.85]	[-2.26]	[-1.80]	[-1.67]	[-0.80]	[-1.53]	[-0.81]	[-1.16]	[-0.80]
FTLE	-0.86	-3.19	-1.97	-3.16	0.092	-3.21	-0.86	-3.19*	-1.97	-3.16*	0.092	-3.21*	-0.86	-3.19	-1.97	-3.16*	0.092	-3.21*
	[-0.53]	[-1.65]	[-1.29]	[-1.68]	[0.05]	[-1.63]	[-0.50]	[-1.57]	[-1.15]	[-1.56]	[0.04]	[-1.58]	[-0.43]	[-1.67]	[-1.20]	[-1.68]	[0.04]	[-1.67]
Dummy Effects	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
Constant	16.30	15.10	17.80	14.90	14.60	15.20	16.30**	15.10*	17.80**	14.90*	14.60**	15.20*	16.30*	15.10*	17.80*	14.90*	14.60*	15.20*
	[1.89]	[1.85]	[2.10]	[1.89]	[1.56]	[1.82]	[2.14]	[1.57]	[1.99]	[1.55]	[1.84]	[1.58]	[1.63]	[1.67]	[1.69]	[1.67]	[1.49]	[1.66]
Observations	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted R²	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38	0.39	0.38
N of Clusters	2	2	2	2	2	2	12	12	12	12	12	12	15	15	15	15	15	15

6.5. The Joint Effects of IFRS Mandate and Transparency on the Long-term Performance of IPO Firms

6.5.1. Descriptive Statistics

Numerous descriptive statistical information for 100 listed IPO companies from 2005 to 2017 are reported in Table 32. The table indicates the average long-term BHAR for the 12-month window is 7%, which shows that IPO firms in Saudi Arabia perform better than their benchmark, the general market index, Tadawul. This outperformance evidence is consistent with prior studies. For instance, AlShiab (2018) documents a similar outperformance observation for 44 IPO firms listed in Saudi Arabia from 2001 to 2015. The author calculates average BHAR of 22% over a 12-month period. Recent evidence documented by Kamaludin and Zakaria (2018) also shows average BHAR for IPO firms in Saudi Arabia to outperform Tadawul by roughly 8.5% in the 12-month period. However, Alanazi and Al-Zoubi (2015) find contrary evidence for the one-year BHAR period reporting that IPO firms in Saudi Arabia underperform Tadawul by 8.92%. This observed dissimilarity in the BHAR's results between Alanazi and Al-Zoubi's (2015) data and the results reported in Table 32 could be related to the sample size and range. This is because the author of this thesis employs 100 IPO firms listed between 2005 and 2016, while Alanazi and Al-Zoubi (2015) utilise smaller data containing 76 IPO firms listed between 2003 and 2010.

Table 32 also presents the maximum value of BHAR being 173% while the minimum record of BHAR is -77%. Such a large variation between maximum and minimum values of BHAR might imply the presence of an extreme performance value. This is because the standard deviation of the BHAR for the 100 listed IPOs in Saudi Arabia is 48%. The table also exhibits that 48% (Post) of Saudi Arabian IPOs are listed post-mandated IFRS in 2008, in which 15% (IFRS) of all listed firms mandated IFRS. The table also reports that the average percentage of the treatment group that covers all banks and insurance IPO firms before and after IFRS mandate is 36%. Table 32 shows that the average IPO underpricing is 211%. The table shows that prestigious underwriting banks dominate the IPO market in Saudi Arabia since reputable underwriters are responsible for 71% of underwritten IPO firms. Non-technology firms also dominate the Saudi IPO market, as 89% of listed IPOs are classified as non-technology companies. Table 32 also shows that the

average offer size of Saudi Arabian IPOs is roughly $225 million, while the smallest IPO size recorded has an offer size of $83 million.

Table 32. Descriptive Statistics for Firm-, Market-, and Formal Institutional Quality Variables

This table provides summary statistics for firm- and market-specific variables for 100 IPO firms from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2003 to 2016. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Time-variant formal institutional proxies include EBF, SARS, and TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy].

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	N
BHAR	0.07	-0.04	1.73	-0.77	0.48	100
UP	2.11	0.77	14	-0.18	3.09	100
Post	0.48	0	1	0	0.50	100
Treatment	0.36	0	1	0	0.48	100
IFRS	0.15	0	1	0	0.36	100
URD	0.71	1	1	0	0.46	100
TFD	0.09	0	1	0	0.29	100
OS	225.05	83.3	3600	7.1	512.72	100
IOPD	0.99	1	1	0	0.10	100
PFD	0.93	1	1	0	0.26	100
OP	9.84	2.97	136.57	2.29	16.47	100
ET	113	48	1114	3	225	100
PMV	0.02	0.01	0.08	0	0.01	100
EBF	4.86	4.94	5.34	4.43	0.28	12
SARS	5.17	5.35	5.34	4.72	0.33	12
TGP	4.52	4.56	4.99	4.2	0.21	12

The table also indicates that 99% and 93% of listed IPO firms have an integer offer price and are classified as private firms. Average offer price and elapsed time are $9.84 and 113 days. Fifteen days prior to the listing of an IPO firm, Table 32 indicates that the average standard deviation of Tadawul experiences volatility of 2% while the maximum documented volatility is 8%. Table 32 also reports statistical information for three formal institutional proxies. For example, the table shows that the average level of ethical behaviour observed for firms in Saudi Arabia is 4.86 out of 7 from 2005 to 2016, with a standard deviation of 28%. Similarly, the mean documented level of strength of auditing and reporting standards in Saudi Arabia is found to be 5.17 out of 7. Moreover, the table reports the mean value of transparency of government policymaking being 4.52 out of 7 over 12 years' period. The biggest witnessed intertemporal changes in the formal institutional quality in Saudi Arabia are related to the variable SARS that shows a deviation from its mean by 33%. This suggests that the level of transparency in Saudi Arabia witnesses a great transformation from 2005 to 2016.

Table 33 reports the yearly statistical distribution data for BHAR over the 12-month window for all IPOs in Saudi Arabia's stock market. The table shows that Tadawul outperforms IPO firms in four years while only IPO firms outperform Tadawul in eight years. Prior to IFRS mandate in 2008, IPO firms are outperformed by 13% and 21% in 2006 and 2007, respectively. However, in 2008, on average, Tadawul outperforms IPO firms by 7%. In contrast, in the five following years, IPO market participants start to perceive the effect of IFRS which in turn might be attributed to an observed continuously improving outperformance by IPO firms, ranging from 2% to 51% from 2009 to 2013. In two years after 2013, Table 33 shows that Tadawul wins back the lead by outperforming IPO firms before it underperforms again by 24% in 2017.

Table 33. IPO Long-term Performance Measures and Sample Distribution by Year

This table provides yearly statistics for long-term performance for 100 IPO firms listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period.

Year	BHAR	Number of IPOs
2006	-0.97	4
2007	-1.63	11
2008	0.13	23
2009	0.21	14
2010	-0.07	11
2011	0.03	10
2012	0.02	5
2013	0.33	8
2014	0.51	4
2015	0.15	6
2016	-0.29	3
2017	-0.09	1

The aftermarket performance for the Saudi Arabian IPOs categorised by industry is reported in Table 34. The table also reports that 11 out of 15 industries IPOs in Saudi Arabia tend to outperform their general market index, Tadawul. The largest three percentages of BHAR performance – 104%, 52%, and 43% - are observed in the Radio/TV/Telecom industries, other services, and healthcare, respectively. In contrast, the poorest BHAR performance of -64% is documented in the Pers/Bus/Rep Svc industry. The table also indicates IPO firms that mandate the application of IFRS contain 33 outperforming and 3 underperforming IPO firms in the insurance and bank industries, respectively. For example, banking sector IPO firms record a poor BHAR return of -17% while insurance sector IPOs record a positive BHAR of 5%. Overall, this substantial difference in BHAR between industries documented in Table 34 is consistent with previous evidence found in the US and GCC markets by Ritter (1991) and Alanazi and Al-Zoubi (2015), respectively.

Table 34. IPO Long-term Performance Measures and Sample Distribution by Industry

This table provides industry statistics for long-term performance for 100 IPO firms listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period.

Industries	BHAR	Number of IPOs
Telephone Communications	0.22	2
Radio/TV/Telecom	1.04	2
Commercial Bank	-0.17	3
Insurance	0.05	33
Manufacturing	-0.04	33
Real Estate	0.19	6
Retail	0.03	5
Wholesale	0.04	3
Other Finance	-0.04	1
Other Services	0.52	1
Transportation	0.32	3
Pers/Bus/Rep Svc	-0.64	1
Construction	0.25	2
Healthcare	0.43	3
Restaurant/Hotel	0.31	2

6.5.2. Results and Discussion

6.5.2.1. Mean Equality Test

The results of the means equality tests of unequal variances for BHAR pre- and post-IFRS mandate are presented in Table 35, respectively. The objective of Table 35 is to run a comparison analysis for BHAR between two groups of data for pre- and post-IFRS mandate periods in 2008. The first group includes mandatory adopter, treatment group (banks and insurance IPO firms) while the second group contains non-mandatory adopter, control group (all IPO firms excluding

banks and insurance). The total BHAR observation is 86 as observations related to the year 2008 are excluded following Hong et al. (2014). This is done to eradicate any confounding effects related to the mandated year. The mean of BHAR for the treatment group before IFRS mandate from 2003 to 2007 is -11% for 16 bank and insurance IPOs. In contrast, the control group scores an average BHAR value of 13.4% before IFRS mandate. This substantial difference in means for BHAR between the control and treatment group indicates that bank and insurance IPO firms tend to underperform Tadawul by -24.4%. This difference in BHAR means between the two groups is weakly significant at 10%.

Table 35. Means Equality Tests of Unequal Variances for IPO Long-term Performance Measured by BHAR

This table provides means equality tests of unequal variances for BHAR for 100 IPO firms from 15 industries listed from 2005 to 2017. Mandatory adopter refers to the treatment group (banks and insurance IPO firms), and non-mandatory adopter refers to the control group (all IPO firms excluding banks and insurance). Pre-IFRS mandate period goes from 2005 to 2007 while post-IFRS mandate period goes from 2009 to 2017. T-statistics are at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

	Pre-IFRS		Post-IFRS		Difference in	T-statistic
	Mean	N	Mean	N	Means	Test
Mandatory Adopters	-0.110	16	0.107	15	-0.003	-0.579
Non-mandatory Adopters	0.134	22	0.110	33	-0.024	-0.420
Difference in Means	-0.244		-0.003			
T-statistic Test	-1.606*		-0.016			

Following the hypothesised relationship between IFRS mandate and long-term performance of IPO firms, the difference in BHAR between these two groups should be positive and significant. Such an outcome may indicate that the application of IFRS indeed produces better disclosure quality in bank and insurance IPO firms which, in turn, certifies the quality of IPO firms and improves the long-term performance of these companies. The table provides results showing that this expected outcome turns out to be the opposite. This is because the average BHAR for mandatory adopters is 10.7%, while average BHAR of non-mandatory adopters is 11%. The discrepancy in means between the two clusters is -0.3%; however, it is statistically insignificant. The statistically marginal and negative variance between the two categories suggests that IFRS mandate does not provide any added economic benefits to IPO firms in the long-term. However,

by looking at the variation in the BHAR difference in means between the mandatory and non-mandatory adopters from pre- to post-IFRS, a different scenario appears. For example, by observing this difference, it could be assumed that IFRS mandate adoption was the driver in reducing the average BHAR difference in means between the two groups by -0.3%, compared to the difference of -24.4% in BHAR before IFRS mandate.

Table 35 also divulges the mean equality tests for the mandatory group before and after IFRS mandate in order to observe the pure effect of IFRS on the treatment group. The averages of BHAR for the treatment group move noticeably from being negative at -11% in the pre-IFRS stage to positive at 10.7% in the post-IFRS stage. Yet, this difference is not statistically significant. This result indicates that the absence of early support for the hypothesis connected to the positive impact of IFRS mandate on the long-term performance of IPO firms in Saudi Arabia. This finding is also reached by Dorsman et al. (2010) who discover that IFRS renders marginally and statistically insignificant economic benefits to the long-term performance of IPO firms in Denmark. On the other hand, the difference in means pre- and post-IFRS for non-mandatory IFRS-adopters indicates a slight drop in the long-term performance of IPO firms. However, the difference in means is -2.4%, and it is statistically insignificant. The general outcomes documented in Table 35 suggest that the performance variance in BHAR between IPO firms and Tadawul is not statistically significant. Prior studies, including Kamaludin and Zakaria (2018); Lizińska and Czapiewski (2018), also attain comparable insignificant BHAR results for Saudi Arabian IPOs.

The results of Table 35 provide a lack of support for Hypothesis 4-1, therefore suggesting that the application of IFRS does not improve the disclosure quality of bank and insurance IPO firms, and has no effect on their long-term performance. However, Hypothesis 4-1 conditions the influence of IFRS on the long-run performance of IPO firms while adjusting for intertemporal changes in transparency. Therefore, the outcomes in Table 35 are not conclusive for Hypothesis 4-1 since variations in the level of intertemporal changes in the quality of the formal institutional environment in Saudi Arabia are not controlled for yet. However, this is indicated previously by the outcomes of Table 25, in Section 6.4.2.1, where the mean equality tests for three proxies for the formal institutional quality in Saudi Arabia from 2005 to 2016 are analysed.

Recall that Table 25 documented a mean level of ethical behaviour of firms, EBF, of 4.67 out of 7 in the pre-IFRS stage while in post-IFRS stage this average is significantly increased to

5.07 at the 1% level of significance. Similarly, the mean level of strength of auditing and reporting quality, SAR, in Saudi Arabia improved post-IFRS mandate by 0.41 points at the 1% level of significance. Equally, there has been a notable improvement in the level of transparency of government policymaking, as it improved by 0.29 points after the implementation of IFRS in 2008. In other words, these outcomes imply that there is a noteworthy improvement in the quality of the formal institutional atmosphere in Saudi Arabia after 2008, which overlaps with the introduction of IFRS. Consequently, the observed lack of support for Hypothesis 4-1 could be merely because IFRS does not work by itself and it requires a certain level of institutional quality in order to provide its benefits for IPOs post-listing. Something similar, in fact, happened in the EU region where prior studies coincided the impact of IFRS on concurrent improvement in countries' formal institutional atmosphere (Daske et al. 2008; Christensen et al. 2013). Alternatively, it could be only significant improvements in transparency measures in Saudi Arabia that influence the long-term performance of IPO firms.

Based on the above results, it would, however, be premature to reject the effect of IFRS mandate in improving the long-term performance of IPO firms in Saudi Arabia. This is because the mean equality test does not control for firm- and market-specific influential factors. Both accounting disclosure and IPO literature account for other firm- and market-specific variables when testing for the long-term performance of IPO firms (Dorsman et al. 2010; Ahmad-Zaluki et al. 2011; Lizińska & Czapiewski 2018). The next section formalises the previous testing. This is achieved by employing a number of DiD regression models to draw a definite conclusion about the joint effect of IFRS mandate and intertemporal changes on transparency and the long-term performance of IPO firms in Saudi Arabia.

6.5.2.2. Regression Analysis for the Joint Effects of IFRS Mandate and Transparency on the Long-term Performance of IPO Firms

The Joint Effects of IFRS Mandate and Ethical Behaviour of Firms on the Long-term Performance of IPO Firms

Table 36 presents the results of seven DiD models that examine the three proposed research hypotheses. Model 1 provides the regression results of a DiD model by regressing the dependent

variable BHAR, long-term performance for the 12-month period, on three independent factors related to the DiD model. They include Post, Treatment, and IFRS variables. The results specify that the coefficient of Post (β_1) is 0.041, and it is statistically insignificant. This result discloses that average BHAR for all listed IPOs post-IFRS mandate from 2009 to 2017 experiences a small improvement in performance by roughly 4% compared to the period before IFRS mandate from 2005 to 2007. This outcome is in harmony with a similar finding attained by Kamaludin and Zakaria (2018) who find that IPO firms marginally over-perform their market index in the long-term.

The coefficient for the Treatment group (β_2) is negative and insignificant. This coefficient indicates that all bank and insurance IPO firms in Saudi Arabia marginally underperform the benchmark, Tadawul from 2005 to 2017, by 9.3%, yet this marginal underperformance is not statistically significant. As well, the statistically insignificant and positive coefficient of β_3 indicates that IFRS mandate does slightly provide long-term economic benefits to IPO firms from 2009 to 2017. This finding implies that post-IFRS mandate IPO firms outperform their benchmark by 9% within the first 12 months of listing. Nonetheless, the coefficient β_3 is in the right positive direction for confirming Hypothesis 4-1, yet the result provides a lack of support for the prediction of the hypothesis due to the lack of statistical significance.

Table 36. Difference in Differences OLS Regression with Robust Standards Errors Estimation to Adjust for Heteroskedasticity concerning the Effect of Joint Effect on IPO Long-term Performance in Saudi Arabia using Ethical Behaviour of Firms

This table provides the results of the DiD models 100 IPO firms listed in Saudi Arabia from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of the controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Time-variant formal institutional proxies proxy by EBF that measures the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. Robust clustered T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1 for one-tail.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5	Model 6	VIF 6	Model 7	VIF 7
					Panel A: DiD Independent Variables									
Post	0.04	1.56	-0.18*	2.12	-0.18*	2.46	-0.17*	2.52	-0.18*	2.45	-0.11	7.83		
	[0.42]		[-1.56]		[-1.61]		[-1.54]		[-1.61]		[-0.43]			
Treatment	-0.09	1.84	0.040	1.15	0.04	2.11	0.03	2.13	0.03	2.12	0.07	3.47	0.08	3.45
	[-0.73]		[0.34]		[0.27]		[0.21]		[0.25]		[0.42]		[0.46]	
IFRS	0.09	2.25			0.010	2.31	-2.68	1504.23						
	[0.37]				[0.04]		[-0.34]							
					Panel B: Transparency Independent Variables									
EBF			0.65***	2.32	0.64***	2.38	0.61***	2.55	0.64***	2.39	0.51**	2.95	0.45**	2.21
			[2.76]		[2.72]		[2.69]		[2.73]		[2.00]		[2.35]	
IFRS*EBF							0.54	1508.05	0.01	2.32	0.01	2.99	-0.01	2.43
							[0.34]		[0.06]		[0.04]		[-0.14]	
					Panel C: Firm-level Control Variables									
UP											-0.02*	1.89	-0.02*	1.89
											[-1.32]		[-1.30]	
URD											-0.19**	1.21	-0.19**	1.2
											[-1.72]		[-1.66]	
TFD											0.27**	1.36	0.26*	1.32
											[1.70]		[1.57]	
PMV											-1.66	1.31	-1.26	1.25
											[-0.42]		[-0.33]	
OS											-0.01	1.37	-3.01	1.32
											[-0.13]		[-0.04]	
IOPD											0.05	1.12	0.06	1.12
											[0.31]		[0.39]	
PFD											-0.10	1.3	-0.091	1.3
											[-0.44]		[-0.42]	
OP											-0.01*	1.34	-0.01*	1.33
											[-1.37]		[-1.34]	
ET											0.01*	1.56	0.01*	1.55
											[1.39]		[1.41]	
Dummy Effects											YE & IE		YE & IE	
Constant	0.07		-3.00***		-2.99***		-2.82***		-2.98***		-1.98*		-1.68**	
	[1.08]		[-2.69]		[-2.66]		[-2.62]		[-2.66]		[-1.60]		[-1.78]	
Observations	100		100		100		100		100		100		100	
Adjusted R^2	0.01		0.07		0.07		0.07		0.07		0.21		0.21	

Model 2 tests the expectation of Hypothesis 4-2 that anticipates a positive relationship between changes in transparency and long-term performance of IPO firms in Saudi Arabia. The first proxy of formal institutional quality, which captures intertemporal changes in the ethical behaviour of firms (EBF), is included in Model 2. The coefficient of EBF is positive and statistically significant at the 1% level, thus providing strong support to Hypothesis 4-2 (0.65; Table 36; Model 2; p<0.01). This outcome suggests that enhancements in the overall quality of the private sector's transparency measured by the level of EBF in Saudi Arabia from 2005 to 2016 largely improve the long-term performance of listed IPO firms by 65%.

However, to fully support the prediction of Hypothesis 4-1, it is essential to obtain a significant coefficient for the variable IFRS while controlling for the effect of the variable EBF. Likewise, to draw a firm conclusion about the hypothesised relationship proposed in Hypothesis 4-2, it is equally important to attain a significant outcome while controlling for the effect of IFRS mandate. Thus, Model 3 advances the empirical testing by simultaneously accounting for the effects of IFRS and EBF. Consistent with the outcomes gained in Models 1 and 2, positive and significant coefficients are found for the variable EBF while an insignificant result is revealed for the coefficient IFRS in Model 3. Similarly, an insignificant result is uncovered for the variable IFRS in Model 3 after accounting for changes in the variable EBF. Hence, a solid rejection of Hypothesis 4-1 is attained.

In Model 4, a progression in empirical testing is undertaken to check the expectation of Hypothesis 4-3. This hypothesis examines if the joint effect between IFRS mandate and intertemporal changes in transparency is positively linked to the long-term performance of IPO firms in Saudi Arabia. The interaction term, IFRS*EBF, reads positively, but its insignificant result indicates the absence of a joint effect between changes in ethical behaviour and long-term performance of Saudi Arabian IPO firms and IFRS mandate. Hence, Hypothesis 4-3 is not supported. Remarkably, the coefficient IFRS in Model 4 reveals insignificant but negative coefficient output where it should render a positive coefficient as predicted by Hypothesis 4-1. The cause for this refutation is entirely attributed to the presence of a multicollinearity problem as showed by the substantial VIF values of 1504.23 and 1508.05 for the variables IFRS and their interaction term IFRS*EBF. The variable IFRS in Model 5 is eliminated to circumvent this problem, as the focus is on the joint effect hypothesis. An insignificant and positive coefficient is sustainably attained for the interaction term IFRS*EBF. This confirms the previous result in Model

4 that IFRS mandate and intertemporal changes in the ethical behaviour of IPO firms do not exert a joint effect on IPO firms with reference to aftermarket performance in Saudi Arabia.

However, the results documented for Model 5 in Table 36 do not control for firm- and market-specific factors that are reported by prior disclosure and IPO literature as influencing the IPO market (Dorsman et al. 2010; Ahmad-Zaluki et al. 2011; Lizińska & Czapiewski 2018). Model 6 extends the empirical testing done in Model 5 by combining several controlling firm- and market-specific factors, and year and industry dummies. The result regarding β_5, the interaction term IFRS*EBF, in Model 6 continued to be insignificant. However, the result of VIF6 indicates there is a multicollinearity problem triggered by the variable Post. This is because its VIF highlights a value of 7.83, which goes beyond the threshold of 5 for the variance inflation factor test. To temper this econometric problem, Model 7 reassesses Hypothesis 4-3 while eliminating the variable Post. Reliably, no supporting result for β_5 is continued to be reported. This indeed provides a solid conclusion about the absence of a joint effect between IFRS mandate and intertemporal changes in the ethical behaviour of IPO firms regarding their aftermarket performance in Saudi Arabia. Therefore, Model 7 becomes the formal model since it offers a multicollinearity-free model along with controlling for firm-, market-specific factors, and year and industry dummies.

The Joint Effects of IFRS Mandate and Strength of Auditing and Reporting Standards on the Long-term Performance of IPO Firms

Table 37 reports the results for five DiD models similar to the prior table. Three research hypotheses are examined here by concentrating on the second formal institutional measure, SARS, the strength of auditing and reporting standards. Before inspecting the outcomes associated with Hypothesis 4-1, the results of the first two elements of the DiD model containing Post and Treatment are checked. The table shows that the coefficient of Post (β_1) is negative and insignificant (-0.077; Table 37; Model 1; p>0.10). This insignificant outcome is consistent with earlier insignificant results attained in Table 36 for the same variable.

Table 37. Difference in Differences OLS Regression with Robust Standards Errors Estimation to Adjust for Heteroskedasticity concerning the Effect of Joint Effect on IPO Long-term Performance in Saudi Arabia using Strength of Auditing and Reporting Standards

This table provides the results of the DiD models 100 IPO firms listed in Saudi Arabia from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi A Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of the controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Time-variant formal institutional proxies proxy by SARS that measures the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. Robust clustered T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5
					Panel A: DiD Independent Variables					
Post	-0.08	2.16	-0.12	2.27	-0.07	2.13	0.02	6.22		
	[-0.72]		[-1.19]		[-0.64]		[0.10]			
Treatment	-0.02	2.06	0.01	2.1	-0.01	2.08	0.07	3.42	0.06	3.32
	[-0.15]		[0.07]		[-0.08]		[0.39]		[0.38]	
IFRS	0.08	2.26	4.14	477.60						
	[0.31]		[1.06]							
					Panel B: Transparency Independent Variables					
SARS	0.32**	1.9	0.43***	2.24	0.32**	1.91	0.37**	2.29	0.38**	2.11
	[1.69]		[2.53]		[1.69]		[1.91]		[2.20]	
IFRS*SARS			-0.77	477.65	0.011	2.26	0.01	2.95	0.01	2.19
			[-1.05]		[0.23]		[0.01]		[0.05]	
					Panel C: Firm-level Control Variables					
UP							-0.03*	1.89	-0.03*	1.89
							[-1.54]		[-1.56]	
URD							-0.19**	1.21	-0.20**	1.19
							[-1.71]		[-1.72]	
TFD							0.25*	1.36	0.26*	1.32
							[1.64]		[1.66]	
PMV							-2.08	1.32	-2.19	1.23
							[-0.51]		[-0.57]	
OS							-0.01	1.38	-0.01	1.29
							[-0.24]		[-0.29]	
IOPD							0.10	1.1	0.11	1.1
							[0.69]		[0.70]	
PFD							-0.10	1.3	-0.10	1.29
							[-0.46]		[-0.47]	
OP							-0.01*	1.41	-0.01*	1.41
							[-1.50]		[-1.51]	
ET							0.01*	1.53	0.01*	1.53
							[1.56]		[1.58]	
Dummy Effects							YE & IE		YE & IE	
Constant	0.32**		-2.14***		-1.54*		-1.35*		-1.38*	
	[1.73]		[-2.45]		[-1.62]		[-1.36]		[-1.58]	
Observations	100		100		100		100		100	
Adjusted R^2	0.04		0.06		0.04		0.21		0.21	

An insignificant result for the variable treatment continues to be observed, similar to Table 36, indicating that being a bank and insurance IPO firm has no impact on the long-term performance of such businesses in Saudi Arabia. Consistent with the reported results in Table 36, the coefficient β_3, the variable IFRS, in Model 1 in Table 37 reports an insignificant and positive result (0.077; Table 37; Model 1; $p > 0.10$). It reconfirms prior findings that IFRS provides no significant impact concerning the long-term performance of IPO firms in Saudi Arabia. This evidence means that Hypothesis 4-1 lacks support. The outcomes in Models 1 to 5 in Table 37 also offer supportive outcomes to prior findings linked to Hypothesis 4-2 using the second proxy SARS. This is because positive and significant coefficients are attained, ranging from 32% to 43%. Models 2 to 5 in Table 37 offer alternative testing specifications where all consistent outcomes are provided.

Table 37 confirms that advances in the overall transparency in Saudi Arabia post-2005 cause a significantly positive impact on the long-term performance of IPO firms in the country's stock market. Table 37 reports the results related to Hypothesis 4-3. Overall, the table provides solid evidence revealing that the significant association between IFRS mandate and intertemporal changes in formal institutional quality on the long-term performance of IPO firms in Saudi Arabia is refuted. This outcome is sustained even after controlling for the multicollinearity problem, for example in Models 2 and 4 due to the alarming VIF results, and also control for firm-, market-specific factors, and year and industry dummies as shown in Models 4 and 5. Collectively, Table 37 indicates that improvements in the overall quality of the accounting profession's transparency gauged by the level of SARS in Saudi Arabia from 2005 to 2016 wield a significantly positive influence on the long-term performance of IPO firms in Tadawul. The anticipation of Hypothesis 4-3 regarding the positive joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia is reported in Models 3 to 5. Consistent with earlier results in Table 36, Models 3 to 5 in Table 37 report positive but insignificant outcomes for the interaction term IFRS*SARS, β_5. These results bring lack of support to the prediction of Hypothesis 4-3.

The Joint Effects of IFRS Mandate and Transparency of Government Policymaking on the Long-term Performance of IPO Firms

Table 38 presents the results for the third proxy of country-level governance, transparency of government policymaking, TPG. Similar to previous tables, five DiD models are employed to inspect the three proposed research hypotheses and all are adjusted for heteroscedasticity. One of the components of the DiD model, Treatment, renders similar insignificant results to the outcomes reported in Tables 36 and 37 while the variable Post shows weakly significant and negative coefficient results in most models in Table 37. Collectively, the results reported in Table 38 related to the coefficient β_3 report an insignificant result. This outcome re-emphasises previous findings that IFRS has no real effect on the long-term performance of IPO firms in Saudi Arabia. Thus, there is a lack of support for Hypothesis 4-1.

Now, the discussion turns to the results regarding the prediction of Hypothesis 4-2. The results in Models 1 to 5 in Table 38 also provide reassurance to the previous findings related to Hypothesis 4-2 using the third proxy of country-level transparency, TGP. These models report positive and significant coefficients ranging from 56% to 84%. However, they differ in testing specifications that account for the multicollinearity problem, as in Models 2 and 4, due to the detected and disturbing VIF outputs, and also control for firm-, market-specific factors, year, and industry dummies. Table 38 confirms that advances in the overall transparency of the Saudi Arabian government's development of policies post-2005 have a significantly positive impact on the long-term performance of IPO firms in the stock market. Furthermore, Table 38 reports the results related to Hypothesis 4-3. Overall, the table provides solid evidence revealing that any association between IFRS mandate and intertemporal changes in formal institutional quality on the long-term performance of IPO firms in Saudi Arabia, is in fact, negated.

The results reported in Tables 36, 37, and 38 show that the long-term performance of IPO firms is statistically higher when IPO underpricing, underwriter reputation, and offer price increase. In contrast, these tables indicate a statistically significant and higher aftermarket performance of IPO firms, specifically in technology firms and the elapsed time increases.

213

Table 38. Difference in Differences OLS Regression with Robust Standards Errors Estimation to Adjust for Heteroskedasticity concerning the Effect of Joint Effect on IPO Long-term Performance in Saudi Arabia using Transparency of Government Policymaking

This table provides the results of the DiD models 100 IPO firms listed in Saudi Arabia from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms in the post-mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term, post*treatment, capturing the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Control variables include the number of the controlling firm- and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the IPO firm's share price before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). Time-variant formal institutional proxies proxy by TPG that measures the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy].Variance inflation factor (VIF) measures the severity of multicollinearity in the OLS regression model. It offers an index measuring how much the variance of an estimated regression coefficient is amplified due to the existence of collinearity between the covariates. Robust clustered T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	VIF 1	Model 2	VIF 2	Model 3	VIF 3	Model 4	VIF 4	Model 5	VIF 5
Panel A: DiD Independent Variables										
Post	-0.16* [-1.64]	2.16	-0.16* [-1.60]	2.2	-0.17* [-1.64]	2.15	-0.07 [-0.30]	7.21		
Treatment	0.02 [0.16]	2.01	0.017 [0.13]	2.02	0.019 [0.15]	2.01	0.06 [0.36]	3.39	0.07 [0.40]	3.33
IFRS	0.018 [0.08]	2.29	-1.70 [-0.22]	1640.84						
Panel B: Transparency Independent Variables										
TGP	0.84*** [3.09]	1.9	0.81*** [3.07]	2.05	0.84*** [3.09]	1.9	0.60** [1.96]	2.38	0.56** [2.24]	1.93
IFRS*TGP			0.37 [0.22]	1643.95	0.01 [0.09]	2.3	0.01 [0.06]	2.98	-0.01 [-0.08]	2.31
Panel C: Firm-level Control Variables										
UP							-0.02 [-1.04]	1.93	-0.02 [-1.06]	1.93
URD							-0.20** [-1.77]	1.22	-0.20** [-1.73]	1.19
TFD							0.27** [1.70]	1.36	0.26* [1.62]	1.32
PMV							-1.07 [-0.27]	1.32	-0.83 [-0.22]	1.27
OS							2.01 [0.02]	1.39	7.01 [0.09]	1.35
IOPD							0.05 [0.26]	1.12	0.05 [0.30]	1.12
PFD							-0.07 [-0.31]	1.33	-0.07 [-0.31]	1.33
OP							-0.01 [-1.06]	1.26	-0.01 [-1.06]	1.26
ET							0.01* [1.35]	1.57	0.01* [1.36]	1.56
Dummy Effects							YE & IE		YE & IE	
Constant	-3.67*** [-3.02]		-3.55*** [-3.00]		-3.66*** [-3.03]		-2.32* [-1.63]		-2.12** [-1.82]	
Observations	100		100		100		100		100	
Adjusted R²	0.09		0.09		0.09		0.21		0.21	

The results also show that pre-IPO market volatility, offer size, integer offer price dummy, and private company dummy have no impact on the long-term performance of IPO firms in Saudi Arabia. An exception to these results is reported in Table 38 and is related to the variables UP and OP, where they lost their significance. Overall, the majority of firm- and market-specific factors deliver comparable outcomes to prior literature, namely Ritter (1991), Dorsman et al. (2010), and Alanazi and Al-Zoubi (2015). The adjusted R-squared results amongst the 17 DiD models reported in Tables 36 to 38 provide moderately high R-squared values reaching up to 21%. This means that the estimations performed here succeeded in explaining up to 21% of the variations in the long-term performance of IPO firms in the stock market of Saudi Arabia. This adjusted R-squared value is almost double what is found by comparable studies such as Dorsman et al. (2010) (0.103; Table 6; Model 4) who report adjusted R-squared value of only 10.30% for 136 listed IPO firms in Denmark. The achieved R-squared value of 21% is also consistent with a comparable adjusted R-squared result of 24% found recently by Persakis and Iatridis (2017).

In summary, the uncovered yet insignificant results for Hypothesis 4-1 are consistent with Dorsman et al. (2010) who state that IFRS does not deliver tangible economic benefits to the long-term performance of IPO firms in Denmark. However, how can such an outcome be clearly interpreted? In the earlier result section, Section 6.2, significant evidence is uncovered of an effective certification role of IFRS mandate adoption. This effect decreases the *ex-ante* uncertainty of IPO investors that leads to reducing IPO underpricing for listed IPO firms in Saudi Arabia. Such an effect is also observed in developed IPO markets (Dorsman et al. 2010; Hong et al. 2014). By combining the results attained related to the effect of the IFRS mandate on short-term IPO underpricing and long-term performance of IPO firms, it becomes apparent that the IFRS mandate does not have a long-lasting effect; it has only a short-lived effect on the problem of asymmetric information in the IPO market. In other words, the findings point to IFRS alleviating the information asymmetry problem but only in the primary market. This is done by contributing positively to the level of disclosure for IPO prospectuses, where investors and analysts can receive additional and quality information related to IPO firms in Saudi Arabia.

On the other hand, IFRS does not successfully generate any additional benefits to the readers of financial reports for IPO firms post-listing in the secondary market in Saudi Arabia. This outcome could be attributed to the fact that in the secondary market, investors and analysts

can obtain reliable information from different sources[52]. Such accessible collections of information can largely assist IPO parties in determining the fair market value of IPO shares, which reflects on the aftermarket price performance. This interpretation is in conjunction with a similar remark highlighted by previous studies showing a great asymmetric information gap between the primary and secondary markets (Mauer & Senbet 1992; Shi et al. 2013; Hong et al. 2014). The absence of IFRS exerting an effect on aftermarket performance of IPO firms could lead to the idea that the quality of formal institutions is the main player in the long-term performance of these firms in Saudi Arabia. The attained results from Tables 36, 37, and 38 clearly support the prediction of Hypothesis 4-2, which supports the above contention. This evidence is comparable to Hartzell et al. (2008) and Zattoni et al. (2017) who find a positive association between the level of corporate governance practices in a country and long-term performance of IPO firms.

The finding related to the absence of the significant joint effect of changes in formal institutional quality proxies and IFRS mandate on the aftermarket performance of IPO firms is comparable to but disagrees with Houqe et al. (2012b). This is because the authors uncover significant evidence documenting a major joint effect between investor protection and IFRS mandate in improving earnings quality, which is measured by the reduction in discretionary accruals. The authors find a positive but insignificant relationship between either investor protection or IFRS mandate in enhancing earnings quality. The presence of omitted variable bias and the short time period for post-IFRS coverage in Houqe et al.'s (2012b) work might explain the differences between their work and this thesis regarding the joint effect results. In fact, Houqe et al. (2012b) acknowledge the existence of an omitted variable bias with respect to the measurement of the investor protection variable. In contrast to the reported results in Tables 36 to 38, Houqe et al. (2012b) assume that countries do not change their formal institutional quality measured by the level of investor protection over the course of time. Hence, they assume a time-invariant nature of the variable investor protection. Hearn (2014) contends that the use of time-invariant formal institutional proxies by previous studies biases the results about the relationship between changes in transparency and short-term performance of IPO firms.

---

[52] These sources, for example, include information about the firms' announcements, media coverage, historical financial reports, and analysts' reports (Jenkinson & Ljungqvist 2001).

Moreover, the data of Houqe et al. (2012b) covers 47 developed and emerging countries between 2000 and 2007 when IFRS became mandatory in 2005; hence, this offers only two years of IFRS experience. The majority of emerging non-EU countries covered by Houqe et al. (2012b); for example, China, Argentina, Brazil, Mexico, Indonesia, India, Malaysia, and Saudi Arabia, had not adopted IFRS mandatorily by 2007. IFRS Foundation (2019) reports that China and India have not permitted IFRS mandate for domestic companies while Argentina, Brazil, Mexico, Indonesia, and Saudi Arabia do so in 2009, 2010, 2008, 2012, and 2008, respectively. Stated differently, the joint effect results generated using an emerging non-EU sample, including Saudi Arabia by Houqe et al. (2012b) provide a valuable foundational work. However, they are difficult to generalise emerging non-EU countries. In contrast, the data employed by this thesis ranges from 2005 to 2016 and offers eight years of IFRS experience.

This thesis can, therefore, offer long-term monitoring of the IFRS effect either individually or jointly with time-variant changes in formal institutional quality. Hence, the results related to Hypothesis 4-3 are likely to provide better results. It reveals the absence of a joint effect between intertemporal changes in transparency and IFRS mandate on the long-term performance of IPO firms in Saudi Arabia. This absent effect is likely to be attributed to the absence of a direct effect of IFRS mandate on the aftermarket performance of IPO firms which is confirmed by the rejection of Hypothesis 4-1 and the finding of Dorsman et al. (2010) as well. Hence, the author of this thesis concludes that IFRS does not exert a long-term effect on IPO firms. Instead, intertemporal improvements in formal institutional quality only matter in the long run concerning the performance of IPO firms after they have been listed.

6.5.2.3. Robustness Tests

In order to improve the robustness of the findings[53], a range of sensitivity tests is employed to make sure that previous conclusions are not an artefact of not controlling for a number of testing specifications. This includes adjusting for the synthetic clustering in the DiD model, outliers, potential endogeneity in the OLS model, the unbalanced distribution of IPO data and small sample size, and omission of some economic and stock market factors linked to the IPO market. An alternative dependent variable is also used to check the sensitivity of the results.

6.5.2.3.1. Problematic Synthetic Clustering Related to DiD Design and Nature of the IPO Data

An argument is made previously regarding the potential presence of econometric shortfalls such as problematic synthetic clustering. This is caused by the DiD design despite its superiority in generating efficient results for events studies that capture the effect of policy intervention on capital market outcomes such as IFRS mandate (Bertrand et al. 2004). As discussed previously, Bertrand et al. (2004) render evidence warning about the stress caused by DiD design and especially when trying to control the treatment and control samples (e.g. IFRS versus non-IFRS mandating group); these can cause synthetic clustering. This in turn encourages error terms for the OLS model to correlate within the clustered group. Consequently, this causes standard errors to be biased and ensures the creation of flawed statistical results. To circumvent this econometric

---

[53] For un-tabulated results, the author of this thesis runs various diagnostic tests for residuals to assess that the employed OLS models represent the BLUE. This includes testing for multicollinearity among explanatory variables utilising VIF test, normality in the distribution of residuals using Jarque and Bera (1980) normality test, serial correlation in residuals using Durbin and Watson (1971) D-statistic test, and heteroscedasticity of residuals using Breusch and Pagan (1979) test. For testing the presence of a multicollinearity problem, Liu et al. (2011) is followed to check the exitance of a multicollinearity issue when the value of VIF exceeds a value of 5. The author uncovers that the employed models have no multicollinearity problem as all VIF values do not exceed a value of 5 with exclusion of Models 6, 5, and 5 in Tables 36, 37, and 38, respectively. As a substitute, this thesis uses Models 7, 6, and 6 in Tables 36, 37, and 38, respectively, to overcome this multicollinearity issue. Collectively, across the 19 models in the above three tables, results adhere with the BLUE because the diagnostic analysis for residuals supports this result. This is because this thesis does not reject the null hypothesis of normality and serial correlation in residuals at 5% level of significance. Yet, the majority of the models used reject the null hypothesis of homoscedasticity at 5% level of significance. This implies that the distribution of residuals is not homogeneous, consequently, Habib and Ljungqvist (2001) is followed to control for this heteroscedasticity problem by employing the White (1980) heteroscedastic-robust standard error in all models in Tables 36, 37, and 38 and in all remaining models.

shortfall, Table 39 reports the results of 18 models that capture the potential effect of clustering within the IFRS-Non-IFRS group, years, and industries. Following Cameron and Miller (2015), the first six models in Table 39 report the results using robust standard errors clustered on IFRS versus no-IFRS groups to validate the findings of Hypotheses 4-1, 4-2 and 4-3.

Similar to the results reported in Tables 36, 37, and 38, the coefficient of IFRS is insignificant, as shown in Models 1, 3, and 5 in Table 39. Consistently, the three proxies for time-variant variations in formal institutional quality in Saudi Arabia, including EBF, SARS, and TGP, produce positive and significant coefficients in Models 1 to 6 in Table 39. The three interaction terms, including IFRS*EBF, IFRS*SARS, and IFRS*TGP, reported in Models 2, 4, and 6 in Table 39, represent the joint effect of IFRS mandate and changes in formal institutional quality. They deliver insignificant outcomes that are consistent with previous findings. Models 7 to 12 in Table 39 capture the second form of clustering in residuals that might exist within years due to the nature of the IPO data.

Table 39. Results for DiD Models Using Clustered Robust Standard Errors Estimation

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 100 IPO firms from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post , treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
	Clustered on IFRS						Clustered on YE						Clustered on IE					
Panel A: DiD Independent Variables																		
Treatment	0.08**	0.08**	0.05	0.06	0.07**	0.07**	0.08	0.08	0.05	0.06	0.07	0.07	0.08	0.08	0.05	0.06	0.07	0.07
	[10.2]	[14.8]	[1.03]	[1.70]	[8.41]	[8.32]	[0.59]	[0.56]	[0.47]	[0.52]	[0.52]	[0.50]	[0.74]	[0.72]	[0.55]	[0.63]	[0.66]	[0.65]
IFRS	-0.04		0.03		-0.02		-0.04		0.03		-0.02		-0.04		0.03		-0.02	
	[-0.46]		[2.19]		[-0.34]		[-0.16]		[0.14]		[-0.08]		[-0.33]		[0.40]		[-0.18]	
Panel B: Transparency Independent Variables																		
EBF	0.45*	0.45*					0.45***	0.45***					0.45***	0.45***				
	[6.20]	[6.33]					[2.92]	[2.85]					[3.42]	[3.41]				

221

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
IFRS*EBF	-0.01						-0.01						-0.01					
	[-0.42]						[-0.13]						[-0.29]					
SARS			0.38*	0.38*					0.38***	0.38***					0.38***	0.38***		
			[3.79]	[4.13]					[3.38]	[3.45]					[3.47]	[3.51]		
IFRS*SARS				0.01						0.01						0.01		
				[0.41]						[0.06]						[0.16]		
TGP					0.56***	0.56***					0.56***	0.56***					0.56***	0.56***
					[390]	[623]					[3.07]	[2.99]					[3.22]	[3.20]
IFRS*TGP						-0.01						-0.01						-0.01
						[-0.31]						[-0.07]						[-0.16]
Panel C: Firm-level Control Variables																		
UP	-0.02	-0.02	-0.03	-0.03	-0.02	-0.01	-0.02	-0.02	-0.03*	-0.03*	-0.02	-0.02	-0.02**	-0.02**	-0.03**	-0.03**	-0.02*	-0.02*
	[-1.18]	[-1.18]	[-1.48]	[-1.44]	[-0.92]	[-0.92]	[-1.17]	[-1.17]	[-1.40]	[-1.44]	[-0.91]	[-0.91]	[-1.82]	[-1.80]	[-2.31]	[-2.30]	[-1.38]	[-1.37]
URD	-0.19	-0.19	-0.20	-0.20	-0.20	-0.20	-0.19***	-0.19***	-0.20***	-0.20***	-0.20***	-0.20***	-0.19**	-0.19**	-0.20**	-0.20**	-0.20**	-0.20**
	[-1.05]	[-1.05]	[-1.07]	[-1.06]	[-1.10]	[-1.10]	[-2.70]	[-2.71]	[-2.75]	[-2.76]	[-2.69]	[-2.70]	[-2.01]	[-2.01]	[-2.17]	[-2.16]	[-2.07]	[-2.07]
TFD	0.26**	0.26**	0.26**	0.26**	0.26**	0.26**	0.26*	0.26*	0.26*	0.26*	0.26*	0.26*	0.26**	0.26**	0.26**	0.26**	0.26**	0.26**
	[7.13]	[7.15]	[10.9]	[10.0]	[8.23]	[8.17]	[1.57]	[1.57]	[1.63]	[1.64]	[1.60]	[1.60]	[1.87]	[1.87]	[1.96]	[1.96]	[1.91]	[1.91]
PMV	-1.26	-1.26	-2.15	-2.19	-0.83	-0.83	-1.26	-1.26	-2.15	-2.19	-0.83	-0.83	-1.26	-1.26	-2.15	-2.19	-0.83	-0.83
	[-1.48]	[-1.47]	[-2.78]	[-3.15]	[-1.38]	[-1.38]	[-0.27]	[-0.27]	[-0.48]	[-0.49]	[-0.18]	[-0.18]	[-0.43]	[-0.43]	[-0.75]	[-0.76]	[-0.28]	[-0.28]
OS	-0.01	-0.01	-0.01	-0.01	0.01*	0.01**	-2.01	-3.01	-0.01	-0.01	7.01	7.01	-2.01	-0.01	-0.01	-0.01	0.01	0.01
	[-0.87]	[-1.08]	[-2.73]	[-2.62]	[5.90]	[8.12]	[-0.03]	[-0.03]	[-0.24]	[-0.24]	[0.08]	[0.08]	[-0.03]	[-0.03]	[-0.22]	[-0.22]	[0.07]	[0.07]
IOPD	0.06	0.06	0.11	0.11	0.05	0.05	0.06	0.06	0.11	0.11	0.05	0.05	0.062	0.063	0.11	0.11	0.050	0.05
	[0.50]	[0.50]	[0.57]	[0.57]	[0.33]	[0.33]	[0.30]	[0.31]	[0.65]	[0.64]	[0.23]	[0.23]	[0.50]	[0.51]	[0.84]	[0.83]	[0.36]	[0.36]
PFD	-0.09	-0.09	-0.11	-0.10	-0.07	-0.07	-0.09	-0.09	-0.11	-0.10	-0.07	-0.07	-0.09	-0.09	-0.11	-0.10	-0.07	-0.07
	[-0.59]	[-0.60]	[-0.82]	[-0.75]	[-0.43]	[-0.43]	[-0.60]	[-0.61]	[-0.70]	[-0.69]	[-0.45]	[-0.46]	[-0.47]	[-0.47]	[-0.56]	[-0.54]	[-0.34]	[-0.35]
OP	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01*	-0.01*	-0.01*	-0.01*	-0.01	-0.01	-0.01**	-0.01**	-0.01**	-0.01**	-0.01*	-0.01*
	[-1.53]	[-1.54]	[-2.86]	[-2.82]	[-1.28]	[-1.28]	[-1.54]	[-1.54]	[-1.75]	[-1.76]	[-1.13]	[-1.13]	[-1.86]	[-1.86]	[-2.39]	[-2.37]	[-1.68]	[-1.68]
ET	0.01	0.01	0.01	0.01	0.01	0.01	0.01*	0.01*	0.01*	0.01*	0.01	0.01	0.01*	0.01*	0.01**	0.01**	0.01*	0.01*
	[1.10]	[1.10]	[1.17]	[1.16]	[1.04]	[1.04]	[1.36]	[1.36]	[1.59]	[1.60]	[1.34]	[1.34]	[1.60]	[1.60]	[1.80]	[1.80]	[1.53]	[1.53]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	-1.68*	-1.68*	-1.36	-1.38	-2.12***	-2.12***	-1.68**	-1.68**	-1.36***	-1.38***	-2.12***	-2.12***	-1.68***	-1.68***	-1.36**	-1.38**	-2.12***	-2.12***
	[-5.88]	[-6.05]	[-2.66]	[-2.93]	[-50.3]	[-52.5]	[-2.46]	[-2.39]	[-2.68]	[-2.76]	[-2.72]	[-2.64]	[-3.00]	[-2.98]	[-2.13]	[-2.22]	[-2.88]	[-2.87]
Observations	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted R^2	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
N of Clusters	2	2	2	2	2	2	12	12	12	12	12	12	15	15	15	15	15	15

This is because Ibbotson and Jaffe (1975) report possible clustering in residuals in some years in the IPO data caused by the observation that high IPO listings are regularly followed by periods of large activity in the IPO market. Models 7 to 12 present the outcomes after accounting for 12 year-clusters. The table renders overall consistent results similar to earlier findings for all six models. Finally, Models 13 to 18 in Table 39 deal with the third form of clustering in the IPO data caused by possible correlations in error terms within industry clusters. This is because Ritter and Welch (2002) report the manifestation of industry clustering in the IPO market where many IPO firms are documented in some specific industries. Consistent with previous outcomes in Tables 36, 37, and 38, supporting results are obtained confirming the prediction of Hypothesis 4-2 while rejecting Hypotheses 4-1 and 4-3 within 15 identified industry clusters in the IPO market of Saudi Arabia. In general, the reported results in Table 39 shows some vicissitudes in the T-statistic values after controlling the effect of clustering in residuals within: firstly, two clusters, IFRS versus non-IFRS group; and secondly, within 12 year-clusters and 15 industry clusters. Despite these changes in T-statistic values, the results tabulated in Table 39 make inferences where the findings in Tables 36, 37, and 38 can be relied upon confidently.

6.5.2.3.2. Dealing with Outliers, Endogeneity, and Unbalanced Distribution of Data

As indicated previously in the descriptive statistics section, Table 32 suggests the likely presence of outliers in the IPO data. The table reports the maximum value of BHAR as 173% while the minimum record BHAR is -77% of which average BHAR is 7%, indicating that some extreme observations might exist. Consequently, the sensitivity of the previously attained results in Tables 36, 37, and 38 that might have contained outliers is studied in Table 40. Following Rousseeuw and Leroy (2005), Models 1 to 6 in Table 40 eliminate only two BHAR observations that have a Cook score bigger than an absolute value of 3. Consistently, the first six models in Table 40 capture the individual effect of IFRS, the individual effect of three proxies of transparency, and the joint effect of both IFRS and transparency. These all provide support for the previous findings.

Table 40. Results for DiD Models Using Robust Standard Errors Estimation to Deal with Outliers, Endogeneity, and Unbalanced Distribution of Data

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 98 IPO firms from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
		Excluding Outliers					2SLS Endogeneity			Bootstrap Estimation					
Panel A: DiD Independent Variables															
Treatment	0.12	0.12	0.10	0.11	0.11	0.11	0.01	-0.01	0.02	0.08	0.08	0.05	0.06	0.07	0.07
	[0.68]	[0.67]	[0.55]	[0.60]	[0.65]	[0.64]	[0.01]	[-0.03]	[0.09]	[0.44]	[0.44]	[0.29]	[0.33]	[0.36]	[0.37]
IFRS	-0.06		0.01		-0.04		0.08	0.10	0.06	-0.04		0.03		-0.02	
	[-0.26]		[0.01]		[-0.20]		[0.35]	[0.46]	[0.24]	[-0.16]		[0.12]		[-0.08]	
Panel B: Transparency Independent Variables															
EBF	0.44**	0.43**					0.15			0.45**	0.45**				
	[1.92]	[1.93]					[0.43]			[2.28]	[2.33]				
IFRS*EBF		-0.01									-0.01				
		[-0.25]									[-0.14]				
SARS			0.36**	0.36**				0.13				0.38**	0.38**		

224

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	[1.75]	[1.78]					[0.43]					[1.92]	[2.00]		
IFRS*SARS		-0.0											0.01		
		[-0.07]											[0.05]		
TGP					0.53**	0.53**		0.29						0.56**	0.56**
					[1.89]	[1.90]		[0.44]						[2.13]	[2.14]
IFRS*TGP						-0.01									-0.01
						[-0.19]									[-0.07]
Panel C: Firm-level Control Variables															
UP	-0.03	-0.03	-0.03	-0.04*	-0.03	-0.03	-0.03*	-0.03*	-0.02	-0.02	-0.02	-0.03*	-0.03*	-0.02	-0.02
	[-1.11]	[-1.11]	[-1.31]	[-1.32]	[-1.03]	[-1.03]	[-1.49]	[-1.57]	[-1.27]	[-1.14]	[-1.15]	[-1.38]	[-1.31]	[-0.91]	[-0.93]
URD	-0.19*	-0.19*	-0.20**	-0.20**	-0.20**	-0.20**	-0.14	-0.14	-0.14	-0.19**	-0.19**	-0.20**	-0.20**	-0.20**	-0.20**
	[-1.65]	[-1.65]	[-1.71]	[-1.72]	[-1.74]	[-1.74]	[-1.24]	[-1.25]	[-1.28]	[-1.69]	[-1.67]	[-1.71]	[-1.75]	[-1.71]	[-1.68]
TFD	0.26*	0.26*	0.26*	0.26*	0.26*	0.26*	0.25*	0.25*	0.25*	0.26*	0.26*	0.26*	0.26*	0.26*	0.26*
	[1.56]	[1.56]	[1.64]	[1.64]	[1.59]	[1.59]	[1.57]	[1.60]	[1.57]	[1.38]	[1.37]	[1.36]	[1.39]	[1.48]	[1.48]
PMV	-1.13	-1.12	-1.99	-2.03	-0.75	-0.75	-2.09	-2.38	-1.70	-1.26	-1.26	-2.15	-2.19	-0.83	-0.83
	[-0.29]	[-0.29]	[-0.51]	[-0.52]	[-0.19]	[-0.19]	[-0.59]	[-0.68]	[-0.45]	[-0.28]	[-0.30]	[-0.51]	[-0.52]	[-0.19]	[-0.19]
OS	-0.013	-0.01	-0.01	-0.01	-5.01	-6.01	-0.01	-0.01	-0.01	-2.01	-3.01	-0.015	-0.014	7.01	7.01
	[-0.15]	[-0.15]	[-0.40]	[-0.40]	[-0.01]	[-0.07]	[-0.49]	[-0.59]	[-0.30]	[-0.02]	[-0.02]	[-0.18]	[-0.17]	[0.055]	[0.053]
IOPD	0.063	0.064	0.11	0.11	0.054	0.054	0.18	0.19	0.14	0.062	0.063	0.11	0.11	0.050	0.050
	[0.38]	[0.38]	[0.69]	[0.68]	[0.31]	[0.31]	[1.01]	[1.18]	[0.59]	[0.34]	[0.35]	[0.63]	[0.59]	[0.27]	[0.28]
PFD	-0.085	-0.085	-0.10	-0.096	-0.058	-0.058	-0.14	-0.15	-0.12	-0.092	-0.093	-0.11	-0.10	-0.065	-0.065
	[-0.38]	[-0.38]	[-0.45]	[-0.43]	[-0.27]	[-0.27]	[-0.66]	[-0.69]	[-0.53]	[-0.38]	[-0.39]	[-0.45]	[-0.40]	[-0.27]	[-0.28]
OP	-0.0028*	-0.01*	-0.01*	-0.01*	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	[-1.30]	[-1.30]	[-1.46]	[-1.47]	[-1.03]	[-1.03]	[-0.71]	[-0.70]	[-0.72]	[-0.71]	[-0.71]	[-0.77]	[-0.81]	[-0.50]	[-0.49]
ET	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01*	0.01	0.01	0.01	0.01	0.01	0.01
	[1.45]	[1.46]	[1.62]	[1.61]	[1.41]	[1.41]	[1.59]	[1.64]	[1.52]	[0.96]	[0.99]	[1.20]	[1.09]	[1.02]	[1.03]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	-1.62*	-1.61*	-1.29	-1.31*	-2.01*	-2.01*	-0.35	-0.29	-0.95	-1.68**	-1.68**	-1.36*	-1.38*	-2.12**	-2.12**
	[-1.48]	[-1.48]	[-1.27]	[-1.30]	[-1.55]	[-1.55]	[-0.23]	[-0.21]	[-0.33]	[-1.70]	[-1.78]	[-1.38]	[-1.39]	[-1.69]	[-1.71]
Observations	98	98	98	98	98	98	100	100	100	100	100	100	100	100	100
Adjusted R^2	0.21	0.21	0.21	0.21	0.21	0.21	0.19	0.19	0.19	0.21	0.21	0.21	0.21	0.21	0.21
P-value of Hausman's f Housman Endogeneity Test	NA	NA	NA	NA	NA	NA	0.46	0.52	0.71	NA	NA	NA	NA	NA	NA
P-value of Cragg and Donald's Weak Instruments Test	NA	NA	NA	NA	NA	NA	0.05	0.05	0.1	NA	NA	NA	NA	NA	NA

Table 40 also presents the results of three 2SLS models, Models 7 to 9, in order to deal with the problem of endogeneity in our OLS model following previous disclosure and IPO literature (Daske et al. 2013; Shi et al. 2013; Fontes et al. 2018). For instance, Habib and Ljungqvist (2001) strongly contend that the decision to choose between high-status and low-status underwriters is likely to be endogenously made by the issuer of the IPO company. This situation occurs when issuers intend to float a large number of shares when they go public. Such a hidden decision can bias the employed OLS model if it is accounted for econometrically (Habib & Ljungqvist 2001). Building on this endogenous observation, Dong et al. (2011) and Paleari et al. (2014) report an association between the aftermarket performance of IPO firms and high-status underwriters where they discover that IPOs underwritten by low-status underwriting banks tend to underperform in the long-run. Moreover, Glennerster and Shin (2008) discover an endogeneity relationship between the level of information quality gauged by the quality and frequency of disclosed macroeconomic information to the public and the decrease of borrowing costs in sovereign bond markets. It is consequently important to account for the probable existence of an endogenous effect between high-status underwriters and time-variant changes in the formal institutional quality with the error term of the BHAR model.

The two-stage least squares (2SLS) method is adopted to deal with these problems, following Paleari et al. (2014), using two robust instrumental variables[54] to correct for such endogeneity. Hausman (1978) Endogeneity Test is employed to test the null hypothesis that high-status underwriters and formal institutional quality proxies are exogenous factors. Cragg and Donald (1993) Weak Instruments Test is employed to investigate the null hypothesis that the utilised instruments are weak. Table 40 reports the results of three models using robust standard errors estimation and 2SLS estimation to correct for endogeneity in the variables URD, EBF, SARS, and TGP. Table 40 provides the results of Hausman's Endogeneity Tests for Models 7, 8, and 9 where the endogenous effects between high-status underwriters and time-variant changes in the formal institutional quality with the error term of the BHAR model are rejected. The outcomes of Cragg and Donald's Weak Instruments also show that the employed instruments are not weak at the significance levels of 5%, 5%, and 10% for Models 7, 8, and 9, respectively. These results

---

[54] The employed instrumental variables include a ratio equals the median amount of IPO proceeds of all underwritten IPOs for every underwriter, divided by the median number of underwritten IPOs and the quality of education system in Saudi Arabia from 2005 to 2017.

confirm the absence of endogeneity in the employed OLS models in Tables 36, 37, and 38. Since using a 2SLS estimation method for exogenous variables is considered to be incorrect because it leads to very biased results, the results concerning Hypotheses 4-1, 4-2, and 4-3 in Table 39 are discounted (Habib & Ljungqvist 2001). This is because the variables URD, EBF, SARS, and TGP are found to be exogenous. Therefore, these results support the trustworthiness of the drawn inferences using OLS estimation in Tables 36, 37, and 38.

The subsequent six models in Table 40, including Models 10 to 15 are subjected to sensitivity testing to control for the effect of unbalanced distribution and the small sample size of the employed IPO data. These tests are conducted following the cautionary note made by Efron and Tibshirani (1986). These authors cautioned that due to the inefficient and untrustworthy results, it is dangerous to employ uneven and a small number of observations. As shown in Tables 32, 33, and 34, our data is relatively small and are unequally distributed over 15 industries and 12 years. To temper with this possible problem in the IPO data, Models 10 to 15 in Table 40 present the results using bootstrapping estimation. Consistently, the table produces quantitatively similar results to the reported results in relation to Hypotheses 4-1, 4-2, and 4-3 in Tables 36, 37, and 38.

6.5.2.3.3. Additional Economic, Stock Market Control Variables, and Alternative Dependent Variable Proxy

The concluding sensitivity tests are reported in Tables 41 and 42. Table 41 provides the results of 18 models using clustered robust standard errors for IFRS, years, and industries along with accounting for a number of additional economic and stock market-specific factors that are relevant to Saudi Arabia.

Table 41. Results for DiD Models Using Clustered Robust Standard Errors Estimation after Including Additional Control Variables

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 100 IPO firms from 15 industries listed from 2005 to 2017. BHAR is the dependent variable, and it is the market-adjusted buy-and-hold excess returns for an IPO firm relative to Saudi Arabia's general market index Tadawul over the 12-month period. The DiD variables include post55, treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2016. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policy-making. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Global financial crisis (GFC) refers to every IPO firm listed during the 2008 GFC. It is a dummy variable, and it equals one if an IPO firm is listed in the GFC; otherwise, it equals zero. The Gulf Cooperation Council crisis (GCC) refers to every IPO firm listed during the 2006 stock market crash which occurred in the GCC countries. It is a dummy variable, and it equals one if an IPO firm is listed in the GCCC; otherwise, it equals zero. Cap effect (CE) refers to IPOs listed in 2013 and onwards of which Tadawul applied a price fluctuation cap of 10% up or down for every traded IPO share. It is a dummy variable, and it equals one if an IPO firm is listed in 2013 and onwards, otherwise it equals zero. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** p<0.01, ** p<0.05, * p<0.1.

Variables	Model 1	Mode 12	Mode 13	Mode 14	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
	Clustered on IFRS						Clustered on YE						Clustered on IE					
	Panel A: DiD Independent Variables																	
Treatment	0.07***	0.07**	0.04	0.05	0.08*	0.08*	0.07	0.07	0.04	0.05	0.08	0.08	0.07	0.07	0.04	0.05	0.08	0.08
	[570]	[20.3]	[0.93]	[1.63]	[3.25]	[3.34]	[0.53]	[0.50]	[0.35]	[0.40]	[0.58]	[0.56]	[0.69]	[0.66]	[0.43]	[0.51]	[0.78]	[0.78]

---

[55] The variable Post is dropped because it has a strong multicollinearity the variable YE.

IFRS	-0.04		0.02		-0.04		-0.04		0.02		-0.04		-0.04		0.02		-0.04	
	[-0.52]		[0.99]		[-0.92]		[-0.18]		[0.11]		[-0.17]		[-0.44]		[0.34]		[-0.49]	
Panel B: Transparency Independent Variables																		
EBF	0.45*	0.45*					0.45**	0.45**					0.45**	0.45**				
	[3.29]	[3.34]					[2.27]	[2.21]					[2.31]	[2.30]				
IFRS*EBF		-0.01						-0.01						-0.01				
		[-0.49]						[-0.15]						[-0.39]				
SARS			0.48*	0.48*					0.48***	0.48***					0.48**	0.48**		
			[5.68]	[6.01]					[2.84]	[2.84]					[2.25]	[2.26]		
IFRS*SARS				0.01						0.01						0.01		
				[0.23]						[0.04]						[0.12]		
TGP					0.51**	0.51**					0.51**	0.51**					0.51**	0.51**
					[43.5]	[48.9]					[2.61]	[2.52]					[2.34]	[2.33]
IFRS*TGP						-0.01						-0.01						-0.01
						[-0.86]						[-0.16]						[-0.46]
Panel C: Firm-level Control Variables																		
UP	-0.02	-0.02	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03	-0.021	-0.021	-0.02**	-0.02**	-0.03**	-0.03**	-0.021*	-0.021*
	[-1.15]	[-1.15]	[-1.26]	[-1.23]	[-1.02]	[-1.02]	[-1.09]	[-1.09]	[-1.25]	[-1.28]	[-1.05]	[-1.05]	[-2.01]	[-1.99]	[-2.38]	[-2.38]	[-1.71]	[-1.70]
URD	-0.19	-0.19	-0.20	-0.20	-0.19	-0.19	-0.19**	-0.19**	-0.20**	-0.20**	-0.19**	-0.19**	-0.19**	-0.19**	-0.20**	-0.20**	-0.19**	-0.19**
	[-1.16]	[-1.16]	[-1.23]	[-1.23]	[-1.13]	[-1.13]	[-2.32]	[-2.33]	[-2.42]	[-2.43]	[-2.34]	[-2.34]	[-1.98]	[-1.98]	[-2.17]	[-2.16]	[-1.94]	[-1.94]
TFD	0.28*	0.28*	0.28**	0.28**	0.28**	0.28**	0.28*	0.28*	0.28*	0.28*	0.28*	0.28*	0.28**	0.28**	0.28**	0.28**	0.28**	0.28**
	[5.88]	[5.90]	[8.27]	[7.84]	[6.77]	[6.71]	[1.59]	[1.59]	[1.66]	[1.66]	[1.60]	[1.60]	[1.93]	[1.93]	[1.97]	[1.97]	[1.99]	[1.99]
PMV	-1.82	-1.81	-2.15*	-2.20**	-1.94*	-1.94*	-1.82	-1.81	-2.15	-2.20	-1.94	-1.94	-1.82	-1.81	-2.15	-2.20	-1.94	-1.94
	[-1.62]	[-1.61]	[-4.98]	[-6.47]	[-3.77]	[-3.82]	[-0.41]	[-0.41]	[-0.52]	[-0.53]	[-0.45]	[-0.45]	[-0.64]	[-0.63]	[-0.74]	[-0.75]	[-0.64]	[-0.64]
OS	-6.01	-6.01	-0.01	-0.01	-9.01	-1.01	-6.01	-6.01	-0.01	-0.01	-9.01	-1.01	-6.01	-6.01	-0.01	-0.01	-9.01	-1.01
	[-0.88]	[-0.87]	[-0.79]	[-0.77]	[-0.05]	[-0.06]	[-0.06]	[-0.06]	[-0.19]	[-0.18]	[-0.00]	[-0.01]	[-0.053]	[-0.06]	[-0.17]	[-0.17]	[-0.00]	[-0.01]
IOPD	0.05	0.05	0.09	0.08	0.05	0.04	0.05	0.050	0.09	0.08	0.05	0.05	0.05	0.05	0.08	0.08	0.04	0.05
	[0.38]	[0.38]	[0.47]	[0.47]	[0.29]	[0.29]	[0.22]	[0.22]	[0.43]	[0.43]	[0.22]	[0.22]	[0.44]	[0.45]	[0.95]	[0.93]	[0.42]	[0.42]
PFD	-0.09	-0.09	-0.09	-0.08	-0.08	-0.09	-0.09	-0.09	-0.087	-0.08	-0.08	-0.089	-0.09	-0.09	-0.08	-0.08	-0.09	-0.09
	[-0.56]	[-0.57]	[-0.69]	[-0.63]	[-0.61]	[-0.61]	[-0.60]	[-0.62]	[-0.55]	[-0.54]	[-0.59]	[-0.60]	[-0.47]	[-0.47]	[-0.46]	[-0.45]	[-0.46]	[-0.47]
OP	-0.01	-0.01	-0.01*	-0.01*	-0.01	-0.01	-0.01	-0.01	-0.01*	-0.01*	-0.01	-0.01	-0.01*	-0.01*	-0.01**	-0.01**	-0.01	-0.01
	[-1.26]	[-1.26]	[-3.39]	[-3.38]	[-1.16]	[-1.16]	[-1.22]	[-1.21]	[-1.60]	[-1.60]	[-0.91]	[-0.91]	[-1.48]	[-1.48]	[-1.88]	[-1.87]	[-1.19]	[-1.19]
ET	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01*	0.01*	0.01	0.01	0.01*	0.01*	0.01*	0.01*	0.01	0.01
	[1.00]	[1.00]	[1.04]	[1.03]	[0.92]	[0.92]	[1.13]	[1.14]	[1.39]	[1.39]	[1.15]	[1.16]	[1.36]	[1.36]	[1.57]	[1.56]	[1.33]	[1.33]
Cap Effect	-0.35**	-0.35**	-0.38*	-0.38*	-0.31*	-0.31*	-0.35**	-0.35**	-0.38***	-0.38***	-0.31***	-0.31***	-0.35***	-0.35***	-0.38***	-0.38***	-0.31***	-0.31***
	[-6.63]	[-6.71]	[-6.06]	[-5.92]	[-5.37]	[-5.34]	[-4.80]	[-4.80]	[-4.77]	[-4.77]	[-4.19]	[-4.20]	[-3.07]	[-3.08]	[-3.02]	[-3.02]	[-2.73]	[-2.72]
GCC2006	0.02	0.02	-0.10*	-0.10*	0.07	0.07	0.02	0.02	-0.10	-0.10	0.074	0.07	0.02	0.02	-0.10	-0.10	0.07	0.07
	[0.03]	[0.03]	[-4.71]	[-5.31]	[1.40]	[1.41]	[0.02]	[0.02]	[-0.75]	[-0.74]	[0.53]	[0.53]	[0.02]	[0.02]	[-0.48]	[-0.48]	[0.49]	[0.48]
GFC2008	-0.02	-0.02	0.00	0.00	-0.07**	-0.08**	-0.02	-0.02	0.00	0.00	-0.07	-0.08	-0.02	-0.02	0.00	0.00	-0.07	-0.08
	[-2.63]	[-2.84]	[0.11]	[0.056]	[-6.67]	[-6.66]	[-0.26]	[-0.26]	[0.03]	[0.02]	[-0.89]	[-0.88]	[-0.18]	[-0.18]	[0.02]	[0.01]	[-0.59]	[-0.59]

Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	-1.67	-1.66	-1.83*	-1.84*	-1.87**	-1.87**	-1.67**	-1.66**	-1.83**	-1.84**	-1.87**	-1.87**	-1.67**	-1.66**	-1.83**	-1.84**	-1.87**	-1.87**
	[-2.95]	[-3.00]	[-4.01]	[-4.28]	[-18.1]	[-19.1]	[-1.96]	[-1.90]	[-2.55]	[-2.56]	[-2.28]	[-2.20]	[-2.00]	[-1.99]	[-1.78]	[-1.81]	[-1.99]	[-1.99]
Observati	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Adjusted	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

Table 42. Results for DiD Models Using Clustered Robust Standard Errors Estimation after Including Additional Control Variables Using WR

This table provides the results of the DiD models for the effect of IFRS mandate on IPO long-term performance in Saudi Arabia, including 100 IPO firms from 15 industries listed from 2005 to 2017. WR is wealth relatives ratio, and it is an alternative dependent variable measure. WR is defined as the IPOs holding period return over the 12 months' period, divided by the benchmark's "Tadawul" holding period return over the same period. A wealth relative larger than 1 points to the IPOs outperforming the benchmark, while a WR less than 1 can be understood as IPOs underperforming the benchmark. The DiD variables include post[56], treatment, and IFRS. Post refers to the control group, including all non-IFRS mandating firms post mandating period from 2009 to 2017 as IFRS is only mandated in 2008 for bank and insurance firms in the Saudi Arabian stock market. Treatment refers to all banks and insurance IPO firms pre- and post-mandating IFRS from 2005 to 2017. IFRS refers to the interaction term that captures the change in underpricing for bank and insurance firms post-IFRS mandate period from 2009 to 2017. This excludes 2008 to avoid any confounding effect as suggested by Hong et al. (2014). Time-variant formal institutional proxies include EBF, SARS, TGP, IFRS*EBF, IFRS*SARS, and IFRS*TGP. EBF indicates the ethical behaviour of firms which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how would you rate the corporate ethics of companies (ethical behaviour in interactions with public officials, politicians, and other firms)? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world]. SARS refers to the strength of auditing and reporting standards which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how strong are financial auditing and reporting standards? [1 = extremely weak; 7 = extremely strong]. TPG indicates the transparency of government policymaking which is a time series index for the weight average ranking results of opinion survey to the following question: In your country, how easy is it for businesses to obtain information about changes in government policies and regulations affecting their activities? [1 = extremely difficult; 7 = extremely easy]. IFRS*EBF indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the ethical behaviour of firms. IFRS*SARS indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the strength of auditing and reporting standards. IFRS*TGP indicates the interaction term capturing the joint effect of IFRS mandate and time-variant changes in the transparency of government policymaking. Control variables include the number of controlling firm and market-specific variables. Firm-specific variables include IPO underpricing (UP), underwriter reputation dummy (URD), technology firm dummy (TFD), offer size (OS), integer offer price dummy (IOPD), private firm dummy (PFD), offer price (OP), and elapsed time (ET). UP is the percentage return of the difference between the offer price to the first closing price on the first trading day of the IPO firm. URD is a self-designed underwriter ranking method ranking all underwriters in the sample based on the total market proceeds for all IPOs they have underwritten from 2005 to 2017 in Tadawul. If the underwriter underwrites more than 10% of the IPO listed in Tadawul, then it is classified as a reputable underwriter and is given a value of one; otherwise, it attains a value of zero. TFD is a dummy variable equal to one if a firm is a technology-type business; otherwise, it equals zero. OS indicates the size of the IPO firms, and it equals the offer price in US dollars times the number of underwritten IPOs. IOPD equals one if the offer price is with an integer value, otherwise, it

---

[56] The variable Post is dropped because it has a strong multicollinearity with the variable YE

equals zero. PED equals one if a firm is a family-owned company; otherwise, it equals zero. OP refers to the value of the share price of the IPO firm before listing in US dollars. ET indicates the length of time between the setting of the offering price and the first trading date. Market-specific variable includes pre-IPO market volatility (PMV), and it is measured by the standard deviation of local stock market return 15 days prior to the first trading date of an IPO firm. Global financial crisis (GFC) refers to every IPO firm listed during the 2008 GFC. It is a dummy variable, and it equals one if an IPO firm is listed in the GFC; otherwise, it equals zero. The Gulf Cooperation Council crisis (GCC) refers to every IPO firm listed during the 2006 stock market crash which occurred in the GCC countries. It is a dummy variable, and it equals one if an IPO firm is listed in the GCCC; otherwise, it equals zero. Cap effect (CE) refers to IPOs listed in 2013 and onwards of which Tadawul applied a price fluctuation cap of 10% up or down for every traded IPO share. It is a dummy variable, and it equals one if an IPO firm is listed in 2013 and onwards, otherwise it equals zero. Fixed effects (FE) variables include year effect (YE) and industry effect (IE). T-statistics in brackets are adjusted for heteroscedasticity at *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Panel A: DiD Independent Variables						
Treatment	0.08	0.07	0.05	0.05	0.08	0.08
	[0.38]	[0.36]	[0.24]	[0.27]	[0.40]	[0.39]
IFRS	-0.012		0.049		-0.01	
	[-0.05]		[0.20]		[-0.03]	
Panel B: Transparency Independent Variables						
EBF	0.43*	0.43*				
	[1.65]	[1.64]				
IFRS*EBF		-0.01				
		[-0.02]				
SARS			0.48**	0.49**		
			[1.82]	[1.83]		
IFRS*SARS				0.01		
				[0.15]		
TGP					0.48**	0.47**
					[1.68]	[1.67]
IFRS*TGP						-0.01
						[-0.02]
Panel C: Firm-level Control Variables						
UP	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*
	[-1.49]	[-1.48]	[-1.59]	[-1.59]	[-1.45]	[-1.45]
URD	-0.21*	-0.21*	-0.22**	-0.22**	-0.21*	-0.21*
	[-1.63]	[-1.63]	[-1.70]	[-1.70]	[-1.63]	[-1.63]
TFD	0.25*	0.25*	0.25*	0.25*	0.24*	0.24*
	[1.49]	[1.49]	[1.57]	[1.57]	[1.51]	[1.51]
PMV	-0.04	-3.81	-4.05	-4.09	-3.98	-3.97
	[-0.82]	[-0.82]	[-0.89]	[-0.90]	[-0.88]	[-0.87]
OS	0.01	0.01	-0.01	-0.01	0.01	0.01
	[0.01]	[0.01]	[-0.10]	[-0.10]	[0.05]	[0.05]

IOPD	0.09	0.09	0.12	0.12	0.09	0.09
	[0.40]	[0.41]	[0.59]	[0.58]	[0.41]	[0.41]
PFD	-0.08	-0.08	-0.07	-0.07	-0.08	-0.08
	[-0.36]	[-0.36]	[-0.32]	[-0.31]	[-0.35]	[-0.35]
OP	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
	[-0.79]	[-0.79]	[-1.14]	[-1.14]	[-0.55]	[-0.55]
ET	0.01	0.01	0.01*	0.01*	0.01	0.01
	[1.18]	[1.18]	[1.32]	[1.32]	[1.16]	[1.16]
Cap Effect	-0.28*	-0.27*	-0.30**	-0.30**	-0.24*	-0.24*
	[-1.60]	[-1.59]	[-1.73]	[-1.73]	[-1.39]	[-1.39]
GCC2006	0.08	0.08	-0.04	-0.04	0.15	0.15
	[0.34]	[0.34]	[-0.15]	[-0.15]	[0.69]	[0.69]
GFC2008	-0.02	-0.02	0.01	0.01	-0.07	-0.07
	[-0.15]	[-0.15]	[0.03]	[0.02]	[-0.51]	[-0.50]
Dummy Effects	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE	YE & IE
Constant	-0.49	-0.47	-0.76	-0.77	-0.63	-0.62
	[-0.39]	[-0.38]	[-0.59]	[-0.59]	[-0.47]	[-0.47]
Observations	100	100	100	100	100	100
Adjusted R^2	0.22	0.22	0.23	0.23	0.22	0.22

These variables comprise the introduction of a price cap for newly listed IPOs in 2013, GCC stock market crisis in 2006, the GFC in 2008, and improvements in financing through the local equity market in Saudi Arabia from 2005 to 2016. As well, Table 41 reports the outcomes of six models that use a wealth relative (WR[57]) ratio as an alternative measure for the dependent variable. The IPO literature commonly uses WR as a supplement to the BHAR measure in order to test the sensitivity of results (Alanazi & Al-Zoubi 2015; Dang & Jolly 2017). Collectively, the employed 18 models in Table 41 and six models in Table 42 provide consistently supportive outcomes to the ones previously reported for Hypotheses 4-1, 4-2, and 4-3 in Tables 36, 37, and 38. Across all reported sensitivity tests, there is a consensus in the results confirming that IFRS mandate has no impact on the aftermarket performance of IPO firms. Alternatively, time-variant enhancements in the level of formal institutional quality in Saudi Arabia only matter in the long-run performance of IPO firms. It can, therefore, be stated that IFRS does not exert a long-lasting effect on the IPO market.

6.6.   Conclusion

In this chapter, results and related discussion are presented in relation to four empirical questions and nine research hypotheses developed in Chapter Four. The central objectives of the research are to explain the effects of IFRS mandating on the quality of accounting information of IPO firms during two important stages of the IPO market in Saudi Arabia. In the first stage, market participants in the IPO market suffer from a great deal of information asymmetry that frequently justifies the existence of large IPO underpricing in the primary market as compensation for *ex-ante* uncertainty risk. Hence, the expected role of the IFRS mandate is to reduce the effect of the asymmetric information problem by offering market participants better quality and additional accounting disclosure. This leads to lowering *ex-ante* uncertainty, and the end result is IPO

---

[57] The WR is defined as the adjusted return from all IPOs within 12 months of listing, divided by the adjusted return from the Tadawul "benchmark" over the same period. A WR larger than 1 means that the IPOs outperformed Tadawul, while a WR less than 1 indicates IPOs underperformed Tadawul (Alanazi & Al-Zoubi 2015).

underpricing for mandating firms. The first research question explored for the presence of such an effect by examining the effect of IFRS mandate on the underpricing of IPO firms in Saudi Arabia.

In the second stage, market participants in the secondary market observe a distinct performance difference between IPO firms and the general market index 12 months post-listing. The attribution of such a performance gap is frequently linked to the over-optimism of IPO investors that initially led to large IPO underpricing in the primary market. Therefore, it is anticipated that IPO firms that mandated quality accounting standards such as IFRS should experience lower IPO underpricing and better long-term performance. The second research question investigated this by testing IFRS influence on the long-term performance of IPO firms in Saudi Arabia. However, accounting disclosure literature raises the controversial possibility of a joint effect between improvements in the quality of institutions and IFRS mandate on capital market outcomes. This argument caused confusion about whether to attribute a positive market outcome to IFRS mandate or to enhancements in the quality of institutions, or to a joint effect of the two. Consequently, the goals of the third and fourth research questions are to examine the joint effects of IFRS mandate and time-variant changes in transparency on the underpricing and long-term performance of IPO firms in Saudi Arabia. While the focus is on studying the joint effect of IFRS mandate and time-variant changes in formal institutional quality on IPO underpricing and long-term performance, the separate effects of IFRS mandate and intertemporal changes in transparency on IPO underpricing and aftermarket performance are also tested.

This is carried out by studying 102 IPO-issuing firms from January 2003 until December 2017 using numerous DiD cross-sectional regression models in four defined empirical sections. Driven by data limited to the formal institutional quality data, the dataset for the third and fourth empirical sections ranged from 2005 to 2017 and related to 100 IPO firms.

The results for the first empirical section, Section 6.2, find robust statistical evidence attributing a substantial economic reduction in IPO underpricing for bank and insurance IPOs (mandating group) by up to 258% after mandating the application of IFRS. This evidence is the first empirical confirmation of the economic benefits that IFRS would bring to the quality of accounting information of IPO firms in emerging non-EU countries. The finding remains robust after controlling for 13 firm-, market-, country-specific, and fixed effect factors that IPO underpricing literature claim to affect IPO underpricing employing numerous testing

specifications. The result for Hypothesis 1 confirms the assertion of much accounting disclosure literature: IFRS is a set of high-quality financial reporting standards that surely will increase reporting transparency leading to less information asymmetry (Ball 2006; Hail et al. 2010; Byard et al. 2011; Ahmed et al. 2013a; Christensen et al. 2013; Daske et al. 2013; Horton et al. 2013; Hong et al. 2014). Hence, due to the fact that IFRS provides additional disclosure requirements compared to local GAAP in Saudi Arabia, the use of IFRS by IPO firms largely affected the degree of information asymmetry amongst market participants in the IPO market.

This indeed results in enhancing the reporting quality of financial reports issued by IPO firms which mandated IFRS in Tadawul. It is confirmed that IFRS mandate indeed works as a quality "certification" signal for IPO issuers in Saudi Arabia, thus supporting the premise of IFRS as an application that improves the quality of accounts published in financial reports. Mandating IFRS makes the accounting information of IPO firms more informative and publicly available to all market participants at no additional cost, hence reducing investors' "*ex-ante* uncertainty" in Saudi Arabia. This thesis argues that the informativeness characteristic of IFRS reduces the information asymmetry problem between participants in the IPO market. Consequently, the use of IFRS as a "certification" signal reduces the *ex-ante* uncertainty of IPO investors, leading to less information asymmetry in the IPO market and subsequently curtails IPO underpricing in Saudi Arabia.

The second empirical section, Section 6.3, uncovers an opposing outcome for Hypothesis 2-1. Against the hypothesised relationship that IFRS improves the aftermarket performance of IPO firms, the results show that IFRS mandate has no relationship with the disclosure quality of mandating firms post-listing. Hence, no economic benefits for bank and insurance IPO issuers in the long-term in Saudi Arabia are found. This conflicting outcome of IFRS mandate leads to the assertion that IFRS has only a short-lived effect but no long-lasting influence on information asymmetry in the IPO market. Thus, the author of this thesis attributes the difference in information nature between the secondary and primary markets to be the reason for this feeble role of IFRS mandate to provide any benefits to the long-term performance of IPO firms in Saudi Arabia. The results imply that IFRS thrives in alleviating asymmetric information in the primary market by giving investors and analysts additional and high-quality information related to IPO firms. The attained results in Section 6.2. and also by prior literature that focused on developed countries including Otero and Enríquez (2012), Hong et al. (2014) and Maglio et al. (2018) support such an

expectation about the role of IFRS in the primary market. This anticipation resulted from the fact that previous literature contends that asymmetric information problem exists in the primary market because the shares of IPO firms have never been listed before, and the performance of IPO firms has also never been observed by investors and analysts (Mauer & Senbet 1992; Shi et al. 2013; Hong et al. 2014). Hence, the only information available to them in order to assess the quality of accounting information is that contained in the prospectuses which are entirely controlled by the issuers (Leone et al. 2007; Hanley & Hoberg 2010; Hong et al. 2014).

However, in the secondary market, where investors and analysts enjoy access to numerous sources of information to determine the ongoing market value of share prices of IPO firms, IFRS fails in providing any advantage to the customers of financial reports for IPO firms post-listing in Saudi Arabia. A similar finding is observed in Denmark also by Dorsman et al. (2010). Such an interpretation is supported by prior literature, in which scholars argue that the degree of information uncertainty faced by secondary market participants is less pronounced than that faced in the primary market for IPO firms. This is due to the wide range of information sources available in the secondary market, which reduce information uncertainty (Habib & Ljungqvist 2001; Ritter & Welch 2002; Engelen & Van Essen 2010; Hong et al. 2014). These sources, for instance, include information about the firms' announcements, media coverage, historical financial reports, and analysts' reports (Jenkinson & Ljungqvist 2001). Such information privilege would make it reasonable to expect the secondary market to suffer from less information asymmetry compared to the primary market (Jenkinson & Ljungqvist 2001).

The true determinant of the long-term performance of IPO firms is related to the expectation of Hypothesis 2-2. The support for this hypothesis showed that IPO firms suffer from a high level of underpricing due to the over-optimistic valuation by investors and analysts on the first trading day of the IPO firm. The results found strong evidence showing that such a firm underperformed by approximately 4% in the long-term. This finding has consistent support from previous literature, including Aggarwal and Rivoli (1990); Ritter (1991), Sehgal and Singh (2008) Mudambi et al. (2012), Alanazi and Al-Zoubi (2015), and Zhao et al. (2018). These scholars find that when IPO firms suffer from large discounting, possibly due to their initial overvaluation, they also suffer from long-term underperformance. This is because such an overvaluation becomes apparent in the secondary market within the first 12 months of post-listing. Thus, investors revise

their assessment of IPO firms, resulting in poorer long-term performance as soon as the initial enthusiasm about the performance of IPO firms fades away.

The results of the third empirical section, Section 6.4, introduce solid support to the theoretical prediction of Hypothesis 3-1. The results confirm that IFRS mandate significantly reduces IPO underpricing by up to 223% even after controlling time-variant changes in transparency. However, Hypothesis 3-2, which examines if intertemporal changes in country-level transparency alleviate IPO underpricing in Saudi Arabia, was consistently rejected. The results showed that changes in the three proxies of country-level transparency; the ethical behaviour of firms, the strength of auditing and reporting standards, and transparency of government policymaking, had no relationship with IPO underpricing. This evidence is consistent with Hearn (2014), Dhamija and Arora (2017), and, Hong et al. (2014) who find no supportive outcomes for the hypothesised negative association between changes in country-level transparency and IPO underpricing. The obtained consistent and significant results for Hypothesis 3-3 provide strong support for the negative joint effect of time-variant changes in transparency and IFRS mandate on IPO underpricing using the three proxies of formal institutional quality. This joint effect provides a large quantifiable economic impact by alleviating underpricing for IPO firms in Saudi Arabia by up to 55%. This finding agrees with Houqe et al. (2012b). This is because the authors find empirical evidence supporting the existence of a joint effect between investor protection and IFRS mandate in improving the accounting quality of firms across countries.

The outcomes of Section 6.4. confirm the argument of this thesis that mandatory IFRS adoption indeed works as a quality "certification" signal or strategy for IPO issuers since the premise of IFRS is to enhance the accounting quality of financial reports. This demand for quality documentation is due to additional disclosure requirements of IFRS compared to local GAAP (Ball 2006, 2016). The identified 21 major differences between the Saudi GAAP and IFRS standards of which 15 of them exert a great influence on the quality of accounting information and disclosure asymmetry in the IPO market in Saudi Arabia probably led to the observed role of IFRS mandate in enhancing the information quality of IPO prospectuses in Saudi Arabia (Iqbal 2012; Nurunnabi 2017). Thus, mandating IFRS enhances the quality of accounting information of IPO prospectus and reduces the *ex-ante* uncertainty of IPO investors leading to less information asymmetry in the IPO market and results in lower IPO underpricing (Shi et al. 2013; Hong et al. 2014). The evidence uncovered in this section also agrees with prior accounting disclosure literature. This school of

thought argued that enhancements in the strength of countries' pre-existing legal and institutional systems are likely to help the effect of IFRS to materialise (Daske et al. 2008; Houqe et al. 2012b; Christensen et al. 2013). This is because the results reveal it is possible for the effects to be additive. Each element (IFRS mandate and transparency) contributes jointly to the primary market in emerging non-EU countries. The evidence uncovered here indicates a high possibility that only IFRS matters, although a significant joint effect of IFRS mandate and transparency on IPO underpricing is found in Saudi Arabia.

This chapter then presented the outcomes of the fourth and last research question in Section 6.5. The results here yield a lack of support for the prediction of Hypothesis 4-1. IFRS does not provide tangible economic benefits to the long-term performance of IPO firms in Saudi Arabia, even after controlling for time-variant changes in transparency. Consistent with what is thoroughly discussed in Section 6.3, the finding of Hypothesis 4-1 confirmed that the effect of IFRS mandating is not long-lasting. Furthermore, IFRS maintains only a short-lived effect on the problem of asymmetric information in the IPO market, which may be attributed to the difference in availability of information between secondary and primary markets (Habib & Ljungqvist 2001; Ritter & Welch 2002; Engelen & Van Essen 2010; Hong et al. 2014). These authors argue that while primary market investors suffer from a lack of publicly available financial and accounting information about IPO firms, secondary market investors have easy access to a range of reliable information, such as media coverage, historical financial reports, and analysts' reports (Jenkinson & Ljungqvist 2001). Such publicly accessible information can feasibly aid in determining the fair market price of IPO shares, which possibly reflects on the aftermarket price performance. This interpretation is supported by previous research that indicates a great asymmetric information gap exists between primary and secondary markets (Mauer & Senbet 1992; Shi et al. 2013; Hong et al. 2014).

The non-appearance of IFRS influence in the aftermarket performance of IPO firms caused the author of this thesis to consider the concept that the quality of formal institutions is the alternative player in influencing the long-term performance of IPO firms in Saudi Arabia. The results for Hypothesis 4-2 support this concept by showing that improving the level of EBF, increasing SARS and raising TGP by one-point increases long-term performance of IPO firms by up to 65%, 43%, and 84%, respectively. Zattoni et al. (2017) offer supportive empirical evidence, documenting a positive association between improved country-level formal institutional quality, measured by the level of control of corruption, and aftermarket performance of IPO firms after 12

months of listing. The lack of support for Hypothesis 4-3, which tested the joint effect of changes in formal institutional quality proxies and IFRS mandate on the aftermarket performance of IPO firms, is not unexpected. This is because the results document the absence of a direct effect of IFRS mandate on the aftermarket performance of IPO firms, which is initially supported by the refusal to support Hypothesis 4-1. Consequently, this allows this thesis to conclude that IFRS does not provide a long-term effect for IPO firms. Rather, it is only intertemporal enhancements in the level of formal institutional quality that matter in the aftermarket performance of IPO firms in Saudi Arabia.

The reliability and trustworthiness of the findings for the four empirical sections are not an artefact of failing to account for possible model misspecifications, as extended robustness testing was carried out for the following: accounting for synthetic clustering in the DiD model; excluding outliers; accounting for probable endogeneity in the OLS model; dealing with the unbalanced distribution of IPO data and small sample size; adding additional economic and stock market factors; and using alternative measurements for the dependent variable. The conclusions drawn remain very much intact after using a total of 13, 14, 73, and 74 DiD models, with a variety of econometric and control specifications, for the first, second, third, and fourth empirical sections, respectively.

Chapter Seven

Conclusion

7.1. Summary

Accounting disclosure literature advocates that the adoption of high-quality accounting standards such as IFRS would surely improve the quality and comparability of financial statements across capital markets (Daske et al. 2013; Christensen et al. 2015; Beuselinck et al. 2017; Vergauwe & Gaeremynck 2019). The underlying principle of this claim is that utilising the same accounting methods in the preparation of financial reports across jurisdictions enables local and international users of those reports to reach a unified interpretation of accounting numbers using the same accounting language (Ball 2006). Not limited to this claimed benefit, proponents of IFRS standards usually claim that IFRS largely differs from local GAAP where IFRS is projected to improve the quality of accounting information of IPO reports due to the capability of IFRS standards to eradicate certain accounting alternatives, benefit users with additional disclosure requirements, and provide defined measurement and recognition rules in comparison to local GAAP (Ahmed et al. 2013b). In turn, IFRS standards are perceived to function as market-based accounting methods that provide superior information quality to capital markets compared to local GAAP (Ball 2016). Such claimed advantages of IFRS might justify its market reputation as a quality certification tool.

Since quality is frequently attached to cost, adopting the IFRS mandate also attracts certain costs. That is, the cost for switching to IFRS standards is not marginal to mandating firms as reported by some empirical evidence in the accounting disclosure literature (Daske et al. 2008; Bova & Pereira 2012; Persakis & Iatridis 2017). The evidence in the literature shows that first-time mandatory adopters of IFRS standards experience multiple costs ranging from a 48% increase in audit fees and taking 60% longer to produce the initial IFRS-compliant annual reports, to shrinking the wealth of shareholders' equity by up to 5.2%, and reducing accounting numbers on income statements adopters (Webb 2006; Griffin et al. 2009; Argaam 2018). This evidence for the

associated costs of IFRS mandate is reported in both developed and emerging[58] economies, which posits an important question: do the economic benefits of IFRS mandate outweigh its economic costs?

Scholars in accounting disclosure literature have examined the economic benefits of IFRS mandate over the last decade but reached inconclusive evidence countries (Ball 2006; Daske et al. 2008; Bova & Pereira 2012; Christensen et al. 2013; Hong et al. 2014; Persakis & Iatridis 2017; Wu & Zhang 2019). The problem is that prior disclosure literature on the economic benefits of IFRS mandate on accounting quality produced fragmented results. While some studies find evidence of a positive effect, others uncover evidence of negative effect and no economic benefits are realised after mandating IFRS as reported in other empirical studies (Ahmed et al. 2013a; Ball 2016; Abad et al. 2018; Maglio et al. 2018). However, the overall evidence gathered in the accounting disclosure literature leans towards supporting positive capital market benefits after mandating IFRS. Yet, this evidence is predominantly concentrated in the European Union and developed non-EU countries (Ball 2006; Daske et al. 2008; Bova & Pereira 2012; Christensen et al. 2013; Hong et al. 2014; Persakis & Iatridis 2017). At the same time, evidence of economic cost is revealed after IFRS mandate for developed EU, developed non-EU, and emerging non-EU economies. Yet, there is a scarcity of empirical evidence for any revealed economic benefits of IFRS mandate on accounting quality in emerging non-EU countries (Bova & Pereira 2012).

Such a remarkable observation motivated the author of this thesis to observe that more than 50% of jurisdictions that have made public commitments to permit or mandate IFRS are categorised as emerging non-EU countries (IAS *Plus* 2019). The author of this thesis also noticed a great deal of pressure imposed on those less-developed economies to surrender their local accounting standards in exchange for better accounting standards provided by IFRS, in order to enhance the quality of their accounting systems (Bova & Pereira 2012; Adibah Wan Ismail et al. 2013; Masoud 2014). In exchange for mandating IFRS, promoters of IFRS in emerging non-EU countries advocate that it can improve the overall quality of an accounting system, subsequently leading to increasing the attraction of cross-country capital inflows. Hence, IFRS can boost economic growth for emerging non-EU nations.

---

[58] See Yaacob and Che-Ahmad (2012), Abu Risheh and Al-Saeed (2014), Lin and Yen (2016), Pawsey (2017), and Abdull razak and Alqurashi (2018).

The author of this thesis argues that since IFRS mandate does indeed incur an economic cost, scholars in the IFRS field, government authorities, accounts preparers, and users of financial reports are left in the dark. To the best of the author's knowledge, there is no current empirical evidence for the economic effects of IFRS mandate in emerging non-EU countries. In this thesis, the focus of the author is on testing the effect of IFRS mandate on accounting quality in the IPO markets due to the scarcity of IFRS-IPO research, particularly in emerging non-EU economies. The IPO market represented a unique setting that contains considerable information uncertainty between preparers and users of IPO prospectuses (Teoh et al. 1998a; Kao et al. 2009; Shi et al. 2013). Hence, IFRS can be perceived as a quality antidote between IPO parties that reduces information asymmetry in the IPO market (Hong et al. 2014; Maglio et al. 2018). The importance of the IPO market develops from the fact that it attracts much attention from researchers, investment institutions, the media, and the general public (Shi et al. 2013; Hong et al. 2014; Alanazi & Al-Zoubi 2015; Firth & Gounopoulos 2017; Haman et al. 2019). The general emphasis is on the extraordinary and sporadically significant first-day instantaneous returns that the share prices of newly listed firms achieve, and also on the aftermarket performance gap of IPO firms compared to the general market index.

The initial return "underpricing" and the long-term performance difference frequently attached to IPO firms represent the initial tangible amount of money and what subsequent owners of IPO firms incur when they invest in IPO firms. A high level of asymmetric information in the IPO market is frequently attributed to those two stock market phenomena (Aggarwal & Rivoli 1990; Ritter 1991; Loughran & Ritter 1995; Teoh et al. 1998a; Chan et al. 2004; Dorsman et al. 2010; Hong et al. 2014; Zattoni et al. 2017). However, the intensity of a larger IPO discount and aftermarket performance gap becomes apparent in emerging non-EU markets due to the inherited information uncertainty faced by market participants in those nations (Hearn 2014; Alanazi & Al-Zoubi 2015; Mayes & Alqahtani 2015; Chen et al. 2017; Rathnayake et al. 2019). This probably explains why non-EU countries suffer from a large amount of information asymmetry, lack of transparency, high IPO underpricing, and long-term performance difference in their stock markets.

Besides accounting standards, accounting disclosure literature emphasised that the overall institutional quality, including the quality of the country-level transparency environment, also affects the quality of accounting (Ball 2016; Persakis & Iatridis 2017). Such an interactive relationship between the accounting system and the level of formal institutional quality in a

242

country motivated the emergence of a strand of research that focusses on examining the joint effect of IFRS mandate and country-level institutional environments on the quality of accounting in capital markets (Houqe et al. 2012b; Persakis & Iatridis 2017). The joint effect argument put forward by this school of thought postulates that jurisdictions could make other reforms to their formal institutional environment, simultaneously by introducing IFRS mandate to enhance the overall transparency of their public and private sectors. Therefore, this literature contends that it might be this concurrent effect that accounts for the observed capital market outcomes. Consequently, combining the remarkable argument about this joint effect along with the observations the author of this thesis documents on the lack of IFRS-IPO research in emerging non-EU countries, motivated this thesis to identify four outstanding research gaps.

In this thesis, the author is primarily motivated by the exceptional empirical work of Daske (2006), Hail and Leuz (2006), Daske et al. (2008), Wang and Welker (2011), Houqe et al. (2012b), Ahmed et al. (2013a), Christensen et al. (2013), and Persakis and Iatridis (2017), particularly the work of Dorsman et al. (2010), Otero and Enríquez (2012), Shi et al. (2013), Hong et al. (2014), and Maglio et al. (2018). However, those studies are silent on whether there are economic benefits for mandating IFRS on IPO underpricing and long-term performance of IPO firms in emerging non-EU countries such as Saudi Arabia. They are also unaware of the joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing and long-term performance of IPO firms in non-EU countries, particularly in Saudi Arabia.

Based on the identification of those four research gaps, the author of this thesis, firstly, aimed to examine the economic benefits of IFRS mandate in explaining IPO underpricing of IPO firms listed in Saudi Arabia. The second aim developed by the author is to examine the economic benefits of IFRS mandate in explaining the long-term performance difference of IPO firms listed in Saudi Arabia. While the third objective is to test the joint effect of IFRS mandate and intertemporal changes in transparency on the underpricing of IPO firms in Saudi Arabia, the fourth goal is to investigate the joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia. This led to the development of nine research hypotheses that set out to address four research questions associated with those four objectives.

The first hypothesis anticipates a negative relationship between IFRS mandate and IPO underpricing in Saudi Arabia. It is constructed to answer the following research question; what is the effect of IFRS mandate on underpricing of IPO firms in Saudi Arabia? To address the second research question, what is the effect of IFRS mandate on the long-term performance of IPO firms in Saudi Arabia? the author developed two research hypotheses. While the first expected a negative relationship between IPO underpricing and the long-term performance of IPO firms in Saudi Arabia after controlling for IFRS mandate, the second theorised a positive link between IFRS mandate and the long-term performance of IPO firms in Saudi Arabia. Consequently, the author developed six research hypotheses related to the examination of the joint effect of IFRS mandate and changes in transparency on IPO underpricing and long-rem performance in Saudi Arabia to address the third and fourth questions: is there a joint effect of IFRS mandate and intertemporal changes in transparency on IPO underpricing in Saudi Arabia?; and is there a joint effect of IFRS mandate and intertemporal changes in transparency on the long-term performance of IPO firms in Saudi Arabia?

Motivated by the lack of availability of an established conceptual framework that articulates the relationship amongst IFRS mandate, IPO underpricing, aftermarket performance of IPO firms, and changes in transparency, the author pieced together a conceptual explanation for IPO underpricing and long-term performance of IPO firms based on "certification" developed by Booth and Smith (1986), "*ex-ante* uncertainty" developed by Beatty and Ritter (1986), and "fad" hypotheses developed by Aggarwal and Rivoli (1990), and Ritter (1991), which deal with the information asymmetry problem in the IPO market.

This conceptual framework perceived IFRS mandate as a quality "certification" signal for the owners of IPO firms since the premise of IFRS is to improve the accounting quality of financial reports. Therefore, due to the additional disclosure requirements that IFRS provides in comparison to national accounting standards, IFRS is expected to deliver a positive effect on the information quality of IPO reports (Ball 2006, 2016). For instance, Iqbal (2012) and IFRS Organisation (2016) identify 21 key differences between the Saudi Arabian GAAP and IFRS standards. Of these 21, Nurunnabi (2017) asserts that 15 IFRS standards are likely to cause a considerable impact on the quality of accounting information and disclosure asymmetry in the IPO market in Saudi Arabia. As a result, the implementation of IFRS mandate is realised as a certification instrument that

decreases the *ex-ante* uncertainty of IPO investors and leads to alleviating the asymmetric information problem in the IPO market. This, in turn, results in lowering IPO underpricing.

The existent literature including Aggarwal and Rivoli (1990); Ritter (1991), Sehgal and Singh (2008) Mudambi et al. (2012), Alanazi and Al-Zoubi (2015), and Zhao et al. (2018) documents the existence of a positive association between IPO underpricing and long-term underperformance of IPO firms. Thus, a decrease in *ex-ante* uncertainty brought about by IFRS is predicted to decrease investors' overreaction to IPO shares on the first trading day. Consequently, the author of this thesis asserted that such an effect should improve the long-term performance of IPO firms after mandating the application of IFRS. To comprehend the relationship between IFRS mandate and variations in the quality of formal institutional environment, the author expanded the above construct to develop three anticipated scenarios. The first projected that it is only the quality of IFRS application that impacts on IPO underpricing and aftermarket performance of IPO firms, while the second scenario connected this effect exclusively to enhancements in the overall level of transparency in Saudi Arabia. Finally, the third scenario involved a joint effect function where there is a concurrent effect of IFRS and improvements in the overall transparency on IPO underpricing and long-term performance of IPO firms in Saudi Arabia.

The author of this thesis adopts a particular scientific research design to carry out this research based on the nature of this examination, following the example of Cooper et al. (2006) and Saunders et al. (2015). The employed scientific research design adopts an objectivistic ontological paradigm, positivist epistemological position, deductive research approach, and quantitative research strategy. In this thesis, the author follows Hong et al. (2014) to employ a DiD research design to scrutinise the influence of IFRS mandate on accounting quality proxy by gauging the variation in underpricing and long-term performance of Saudi IPO firms before and after IFRS mandate in 2008. The author further discusses the rationale for employing the DiD research design, essentially an experimental research method, that uses observational study data to examine the effect of treatment (mandating IFRS) on a treatment group (IPO firms who mandate IFRS) in comparison to a control group (IPO firms who do not mandate IFRS). This design allows the author to develop an analytical estimation that captures the effect of the treatment (IFRS mandate adoption), on the dependent variables (underpricing and aftermarket performance of IPO firms) and then compare the average difference in the dependent variables for the treatment group with the average variation for the control group (Slaughter 2001).

To address the four research questions proposed in this thesis, the author divides data and method into four sections. Hence, for the first and second empirical sections, the author utilises a total sample comprising 102 Saudi IPO firms listed in 15 industries from January 2003 to December 2016. In the remaining two sections, the author employs a total sample for 100 Saudi IPO firms listed in 15 industries from January 2005 to December 2016. This is because data is not available from formal institutions in Saudi Arabia prior to 2005. Across the four sections, the author employs unbalanced cross-sectional regression approximation to deal with the nature of the research questions and data. The sample selection criteria employed in this thesis are constructed following the accounting disclosure and IPO literature, including DuCharme et al. (2001), Shi et al. (2013), Hong et al. (2014), and Boulton et al. (2017). Subsequently, the author makes use of eight controlling firm- and market-specific variables to maximise the trustworthiness of the attained conclusions following IPO and accounting disclosure literature, including Dorsman et al. (2010), Shi et al. (2013) and Hong *et al*. (2014). Following Shi et al. (2013), the author then defines the dependent variable, IPO underpricing, as a percentage return of the variance between the offer price to the first closing price on the first trading day of the IPO firm. Likewise, the second dependent variable, long-term performance, is the market-adjusted buy-and-hold return for the first 12 months calculated from the closing price of the first trading day, following Alanazi and Al-Zoubi (2015). Additionally, three time-variant proxies are employed to capture changes in the level of formal institutional quality proxies in Saudi Arabia, as developed by the World Economic Forum (2017): time series annual measures of ethical behaviour of firms, the strength of auditing and reporting standards, and transparency of government policymaking.

The choice of Saudi Arabia as a suitable testing ground is made due to five characteristics. The author of this thesis argues that such characteristics would improve the understanding of the distinctive link between IFRS mandate, IPO underpricing, long-term performance of IPO firms, and variations in transparency. First, the author discusses the close similarity in relation to the quality of formal and informal institutional characteristics between Saudi Arabia and other emerging non-EU countries. For example, a similar level of formal institutional quality measured by the level of control of corruption found in Saudi Arabia and several emerging non-EU countries including to Brazil, China, India, Indonesia, Mexico, and Russia. Here, Kaufmann et al. (2017) show the average level of control of corruption in Saudi Arabia to be -0.08 in a scale ranging from -2.5 for the worst to 2.5 to the best practice in preventing corruption; this is for the period 2005 to

246

2016. Kaufmann et al. (2017) also report average negative values for control of corruption Brazil, China, India, Indonesia, Mexico, and Russia as being -0.09, -0.50, -0.46, -0.69, -0.47, and -0.93, respectively. The tight similarity between the low-level corruption control perceived in Saudi Arabia and that detected in emerging non-EU countries becomes stronger when the average level of control of corruption in developed countries such as Australia, the United Kingdom, and the United States is examined. Kaufmann et al. (2017) report that these three countries sustain positive averages of control of corruption for 1.99, 1.73, and 1.35, respectively. Therefore, it is possible to make any outcomes obtained from Saudi Arabia in relation to IFRS mandate effortlessly generalisable to other emerging non-EU countries.

The second characteristic is related to the length of IFRS experience provided by the Saudi Arabian adoption of IFRS. The author of this thesis shows 10 years of IFRS experience enabled the author to contend the IPO market of Saudi Arabia is very attractive for observing the long-term effects of IFRS mandate while using an adequate timeframe in order to attain trustworthy outcomes. Third, the author discusses 21 major differences found between the Saudi Arabian GAAP and IFRS standards identified by Iqbal (2012) and IFRS Organisation (2016). Those differences allow the author to anticipate IFRS mandate playing a positive role in Saudi Arabia. Fourth, the Saudi Arabian IPO market is free from self-selection bias that influenced prior results of other voluntary-based studies as argued by Ball et al. (2003), Daske et al. (2008), Li (2010), Chua et al. (2012), and Christensen et al. (2013). This is because voluntary adoption of IFRS has been prohibited in Saudi Arabia. Finally, the author of this thesis showed how there is a similarity in the existence of a concurrent effect in Saudi Arabia to that in emerging non-EU countries that has not been observed by previous literature. The discussion shows that the overall formal institutional environment in Saudi Arabia has improved since IFRS was mandated in 2008, which indicated the possibility of a similar occurrence in Europe when IFRS was mandated in 2005. For example, Daske et al. (2008) and Christensen et al. (2013) contend that European countries utilise the introduction of IFRS as an opportunity to enhance the overall quality of their institutional environment. Consequently, the author of this thesis argues that those five characteristics are likely to make the extraction of any results from the Saudi Arabian data greatly generalisable to other emerging states.

The findings of the first empirical section, Section 6.2, provide support to Hypothesis 1. It reveals that after mandating IFRS in 2008, the underpricing of bank and insurance IPOs

(mandating group) significantly fell by 258%. Such an outcome with a high economic impact allows the author to confirm that because IFRS provides additional disclosure requirements in comparison to the national accounting standards of Saudi Arabia, the degree of information asymmetry amongst market participants in the IPO market largely fell after IFRS mandate. Hence, this result makes it possible to affirm that IFRS mandate indeed works as a quality "certification" signal for IPO firms in Saudi Arabia. In turn, the premise of IFRS is supported as an application that enhances the quality of financial reports. Such certifying role of IFRS mandate improved the confidence in the context of accounting information of IPO firms by making them more informative and publicly available to all users at no additional cost, consequently reducing investors' "*ex-ante* uncertainty" in Saudi Arabia. These findings are consistent with the perception of accounting disclosure literature in relation to the role of IFRS. This school of thought sees IFRS standards is a set of high-quality financial reporting standards that confidently improves reporting transparency resulting in less information asymmetry (Ball 2006; Hail et al. 2010; Byard et al. 2011; Ahmed et al. 2013a; Christensen et al. 2013; Daske et al. 2013; Horton et al. 2013; Hong et al. 2014).

The second empirical section, Section 6.3, reveals there is no economic benefit to be observed from IFRS mandating for bank and insurance IPO investors in the long-term in Saudi Arabia. This outcome provides a rejection to Hypothesis 2-1 making the author to contend that IFRS possesses only a short-lived effect while its long-lived effect does not exist for information asymmetry in the IPO market. In other words, the outcomes indicated that IFRS improves symmetric information amongst IPO participants in the primary market by providing them with additional and superior information related to IPO companies. However, in the secondary market, where IPO participants can access abundant sources of information to evaluate share prices of IPO firms, IFRS does not afford any benefits to the clienteles of financial reports for IPO firms post-listing. Hence, the author concluded that IFRS thrives and produces its expected premises only when the level of information asymmetry is high. Thus, the author of this thesis attributes the variance in informational nature between the secondary and primary markets to be the cause of the failure of the IFRS mandate to aid the long-term performance of IPO firms in Saudi Arabia.

This is because prior literature emphasises that problematic asymmetric information occurs in the primary market because the shares of IPO firms have never been listed before, and the performance of IPO firms has also never been detected by investors (Mauer & Senbet 1992; Shi

248

et al. 2013; Hong et al. 2014). Thus, the only obtainable information to investors in order to evaluate the quality of accounting information is found in the prospectuses, which are completely governed by the issuers of IPO firms (Leone et al. 2007; Hanley & Hoberg 2010; Hong et al. 2014). However, in the secondary market, where investors can access a range of information to calculate the fair share prices of IPO firms, IFRS does not render any gain to the clienteles of financial reports for IPO firms post-listing in Saudi Arabia.

The results of this section then show that IPO firms that experienced high underpricing underperformed by approximately 4% in the long-term. This finding implies that IPOs suffer from an elevated level of underpricing due to their over-optimistic evaluation when debuting in the primary market. This is because such an overvaluation fault is gradually noticed in the secondary market within the first 12 months after the IPO firm has been listed. Therefore, investors are likely to review their valuation of IPO firms. Consequently, this leads to long-term underperformance as soon as the initial fervour about the performance of IPO firms fades away. This outcome has steady support from prior literature, including Aggarwal and Rivoli (1990); Ritter (1991), Sehgal and Singh (2008) Mudambi et al. (2012), Alanazi and Al-Zoubi (2015), and Zhao et al. (2018).

In the third empirical section, Section 6.4, the author makes several interesting findings related to three predictable scenarios. The first empirical evidence documents the existence of a significant and negative joint effect of IFRS mandate and time-variant variations in transparency on IPO underpricing. The author finds that this joint effect delivered an enormous quantifiable economic benefit to IPO firms by reducing underpricing in Saudi Arabia by up to 55%. This evidence agrees with previous accounting disclosure literature. This stream of research contended that improvements in the strength of countries' pre-existing institutional systems are expected to aid IFRS to provide its expected benefits (Daske et al. 2008; Houqe et al. 2012b; Christensen et al. 2013). However, the evidence reveals a large likelihood that it is only IFRS that matters, even though a significant joint effect of IFRS mandate and transparency on IPO underpricing is uncovered in Saudi Arabia. This is because the outcomes also show a greater economic benefit attributed only to IFRS mandate in decreasing IPO underpricing by up to 223% even after adjusting intertemporal variations in formal institutional quality in Saudi Arabia. Unexpectedly, the author finds no association between time-variant changes in transparency in Saudi Arabia and IPO underpricing. This evidence is consistent with Hearn (2014), Dhamija and Arora (2017), and, Hong

et al. (2014) who uncover no supportive results for the hypothesised negative relationship between variations in country-level transparency and IPO underpricing.

Finally, the outcomes of the fourth empirical section, Section 6.5, reveals that against the prediction of Hypothesis 4-1, IFRS does not deliver noticeable economic benefits to the aftermarket performance of IPO firms in Saudi Arabia even after adjusting for intertemporal variations in transparency. In perfect alignment with the second empirical section, Section 6.3, the results show that IFRS mandate does not exert a long-lived effect. In fact, IFRS has only a short-lived effect on the problem of asymmetric information in the IPO market. As discussed previously, the difference of information nature between secondary and primary markets is attributed to the reason for this absent effect of IFRS mandate on the aftermarket performance of IPO firms (Habib & Ljungqvist 2001; Ritter & Welch 2002; Engelen & Van Essen 2010; Hong et al. 2014). These scholars make an argument stating that investors in the primary market suffer from lack of publicly obtainable financial and accounting information about the IPO firm, in contrast, in the secondary market, these investors can access an abundance of dependable sources of information about listed firms. Consequently, such publicly reachable assortments of information can practically support IPO investors in determining a fair market price of IPO stocks that perhaps reflects on the aftermarket price performance. This explanation is in agreement with a comparable observation attained by prior research signifying a great asymmetric information gap between the primary and secondary markets (Mauer & Senbet 1992; Shi et al. 2013; Hong et al. 2014).

The absence of IFRS impact in the aftermarket performance of IPO companies enabled the author to argue that time-variant changes in transparency in Saudi Arabia are the substitute factor that affects the long-term performance of IPO firms. This perception is indeed confirmed collectively by the results of the three formal institutional proxies related to Hypothesis 4-2. An enhancement in the level of ethical behaviour of firms, the strengthening of auditing and reporting standards, and an increase in the transparency of government policymaking by one-unit improve the long-term performance of IPO firms by up to 65%, 43%, and 84%, respectively. This evidence is in line with Zattoni et al. (2017), who find empirical evidence supporting a positive relationship between an enhancement in country-level control of corruption and aftermarket performance of IPO firms. However, it is found that a joint effect of IFRS mandate and variations in formal institutional quality on the aftermarket performance of IPO firms is economically absent. The lack of support for Hypothesis 4-3 that tests the joint effect of changes in formal institutional quality

and IFRS mandate on the aftermarket performance of IPO firms is not completely unforeseen. This is because the results show an absence of a direct influence of IFRS mandate on the aftermarket performance of IPO firms, which is primarily supported by the refusal to support Hypothesis 4-1. As a result, the author concludes that IFRS does not offer a long-lasting outcome for IPO firms. In its place, what does really matter in relation to the aftermarket performance of IPO firms in Saudi Arabia, are the intertemporal improvements in the level of formal institutional quality.

To make sure that the above conclusions are valid and trustworthy, a battery of robustness tests are deployed to ensure they are not an artefact of misspecifications by firstly, checking the consistency of the outcomes after controlling for probable synthetic clustering issue in the DiD design; secondly, excluding possible outliers; thirdly, accounting for endogeneity in the OLS estimation; fourthly, accounting for small and unbalanced sample size; and lastly, controlling for other specific changes in the economy and stock market of Saudi Arabia. To the best of the author's knowledge, this thesis provides the first empirical examination that tests the benefits that IFRS mandate adoption brings to the underpricing and long-term performance of IPO firms, while controlling for intertemporal changes in transparency in one of the largest emerging non-EU countries, Saudi Arabia. The author discusses a number of contributions that can be used by researchers in the field of accounting and finance, policymakers, and local and international investors in emerging non-EU countries such as Saudi Arabia.

7.2. Contributions

The results of this research make a unique contribution to the intersection of information disclosure, and IPO literature by examining not only the individual impacts of the IFRS mandate and intertemporal changes in transparency, but also the joint effect of these factors on accounting quality. This research examined the underpricing and long-term performance of IPO firms in one of the largest non-EU emerging economies, Saudi Arabia. Much of the accounting disclosure literature examines the relationship between IFRS and information quality of listed companies in the secondary market, for example: Ball (2006), Daske (2006), Hail and Leuz (2006), Barth et al. (2008), Daske et al. (2008), Li (2010), Byard et al. (2011), Wang and Welker (2011), Houqe et al. (2012b), Ahmed et al. (2013b), Ahmed et al. (2013a), Christensen et al. (2013), Horton et al.

(2013), DeFond et al. (2014), and Abad et al. (2018). More specifically, this research contributes to the existing literature on the relationship between IFRS mandate, IPO underpricing, and long-term performance (see Dorsman et al. (2010), Otero and Enríquez (2012), Hong et al. (2014), and Maglio et al. (2018)).

The author of this thesis contributes to knowledge, specifically in providing the first empirical evidence of the economic benefits that IFRS would bring to the quality of accounting information of IPO firms in emerging non-EU countries. Given the number of nations that implement IFRS applications, and their associated costs there is no current understanding of how these emerging non-EU countries will benefit from mandating IFRS mandates in order to benefit the primary and secondary markets. Capitalising on the unique characteristics offered by the Saudi Arabian adoption of IFRS and the transparency and cultural similarity with a wide spectrum of emerging non-EU economies, this thesis helps researchers, policymakers, local and international investors in emerging non-EU countries and particularly Saudi Arabia.

Research in accounting disclosure and IPO literature can benefit from the robust results of this thesis in two ways. Firstly, this thesis proposes a theoretical framework that can explain the certification role of IFRS, both in reducing the ex-ante uncertainty of IPO investors that contributes to the underpricing of IPO firms. By alleviating the fading effect attributed to the long-term performance gap of IPO firms, the availability of such a framework helps scholars in understanding the relationship between IFRS compliance, and its expected benefits on the quality of IPO firms in the primary and secondary markets. Ball (2016) highlights that the unavailability of a well-established and tested conceptual framework in the accounting disclosure literature for economic benefits of IFRS mandate on capital markets outcomes is realised.

Secondly, the findings of this thesis with reference to the short-lived effect, with the absence of the long-lived effect of IFRS compliance on the underpricing, and aftermarket performance of IPO firms, respectively, should benefit IFRS research. Hong et al. (2014) argue that IFRS provides no economic benefits to IPO firms outside of Europe. If such evidence is to be generalised into emerging non-EU countries where they represent more than half of IFRS adopters, then there is no economic rationale for adopting IFRS in the first place. The findings of this thesis provide significant evidence that implementing IFRS reduces IPO underpricing in Saudi Arabia, a country that shares many formal and informal institutional features in other emerging non-EU

economies. In contrast, IFRS mandate provides no benefits to IPO firms post-listing so this thesis can encourage IFRS scholars to revise their expectations about the role of IFRS in emerging non-EU nations.

Moreover, research in accounting disclosure and IPO fields may take advantage of results of this joint effect notion. This relates to whether the potential economic effect on IPO underpricing, and long-term performance is solely due to either the IFRS mandate, intertemporal changes in transparency, or, to the joint effect of these two factors. Saudi Arabia's adoption of IFRS is dissimilarly motivated by the European harmonisation efforts that took place jointly with the mandatory adoption of IFRS in 2005 (Daske et al. 2008; Christensen et al. 2013; Persakis & Iatridis 2017). In fact, Saudi Arabia, like many other emerging economies, experienced notable improvements to its formal institutions when IFRS was adopted in 2008. For example, the World Economic Forum (2017) reveals that a number of emerging non-EU economies including Saudi Arabia, Brazil, China, India, Indonesia, Mexico, and Russia have improved their security regulations since 2008, by nearly 37%, 30%, 32%, 42%, 40%, 43.5%, and 10%, between 2008 and 2016, respectively.

To the best of the author's knowledge, no current research has attempted to formally address the joint effect notion of the IFRS mandate and intertemporal changes in transparency. This thesis pioneers IFRS research by finding that it only matters for reducing the underpricing of IPO firms but provides no benefits with reference to the aftermarket performance of those companies. Although this thesis uncovers a significant joint effect of IFRS compliance, and intertemporal changes in transparency on IPO underpricing in Saudi Arabia, this concurrent effect vanishes in the secondary market. Remarkably, intertemporal improvements in formal institutional quality only matter in the long-term concerning the performance of IPO firms post-listing while they do not add any value to the underpricing of such firms. The results of this thesis can subsequently lead to a better understanding of the concurrent effect problem that is under-addressed in the information disclosure, and IPO literature.

7.2.1. Policy Implications

The findings of this thesis have a number of policy implications. Legislators in Saudi Arabia may now be able to use them as reliable empirical evidence to evaluate the actual economic effect of IFRS implementation on the quality of financial reports for listed banking and insurance IPO firms, compared to the remaining non-mandated sectors. Saudi authorities can employ the results to promote the sale of the world's largest oil state-owned enterprise, Aramco, in late 2019. This is because disclosure literature including Yunxia and Liansheng (2008), Albu et al. (2014), and Procházka (2017) find that state-owned enterprises in countries such as China and Romania tend to be involved in earnings management practices when privatising government-owned firms. This suggests uncertainty for international investors who heavily rely on accounting information and the financial accuracy related to the share valuations of state-owned enterprises in emerging countries (see Jeanjean and Stolowy (2008) Ugrin et al. (2017). The Saudi Arabian government can use the results of this thesis as reliable evidence to certify the quality of accounting information in the IPO prospectus for Aramco.

This certifying effect reduced the problem of information asymmetry that has compromised the functionality of the IPO market. In turn, IFRS can work as an effective certification tool to reduce the *ex-ante* uncertainty of international investors who wish to invest in the Kingdom's IPO market, in particular, the Aramco offering. Local and international investors who invest in Saudi Arabia's IPO market can now benefit from these results. They can now be confident in the good quality of accounting information in the IPO prospectus in exchange for reducing their expected investment return. This is due to the enhancement in accounting quality of IPO prospectuses after the IFRS mandate - IPO underpricing fell by up to 258%. This may alter the attractiveness of the expected investment return observed in the IPO market in Saudi Arabia, yet it will not deter investors because this research shows that average underpricing from 2003 to 2016 amounted to 213%.

Many non-EU countries have been asked to surrender their local accounting standards in exchange for better ones provided by IFRS (Bova & Pereira 2012; Adibah Wan Ismail et al. 2013; Masoud 2014). The findings documented here will encourage policy-makers in those countries to closely observe the benefits of IFRS and how it generates better accounting disclosure of listed

IPO companies. This thesis provides conclusive evidence that can help promoters of IFRS to justify its economic cost. IFRS mandate enhances the quality of financial reports in emerging non-EU countries and can serve as a marketing instrument to encourage foreign investors who demand quality accounting information (Schleicher et al. 2010; Florou & Pope 2012; Gordon et al. 2012). Thus, policy-makers in emerging non-EU economies can be more concerned about improving the information quality of their local stock markets to attract foreign capital inflows. Moreover, the development of the IPO market supports local economic growth in which higher frequency of IPO listings is perceived as an imperative supporting tool. It guarantees an uninterrupted expansion of equity markets in emerging non-EU economies (Tian 2011; Jamaani & Roca 2015).

The outcomes of this thesis confirm that IFRS functions well as a quality "certification" signal for entrepreneurs/founders since IFRS is premised on improving the accounting quality of financial reports. This demand for quality certification is due to added disclosure requirements of IFRS that can be compared to local GAAP (Ball 2016). It is evident that IFRS mandate reduces the ex-ante uncertainty of IPO investors, resulting in less information asymmetry in the IPO market. This, in turn, leads to reducing the cost of going public for IPO issuers who suffer from a large discount when they sell part of their shareholdings to the public. IFRS mandate reduces the cost of going public, which, in turn, increases founding entrepreneurs' incentive to expand their operations by raising equity through their local stock markets. Finally, this accelerates the growth of IPO markets and contributes to sustainable economic growth in emerging non-EU economies.

7.3. Limitations and Future Research

This thesis may suffer from two limitations. First, the author focuses on the impact of IFRS mandate on IPO underpricing and long-term performance by employing local IPO data from Saudi Arabia. Second, the size of the IPO data is relatively small in that it includes only 102 Saudi IPO firms from 2003 to 2017. Those two limitations may be criticised on the basis that the attained empirical evidence might not extend to other emerging non-EU countries and may have a low economic impact, hence affecting the generalisability of the results. However, the first concern about the generalisability of the results from employing Saudi Arabian data is likely to be marginal.

For instance, the intersection of accounting disclosure and IPO literature argues that a high level of IPO underpricing simply reflects an information environment that is characterised by the reality of inferior information disclosure and transparency. This scenario increases the problem of information asymmetry amongst IPO investors (Lee et al. 1996; Chan et al. 2004; Boulton et al. 2011; Shi et al. 2013; Hong et al. 2014). The level of IPO underpricing in Saudi Arabia, for example, is high, averaged at around 213%, and is relatively similar to average underpricing in many emerging non-EU countries including: 124.2% in China as reported in Su (2004); 108% in Bangladesh as documented in Hasan and Quayes (2008); 120% in India as described in Kumar (2004); and 182% in Malaysia as reported in Murugesu and Santhapparaj (2010). Therefore, given the close similarity in the level of IPO underpricing, for example, between Saudi Arabia and many less developed IPO markets, the obtained results can be applied to emerging non-EU countries.

Furthermore, the author discusses in the Data Section, Chapter Five, that Saudi Arabia and other emerging non-EU countries share analogous informal and formal institutional quality characteristics. To illustrate this similarity in the level of informal institutional quality, the author shows that Hofstede (2011) scores for the culture of Saudi Arabia are 95 out of 100 for the scale of power distance. Hofstede (2011) also scores a range of emerging non-EU cultures such as Brazil, China, India, Indonesia, Mexico, and Russia and they have high values of power distance of 69, 80, 77, 78, 81, and 93, respectively. Consistently, the author of this thesis demonstrates that for the years 2005 to 2016, Kaufmann et al. (2017) score average level of control of corruption in Saudi Arabia is -0.08 in a scale ranging from -2.5 for the worst to 2.5 to the best practice in preventing corruption. Kaufmann et al. (2017) also score a range of emerging non-EU nations as having average values for control of corruption. These are -0.09, -0.50, -0.46, -0.69, -0.47, and -0.93 for Brazil, China, India, Indonesia, Mexico, and Russia, respectively. Piecing together the resemblance between the scores of power distance and control of corruption between Saudi Arabia and the above-mentioned emerging non-EU nations, the close informal and formal institutional quality ties between Saudi Arabia and these emerging economies can clearly be perceived.

Although the relatively small sample size of 102 IPOs may be seen as a weakness that might affect the economic impact of this thesis, the outcomes of the bootstrap estimation provided consistent results across the four empirical sections reported here. Moreover, the relative similarity in the sample size of our IPO data is comparable to single emerging non-EU studies that tested

IPO underpricing and long-term performance. This confirms that the sample size of this thesis is within an acceptable range of those in other comparable empirical studies. For example, Leal (2005), Hasan and Quayes (2008), Hearn (2012), Kumar (2004), Uddin and Raj (2012), Hearn (2014), Alanazi and Al-Zoubi (2015), and AlShiab (2018) employ a sample size comprising of 66, 93, 104, 102, 147, 86, 76, and 44 IPO firms, respectively. Thus, regardless of those two limitations, the results of this thesis have a reasonable degree of generalisability to other emerging non-EU countries. Future research can extend this empirical testing by validating the findings of this study by examining the economic impact of IFRS mandate on the underpricing and long-term performance of IPO firms in other emerging non-EU countries.

References

Abad, D, et al. 2018, 'Does IFRS Mandatory Adoption Affect Information Asymmetry in the Stock Market?', *Australian Accounting Review*, vol. 28, no. 1, pp. 61-78.

Abdull razak, R & Alqurashi, R 2018, 'Assessing The Impact of The Mandatory Conversion To IFRS on Net Income In Saudi Arabia ', paper presented to 1st International Conference on Multidisciplinary Academic Research

Sydney Australia.

Abdull Razak, R & Alqurashi, R 2019, 'Assessing the Impact of the Mandatory Conversion to IFRS on Net Income in Saudi Arabia ', *Asia Pacific Institute of Advanced Research*, vol. 5, no. 1, pp. 65-75.

Abu Risheh, KE & Al-Saeed, MtA 2014, 'The Impact of IFRS Adoption on Audit Fees: Evidence from Jordan', *Accounting & Management Information Systems/Contabilitate si Informatica de Gestiune*, vol. 13, no. 3.

Adibah Wan Ismail, W, et al. 2013, 'Earnings quality and the adoption of IFRS-based accounting standards: Evidence from an emerging market', *Asian Review of Accounting*, vol. 21, no. 1, pp. 53-73.

Aggarwal, R & Rivoli, P 1990, 'Fads in the initial public offering market?', *Financial Management*, pp. 45-57.

Aghimien, PA 2016, 'Development of accounting standards in selected Middle Eastern countries in comparison to the United States of America', *Review of International Business and Strategy*, vol. 26, no. 1, pp. 69-87.

Agostino, M, et al. 2011, 'The value relevance of IFRS in the European banking industry', *Review of quantitative finance and accounting*, vol. 36, no. 3, pp. 437-57.

Aharony, J, et al. 2010, 'The impact of mandatory IFRS adoption on equity valuation of accounting numbers for security investors in the EU', *European Accounting Review*, vol. 19, no. 3, pp. 535-78.

Aharony, J, et al. 1993, 'Initial public offerings, accounting choices, and earnings management', *Contemporary Accounting Research*, vol. 10, no. 1, pp. 61-81.

Ahmad-Zaluki, NA, et al. 2011, 'Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance', *The International Journal of Accounting*, vol. 46, no. 2, pp. 111-37.

Ahmed, AS, et al. 2013a, 'Does Mandatory Adoption of IFRS Improve Accounting Quality? Preliminary Evidence', *Contemporary Accounting Research*, vol. 30, no. 4, pp. 1344-72.

Ahmed, K, et al. 2013b, 'A Meta-Analysis of IFRS Adoption Effects', *The International Journal of Accounting*, vol. 48, no. 2, pp. 173-217.

Al-Hassan, A, et al. 2010, 'The Under-Pricing of IPOs in the Gulf Cooperation Council Countries', *Research in International Business and Finance*, vol. 24, no. 3, pp. 344-60.

Al Kadi, S 2014, *Profitability of IPOs in Saudi Arabia*, Aljazira Capital Saudi Arabia, viewed 23/08/2016, <http://www.aljaziracapital.com.sa/report_file/ess/SPE-178.pdf>.

Alali, FA & Foote, PS 2012, 'The value relevance of international financial reporting standards: empirical evidence in an emerging market', *The International Journal of Accounting*, vol. 47, no. 1, pp. 85-108.

Alanazi, A, et al. 2011, 'Saudi Arabian IPOs and Privatized Firms Profitability', *Review of Middle East Economics and Finance*, vol. 7, no. 1, pp. 67-90.

Alanazi, AS & Al-Zoubi, HA 2015, 'Extreme IPO Underpricing and the Legal Environment in Wealthy Emerging Economies', *Journal of Multinational Financial Management*, vol. 31, pp. 83-103.

Alavi, A, et al. 2008, 'Pre-IPO Ownership Structure and its Impact on the IPO Process', *Journal of Banking & Finance*, vol. 32, no. 11, pp. 2361-75.

Albu, CN, et al. 2014, 'When global accounting standards meet the local context—Insights from an emerging economy', *Critical Perspectives on Accounting*, vol. 25, no. 6, pp. 489-510.

Allen, F & Faulhaber, GR 1989, 'Signalling by underpricing in the IPO Market', *Journal of Financial Economics*, vol. 23, no. 2, pp. 303-23.

AlMotairy, OS & Stainbank, LJ 2014, 'Compliance with International Education Standards in Saudi Arabia: Policy and Educational Implications', *Journal of Business Studies Quarterly*, vol. 5, no. 4, p. 5.

Alqahtani, F & Boulanouar, Z 2017, 'Sharia Compliance Status & Investor Demand for IPOs: Evidence from Saudi Arabia', *Pacific-Basin Finance Journal*, vol. 46, no. Part B, pp. 258-68.

Alqahtani, FA & Mayes, DG 2014, 'Underpricing of Initial Public Offerings in Saudi Arabia and the Effect of Sharia Compliance', *Journal of Islamic Accounting and Business Research, Forthcoming*.

AlShiab, MS 2018, 'Initial Public Offerings Short and Long Term Performance of MENA Countries', *European Scientific Journal, ESJ*, vol. 14, no. 10, pp. 234-51.

Amihud, Y & Mendelson, H 1986, 'Asset pricing and the bid-ask spread', *Journal of Financial Economics*, vol. 17, no. 2, pp. 223-49.

An, HH & Chan, KC 2008, 'Credit Ratings and IPO Pricing', *Journal of Corporate Finance*, vol. 14, no. 5, pp. 584-95.

Ang, JS & Brau, JC 2002, 'Firm transparency and the costs of going public', *Journal of Financial Research*, vol. 25, no. 1, pp. 1-17.

Argaam 2018, *Saudi banks reveal IFRS9 impact on balance sheets*, viewed 7 March 2019, <https://www.argaam.com/en/article/articledetail/id/531979>.

Armstrong, CS, et al. 2010, 'Market Reaction to the Adoption of IFRS in Europe', *The Accounting Review*, vol. 85, no. 1, pp. 31-61.

Ashbaugh, H & Pincus, M 2001, 'Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings', *Journal of Accounting Research*, vol. 39, no. 3, pp. 417-34.

Bae, K-H, et al. 2008, 'International GAAP Differences: The Impact on Foreign Analysts', *The Accounting Review*, vol. 83, no. 3, pp. 593-628.

Ball, R 2006, 'International Financial Reporting Standards (IFRS): Pros and Cons for Investors', *Accounting and Business Research*, vol. 36, no. sup1, pp. 5-27.

Ball, R 2016, 'IFRS–10 years later', *Accounting and Business Research*, vol. 46, no. 5, pp. 545-71.

Ball, R, et al. 2014, 'Mandatory IFRS adoption, fair value accounting and accounting information in debt contracts', *Fair Value Accounting and Accounting Information in Debt Contracts (September 18, 2014)*.

Ball, R, et al. 2003, 'Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries', *Journal of Accounting and Economics*, vol. 36, no. 1, pp. 235-70.

Banerjee, S, et al. 2011, 'Cross-country IPOs: What explains differences in underpricing?', *Journal of Corporate Finance*, vol. 17, no. 5, pp. 1289-305.

Barnett, V & Lewis, T 1994, *Outliers in statistical data*, vol. 3, Wiley New York.

Barry, CB & Brown, SJ 1985, 'Differential information and security market equilibrium', *Journal of Financial and Quantitative Analysis*, vol. 20, no. 04, pp. 407-22.

Barry, CB, et al. 1990, 'The role of venture capital in the creation of public companies: Evidence from the going-public process', *Journal of Financial Economics*, vol. 27, no. 2, pp. 447-71.

Barth, ME & Israeli, D 2013, 'Disentangling Mandatory IFRS Reporting and Changes in Enforcement', *Journal of Accounting and Economics*, vol. 56, no. 2, pp. 178-88.

Barth, ME, et al. 2008, 'International Accounting Standards and Accounting Quality', *Journal of Accounting Research*, vol. 46, no. 3, pp. 467-98.

Barth, ME, et al. 2017, 'The JOBS Act and information uncertainty in IPO firms', *The Accounting Review*, vol. 92, no. 6, pp. 25-47.

Barth, ME, et al. 2014, 'Relevance of differences between net income based on IFRS and domestic standards for European firms', *Journal of Business Finance & Accounting*, vol. 41, no. 3-4, pp. 297-327.

Bayley, L, et al. 2006, 'IPO Flipping in Australia: Cross-Sectional Explanations', *Pacific-Basin Finance Journal*, vol. 14, no. 4, pp. 327-48.

Beatty, RP 1989, 'Auditor reputation and the pricing of initial public offerings', *Accounting review*, pp. 693-709.

Beatty, RP & Ritter, JR 1986, 'Investment Banking, Reputation, and the Underpricing of Initial Public Offerings', *Journal of Financial Economics*, vol. 15, no. 1, pp. 213-32.

Bénassy-Quéré, A, et al. 2007, 'Institutional determinants of foreign direct investment', *The World Economy*, vol. 30, no. 5, pp. 764-82.

Bertrand, M, et al. 2004, 'How Much Should We Trust Differences-in-Differences Estimates?', *The Quarterly journal of economics*, vol. 119, no. 1, pp. 249-75.

Beuselinck, C, et al. 2017, 'Which Analysts Benefited Most from Mandatory IFRS Adoption in Europe?', *Journal of International Accounting Research*, vol. 16, no. 3, pp. 171-90.

Bhat, G, et al. 2011, 'Panacea, Pandora's box, or placebo: Feedback in bank mortgage-backed security holdings and fair value accounting', *Journal of Accounting and Economics*, vol. 52, no. 2, pp. 153-73.

Biddle, GC, et al. 2013, 'Do Adoptions of International Financial Reporting Standards Enhance Capital Investment Efficiency?', *Available at SSRN 2353693*.

Bissessur, S & Hodgson, A 2012, 'Stock market synchronicity–an alternative approach to assessing the information impact of Australian IFRS', *Accounting & Finance*, vol. 52, no. 1, pp. 187-212.

Bloomberg 2016, *Saudi Arabia to let foreign investors participate in IPOs*, Gulf News, <http://gulfnews.com/business/sectors/markets/saudi-arabia-to-let-foreign-investors-participate-in-ipos-1.1881564>.

Bonsón, E, et al. 2009, 'Towards the Global Adoption of XBRL Using International Financial Reporting Standards (IFRS)', *International Journal of Accounting Information Systems*, vol. 10, no. 1, pp. 46-60.

Boolaky, PK & Cooper, BJ 2015, 'Comparing the strength of auditing and reporting standards and investigating their predictors in Europe and Asia', *Australian Accounting Review*, vol. 25, no. 3, pp. 292-308.

Booth, JR & Smith , RL 1986, 'Capital Raising, Underwriting and the Certification Hypothesis', *Journal of Financial Economics*, vol. 15, no. 1, pp. 261-81.

Botosan, CA 1997, 'Disclosure level and the cost of equity capital', *Accounting review*, pp. 323-49.

Boulanouar, Z, et al. 2016, 'IPO underpricing in the insurance industry and the effect of Sharia compliance: evidence from Saudi Arabian market', *International Journal of Islamic and Middle Eastern Finance and Management*, vol. 9, no. 3, pp. pp. 314-32.

Boulton, TJ, et al. 2010, 'IPO Underpricing and International Corporate Governance', *Journal of International Business Studies*, vol. 41, no. 2, pp. 206-22.

Boulton, TJ, et al. 2011, 'Earnings Quality and International IPO Underpricing', *The Accounting Review*, vol. 86, no. 2, pp. 483-505.

Boulton, TJ, et al. 2017, 'Conservatism and International IPO Underpricing', *Journal of International Business Studies*, vol. 48, no. 6, pp. 763-85.

Bova, F & Pereira, R 2012, 'The Determinants and Consequences of Heterogeneous IFRS Compliance Levels Following Mandatory IFRS Adoption: Evidence from a Developing Country', *Journal of International Accounting Research*, vol. 11, no. 1, pp. 83-111.

Bradley, DJ, et al. 2004, 'Negotiation and the IPO Offer Price: A Comparison of Integer vs. Non-Integer IPOs', *Journal of Financial and Quantitative Analysis*, vol. 39, no. 3, pp. 517-40.

Breusch, TS & Pagan, AR 1979, 'A Simple Test for Heteroscedasticity and Random Coefficient Variation', *Econometrica: Journal of the Econometric Society*, vol. 47, no. 5, pp. 1287-94.

Brüggemann, U, et al. 2013, 'Intended and Unintended Consequences of Mandatory IFRS Adoption: A Review of Extant Evidence and Suggestions for Future Research', *European Accounting Review*, vol. 22, no. 1, pp. 1-37.

Burgstahler, DC, et al. 2006, 'The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms', *The Accounting Review*, vol. 81, no. 5, pp. 983-1016.

Byard, D, et al. 2011, 'The Effect of Mandatory IFRS Adoption on Financial Analysts' Information Environment', *Journal of Accounting Research*, vol. 49, no. 1, pp. 69-96.

Callao, S & Jarne, JI 2010, 'Have IFRS affected earnings management in the European Union?', *Accounting in Europe*, vol. 7, no. 2, pp. 159-89.

Cameron, AC & Miller, DL 2015, 'A practitioner's Guide to Cluster-Robust Inference', *Journal of Human Resources*, vol. 50, no. 2, pp. 317-72.

Capkun, V, et al. 2008, 'Earnings management and value relevance during the mandatory transition from local GAAPs to IFRS in Europe', *Available at SSRN 1125716*.

Carmona, S & Trombetta, M 2008, 'On the global acceptance of IAS/IFRS accounting standards: The logic and implications of the principles-based system', *Journal of Accounting and Public Policy*, vol. 27, no. 6, pp. 455-61.

Carter, RB, et al. 1998, 'Underwriter reputation, initial returns, and the long-run performance of IPO stocks', *The Journal of Finance*, vol. 53, no. 1, pp. 285-311.

Cascino, S & Gassen, J 2015, 'What drives the comparability effect of mandatory IFRS adoption?', *Review of Accounting Studies*, vol. 20, no. 1, pp. 242-82.

Castro, FH & Santana, V 2018, 'Informativeness of stock prices after IFRS adoption in Brazil', *Journal of Multinational Financial Management*, vol. 47, pp. 46-59.

Chahine, S 2008, 'Underpricing Versus Gross Spread: New Evidence on the Effect of Sold Shares at the Time of IPOs', *Journal of Multinational Financial Management*, vol. 18, no. 2, pp. 180-96.

Chan, K & Hameed, A 2006, 'Stock price synchronicity and analyst coverage in emerging markets', *Journal of Financial Economics*, vol. 80, no. 1, pp. 115-47.

Chan, K, et al. 2004, 'Underpricing and long-term performance of IPOs in China', *Journal of Corporate Finance*, vol. 10, no. 3, pp. 409-30.

Chemmanur, TJ & Paeglis, I 2005, 'Management quality, certification, and initial public offerings', *Journal of Financial Economics*, vol. 76, no. 2, pp. 331-68.

Chen, C, et al. 2013, 'Externalities of mandatory IFRS adoption: Evidence from cross-border spillover effects of financial information on investment efficiency', *The Accounting Review*, vol. 88, no. 3, pp. 881-914.

Chen, D, et al. 2017, 'Political connection of financial intermediaries: Evidence from China's IPO market', *Journal of Banking & Finance*, vol. 76, pp. 15-31.

Chen, H, et al. 2010, 'The role of international financial reporting standards in accounting quality: Evidence from the European Union', *Journal of International Financial Management & Accounting*, vol. 21, no. 3, pp. 220-78.

Chiang, TC & Zheng, D 2010, 'An empirical analysis of herd behavior in global stock markets', *Journal of Banking & Finance*, vol. 34, no. 8, pp. 1911-21.

Chiapello, E & Medjad, K 2009, 'An unprecedented privatisation of mandatory standard-setting: The case of European accounting policy', *Critical Perspectives on Accounting*, vol. 20, no. 4, pp. 448-68.

Choi, JJ, et al. 2013, 'Foreign ownership and information asymmetry', *Asia-Pacific Journal of Financial Studies*, vol. 42, no. 2, pp. 141-66.

Chourou, L, et al. 2018, 'How does national culture influence IPO underpricing?', *Pacific-Basin Finance Journal*, vol. 51, pp. 318-41.

Christensen, HB, et al. 2012, *Capital-market effects of securities regulation: Hysteresis, implementation, and enforcement*, National Bureau of Economic Research.

Christensen, HB, et al. 2013, 'Mandatory IFRS Reporting and Changes in Enforcement', *Journal of Accounting and Economics*, vol. 56, no. 2, pp. 147-77.

Christensen, HB, et al. 2007, 'Cross-sectional variation in the economic consequences of international accounting harmonization: The case of mandatory IFRS adoption in the UK', *The International Journal of Accounting*, vol. 42, no. 4, pp. 341-79.

Christensen, HB, et al. 2015, 'Incentives or standards: What determines accounting quality changes around IFRS adoption?', *European Accounting Review Forthcoming*.

Christensen, J 2010, 'Conceptual frameworks of accounting from an information perspective', *Accounting and Business Research*, vol. 40, no. 3, pp. 287-99.

Chu, J, et al. 2019, 'Does a Firm's Corporate Governance Enhance the Beneficial Effect of IFRS Adoption?', *Sustainability*, vol. 11, no. 3, pp. 1-13.

Chua, WF & Taylor, SL 2008, 'The rise and rise of IFRS: An examination of IFRS diffusion', *Journal of Accounting and Public Policy*, vol. 27, no. 6, pp. 462-73.

Chua, YL, et al. 2012, 'The Impact of Mandatory IFRS Adoption on Accounting Quality: Evidence from Australia', *Journal of International Accounting Research*, vol. 11, no. 1, pp. 119-46.

Cieslewicz, JK 2014, 'Relationships between national economic culture, institutions, and accounting: Implications for IFRS', *Critical Perspectives on Accounting*, vol. 25, no. 6, pp. 511-28.

Clarkson, PM & Merkley, J 1994, 'Ex ante uncertainty and the underpricing of initial public offerings: Further Canadian evidence', *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, vol. 11, no. 2, pp. 54-67.

CMA 2015, *Capital Market Authority Strategic Plan 2015-2019*, viewed 10/08/2016, <http://cma.org.sa/En/Documents/CMA-Strategic-Plan-EN.pdf>.

CMA 2016, *CMA: Obligating Listed Companies to Disclose Phases of Transition to the International Financial Reporting Standards Aims to Urge and Help them to Ensure Implementation Success*, viewed 3/11/2017, <https://cma.org.sa/en/MediaCenter/PR/Pages/standards.aspx>.

CNBC 2019, *Lyft Stumbles After Lawsuit Claims the Company Misled Investors in its IPO Prospectus*, viewed 21/05/2019, <https://www.cnbc.com/2019/05/20/lyft-dips-after-lawsuit-claims-the-company-misled-investors.html>.

Cohen, J, et al. 2013, *Applied multiple regression/correlation analysis for the behavioral sciences*, 3 edn, Lawrence Erlbaum Associates.

Cooper, DR, et al. 2006, *Business research methods*, Twelfth edition edn edn, McGraw-Hill Irwin New York.

Cotter, J, et al. 2012, 'IFRS adoption and analysts' earnings forecasts: Australian evidence', *Accounting & Finance*, vol. 52, no. 2, pp. 395-419.

Cragg, JG & Donald, SG 1993, 'Testing Identifiability and Specification in Instrumental Variable Models', *Econometric Theory*, vol. 9, no. 2, pp. 222-40.

Cuillier, D & Piotrowski, SJ 2009, 'Internet information-seeking and its relation to support for access to government records', *Government Information Quarterly*, vol. 26, no. 3, pp. 441-9.

Cumming, D, et al. 2016, 'Sustainable and Ethical Entrepreneurship, Corporate Finance and Governance, and Institutional Reform in China', *Journal of Business Ethics*, vol. 134, no. 4, pp. 505–8

Dang, HD & Jolly, M 2017, 'Red flags for IPO downfalls in New Zealand', *Managerial Finance*, vol. 43, no. 9, pp. 1034-51.

Daske, H 2006, 'Economic Benefits of Adopting IFRS or US-GAAP–Have the Expected Cost of Equity Capital Really Decreased?', *Journal of Business Finance & Accounting*, vol. 33, no. 3-4, pp. 329-73.

Daske, H, et al. 2008, 'Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences', *Journal of Accounting Research*, vol. 46, no. 5, pp. 1085-142.

Daske, H, et al. 2013, 'Adopting a Label: Heterogeneity in the Economic Consequences Around IAS/IFRS Adoptions', *Journal of Accounting Research*, vol. 51, no. 3, pp. 495-547.

De George, ET, et al. 2016, 'A Review of the IFRS Adoption Literature', *Review of Accounting Studies*, vol. 21, no. 3, pp. 898-1004.

DeFond, ML, et al. 2014, 'Does Mandatory IFRS Adoption Affect Crash Risk?', *The Accounting Review*, vol. 90, no. 1, pp. 265-99.

Derrien, F 2005, 'IPO Pricing in "Hot" Market Conditions: Who Leaves Money on the Table?', *The Journal of Finance*, vol. 60, no. 1, pp. 487-521.

Devalle, A, et al. 2010, 'Assessing the value relevance of accounting data after the introduction of IFRS in Europe', *Journal of International Financial Management & Accounting*, vol. 21, no. 2, pp. 85-119.

Dhamija, S & Arora, RK 2017, 'Impact of quality certification on IPO underpricing: evidence from India', *Global Business Review*, vol. 18, no. 2, pp. 428-44.

Diamond, DW & Verrecchia, RE 1991, 'Disclosure, Liquidity, and the Cost of Capital', *The Journal of Finance*, vol. 46, no. 4, pp. 1325-59.

Ding, Y, et al. 2007, 'Differences Between Domestic Accounting Standards and IAS: Measurement, Determinants and Implications', *Journal of Accounting and Public Policy*, vol. 26, no. 1, pp. 1-38.

Domowitz, I, et al. 1997, 'Market segmentation and stock prices: Evidence from an emerging market', *The Journal of Finance*, vol. 52, no. 3, pp. 1059-85.

Dong, M, et al. 2011, 'Underwriter quality and long-run IPO performance', *Financial Management*, vol. 40, no. 1, pp. 219-51.

Dorsman, A, et al. 2010, 'IFRS Adoption and Performance of Dutch IPOs', paper presented to Multinational Finance Society, Barcelona, Spain.

Drobetz, W, et al. 2010, 'Information asymmetry and the value of cash', *Journal of Banking & Finance*, vol. 34, no. 9, pp. 2168-84.

DuCharme, LL, et al. 2001, 'Earnings Management: IPO Valuation and Subsequent Performance', *Journal of Accounting, Auditing & Finance*, vol. 16, no. 4, pp. 369-96.

Duh, R-R, et al. 2012, 'The Impact of IAS 39 on the Risk-Relevance of Earnings Volatility: Evidence from Foreign Banks Cross-Listed in the USA', *Journal of Contemporary Accounting & Economics*, vol. 8, no. 1, pp. 23-38.

Dupret, G & Koda, M 2001, 'Bootstrap re-sampling for unbalanced data in supervised learning', *European Journal of Operational Research*, vol. 134, no. 1, pp. 141-56.

Durbin, J & Watson, GS 1971, 'Testing for Serial Correlation in Least Squares Regression. III', *Biometrika*, vol. 58, no. 1, pp. 1-19.

Easley, D & O'hara, M 2004, 'Information and the cost of capital', *The Journal of Finance*, vol. 59, no. 4, pp. 1553-83.

Efron, B & Tibshirani, R 1986, 'Bootstrap Methods for Standard Errors, Confidence Intervals, and Other Measures of Statistical Accuracy', *Statistical science*, vol. 1, no. 1, pp. 54-75.

Eng, LL, et al. 2019, 'International Financial Reporting Standards Adoption and Information Quality: Evidence From Brazil', *Journal of International Financial Management & Accounting*, vol. 30, no. 1, pp. 5-29.

Engelen, P-J 2003, 'Underpricing of IPOs: Belgium evidence', *European Review of Economics and Finance*, vol. 2, pp. 53-69.

Engelen, P-J & Van Essen, M 2010, 'Underpricing of IPOs: Firm-, issue-and country-specific characteristics', *Journal of Banking & Finance*, vol. 34, no. 8, pp. 1958-69.

Ernstberger, J, et al. 2008, 'Analysts' Forecast Accuracy in Germany: the Effect of Different Accounting Principles and Changes of Accounting Principles', *BuR-Business Research*, vol. 1, no. 1, pp. 26-53.

Ewert, R & Wagenhofer, A 2005, 'Economic Effects of Tightening Accounting Standards to Restrict Earnings Management', *The Accounting Review*, vol. 80, no. 4, pp. 1101-24.

Fedyk, T & Khimich, N 2018, 'R&D investment decisions of IPO firms and long-term future performance', *Review of Accounting and Finance*, vol. 17, no. 1, pp. 78-108.

Felo, AJ 2001, 'Ethics programs, board involvement, and potential conflicts of interest in corporate governance', *Journal of Business Ethics*, vol. 32, no. 3, pp. 205-18.

Filatotchev, I & Bishop, K 2002, 'Board Composition, Share Ownership, and 'Underpricing'of UK IPO Firms', *Strategic Management Journal*, vol. 23, no. 10, pp. 941-55.

Firth, M & Gounopoulos, D 2017, *IFRS Adoption and Management Earnings Forecasts of Australian IPOs*, Available at SSRN: https://ssrn.com/abstract=2199034 or http://dx.doi.org/10.2139/ssrn.2199034

Florou, A & Kosi, U 2015, 'Does Mandatory IFRS Adoption Facilitate Debt Financing?', *Review of Accounting Studies*.

Florou, A & Pope, PF 2012, 'Mandatory IFRS Adoption and Institutional Investment Decisions', *The Accounting Review*, vol. 87, no. 6, pp. 1993-2025.

Fontes, JC, et al. 2018, 'The Impact of Fair Value Measurement for Bank Assets on information Asymmetry and the Moderating Effect of Own Credit Risk Gains and Losses', *The Accounting Review*, vol. 93, no. 6, pp. 127-47.

Francis, JR, et al. 2005, 'Disclosure Incentives and Effects on Cost of Capital Around the World', *The Accounting Review*, vol. 80, no. 4, pp. 1125-62.

Furtune 2019, *Lyft Rises 9% on First Day of Trading for a Market Cap of $26.5 Billion*, viewed 21/05/2019, <http://fortune.com/2019/03/29/lyft-stock-today-ipo-market-cap-26-billion/>.

García, MdPR, et al. 2017, 'Does an IFRS adoption increase value relevance and earnings timeliness in Latin America?', *Emerging Markets Review*, vol. 30, pp. 155-68.

Gilligan, TW & Krehbiel, K 1989, 'Asymmetric information and legislative rules with a heterogeneous committee', *American Journal of Political Science*, pp. 459-90.

Glaum, M, et al. 2013, 'Introduction of international accounting standards, disclosure quality and accuracy of analysts' earnings forecasts', *European Accounting Review*, vol. 22, no. 1, pp. 79-116.

Glennerster, R & Shin, Y 2008, 'Does transparency pay?', *International Monetary Fund*, vol. 55, no. 1, pp. 183-209.

Gordon, LA, et al. 2012, 'The Impact of IFRS Adoption on Foreign Direct Investment', *Journal of Accounting and Public Policy*, vol. 31, no. 4, pp. 374-98.

Griffin, PA, et al. 2009, 'Governance Regulatory Changes, International Financial Reporting Standards Adoption, and New Zealand Audit and Non-Audit Fees: Empirical Evidence', *Accounting & Finance*, vol. 49, no. 4, pp. 697-724.

GulfBase 2016, *Saudi Arabia Market*, <http://www.gulfbase.com/gcc/index/1?t=3>.

GulfBase 2017, *Search the Database*, viewed 23/05/2017, <https://www.gulfbase.org/>.

Gupta, DR, et al. 2018, 'Influence of national culture on IPO activity', *Journal of Business Research*, vol. 90, pp. 226-46.

Habib, MA & Ljungqvist, AP 2001, 'Underpricing and Entrepreneurial Wealth Losses in IPOs: Theory and Evidence', *Review of Financial Studies*, vol. 14, no. 2, pp. 433-58.

Hail, L 2002, 'The impact of voluntary corporate disclosures on the ex ante cost of capital for Swiss firms', *uropean Accounting Review*, vol. 11, no. 4.

Hail, L & Leuz, C 2006, 'International Differences in the Cost of Equity Capital: Do Legal Institutions and Securities Regulation Matter?', *Journal of Accounting Research*, vol. 44, no. 3, pp. 485-531.

Hail, L, et al. 2010, 'Global Accounting Convergence and the Potential Adoption of IFRS by the US (Part I): Conceptual Underpinnings and Economic Analysis', *Accounting Horizons*, vol. 24, no. 3, pp. 355-94.

Haman, J, et al. 2019, 'The Effects of IPO Mandatory Lockups and Corporate Governance on Underpricing: Evidence From The Australian Securities Exchange', *Journal of Accounting, Auditing & Finance*, vol. 1, no. 1, pp. 1-16.

Hamao, Y, et al. 2000, 'Institutional affiliation and the role of venture capital: Evidence from initial public offerings in Japan', *Pacific-Basin Finance Journal*, vol. 8, no. 5, pp. 529-58.

Hanley, KW & Hoberg, G 2010, 'The Information Content of IPO Prospectuses', *Review of Financial Studies*, vol. 23, no. 7, pp. 2821-64.

Hannafey, FT 2003, 'Entrepreneurship and Ethics: A Literature Review', *Journal of Business Ethics*, vol. 46, no. 2, pp. 99-110.

Harris, JD, et al. 2009, 'Ethics and entrepreneurship', *Journal of Business Venturing*, vol. 24, no. 5, pp. 407-18.

Harris, RI & Judge, G 1998, 'Small sample testing for cointegration using the bootstrap approach', *Economics Letters*, vol. 58, no. 1, pp. 31-7.

Hartzell, JC, et al. 2008, 'The role of corporate governance in initial public offerings: evidence from real estate investment trusts', *The Journal of Law and Economics*, vol. 51, no. 3, pp. 539-62.

Harvey, CR 1995, 'Predictable risk and returns in emerging markets', *Review of Financial Studies*, vol. 8, no. 3, pp. 773-816.

Hasan, T & Quayes, S 2008, 'Underpricing of Initial Public Offerings in Bangladesh', *Applied Financial Economics Letters*, vol. 4, no. 1, pp. 5-8.

Hausman, JA 1978, 'Specification Tests in Econometrics', *Econometrica: Journal of the Econometric Society*, vol. 46, no. 6, pp. 1251-71.

Healy, PM & Palepu, KG 2001, 'Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature', *Journal of Accounting and Economics*, vol. 31, no. 1, pp. 405-40.

Hearn, B 2011, 'The impact of corporate governance measures on the performance of West African IPO firms', *Emerging Markets Review*, vol. 12, no. 2, pp. 130-51.

Hearn, B 2012, 'The Contrasting Effects of Board Composition and Structure on IPO Firm Underpricing in a Developing Context', *International Review of Financial Analysis*, vol. 21, pp. 33-44.

Hearn, B 2014, 'The impact of institutions, ownership structure, business angels, venture capital and lead managers on IPO firm underpricing across North Africa', *Journal of Multinational Financial Management*, vol. 24, no. 1, pp. 19-42.

Hensler, DA, et al. 2000, 'The Performance of Initial Public Offerings in the Mexican Stock Market, 1987–1993', *Journal of International Money and Finance*, vol. 19, no. 1, pp. 93-116.

Hodgdon, C, et al. 2008, 'Compliance with IFRS disclosure requirements and individual analysts' forecast errors', *Journal of International Accounting, Auditing and Taxation*, vol. 17, no. 1, pp. 1-13.

Hofstede, G 2011, 'Dimensionalizing Cultures: The Hofstede Model in Context', *Online Readings in Psychology and Culture*, vol. 2, no. 1, pp. 1-26.

Hogan, CE 1997, 'Costs and benefits of audit quality in the IPO market: A self-selection analysis', *Accounting review*, pp. 67-86.

Holthausen, RW 2009, 'Accounting standards, financial reporting outcomes, and enforcement', *Journal of Accounting Research*, vol. 47, no. 2, pp. 447-58.

Holthausen, RW & Watts, RL 2001, 'The relevance of the value-relevance literature for financial accounting standard setting', *Journal of Accounting and Economics*, vol. 31, no. 1, pp. 3-75.

Hong, HA, et al. 2014, 'The Impact of Mandatory IFRS Adoption on IPOs in Global Capital Markets', *The Accounting Review*, vol. 89, no. 4, pp. 1365-97.

Hope, O-K, et al. 2006, 'Empirical Evidence on Jurisdictions that Adopt IFRS', *Journal of International Accounting Research*, vol. 5, no. 2, pp. 1-20.

Hopp, C & Dreher, A 2013, 'Do differences in institutional and legal environments explain cross-country variations in IPO underpricing?', *Applied Economics*, vol. 45, no. 4, pp. 435-54.

Horton, J & Serafeim, G 2010, 'Market Reaction to and Valuation of IFRS Reconciliation Adjustments: First Evidence from the UK', *Review of Accounting Studies*, vol. 15, no. 4, pp. 725-51.

Horton, J, et al. 2013, 'Does Mandatory IFRS Adoption Improve the Information Environment?', *Contemporary Accounting Research*, vol. 30, no. 1, pp. 388-423.

Houqe, MN & Monem, RM 2016, 'IFRS Adoption, Extent of Disclosure, and Perceived Corruption: A Cross-Country Study', *The International Journal of Accounting*, vol. 51, no. 3, pp. 363-78.

Houqe, MN, et al. 2012a, 'Government Quality, Auditor Choice and Adoption of IFRS: A Cross Country Analysis', *Advances in accounting*, vol. 28, no. 2, pp. 307-16.

Houqe, MN, et al. 2016, 'The economic consequences of IFRS adoption: Evidence from New Zealand', *Journal of International Accounting, Auditing and Taxation*, vol. 27, pp. 40-8.

Houqe, MN, et al. 2012b, 'The Effect of IFRS Adoption and Investor Protection on Earnings Quality Around the World', *The International Journal of Accounting*, vol. 47, no. 3, pp. 333-55.

Howorth, C, et al. 2004, 'Buyouts, information asymmetry and the family management dyad', *Journal of Business Venturing*, vol. 19, no. 4, pp. 509-34.

Hutton, AP, et al. 2009, 'Opaque financial reports, R 2, and crash risk', *Journal of Financial Economics*, vol. 94, no. 1, pp. 67-86.

Huyghebaert, N & Van Hulle, C 2006, 'Structuring the IPO: Empirical evidence on the portions of primary and secondary shares', *Journal of Corporate Finance*, vol. 12, no. 2, pp. 296-320.

IAS Plus 2015, *IFRS 13 — Fair Value Measurement*, Deloitte Global Services Limited, viewed 2/3/2015, <http://www.iasplus.com/en/standards/ifrs/ifrs13>.

IAS Plus 2016, *Financial reporting framework in Saudi Arabia*, IAS Plus, <http://www.iasplus.com/en/jurisdictions/asia/saudi-arabia>.

IAS Plus 2017, *Use of IFRSs by jurisdiction - G20 domestic listed companies*, viewed 8/7/2017 2017, <https://www.iasplus.com/en/resources/ifrs-topics/use-of-ifrs-g20#totals>.

IAS *Plus* 2019, *International Forum For Accountancy Development (IFAD)*, Deloitte Global Services Limited, viewed 6 March 2019, <http://www.iasplus.com/en/resources/global-organisations/ifad>.

IAS*Plus* 2019a, *The IFRS Foundation*, viewed 5/3 2019, <https://www.iasplus.com/en/resources/ifrsf/governance/ifrsf>.

IAS*Plus* 2019b, *Use of IFRS by jurisdiction*, Deloitte Global Services Limited, viewed 10 March 2019, <http://www.iasplus.com/en/resources/ifrs-topics/use-of-ifrs>.

Ibbotson, RG 1975, 'Price Performance of Common Stock New Issues', *Journal of Financial Economics*, vol. 2, no. 3, pp. 235-72.

Ibbotson, RG & Jaffe, JF 1975, '"Hot Issue" Markets', *The Journal of Finance*, vol. 30, no. 4, pp. 1027-42.

IFRS Foundation 2017, *Analysis of the G20 IFRS Profiles*, <http://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/#analysis>.

IFRS Foundation 2016, *Mission Statement*, <http://www.ifrs.org/About-us/Pages/IFRS-Foundation-and-IASB.aspx>.

IFRS Foundation 2018, *Who we are and what we do*, viewed 03/03 2019, <https://www.ifrs.org/-/media/feature/about-us/who-we-are/who-we-are-english-2018-final.pdf>.

IFRS Foundation 2019, *Who uses IFRS Standards?*, viewed 22/02/2019, <https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/#profiles>.

IFRS Organisation 2016, *IFRS Application Around the World Jurisdictional Profile: Saudi Arabia*, viewed 15/08/2016, <http://www.ifrs.org/use-around-the-world/Documents/Jurisdiction-profiles/Saudi-Arabia-IFRS-Profile.pdf>.

Iqbal, Muhammad A 2012, *Saudi Accounting Framework in Comparison with in Comparison with IFRS Framework* SOCPA, Saudi Arabia, viewed 15/08/2016, <http://www.icapksachapter.org/wp-content/uploads/presentation/ICAP_Chapter_CPD_Khobar.pdf>.

Isshaq, Z & Faff, R 2016, 'Does the Uncertainty of Firm-Level Fundamentals Help Explain Cross-Sectional Differences in Liquidity Commonality?', *Journal of Banking & Finance*, vol. 68, no. July, pp. 153-61.

Jaccard, J, et al. 1990, 'The detection and interpretation of interaction effects between continuous variables in multiple regression', *Multivariate Behavioral Research*, vol. 25, no. 4, pp. 467-78.

Jamaani, F & Roca, E 2015, 'Are the Regional Gulf Stock Markets Weak-Form Efficient as Single Stock Markets and as A Regional Stock Market?', *Research in International Business and Finance*, vol. 33, no. 1, pp. 221-46.

Jarque, CM & Bera, AK 1980, 'Efficient Tests For Normality, Homoscedasticity and Serial Independence of Regression Residuals', *Economics Letters*, vol. 6, no. 3, pp. 255-9.

Jeanjean, T & Stolowy, H 2008, 'Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption', *Journal of Accounting and Public Policy*, vol. 27, no. 6, pp. 480-94.

Jenkinson, T & Ljungqvist, A 2001, *Going public: The theory and evidence on how companies raise equity finance*, Oxford University Press.

Jermakowicz, EK & Gornik-Tomaszewski, S 2006, 'Implementing IFRS from the perspective of EU publicly traded companies', *Journal of International Accounting, Auditing and Taxation*, vol. 15, no. 2, pp. 170-96.

Jiang, L & Kim, JB 2004, 'Foreign equity ownership and information asymmetry: evidence from Japan', *Journal of International Financial Management & Accounting*, vol. 15, no. 3, pp. 185-211.

Jiao, T, et al. 2012, 'Mandatory IFRS adoption and its impact on analysts' forecasts', *International Review of Financial Analysis*, vol. 21, pp. 56-63.

Jones, SL, et al. 1999, 'Share Issue Privatizations as Financial Means to Political and Economic Ends', *Journal of Financial Economics*, vol. 53, no. 2, pp. 217-53.

Jones, TL & Swaleheen, M 2010, 'Endogenous Examination of Underwriter Reputation and IPO Returns', *Managerial Finance*, vol. 36, no. 4, pp. 284-93.

Judge, WQ, et al. 2015, 'Corporate governance and IPO underpricing in a cross-national sample: A multilevel knowledge-based view', *Strategic Management Journal, Forthcoming*, vol. 36, no. 8, pp. 1174–85

Kamaludin, K & Zakaria, N 2018, 'The Short and Long-Run Initial Public Offerings (IPOs) Performance in the Emerging Market: Evidence From Saudi Arabia Share Market', in *31st International Business Information Management Association Conference Proceedings*, pp. 25-6.

Kao, JL, et al. 2009, 'Regulations, Earnings Management, and Post-IPO Performance: The Chinese Evidence', *Journal of Banking & Finance*, vol. 33, no. 1, pp. 63-76.

Kaufmann, D, et al. 2007, 'Governance matters VI: aggregate and individual governance indicators 1996-2006', *World Bank Policy Research Working Paper*, vol. 4280.

Kaufmann, D, et al. 2011, 'The Worldwide Governance Indicators: Methodology and Analytical Issues', *Hague Journal on the Rule of Law*, vol. 3, no. 02, pp. 220-46.

Kaufmann, D, et al. 2017, *Worldwide Governance Indicators*, The World Bank Group, viewed 10 March 2017, <http://info.worldbank.org/governance/wgi/index.aspx#home>.

Khatoun, B & Shamma, S 2015, *The US$50 Billion Opportunity: Saudi Arabia's Stock Market Opens to Direct Foreign Investment*, Franklin Templeton Investments, viewed 22/08/2016, <http://www.franklintempleton.co.uk/downloadsServlet?docid=idjp7fy9>.

Kim, S, et al. 2016, 'Mandatory IFRS Adoption and Financial Analysts' Information Environment: Evidence from Korean Market', *Journal of Applied Business Research*, vol. 23, no. 5, pp. 1387-404.

Klapper, LF & Love, I 2004, 'Corporate governance, investor protection, and performance in emerging markets', *Journal of Corporate Finance*, vol. 10, no. 5, pp. 703-28.

Knill, C 2013, 'The Study of Morality Policy: Analytical Implications From A Public Policy Perspective', *Journal of European Public Policy*, vol. 20, no. 3, pp. 309-17

Koutmos, G 1999, 'Asymmetric price and volatility adjustments in emerging Asian stock markets', *Journal of Business Finance & Accounting*, vol. 26, no. 1-2, pp. 83-101.

Krishnan, GV & Zhang, J 2019, 'Does Mandatory Adoption of IFRS Enhance Earnings Quality? Evidence From Closer to Home', *The International Journal of Accounting*, vol. 54, no. 01, pp. 1-42.

Kumar, AV 2004, 'Venture backed IPO's in India: Issues of certification and underpricing', *The Journal of Entrepreneurial Finance*, vol. 9, no. 2, pp. 93-108.

La Porta, R, et al. 2000, 'Investor protection and corporate governance', *Journal of Financial Economics*, vol. 58, no. 1, pp. 3-27.

La Porta, R, et al. 1998, 'Law and finance', *Journal of Political Economy*, vol. 106 no. 6, pp. 1113–155.

La Porta, R, et al. 2006, 'What Works in Securities Laws?', *The Journal of Finance*, vol. 61, no. 1, pp. 1-32.

Lambert, R, et al. 2007, 'Accounting information, disclosure, and the cost of capital', *Journal of Accounting Research*, vol. 45, no. 2, pp. 385-420.

Landsman, WR 2007, 'Is fair value accounting information relevant and reliable? Evidence from capital market research', *Accounting and Business Research*, vol. 37, no. sup1, pp. 19-30.

Landsman, WR, et al. 2012, 'The information content of annual earnings announcements and mandatory adoption of IFRS', *Journal of Accounting and Economics*, vol. 53, no. 1, pp. 34-54.

Leal, RP 2005, 'Using Accounting Information in Prospectuses to Invest in Brazilian IPOs During High Inflation Years', *Latin American Business Review*, vol. 5, no. 3, pp. 65-90.

Lee, E, et al. 2010, 'Mandating IFRS: Its impact on the cost of equity capital in Europe', *Journal of International Accounting Research*, vol. 9, no. 1, pp. 58-9.

Lee, PJ, et al. 1996, 'Australian IPO pricing in the short and long run', *Journal of Banking & Finance*, vol. 20, no. 7, pp. 1189-210.

Leone, AJ, et al. 2007, 'Disclosure of Intended Use of Proceeds and Underpricing in Initial Public Offerings', *Journal of Accounting Research*, vol. 45, no. 1, pp. 111-53.

Leuz, C, et al. 2003, 'Earnings Management and Investor Protection: an International Comparison', *Journal of Financial Economics*, vol. 69, no. 3, pp. 505-27.

Leuz, C & Verrecchia, RE 2000, 'The Economic Consequences of Increased Disclosure ', *Journal of Accounting Research*, vol. 38, pp. 91-124No.

Li, S 2010, 'Does Mandatory Adoption of International Financial Reporting Standards in the European Union Reduce the Cost of Equity Capital?', *The Accounting Review*, vol. 85, no. 2, pp. 607-36.

Lin, H-L & Yen, A-R 2016, 'The Effects of IFRS Experience on Audit Fees for Listed Companies in China', *Asian Review of Accounting*, vol. 24, no. 1, pp. 43-68.

Liu, C, et al. 2011, 'The Impact of IFRS on Accounting Quality in a Regulated Market: An Empirical Study of China', *Journal of Accounting, Auditing & Finance*, vol. 26, no. 4, pp. 659–76.

Liu, X & Ritter, JR 2010, 'The Economic Consequences of IPO Spinning', *The Review of Financial Studies*, vol. 23, no. 5, pp. 2024-59.

Liu, X & Ritter, JR 2011, 'Local Underwriter Oligopolies and IPO Underpricing', *Journal of Financial Economics*, vol. 102, no. 3, pp. 579-601.

Lizińska, J & Czapiewski, L 2018, 'Towards Economic Corporate Sustainability in Reporting: What Does Earnings Management around Equity Offerings Mean for Long-Term Performance?', *Sustainability*, vol. 10, no. 12, p. 4349.

Ljungqvist, A, et al. 2003, 'Global Integration in Primary Equity Markets: The Role of US Banks and US Investors', *Review of Financial Studies*, vol. 16, no. 1, pp. 63-99.

Ljungqvist, A & Wilhelm, WJ 2003, 'IPO Pricing in the Dot-Com Bubble', *The Journal of Finance*, vol. 58, no. 2, pp. 723-52.

Longenecker, JG, et al. 1989, 'Ethics in small business', *Journal of Small Business Management*, vol. 27, no. 1, p. 27.

Loughran, T & Ritter, JR 1995, 'The new issues puzzle', *The Journal of Finance*, vol. 50, no. 1, pp. 23-51.

Loughran, T & Ritter, JR 2004, 'Why Has IPO Underpricing Changed Over Time?', *Financial Management*, vol. 33, no. 3, pp. 5-37

Louis, H & Urcan, O 2014, 'The effect of IFRS on cross-border acquisitions', *Available at SSRN 2164995*.

Lowry, M & Shu, S 2002, 'Litigation Risk and IPO Underpricing', *Journal of Financial Economics*, vol. 65, no. 3, pp. 309-35.

Maddala, GS & Lahiri, K 1992, *Introduction to econometrics*, vol. 2, Macmillan New York.

Maglio, R, et al. 2018, 'IFRS and IPO Underpricing: Evidence from Italy', *International Journal of Managerial and Financial Accounting*, vol. 10, no. 3, pp. 181-201.

Maines, LA, et al. 2003, 'Evaluating concepts-based vs. rules-based approaches to standard setting', *Accounting Horizons*, vol. 17, no. 1, pp. 73-89.

Masoud, N 2014, 'Accounting, FRQ, Emerging Countries Transition: How can a Country Implement an IFRS Standard Change Successfully?', *Global Journal of Management And Business Research*, vol. 14, no. 2, pp. 37-55.

Mauer, DC & Senbet, LW 1992, 'The effect of the secondary market on the pricing of initial public offerings: Theory and evidence', *Journal of Financial and Quantitative Analysis*, vol. 27, no. 1, pp. 55-79.

Mayes, D & Alqahtani, F 2015, 'Underpricing of IPOs in Saudi Arabia and Sharia compliance', *Journal of Islamic Accounting and Business Research*, vol. 6, no. 2, pp. 189-207.

McAnally, ML, et al. 2010, 'Assessing the financial reporting consequences of conversion to IFRS: The case of equity-based compensation', *Accounting Horizons*, vol. 24, no. 4, pp. 589-621.

McKinsey & Company 2016, *Saudi Arabia Beyond Oil: the Investment and Productivity Transformation*, McKinsey & Company, viewed 16/08/2016, <http://www.mckinsey.com/global-themes/employment-and-growth/moving-saudi-arabias-economy-beyond-oil>.

Mudambi, R, et al. 2012, 'Multinationality and the Performance of IPOs', *Applied Financial Economics*, vol. 22, no. 10, pp. 763-76.

Murugesu, J & Santhapparaj, AS 2010, 'Impact of risk disclosure in the prospectus on valuation and initial returns of initial public offerings in Malaysia', *IUP Journal of Applied Finance*, vol. 16, no. 6, p. 30.

Narktabtee, K & Patpanichchot, S 2011, 'The impact of country-level vs firm-level factors on the effectiveness of IFRS adoption: The case of European Union', *International Business & Economics Research Journal (IBER)*, vol. 10, no. 10, pp. 79-92.

Nobes, C 2006, 'The Survival of International Differences Under IFRS: Towards a Research Agenda', *Accounting and Business Research*, vol. 36, no. 3, pp. 233-45.

Nobes, CW 2001, *Introducing GAAP 2001: A Survey of National Accounting Rules Benchmarked Against International Accounting Standards*, Andersen, BDO, Deloitte Touche Tohmatsu, Ernst & Young Grant Thornton, KPMG and PricewaterhouseCoopers, <http://www.iasplus.com/en/binary/resource/gaap2001.pdf>.

Nurunnabi, M 2017, 'IFRS and Saudi Accounting Standards: A Critical Investigation', *International Journal of Disclosure and Governance*, vol. 14, no. 3, pp. 191-206.

Otero, S & Enríquez, E 2012, 'Analysis of the Effect of the IFRS Application on the Valuation of Spanish Initial Public Offerings', *Public and Municipal Finance*, vol. 1, no. 1, pp. 30-41.

Paananen, M 2008, 'The IFRS Adoption's Effect on Accounting Quality in Sweden', *Available at SSRN 1097659*.

Paananen, M & Lin, H 2009, 'The Development of Accounting Quality of IAS and IFRS Over Time: The case of Germany', *Journal of International Accounting Research*, vol. 8, no. 1, pp. 31-55.

Pacter, P 2017, *Pocket Guide to IFRS Standards: The Global Financial Reporting Language*, IFRS Foundation, <https://www.ifrs.org/-/media/feature/around-the-world/pocket-guide/pocket-guide-2017.pdf>.

Pae, J, et al. 2008, 'Agency Cost Reduction Associated with EU Financial Reporting reform', *Journal of International Accounting Research*, vol. 7, no. 1, pp. 51-76.

Paleari, S, et al. 2014, 'How do underwriters select peers when valuing IPOs?', *Financial Management*, vol. 43, no. 4, pp. 731-55.

Pawsey, NL 2017, 'IFRS Adoption: A Costly Change that keeps on Costing', *Accounting Forum*, vol. 41, no. 2, pp. 116-31.

Persakis, A & Iatridis, GE 2017, 'The Joint Effect of Investor Protection, IFRS and Earnings Quality on Cost of Capital: An International Study', *Journal of International Financial Markets, Institutions and Money*, vol. 46, no. January, pp. 1-29.

Porta, R, et al. 2002, 'Investor protection and corporate valuation', *The Journal of Finance*, vol. 57, no. 3, pp. 1147-70.

Procházka, D 2017, 'Specifics of IFRS Adoption by Central and Eastern European Countries: Evidence from Research', *Scientific Annals of Economics and Business*, vol. 64, no. 1, pp. 59-81.

PWC 2012, *IFRS and US GAAP: similarities and differences*, viewed 15/04/2015, <https://www.pwc.com/en_US/us/issues/ifrs-reporting/publications/assets/ifrs-and-us-gaap-similarities-and-differences-2012.pdf>.

Rahman, MJ, et al. 2019, 'Factors Affecting the Accuracy of Analysts' Forecasts: A Review of the Literature', *Academy of Accounting and Financial Studies Journal*, vol. 23, no. 3, pp. 1-18.

Rajgopal, S & Venkatachalam, M 2011, 'Financial reporting quality and idiosyncratic return volatility', *Journal of Accounting and Economics*, vol. 51, no. 1, pp. 1-20.

Rathnayake, DN, et al. 2019, 'Are IPOs Underpriced or Overpriced? Evidence from an Emerging Market', *Research in International Business and Finance*, vol. 50, no. December, pp. 171-90.

Reber, B & Fong, C 2006, 'Explaining mispricing of initial public offerings in Singapore', *Applied Financial Economics*, vol. 16, no. 18, pp. 1339-53.

Relly, JE & Sabharwal, M 2009, 'Perceptions of transparency of government policymaking: A cross-national study', *Government Information Quarterly*, vol. 26, no. 1, pp. 148-57.

Reuters 2013, *Saudi Stock Market Caps First-Day Price Volatility*, Gulf Business <http://gulfbusiness.com/saudi-stock-market-caps-first-day-price-volatility/#.V70xLI9OK74>.

Ritter, JR 1991, 'The long-run performance of initial public offerings', *The Journal of Finance*, vol. 46, no. 1, pp. 3-27.

Ritter, JR 2003, 'Differences Between European and American IPO Markets', *European Financial Management*, vol. 9, no. 4, pp. 421-34.

Ritter, JR 2018, *Initial Public Offerings: Updated Statistics*, University of Florida, Jay Ritter Personal Website, viewed 05/03/2019, <https://site.warrington.ufl.edu/ritter/files/2019/01/IPOs2018Statistics_Dec.pdf>.

Ritter, JR & Welch, I 2002, 'A Review of IPO Activity, Pricing, and Allocations', *The Journal of Finance*, vol. 57, no. 4, pp. 1795-828.

Rock, K 1986, 'Why New Issues are Underpriced', *Journal of Financial Economics*, vol. 15, no. 1, pp. 187-212.

Rogers, W 1994, 'Regression standard errors in clustered samples', *Stata technical bulletin*, vol. 3, no. 13.

Rousseeuw, PJ & Leroy, AM 2005, *Robust Regression and Outlier Detection*, John Wiley & Sons, USA, Hoboken.

Ruud, JS 1993, 'Underwriter Price Support and the IPO Underpricing Puzzle', *Journal of Financial Economics*, vol. 34, no. 2, pp. 135-51.

Ryan, SG 2008, 'Accounting in and for the Subprime Crisis', *The Accounting Review*, vol. 83, no. 6, pp. 1605-38.

Saito, R & Maciel, LP 2006, 'Underpricing of Brazilian IPOs: empirical evidence from 1999 to 2005', paper presented to National Association of Graduate Studies and Research in Administration, 30th meeting, Salvador, viewed 11/12/2014.

SAMA 2016, *SAMA's Functions*, SAMA, <http://www.sama.gov.sa/en-US/About/Pages/SAMAFunction.aspx>.

Saudi Vision 2030 2016, *Saudi Vision 2030*, viewed 15/08/2016, <file:///C:/Users/Owner/Downloads/Saudi_Vision2030_EN.pdf>.

Saunders, M, et al. 2015, *Research methods for business students*, 7th Edition edn, Pearson Education India.

Schleicher, T, et al. 2010, 'IFRS adoption in Europe and investment-cash flow sensitivity: Outsider versus insider economies', *The International Journal of Accounting*, vol. 45, no. 2, pp. 143-68.

Sehgal, S & Singh, B 2008, 'Determinants of Initial and Long-Run Performance of IPOs in Indian Stock Market', *Asia Pacific Business Review*, vol. 4, no. 4, pp. 24-37.

Sethi, P 1994, 'Imperfect Markets: Business Ethics as an Easy Virtue', *Journal of Business Ethics*, vol. 13, no. 10, pp. 803–15

Shi, C, et al. 2013, 'Does Disclosure Regulation Work? Evidence from International IPO Markets', *Contemporary Accounting Research*, vol. 30, no. 1, pp. 356-87.

Singleton-Green, B 2015, 'The Effects of Mandatory IFRS Adoption in the EU: A Review of Empirical Research', *ICAEW*, no. Information for Better Markets, pp. 1-166.

Slaughter, MJ 2001, 'Trade liberalization and per capita income convergence: a difference-in-differences analysis', *Journal of International Economics*, vol. 55, no. 1, pp. 203-28.

SOCPA 2016a, *Accountant's Regulations*, SOCPA, <http://socpa.org.sa/Socpa/About-Socpa/Accountant-s-Regulations.aspx>.

SOCPA 2016b, *Accounting Standards*, SOCPA, <http://socpa.org.sa/Socpa/Technical-Resources/Accounting-Standards.aspx?lang=ar-sa>.

Soderstrom, NS & Sun, KJ 2007, 'IFRS Adoption and Accounting Quality: a Review', *European Accounting Review*, vol. 16, no. 4, pp. 675-702.

Song, S, et al. 2014, 'IPO Initial Returns in China: Underpricing or Overvaluation?', *China Journal of Accounting Research*, vol. 7, no. 1, pp. 31-49.

Stecher, J & Suijs, J 2012, 'Hail, Procrustes! Harmonized accounting standards as a Procrustean bed', *Journal of Accounting and Public Policy*, vol. 31, no. 4, pp. 341-55.

Stehle, R, et al. 2000, 'Long-run stock performance of German initial public offerings and seasoned equity issues', *European Financial Management*, vol. 6, no. 2, pp. 173-96.

Su, D 2004, 'Leverage, insider ownership, and the underpricing of IPOs in China', *Journal of International Financial Markets, Institutions and Money*, vol. 14, no. 1, pp. 37-54.

Su, D & Fleisher, BM 1999, 'An Empirical Investigation of Underpricing in Chinese IPOs', *Pacific-Basin Finance Journal*, vol. 7, no. 2, pp. 173-202.

Sun, J, et al. 2011, 'How would the mandatory adoption of IFRS affect the earnings quality of US firms? Evidence from cross-listed firms in the US', *Accounting Horizons*, vol. 25, no. 4, pp. 837-60.

Tadawul 2015, *Saudi Stock Exchange (Tadawul) Annual Statistical Report 2015*, Tadawul, <https://www.tadawul.com.sa/wps/wcm/connect/f9c937c6-6bef-46bb-8a91-9f0f8eb63d8c/Yearly_2015_1.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=f9c937c6-6bef-46bb-8a91-9f0f8eb63d8c>.

Tadawul 2016, *Market Watch Today*, Tadawul, viewed 22/08 2016, <https://www.tadawul.com.sa/wps/portal/tadawul/markets/equities/market-watch/market-watch-today>.

Tadawul 2017, *Market Information Services*, viewed 23/05/2017, <https://www.tadawul.com.sa/wps/portal/tadawul/services/market-information-services/!ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfIjo8zijYycLQwtTQx8DHzMDQ0czdwNPAN9TYzdLUz1w1EVuHv6mRs4Bjp6hLmFhRgb-BvpR1Gi38CEOP0GOICjAWH9UahKsPgArwKQE8EK8LghOLFIvyA3NDTCIDMg3VFREQAdEbPA/dz/d5/L0lHSkovd0RNQUZrQUVnQSEhLzROVkUvZW4!/>.

Teoh, SH, et al. 1998a, 'Earnings Management and the Long-Run Market Performance of Initial Public Offerings', *The Journal of Finance*, vol. 53, no. 6, pp. 1935-74.

Teoh, SH, et al. 1998b, 'Are accruals during initial public offerings opportunistic?', *Review of Accounting Studies*, vol. 3, no. 1-2, pp. 175-208.

The National Center for Performance Measurement 2018, *Saudi Arabia Climbs Five Rankings in Transparency International's 2017 Corruption Index* <https://www.prnewswire.com/news-releases/saudi-arabia-climbs-five-rankings-in-transparency-internationals-2017-corruption-index-674939543.html>.

The New York Times 2019, *Lyft's First Results After I.P.O. Show $1.14 Billion Quarterly Loss*, The New York Times, viewed 21/05/2019, <https://www.nytimes.com/2019/05/07/technology/lyft-ipo-financial-results-uber.html>.

The World Bank 2019, *Listed domestic companies, total*, viewed 25 Feburary 2019, <https://databank.worldbank.org/data/source/world-development-indicators>.

Tian, L 2011, 'Regulatory Underpricing: Determinants of Chinese Extreme IPO Returns', *Journal of Empirical Finance*, vol. 18, no. 1, pp. 78-90.

Turki, H, et al. 2017, 'IFRS Mandatory Adoption Effect on the Information Asymmetry: Immediate or Delayed?', *Australasian Accounting, Business and Finance Journal*, vol. 11, no. 1, pp. 55-77.

Tweedie, D 2007, *Sir David Tweedie addresses US Senate*, viewed 10/04 2015, <http://www.ifrs.org/News/Press-Releases/Pages/Sir-David-Tweedie-addresses-US-Senate.aspx>.

Uddin, MH & Raj, M 2012, 'Aftermarket risk and underpricing of initial public offers in the arabian gulf countries: An empirical analysis', *The International Journal of Business and Finance Research*, vol. 6, no. 3, pp. 123-38.

Ugrin, JC, et al. 2017, 'The Relationship Between Income-Increasing Earnings Management and IAS/IFRS Adoption Across Cultures', *Advances in accounting*, vol. 37, no. June pp. 140-51.

United Nations 2012, *Country classification*, viewed 23/7 2017, <http://www.un.org/en/development/desa/policy/wesp/wesp_current/2012country_class.pdf>.

Van Tendeloo, B & Vanstraelen, A 2005, 'Earnings Management Under German GAAP Versus IFRS', *European Accounting Review*, vol. 14, no. 1, pp. 155-80.

Vergauwe, S & Gaeremynck, A 2019, 'Do Measurement-Related Fair Value Disclosures Affect Information Asymmetry?', *Accounting and Business Research*, vol. 49, no. 1, pp. 68-94.

Wang, S & Welker, M 2011, 'Timing Equity Issuance in Response to Information Asymmetry Arising from IFRS Adoption in Australia and Europe', *Journal of Accounting Research*, vol. 49, no. 1, pp. 257-307.

Webb, R 2006, 'Brace Yourselves: IFRS Will be Bumpy', *Financial Review*, vol. 25, no. 1, pp. 26-34.

White, H 1980, 'A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity', *Econometrica*, vol. 48, no. 4, pp. 817-38.

World Economic Forum 2014, *The Global Competitiveness Report*, viewed 10 March 2015, <http://www.weforum.org/reports?filter[type]=Competitiveness>.

World Economic Forum 2017, *The Global Competitiveness Report*, viewed 10 March 2017, <http://reports.weforum.org/global-competitiveness-report-2015-2016/>.

Wu, JS & Zhang, IX 2019, 'Mandatory IFRS Adoption and the Role of Accounting Earnings in CEO Turnover', *Contemporary Accounting Research*, vol. 36, no. 1, pp. 168-97.

Wysocki, P 2011, 'New institutional accounting and IFRS', *Accounting and Business Research*, vol. 41, no. 3, pp. 309-28.

Yaacob, NM & Che-Ahmad, A 2012, 'Audit Fees After IFRS Adoption: Evidence from Malaysia', *Eurasian Business Review*, vol. 2, no. 1, pp. 31-46.

Yip, RW & Young, D 2012, 'Does Mandatory IFRS Adoption Improve Information Comparability?', *The Accounting Review*, vol. 87, no. 5, pp. 1767-89.

Yunxia, B & Liansheng, W 2008, 'Information Disclosure and Earnings Management Around Privatization of State Shares ', *Accounting Research*, vol. 10.

Zahn, M, et al. 2007, 'Is there an association between intellectual capital disclosure, underpricing and long-run performance?', *Journal of Human Resource Costing & Accounting*, vol. 11, no. 3, pp. 178-213.

Zattoni, A, et al. 2017, 'Does Board Independence Influence Financial Performance in IPO Firms? The Moderating Role of the National Business System', *Journal of World Business*, vol. 52, no. 5, pp. 628-39.

Zhao, JH, et al. 2003, 'The impact of corruption and transparency on foreign direct investment: An empirical analysis', *MIR: Management International Review*, pp. 41-62.

Zhao, R, et al. 2018, 'Investor Attention and Performance of IPO Firms: Evidence From Online Searches', *Physica A: Statistical Mechanics and its Applications*, vol. 508, no. 15 October pp. 342-8.