

**A COMPARATIVE STUDY OF THE IMPACT OF
GLOBALISATION ON THE DEVELOPMENT OF
BANGLADESH AND TANZANIA**

By

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**Submitted for the degree of Doctor of Philosophy
December 2007**

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Student Declaration

I, Rachelle Simpson, declare that the PhD thesis entitled “A Comparative Study of the Impact of Globalisation on the Development of Bangladesh and Tanzania” 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

Date

Acknowledgement

Undertaking this research would not have been possible without the support and guidance of many people. I am especially grateful to my supervisors, Muhammad Mahmood and László Kónya, for their persistence and the support, encouragement and ideas provided to me throughout this process.

Abstract

Across the extensive body of literature on the subject of developing countries in the most recent period of globalised economic activity three main arguments are evident, firstly, that globalisation has had a positive impact on these countries, secondly, that globalisation has had a negative impact on these countries, and thirdly, that these countries have been by-passed by the most recent period of globalisation. This research seeks to understand what the impact has been on two of the world's poorest developing countries, Bangladesh and Tanzania. Within the research globalisation is measured by openness, specifically changes in trade and investment flows. Impact is measured through change in development, and in order to do this, a modified Human Development Index is created. Through analysing each of the two countries during the globalisation period and comparing and contrasting the experience with the period prior to globalisation utilising common econometric techniques, this research reaches the conclusion that neither country has been excluded from the most recent period of globalisation. Further, it is concluded that the net impact of globalisation on development in both countries has been neither positive nor negative, thereby suggesting that both positive and negative forces have counterbalanced one another.

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1 Introduction

1.1 Research objective

The overall objective of this research is to provide an empirical study into the impact of globalisation on two of the world's poorest countries.

This introductory chapter briefly presents what is understood about the most recent period of globalisation and the various impacts it is purported to have on developing countries. The knowledge gap in the existing literature is outlined, along with how the current research will make a contribution to shedding more light on the area where the gap occurs. Research objectives are established and a structure provided for the remainder of the thesis.

1.2 Globalisation

During the past two decades a plethora of literature has emerged on the subject of globalisation. Within this literature there is a lack of consensus as to what globalisation is, about when the most recent period of globalisation commenced and how it differs from other periods in economic history, and what its effects have been. In general, most definitions of globalisation make reference to international flows, whether that is of capital, goods and services, knowledge or people. A second common theme is that of time and space compression, whereby as a consequence of technology and other developments, communication and exchange are able to occur much more rapidly.

Globalisation is a multifaceted phenomenon encompassing not only economics but also other fields of study including politics and sociology. The economic components of globalisation include trade, investment, production, finance, competition and demand. The main focus of this thesis is trade and investment, although what is observed within these two areas is strongly influenced by the other economic areas. For example, trade in components has been influenced by the production trend of a breakdown in value chains, while larger investment flows have been facilitated by new financial instruments.

As has been mentioned, there is a lack of consensus as to when the most recent period of globalisation commenced. There are some perspectives that globalisation commenced more than 200 years ago, such as Lindert and Williamson (2001), while an alternative view points to the growth in trade and investment flow after recovery from the Second World War (Scholte 1996). Much of the literature however points to globalisation as a much more recent phenomenon, or at least acknowledges that the last one to two decades have presented some different or unique characteristics to other periods within economic history, albeit periods that have displayed strong growth in trade and integration within the international economy. There is a similar lack of consensus about what the defining factors of the most recent period have been, although some of the recurring themes point to the changing dynamics of players within the international economy, the extent of technology, the nature of flows and exchanges and the intensification of competition (Hay & Marsh 2000b).

One of the main areas of focus of the globalisation literature has been the impact on developing countries. This is also an area where there are alternate perspectives and no clear consensus as to what the impact has been. From this literature three key themes emerge about developing countries: firstly, that globalisation has largely by-passed developing countries; secondly, that globalisation has had detrimental consequences for developing countries; and thirdly, that globalisation has been a positive experience for developing countries.

The first theme to emerge is that developing countries have largely been by-passed by the processes of globalisation. The main arguments within this theme relate to the unsuitability of developing countries to deal with the processes of globalisation due to institutional and structural problems inherent within these countries. More specifically, developing countries are largely unable to produce what is being demanded within the international economy, some developing countries are disadvantaged by their geographical location, and the resources and infrastructure within developing countries mean that these countries are not able to adapt to production trends associated with globalisation. While globalisation has brought about higher levels of trade and investment, many developing countries have not seen much change in their volumes of trade and investment, and at times, there has even been declines experienced, as trade and investment are redirected to countries that are more able to participate in the international economy that has emerged (UNCTAD 2002a).

The second theme is that developing countries have been disadvantaged through globalisation. One of the most common arguments within this theme is that as a consequence of the increased specialisation that has come about with globalisation, many developing countries have a more narrow export focus, which is centred on what are essentially unattractive products (see for example, Porter 1990). More specifically exports from developing countries are largely commodities which have demonstrated declines in terms of trade and high levels of volatility, and have low growth prospects, as such products are not demanded within the international economy that has emerged (UNCTAD 2002b). Other key arguments within this theme pertain to the detrimental consequences that have been experienced when developing countries have participated in globalisation, which include deterioration in labour and environmental standards, environmental degradation and application of unsuitable technologies (see for example, Baker, Epstein & Pollin 1998; Chussodovsky 1997; Cole 2000; Crotty, Epstein & Kelly 1998; Goldsmith, E. 1996; Hamilton & Clements 1999; Khor 1996; Nayyar 2001; Obstfeld 1998).

The third theme, that globalisation has been beneficial for developing countries, is strongly aligned with the general benefits of trade, such as providing access to capital, technology, managerial practices and production techniques, and bringing previously unemployed labour into production (see for example, Gundlach & Nunnenkamp 1998). Time and space compression has facilitated more rapid access than may otherwise have been evidenced. One of the main arguments in support of this theme is that the trends associated with globalisation, for example, the break down of value chains, have afforded

developing countries opportunities that would have otherwise not have presented. Such opportunities include participating in international trade, thereby earning export income and raising national income, attracting foreign direct investment (FDI) and developing manufacturing sectors, which is recognised as a key step along the path to development (Arndt 1999).

To a large extent, there is alignment between economic theory and the globalisation literature as it pertains to developing countries. Much of the arguments that globalisation has been beneficial for developing countries find their origins in classical and neo-classical theory. The arguments that globalisation has had negative implications for developing countries have a high level of alignment with the likes of Prebisch (1950) and Singer (1950) and the economists that built upon their initial doctrine. Advocates of the perspective that globalisation has been detrimental for developing countries explore the differences between the current international economy and the international economy that existed when traditional economic theories that espoused the benefits of trade were proposed. The perspective that developing countries have been by-passed by globalisation acknowledges the benefits of trade recognised by classical and neoclassical economists, but claims that these benefits have not been extended to developing countries (see for example, Hirst & Thompson 1996; Hoogvelt 1997).

1.3 Statement of significance

Despite the plethora of literature on the subject of globalisation, and more specifically, globalisation and developing countries, there is an absence of comprehensive studies that

have attempted to classify and categorise the experience of any individual developing country, in order to understand whether the experience has been positive or negative. To a large extent the literature is general or focuses on specific issues, for example, exploring the potential environmental implications globalisation has had on a specific developing country, and therefore, does not explore the totality of effects of globalisation. Additionally, much of the literature is qualitative in nature, thereby, exploring the implications but not combining the effects into a single measure of impact. Finally, much of the literature that has emerged on the subject is largely conjectural, without clear empirical evidence to support the statements made.

In summary, a clear gap in the current literature exists in providing a comprehensive study of individual countries in order to understand if these have been by-passed by the processes of globalisation, and if not, whether the net effect on these countries has been positive or negative.

1.4 Research overview

1.4.1 The countries which will be studied

The countries selected for this research are designated as Least Developed Countries (LDCs) by the United Nations Conference on Trade and Development. The rationale for selecting these countries is that they are amongst the world's poorest and most disadvantaged. Ultimately, it is of most interest how these countries and their population

has been impacted by globalisation, as opposed to some of the more advanced developing countries, which are on the verge of being classified as developed or newly industrialised.

This research will focus on two countries, and in doing so, compare and contrast the experience of each country. The majority of the world's LDCs are located in either Africa or Asia, and therefore a country from each region will be considered. By researching countries in different regions, regional developments and considerations can be encompassed within the analysis. For example, there is evidence that suggests that African countries have fared worse than their Asian counterparts within the globalisation period, largely, because Asian countries have been able to exploit regional linkages (UNCTAD 2003). The two countries that will be explored are Bangladesh in Asia and Tanzania in Africa.

1.4.2 How impact will be assessed

How globalisation has impacted developing countries could be assessed a number of ways, for example, impact on growth, income or sectoral composition. The current research is concerned with how the lives of the populations of the countries that will be studied have been impacted. The way to measure impact on the lives of populations is generally via development (UNDP 1990). One of the presently most accepted measures of development is the United Nations Development Programme's (UNDP) Human Development Index (HDI). As part of this research, a variation of the HDI will be created which is aligned to the nature and objectives of the research, specifically, ascertaining the impact of globalisation on the two subject countries.

1.5 Research objectives

The overall aim of this research is to provide a comparative study of the impact of globalisation on the development of two of the world's Least Developed Countries, in order to assess whether the effects have been beneficial, detrimental or neutral in each country, or whether these countries have largely been by-passed by the processes of globalisation. A secondary objective is to compare and contrast the experience of these two countries to better understand how country specific factors have come into play. In order to achieve the overall aim, the following objectives will be pursued:

- (i) Selection of a measure of development that is responsive to changes in the short term and reflective of the current issues facing developing economies;
- (ii) Selection of a measure of openness that is reflective of participation in the international economy;
- (iii) Selection of a time period which is representative of the current period of globalisation;
- (iv) Analysis of movement in both the measure of openness and the measure of development over the globalisation period, and in the period preceding the globalisation period, in order to ascertain differences between the two time periods;
- (v) Analysis of the relationship between the measures of development and openness during the globalisation period, and in the period preceding the globalisation period, in order to ascertain differences between the two time periods;

- (vi) Consideration of factors that have influenced the development of each of the subject countries during the globalisation period;
- (vii) Consideration of factors that have influenced the openness of each of the subject countries during the globalisation period;
- (viii) Comparison of the findings for each economy in order to understand and potentially explain similarities and dissimilarities.

1.6 Structure of this thesis

In the following chapter, Chapter 2, a review of the literature on globalisation is provided, initially focussing on what globalisation is, what the enablers and drivers have been, and how the current globalisation period differs from other periods in economic history. The chapter then goes on to explore what the most recent period of globalisation has meant for developing countries, and the main arguments that have emerged in each of the three areas discussed previously - positive impact, negative impact and no or limited impact, as a consequence of being by-passed.

Chapter 3 reviews classical and neo-classical trade theory and considers its relevance to what has been observed within the most recent period of globalisation. Given that two main economic components of globalisation have been identified as trade and investment, Chapter 3 also reviews the literature on investment theory, focussing on the emergence of multinational enterprises (MNEs).

Chapter 4 presents the economic theories that have emerged over the past six decades that focus on the implications of trade for developing countries. The alignment of these theories with the arguments presented in relation to globalisation and developing countries is considered. The rationale for only presenting trade within this chapter is that there is extensive literature on trade and developing countries, whereas investment theory has focussed largely on explaining the investment flows between developed countries.

Chapter 5 presents a review of the literature on measuring development. This is an important context for determining how development will be measured for the current research. The chapter considers how measuring development has moved away from considering purely income toward more encompassing measurements before reviewing the literature on the HDI, a widely accepted measurement of development.

With the previous chapters having set the scene for understanding globalisation, how economic theory relates to what has been observed within the most recent period of globalisation and how development has previously been measured, Chapter 6 presents the research methodology in detail. The purpose of Chapter 6 is to outline how this research will contribute to the body of knowledge on globalisation and developing countries. Each research component is discussed in detail, including the measurement of openness. A considerable part of the chapter involves describing how the measure of development will be produced, the decisions that need to be made and factors taken into consideration.

Chapter 7 introduces the two countries that are the subject of the research. It briefly looks at LDCs as a group and differences in the African and Asian regions, before embarking on detailed analysis of Bangladesh and Tanzania. A brief review of the recent economic history for the period preceding globalisation is provided for both countries, before examining how each country changed throughout the globalisation period. The focus of the analysis in this chapter is understanding how output and production changed, and also how the external sector changed, specifically in terms of export volume and value, the goods and services exported and imported by each country during the globalisation period, and the countries traded with. Investment is also considered. The experience of each country is compared and contrasted.

Chapter 8 presents the creation of a modified development index based on the HDI, but taking into account the nature and objectives of the current research, and criticisms of the HDI and suggestions for improvement. The modified index is calculated for Bangladesh and Tanzania for a forty year period, and then analysed.

In Chapter 9, the modified development index is analysed with the measure of openness utilising widely accepted economic analytical approaches, culminating in testing for Granger causality between openness and development to ascertain if openness does precede development.

Chapter 10 presents what has been learned about the impact of globalisation on two of the world's poorest developing countries, in light of the original research objectives set. The

contribution that has been made to the body of knowledge on the subject is explained, research limitations and areas for future study are provided.

2 Globalisation

2.1 Introduction

The purpose of this chapter is to shed light on what is meant by the term globalisation, and explore what has occurred within the international economy. Significant literature has been produced on the topic over the past two decades. There are a large number of diverse perspectives pertaining to what globalisation is, what has caused it and what has resulted from it. This chapter seeks to bring together these perspectives and ideas to succinctly analyse the most recent period of international economic activity. The chapter commences with a review of definitions and components of globalisation. Enablers and drivers are then analysed and discussed, and the key players and roles are presented. To provide some context, enablers are factors that have made globalisation possible, while drivers are factors that have lead or pushed the occurrence of globalised activity. What has been observed within the international economy is next discussed, and this is contrasted with what has occurred in earlier periods of economic history, both the period prior to the most recent period of globalisation, and then to a time in history which is highlighted as one of heightened international economic activities. The second half of the chapter discusses what recent occurrences have meant for the developing world, and more specifically, the most underdeveloped countries.

2.2 Definitions and components of globalisation

The term globalisation is used to describe a recent period in international economic activity, commencing from the late 1980s. Notably, there is no firm consensus of when the period of globalisation started, and when or whether it has ended, however, the period indicated relates to when many of the writings on the subject globalisation emerged, and the period generally discussed or referenced in these writings.

There are a significant number of definitions of globalisation and concepts of what it entails, so much so, that Hirst and Thompson (1996) assert that there is no one accepted model of the globalised economy and how it differs from the past. Similarly, Bairoch and Kozul-Wright (1996, pp.2-3) assert “most contemporary observers have differed in their description of the globalisation process, and have failed to construct a consistent theoretical explanation of what is driving it and where it might be going”.

As a start to explaining the phenomena of globalisation, most definitions make reference to openness, integration or flows. Openness pertains to individual countries participating in, or being willing to participate in, international economic activity. Integration refers to combining or amalgamating elements across countries, which predominantly occurs through cross-border activity and international division of production (Gundlach & Nunnenkamp 1994). Flows as they pertain to globalisation encapsulates the movement of goods and services through trade, financial transaction through investment and foreign exchange markets and the sharing of ideas, intellectual property and technology. While the focus of this thesis and analysis is on the economic aspects, globalisation is

multidisciplinary and also spans the areas of politics, sociology and anthropology (Inda & Rosaldo 2002; Mittelman 1996).

In relation to what has been observed within the more recent period of international economic activity, Hay and Marsh (2000) assert that there has been a gradual evolution toward globalisation rather than a quantum leap at any particular point in time, while Hirst and Thompson (1996) note that what has emerged is not a truly global economy, but rather a high level of interaction between individual players within the international economy.

The economic components of globalisation pertain to production, trade, investment, finance, competition and demand. All of these factors have exhibited increased international integration over the past two decades. What has specifically been observed in relation to these factors will be explored in later sections of this chapter.

2.3 Enablers and drivers of globalisation

2.3.1 Enablers of globalisation

As referred to in the introduction of this chapter, enablers are factors that have changed within the international economy to allow an increased level of integration or greater flows between countries. Some of these factors have represented reductions in barriers to international activities that have previously existed. Broadly, the factors that have enabled globalisation encompass technology and innovation, improvements in transportation and

communication, political developments, reduced protectionism, trends towards deregulation, and developments in financial markets. These factors are explored in further detail below.

New technologies have been introduced, which have increased the ease of relocating production facilities and have enabled buyers to understand and source products globally (Dunning, Van Hoesel & Narula 1998). Improvements in transportation and communication have reduced perceptions of time and distance (Hoogvelt 1997; Sassen 1996). More specifically, transportation innovations have lowered the cost of transporting and reduced the time it takes to move products, while developments in communication have resulted in improvements to consumer markets, for example, through providing an understanding of alternative offerings, and have facilitated knowledge sharing (Naisbitt 1994).

Two key political developments have enabled globalisation – ideological shifts and growth in international institutions. The end of the cold war and the demise of communism has increased the strength of capitalism and free market forces within the international economy, which has in turn facilitated the spread of private sector activity (Oman 1994; Pieper & Taylor 1998). Simultaneously, multilateral institutions, such as the World Bank, International Monetary Fund (IMF) and World Trade Organisation (WTO), have strengthened in influence, and alliances between countries such as Group of 7 (G7) have emerged. Such developments have contributed to a higher level of integration within the international economy.

In the period preceding globalisation, trends of deregulation were evidenced across many economies, encompassing liberalisation of trade, foreign investment and financial markets. Barriers to trade, in particular tariffs, progressively fell during the first four decades following the Second World War under the auspices of the General Agreement of Trade and Tariffs (GATT), thereby encouraging trade between countries. Additionally, countries entered into regional trading bloc arrangements in order to facilitate and promote trade. Within the 1990s, protection levels within developed countries increased by way of non-tariff barriers, especially through contingent protection measures such as anti-dumping duties (ADD), countervailing duties (CVD) and safeguard measures, which are discussed further later in this chapter. Technologies and new instruments in financial markets, along with liberalisation of foreign investment and financial markets have increased cross border financial flows.

2.3.2 Drivers of globalisation

Globalisation has predominantly been driven by economic factors, and more specifically the profit motivations of corporate entities, and these entities seeking to achieve competitive advantages. Firms have globalised by fragmenting their production processes across national frontiers, in order to reduce costs, and have sought to attract customers from multiple markets in order to maximise revenues. Profit motivations have also influenced foreign investment decisions and decisions to globally outsource and enter into strategic alliances with foreign entities. Trends evidenced in production, such as high sunk costs, rates of technological obsolescence and changing product life cycles, have

necessitated corporate entities seeking lower production costs and multiple markets for products.

2.4 Roles within the globalised economy

With the deregulation that has enabled globalisation, market forces are increasingly driving international economic activity. MNEs, firms that own and control operations in more than one country, have emerged as the dominant players within the globalised economy. Such entities largely control trade and investment, and their contribution to global economic activity tends to receive as much, if not more, recognition as that of nations (Naisbitt 1994; Porter 1990). Supranational organisations, international banks and financial intermediaries have also increased in significance within the global economy (Nayyar 2003; Pieper & Taylor 1998; Scholte 1996).

Much has been written about the changing role of government within the globalised economy. Some critics have referred to the diminishing role of government (for example, Chang 1998; Nayyar 2003), while others have pointed to changed roles for governments to fulfil (for example, Cantwell 1989; Porter 1990). With trends toward deregulation, governments have less of a regulatory role to play in economic activity. Similarly, with privatisation of activity, governments less directly participate in economic activity. With the proportion of economic activity which has moved from a national to an international level, individual governments have a diminished ability to control or influence economic activity (Rodrik 1997). There has been some convergence in government policies globally, under the auspices of multilateral institutions. This has contributed towards the

trends of privatisation and deregulation, and the growth of more market oriented economies. The increasing volume of funds circulating has lessened the ability of central banks to manage exchange rates. Governments have used monetary and fiscal policies less to control and influence economic activity, recognising that these policies potentially impact the competitiveness of domestic industry in an international economy. These policies have also influenced investment decisions of MNEs, which has further constrained governments in the policies they have been able to implement. The effectiveness of monetary policy has also been weakened by the volume of funds circulating within the international economy (Oman 1996).

Despite the trends noted in relation to the changing role of national governments, there are clear, albeit less direct, functions for national governments to perform within the international economy that have emerged in the most recent period of globalisation. Such roles pertain to enabling private sector activities to be successful through the promotion of trade, innovation and industrial development. National governments also have a role to target and foster select industries (Cantwell 1989; Porter 1990). Gwynne (1996) notes that targeting lay at the heart of the successful East Asian development model. Further, national governments have a role to enable access to the most competitive goods and services globally, in order to assist domestic entities in becoming internationally competitive (Ohmae 1994). Finally, national governments have a role in the attraction of FDI through setting appropriate domestic economic policy and the provision of infrastructure.

2.5 What has occurred in the international economy

Much of the literature on the most recent period of globalisation discusses what has been observed or what has occurred within the international economy. There are many and diverse occurrences. Efforts to describe these have contributed, firstly, to the vast literature on globalisation and, secondly, to the lack of consensus surrounding what globalisation means and how the most recent period of globalisation is distinct from other periods in history. What has occurred from an economic perspective can be broadly categorised into the areas of overarching effects, national economy impacts, consumer trends, market trends, production and trade. As referenced earlier in this chapter, there are also non-economic aspects such as social and political observations, which will be briefly discussed for completeness.

Overarching effects are those that span and influence a number of the other areas identified. To provide some context, the overarching effects are largely reflected in the enablers and drivers that have been previously discussed, but deserve attention because these trends have not only enabled or driven globalised activity, but have also remained an integral part of the activity that has been observed. Specifically, there has been strengthening of private sector activity, and movement of the focus of economic activity from nations to the firms that operate within nations. Distance has become less relevant due to developments in transportation and communication. Transaction costs have fallen and at the same time transaction volumes have increased.

There have been a larger number of flows between countries that have participated in the most recent period of globalisation, which has resulted in greater integration between these countries. Hoogvelt (2001) refers to this as 'thickening of the core'. Notably, not all countries have been able to equally participate in globalisation, specifically some groups of developing countries have not participated, or at least their participation has been substantially less than that of other countries. What has resulted from this unequal spread of activity is greater differences between the countries which have achieved a higher level of integration and those that have been largely by-passed the processes of integration. These differences are evidenced in aspects such as income, development and technological advancement. James (2002) likens participation in globalisation to Myrdal's cumulative causation, in terms of setting of a spiralling effect of benefits, whereas not participating sets off a spiral effect of detrimental impacts. It is a matter of debate as to whether developing countries deliberately choose not to participate or whether there are factors beyond their control. This is also explored later in the chapter, however, it is suffice to say that a country's ability to engage in the process of globalisation may be limited by a variety of external factors which the country is unable to influence. There are domestic factors which are controllable and impact the extent to which a country is able to participate in international economic activity.

A number of trends pertaining to buying are discussed in the globalisation literature. Such trends pertain to both consumers and businesses that purchase inputs for production and to fulfil their value chain activities. Buyers are more aware of what is available due to communication technologies. They are also able to increasingly source products globally,

meaning that they are no longer constrained by, or restricted to, what is available domestically. Time to market has become increasingly important. A further trend has been differentiation of previously commodity like products, for example, coffee and some fruits, whereby, purchasers will seek out products from specific regions. In relation to consumer markets, there has been convergence of markets globally, as a consequence of improvements in communications and transportation technologies (Salvatore 1998).

The trends outlined have resulted in greater competition in both domestic and international markets. Domestic firms need to be internationally competitive in order to continue to exist. Exposure to international competition has seen the removal of entrenched domestic monopolies. Within the international arena, MNEs have grown and strengthened. This in part has been the consequence of mergers and acquisitions, and alliances, such as joint ventures, between competitors and firms that operate within the same value chains. There has been intensification of competition and concentration of power, with smaller firms that are less able to compete with MNEs either being consumed by larger entities, or being forced out of the market by the competition. As a consequence of these trends, an oligopolistic market structure has emerged in many industries (Nayyar 2003). Privatisation has meant that governments are no longer directly participating in economic activity, while deregulation has meant that government regulation of activity has significantly lessened. Given that MNEs span several countries, governments are less able to regulate or influence the activities of these entities, outside their own jurisdiction.

A number of production trends have been evidenced in the most recent period of globalisation. These trends are discussed prior to trade and investment trends, as they provide the rationale and context for some of the trade and investment trends that have been observed. What has been observed in relation to production can be broadly categorised into the areas of production methods and location related trends. Production method trends are discussed first, as these are influential on the location trends observed.

One of the frequently discussed trends from the most recent period of globalisation is the fragmentation of production from total goods and services to the production of components (Krugman 1995), also referred to as the breakdown of value chains. Specifically, a firm will analyse the overall production of a good, and then divide this into discrete activities, which can either be fulfilled within the firm at a single or multiple locations, or can be outsourced. Outsourcing of functions that are not core competencies of a firm has become common over the past two decades because, firstly, outsourcing may create cost savings or achieve quality benefits, and secondly, it allows firms to concentrate on the activities that they do best and which are core to their business achieving competitiveness.

A second trend to emerge is that of flexible production, a concept predicated on achieving competitive advantage through delivery of customised goods within relatively short time periods (Oman 1994). Flexible production represents movement away from the mass production techniques evidenced in earlier decades, which were characterised by undifferentiated products produced from production lines and significant time to market.

It is characterised by economies of scale and scope, high start up costs, high levels of technological obsolescence and shorter production life cycles. Such characteristics generally cause higher fixed costs and are therefore aligned to presence in multiple markets and the attraction of large number of buyers over which to diffuse these fixed costs. The extent of technology and capital used in production has increased, and, as a consequence, a decreased proportion of production relies on labour. Both economies of scale and scope remain important in production, and have influenced the size of firms that exist.

Globalisation has seen firms face a larger number of production location decisions due to the competitive advantages that can be achieved through optimally locating production facilities globally. Additionally, fragmentation of production has increased the number of location decisions that typically need to be made by an enterprise. Production inputs are increasingly being sought globally as a means to reduce production costs in order to improve or sustain competitiveness. The breakdown of value chains lends itself to the division of production activity at a global level, with owners of the overall production process locating each aspect of the value chain in a location which enables overall competitive advantage goals to be achieved. Notably, developed countries have tended to retain activity that adds relatively high amounts of value within production, while low value-add activity has tended to be moved to developing countries. The impact of this trend on developing countries is explored further later in this chapter. As a consequence of the trends outlined, multi-country production networks have emerged (Yusuf &

Stiglitz 2001). Production activity within developed countries has tended to be narrow due to the increased use of imported inputs (Feenstra 1998).

There is debate as to whether the trend toward production location has been global or regional. Much of the globalisation literature refers to globalised production networks. However, Oman (1994) suggests that location of production and sourcing of inputs predominantly occurs regionally, in response to trading blocs that have been created, such as the European Union, and the need for proximity between production facilities and markets due to the production methods which have emerged. Those that refer to global production networks (for example, Dunning 1998; Gundlach & Nunnenkamp 1994) note that factors other than proximity are important in determining production location.

Trade is one of the most discussed elements of globalisation, because it represents flows of goods and services. What has occurred in relation to trade can be broadly classified into the areas of volume and nature of trade, and then general trends, encompassing comparative advantage and protection. There has been an increase in the amount of goods and services traded during the most recent period of globalisation. The volume of goods and services traded more than doubled between 1988 and 2000, increasing from \$2,875bn to \$6,364bn (UNCTAD 2004). Further, the volume of trade has been increasing at a faster rate than the growth in world Gross Domestic Product (GDP) during the last quarter of a century (The World Bank 2001). An increasing amount of world output is entering trade, and an increasing volume of merchandise trade is made up of semi-manufactured and manufactured goods. The trends evidenced in relation to production

have positively influenced the volume of trade, with components as well as finished goods being exchanged. Intrafirm trade now accounts for about one third of trade in merchandise (UNCTAD 2002c). Trade is also involving more advanced goods and services, and highly differentiated goods and services, resulting in commodities representing a lower proportion of overall trade than they have in the past. Trade has remained dominated by developed countries, although a few newly industrialised countries have increased their participation in trade over the past two decades. Developed countries have consistently represented around 70% of the volume of goods and services that have been traded over the past two decades (UNCTAD 2004).

Comparative advantage has traditionally been the basis by which nations trade. Within the most recent period of globalisation comparative advantage has moved from being considered fixed and based on natural resource endowment, to being alterable and influenced by technological change and foreign investment (James 2002; Ohmae 1994). In this way, comparative advantage has moved from being considered a static to a dynamic phenomena. Further, with the diversification in what buyers are demanding, trade is increasingly occurring between countries with similar factor endowments (Porter 1990), whereas extensions of comparative advantage theory explained trade as being driven by different factor endowments. With trends such as the fragmentation of production, and the emergence of large dominant players in the form of MNEs, both intra-industry and intra-firm trade has been evidenced (Krugman 1995; Nayyar 2003). Within MNEs, inputs and components move between divisions and parent companies and

subsidiaries. Trade in intermediate products now represents approximately half of the imports into major countries (OECD 1994).

As discussed under enablers of globalisation, protection levels fell in the four decades following the Second World War. However, more recently, protectionism by developed countries has increased and taken forms other than traditional tariff barriers. Specifically, developed countries have implemented standards and other import restrictions, such as ADD, which have been detrimental to the exports of developing and newly-industrialised countries. There is also evidence of dumping by developed countries, in response to the governments of these countries subsidising their own agricultural industries.

Financial flows have been a significant aspect of the most recent period of globalisation. FDI has been increasing at a faster rate than trade, with net inflows increasing from \$156bn in 1988 to \$884bn 2000 (The World Bank 2001). This represents an annual growth rate of approximately 15.5% while trade grew at only 7% during the same period (UNCTAD 2004). Both the volume of funds circulating and the number of transactions have risen, and financial markets have become increasingly integrated. Notably, financial flows remain predominantly within the triad of Japan, North America and Europe, and largely not directed toward developing countries (Crotty, Epstein & Kelly 1998). Investment has also predominantly been directed toward manufacturing activity (Baker, Epstein & Pollin 1998). New financial instruments and technologies have been influential in the changes that have been observed. Additionally, there have been growing and mutually reinforcing links between trade and investment, for example, firms have made

capital investments in foreign countries, and then exported the goods that were produced from these investments (Falconer & Sauve 1996).

The non-economic components of globalisation can broadly be classified into the areas of migration, politics and society. While there is reference to specific migration activity (for example, Pellerin 1996) in the globalisation literature, it receives less attention than other flows. Wolfe (1995) asserts migration is a means by which to participate in other aspects of globalisation. Migration largely occurred at a time when other resources were less mobile, and with the mobility of other resources and the flows that have been observed, migration has diminished in importance within the international economy (Nayyar 2001). The political aspects of globalisation have already been briefly touched upon in terms of enablers. There has been strengthening of free-market ideologies and decreasing support for non-capitalist ideologies. Democracy has also grown and supranational bodies have emerged. The social aspects of globalisation have largely been enabled through developments in communication and include increased common global concern, sharing of opinions and attitudes and cultural awareness (Goodstein 1998; Inda & Rosaldo 2002; Scholte 1996). Global concern has emerged for issues such as the environment and human rights. There have been increased interactions between people in different locations as a consequence of trade, foreign investment and migration.

2.6 Differences between the current period and earlier periods in economic history

The most recent period of globalisation is considered unique for a number of reasons. Although, these have been touched on in earlier sections of this chapter, they are referenced here to indicate how the recent period differs from others in economic history. Some of the differentiating factors are the new players that have emerged, the extent of technology and innovation, the type of trade that is being observed, the complexity of the goods and services being traded, the mobility of capital and labour and the intensification of competition.

In contrast to the period preceding the most recent period of globalisation, what has been observed within the globalisation period is trade growing faster than production and trade in manufacturing growing faster than overall trade (Gundlach & Nunnenkamp 1994). The latter trend is reflective of the fragmentation of production. In relation to financial flows, FDI has grown more rapidly than trade, and integration of capital markets has deepened rather than widened, reflecting a larger number of flows between a consistently narrow range of economies (Hoogvelt 1997). As has already been mentioned, the eventuation of the most recent period of globalisation occurred through gradual evolution rather than a quantitative leap from the previous period (Hay & Marsh 2000).

There are parallels between the recent period of globalisation and what occurred in the thirty years preceding the First World War. Some references to the earlier period suggest a higher level of integration in the earlier period (for example, Hirst & Thompson 1996;

Rodrik 1997), while other references suggest a higher level of integration more recently (for example, Bordo, Eichengreen & Irwin 1999), and other references draw neither conclusion (for example, Baldwin & Martin 1999; Sachs & Warner 1995; Williams 1996), noting that both periods represent periods of integration within the international economy. The earlier period commenced around 1880 and was brought to an end by the First World War and the subsequent Great Depression. The recent period of globalisation has been dominated by manufacturing, whereas, the earlier period was dominated by agriculture and minerals (Bhaduri 1998). Similarly, the earlier period was driven by falling transportation costs, however the more recent period has been driven by falling transaction costs (James 2002) and communication (Baldwin & Martin 1999). Labour mobility was significant in the earlier period, in contrast, capital mobility has become more important in the recent period (Nayyar 2003). In the earlier period, nations and governments remained the dominant players, whereas in the more recent period, corporate entities have become the dominant players (Bairoch & Kozul-Wright 1996). Despite these differences outlined, there is a common element between the two periods of divergence between the countries that have been participated in the processes of globalisation, and those that did not (Milanovic 2003).

2.7 Globalisation and developing countries

In this part of the chapter globalisation as it pertains to developing countries is examined. There is a divergence of perspectives in relation to the impact of globalisation on developing countries, with three main views being evidenced: that developing countries have been by-passed by the processes and benefits of globalisation; that developing

countries have been disadvantaged by the processes of globalisation, and lastly, that globalisation has delivered benefits to developing countries. Each of these views is explored.

Much of the globalisation literature makes reference to the processes of globalisation being uneven and unequal (for example, Baker, Epstein & Pollin 1998; Kiely 1998b; Morris, 1996). The globalisation experience has differed between developing and developed countries, and among developing countries. Furthermore, the experience has varied within individual countries (CEPAL 2002). There have been regional differences with respect to developing countries during the most recent period of globalisation. Generally speaking, developing countries in the African region have not fared as well as those in the Asian region (Nayyar 2003; UNCTAD 2001). African countries have actually reduced their participation in the international economy while Asian countries have increased theirs (Binswanger & Lutz 2003). In terms of exports, Asian countries have largely diversified into manufactured goods, while African countries have continued to predominantly export agriculture and other commodities (Borensztein et al. 1994). Asian countries have had the benefit of the advancement and development of other countries in the region in earlier decades, specifically Japan and the East Asian Tiger economies. African countries have had exports dominated by one or two key commodities, and have thus suffered by this exposure to a narrow range of exports. These trends are explored further in Chapter 7.

Before examining the perspectives on the impact of globalisation on developing countries, it is pertinent to mention that there is divergence in views as to how factors associated with globalisation have impacted developing countries. More specifically, a factor may deliver both beneficial and detrimental effects. For example, fragmentation of production is said to benefit developing countries by making it easier for them to participate in international economic activity because they can concentrate on becoming competent in a smaller element of production (Arndt 1999). However, the same trend is said to disadvantage developing countries because it is likely that the parts of the value chain they have a comparative advantage in will contribute to a low proportion of the overall value and therefore limited export income and may not enable skill attainment which is a critical aspect of economic development (Chussodovsky 1997).

2.7.1 Globalisation by-passing developing countries

The first of the three areas pertaining to developing countries to be considered is that globalisation has largely by-passed these countries. Dollar and Kraay (2001) assert that developing countries which have not participated in globalisation suffered significant slowdown in their growth. Similarly, Lindert and Williamson (2001) suggest that globalisation has been a largely positive experience for many countries, however, the countries which have become worse off are the countries that have not participated. Further, the inequality previously noted has been proposed to occur because globalisation has not spread far enough (Johnson 2002), thus inequality and non-participation are inextricably linked.

Developing countries generally do not participate by choice, but because of occurrences within the international economy, for example, the low demand for the exports of developing countries, which makes it virtually impossible for such countries to participate in international economic activity. Other areas where developing countries largely do not have a choice pertain to where there are standards or requirements for certain goods or services which developing countries are not able to meet, in attracting FDI and in the establishment of production facilities by MNEs. Notably, there are domestic elements that make developing countries less able to participate in global trends, for example, economic stability and the quality of infrastructure available to support industry and production. These elements are explored later in this chapter, however, it is important to note that while such factors are potentially alterable in the medium to long-term, countries may not always have the capabilities to bring about such change.

Hoogvelt (1997) adopts the dependency theorist terminology of core and periphery to describe the pattern of separation and exclusion that has emerged within the most recent period of globalisation, where core pertains to developed countries and periphery to developing countries. Specifically, a small number of relatively advanced developing countries have been able to move from the periphery to the core, such as Taiwan, Singapore and South Korea. However, the majority of developing countries have remained in the periphery, especially those located in the African region. Therefore, trading patterns within the international economy have remained largely unchanged from the period prior to globalisation. Additionally, trading patterns are largely similar to what

they were at the beginning of the Twentieth Century (Bhaduri 1998) for countries that have remained in the periphery. Hoogvelt (1997) makes reference to there actually being less interaction between the core and periphery than in the past. For the developing countries that have moved into the core, improvements in income and growth have been observed (Hirst & Thompson 1996), however, for developing countries that have not moved into the core, their relative position within the international economy has deteriorated as a consequence of the growth of other countries. Notably, the countries that have moved into the core represent a small proportion of the overall population of the developing world.

A number of trends that were discussed previously have contributed to developing countries being unable to participate in the process of globalisation, and the perpetuation and strengthening of the core and periphery structure within the international economy. Relevant trends include the growth of MNEs, the increase in protectionism by developing countries, and the emerging production trends. Oman (1994) notes that because of the trends associated with globalisation, the division between developed and developing countries has been more prevalent than in other periods in economic history.

As was noted earlier in this chapter, one of the key trends of the most recent period of globalisation has been the expansion of MNE activity. The majority of this expansion has occurred within the developed countries. As a consequence, associated flows of capital have also been directed toward developed countries. Trade within MNE groups has consequently also been concentrated between developed countries (Hirst & Thompson

1996). Notably, a limited number of more advanced developing countries in the Asian region have attracted capital flows. It is essentially this group that has moved from the periphery to core in terms of Hoogvelt's analysis.

While tariff barriers have gradually been reduced since the Second World War, the most recent period of globalisation evidenced the emergence of new forms of non-tariff barriers by developed countries, for example, standards (Oman 1996). Many of the emerging non-tariff barriers are in the areas of products exported by developing countries, such as agriculture and other commodities. This problem is further compounded by developed countries such as the United States and European Union countries providing agricultural subsidies to their farmers to boost agricultural exports, which then compete with the agricultural exports of developing countries in world markets. At the same time, developing countries have had to continue to reduce protection barriers to quality for assistance from international agencies (Chussodovsky 1997). Further, substantial regional trading blocs have emerged, for example, the Northern American Free Trade Agreement (NAFTA) and the European Union, which have reduced export opportunities for developing countries that are not part of such blocs.

The production trends outlined earlier in this chapter have hindered developing countries from participation in international economic activity. Where developing countries have diversified from primary sector industries into manufacturing, this has typically been into labour-intensive manufacturing. With increased use of technology and automation in production globally, there are fewer opportunities for labour-intensive manufacturing

(Kiely 1998a). Trends toward lower levels of supply stocks being held and just-in-time production translate into an increased need for physical proximity between market and production sources, which means many developing countries, especially those in the African region, are not able to be involved. To some extent MNEs have looked to minimise foreign exchange risk by locating production facilities where there are markets for products (Oman 1994). Given the small size of domestic markets that typically exist within developing countries, this trend has reduced the production facilities that are located within most of the developing countries.

The flexible production methods that have typified the most recent period of globalisation are outside the reach of developing countries for a number of reasons (Hoogvelt 1997; Oman 1996). Firstly, such production methods require a minimum efficient level of scale or size. Secondly, flexible production methods are associated with high start up costs due to the plant and equipment, and knowledge acquisition, required. The rates of technological obsolescence are high, with equipment needing to be continuously updated to remain competitive. This technological obsolescence creates costs which are higher than developing countries are likely to be able to effectively absorb. The infrastructure and human resource capability requirements for flexible production methods tend to be higher than what is generally found in developing countries. Finally, flexible production methods rely heavily on economies of scope, which are more likely to be achieved in developed countries where significant manufacturing activity already exists.

There are a number of domestic factors which influence the extent to which developing countries are able to participate in international economic activity (Gundlach & Nunnenkamp 1996). Resource endowment provides the initial basis of what developing countries are likely to export, and also what will attract FDI to developing countries. The quality of human and physical capital is important, with the most basic level of manufacturing requiring a minimal level of workforce education. Domestic infrastructure such as transportation networks is important. Infrastructure influences how exporting can be achieved and also has the potential to attract FDI. The capacity for domestic industry to adapt imported technologies is important since a developing country that does not have the ability to adapt to imported technologies may be considered unsuitable for certain investment opportunities. Macroeconomic and political stability are both important for FDI, as are well functioning domestic markets, supported by appropriate government policy around aspects such as trade and industry. Finally, as previously noted, the size of the domestic market is also crucial, with larger domestic markets more likely to attract FDI.

In addition to the domestic factors outlined, geographical location and regional linkages have also proven to be important in influencing participation in international economic activity (Redding & Venables 2004). This is evidenced by the developing countries that have successfully integrated within the international economy during the most recent period of globalisation predominantly being from the Asian region, where there has been industrialisation within the region in earlier decades with Japan and the Asian tiger economies.

2.7.2 Disadvantages of globalisation for developing countries

A second school of thought is that developing countries have not been by-passed by the most recent period of globalisation, rather that participation in international economic activity has largely disadvantaged developing countries, putting them in a worse position than would otherwise have been the case. The problems faced by developing countries participating in the international economy are due to the high level of concentration brought about through specialisation, and to the unattractiveness of the industries being specialised in, for example, agricultural commodities and simple manufacturing.

Globalisation has brought about developing countries participating in international economic activity according to comparative advantage. The poorest developing countries tend to export a narrow range of low value-add products, typically dominated by one or two key exports which exhibit relatively low growth rates within global export markets. Such countries therefore lack export diversification. This structure is problematic, because it creates vulnerability and instability in revenue, arising from any external shocks. Any number of events could put an export at risk, with severe implications for export earnings. For example, the introduction of a less expensive substitute could diminish export earnings considerably. Genetic engineering could also pose a threat to a narrow export structure (Rifkin 1996). Where there is concentration in agriculture, a crop failure or natural disaster could adversely impact on export earnings for a given time period.

Much of the criticism pertaining to developing countries and globalisation relates to the industries that developing countries have a comparative advantage in, and therefore the goods that are exported by these countries when participating in international economic activity. Porter (1990) asserts developing countries are largely stuck in unattractive industries with low scope for growth. The industries that developing countries predominantly specialise in are primary commodities, and simple manufacturing, often processing these primary products.

The problems inherent with industry and exports dominated by primary commodities did not emerge during the most recent period of globalisation, with economists such as Prebisch (1950) and Singer (1950) warning against such structure several decades earlier. However, the problems highlighted by these economists have continued to exist, and have potentially even increased in relevance in recent years, with increasing evidence to support the initial theories proposed. Over the past four decades, there has been evidence of the sustained decline in terms of trade for commodities, which Prebisch and Singer predicted. Additionally, commodities have largely exhibited instability and short-term price fluctuations (UNCTAD 2001). The relevant economic theories and the empirical evidence which has emerged are considered in detail in Chapter 4.

In recent periods, including the globalisation period, agriculture has exhibited low, and for some products, negative growth rates (UNCTAD 2002a). There are a number of factors that have contributed to the observed trends including population growth rates, income elasticity of demand for agricultural goods, and the emergence of substitute

products (Gwynne 1996; Maizels 2003). Due to low population growth rates in developed countries, the export market size for agriculture is declining. Agricultural commodities exhibit low income elasticities of demand relative to manufactured goods, and therefore, as incomes rise in developed countries there is not a proportionate increase in demand for agricultural commodities. Agriculture also exhibits low price elasticity of demand, so that movements in price do not have significant impact on demand. At the same time, agriculture exhibits high price elasticity of supply, so that when multiple countries export the same commodity, prices fall. In recent times, a growing number of substitutes for certain agricultural commodities have been introduced, which has increased the vulnerability of producers of these commodities. Trends of increased protectionism toward agriculture and other commodities and the emergence of product differentiation for agricultural commodities, previously discussed, add to the issues that make specialising in agriculture problematic for developing countries.

In terms of manufacturing, the trend of breakdown of value chains has provided opportunities for developing countries to participate in manufacturing, albeit at the lower end of the value chain where a smaller amount of value is typically added relative to the total value of the good or service being produced (Krugman 1995). The problems associated with this kind of participation is that developing countries are not developing the skills necessary for advancement and export income is minimal, reflective of the relative value the output of developing countries brings to the overall production process (Chussodovsky 1997).

The growth of FDI and global expansion of MNE activity have been referenced as some of the key aspects of globalisation. FDI and MNE activity in developing countries is suggested to disadvantage developing countries in a number of ways. Because MNE activity is driven by profit motivations of shareholders, their presence in developing countries potentially leads to surplus extraction with limited benefit to the developing countries (Chang 1998; Goldsmith, J. 1996). As developing countries compete to attract FDI, a so-called race to the bottom can emerge, as a consequence of developing countries lowering and compromising standards to attract FDI (Nayyar 2001; Obstfeld 1998). Standards that have the potential to be eroded include labour, health and environmental standards (Crotty, Epstein & Kelly 1998). Another problem associated with FDI and MNE activity is that governments either provide concessions, thereby reducing income, or spend to meet the infrastructure requests of MNEs, diverting spending away from development areas such as health and education. Technologies introduced by MNEs have displaced local technologies, and the technologies introduced are potentially less aligned with the resources and skills that exist within developing countries. Finally, the FDI that is directed toward developing countries may not go toward sectors that are conducive to economic development, for example, investment may be made in agriculture and mining (Baker, Epstein & Pollin 1998).

A number of environmental issues have been associated with globalisation and activity within developing countries. Specialisation has caused excessive use of non-renewable resources (Goldsmith, E. 1996; Hamilton & Clements 1999). Ecological problems highlighted throughout the literature include soil erosion and land degradation due to

over-farming, and destruction of marine life due to over-fishing of rivers and oceans (Cole 2000; Daly 1996; Khor 1996). Pollution has been caused by emergence of industry, and inadequate sanitation to cope with rural-urban migration. Health problems have also increased as a consequence of rural-urban migration (HWGNRD 1996; Larkin 1998). There have also been adverse social and cultural impacts of developing countries participating in globalisation, such as loss of natural cultures and the introduction of alternative values such as materialism (Scholte 1996).

2.7.3 Advantages of globalisation for developing countries

Despite the exclusion and disadvantages outlined previously, globalisation is proposed to have had a number of benefits on developing countries. Dollar and Kraay (2001) assert that where developing countries have been able to participate in globalisation, they have experienced higher growth rates than developed countries. Some of the benefits of globalisation to developing countries are based on arguments put forward by free-trade advocates in earlier periods, while others are driven by the specific trends evidenced during the more recent period of globalisation.

Globalisation has increased the FDI and MNE activity for some developing countries (Gundlach & Nunnenkamp 1998), has provided the dynamic benefits outlined by Harberler (1988), such as access to capital, technology and managerial practices and production techniques. It also afforded the opportunity for some developing countries to increase manufacturing outputs, which form part of the critical path towards development. More generally FDI and MNE activity have brought unemployed or

unemployed resources into production and stimulated domestic demand through imports. A further benefit is that greater exposure to the competitiveness of international markets should have improved the efficiency and the quality of outputs of domestic industry within developing countries.

The breakdown of value chains is considered to provide benefits to developing countries through giving these countries opportunities to get involved in manufacturing activity that might otherwise not exist (Gundlach & Nunnenkamp 1998). It is more manageable for a developing country to attain competency in part of a value chain or a component rather than an overall good. Further, value chain breakdown allows specialisation based on inherent resource endowment and skills, and therefore is more efficient for developing countries (Arndt 1999).

As has been discussed, communication and transportation have been important aspects of globalisation. Developing countries have benefited through these areas, with growing awareness of the problems faced by the populations of developing countries and increasing activity to address these problems (Johnson 2002). The result has been improvements in the lives of people within developing countries evidenced by lower child mortality rates and higher life expectancy. Some of the specific areas that have been addressed include access to clean water and food supplies, and provision of medical treatment including vaccinations.

2.8 Conclusion

This chapter has provided an overview of the most recent period of globalisation. It has presented a view that globalisation is a complex and multifaceted phenomena, that has been enabled and driven by a number of occurrences within the international economy. While there is no firm consensus of when the period commenced, much of the literature analysing the changes observed emerged during the 1990s. There has also been a gradual evolution of change rather than a distinct cut-over at a given point in time. While the recent period of globalisation has some commonalities with earlier periods in economic history, there are also some differentiating factors, specifically, the key players that have become dominant and the technological changes that have occurred. The main economic components of globalisation pertain to trade, investment and production. The chapter also presented three alternative views as to the impact of this period of globalisation on developing countries, demonstrating the diversity in views in this area. The three views are that developing countries have been by-passed by globalisation, that developing countries have been disadvantaged by globalisation and thirdly, that globalisation has benefited developing countries, largely by the opportunities it has provided. In reality, it is likely that across individual developing countries different aspects of globalisation have been observed, with the net result that globalisation has had varying consequences for different groups of developing countries. Individual country factors are likely to influence what the experience of globalisation has been, with factors such as geographical location, domestic economic conditions and infrastructure levels being influential. The next two chapters considers the relevant economic theory, and how this theory is related to what has been observed.

3 Trade and investment theory

3.1 Introduction

In the previous chapter, the concept of globalisation was examined and more specifically the most recent period of globalisation, what has influenced this period and how it is different to other periods in economic history. As has been discussed, the main economic components of globalisation are trade and investment. The first part of this chapter reviews classical and neoclassical trade theory to examine its relevance to the current international economy and more specifically to developing countries. In the second part of this chapter investment theory is considered, focussing on how the growth in direct investment over the past four decades has been explained, the role of MNEs, the relationship between trade and investment, and what investment has meant for developing countries.

3.2 Trade

3.2.1 Classical and Neo-classical trade theory

One of the earliest references to economists articulating the benefits of trade is that of Adam Smith, who proposed the theory of absolute advantage in 1776. Specifically, Smith stated:

“between whatever places foreign trade is carried on, they all of them derive two distinct benefits from it. It carried out the surplus part of the produce of their land and labour for which there is no demand among them, and brings back in return

for it something else for which there is a demand..... By means of it, the narrowness of the home market does not hinder the division of labourBy opening a more extensive market for whatever part of the produce of their labour may exceed the home consumption, it encourages them to improve its productive powers and to augment its annual produce to the utmost, and thereby to increase the real revenue of wealth and society.” (Smith, 1939 p.446-47)

In summary, the benefits of trade that Smith alluded to are firstly the exchange of surplus good for something of value, and secondly, being able to obtain goods and services that are unable to be produced within the domestic economy. The specific benefits of trade identified by Smith continue to be primarily why nations trade today. Trade is used as a vent for surplus production that would otherwise be wasted in the domestic economy in the absence of trade. Additionally, trade widens the market for goods and services and enables resources to specialise in what they are most efficient at producing.

The theory presented by Smith is referred to as absolute advantage, because it makes reference to absolute, rather than relative or comparative values. In 1817, David Ricardo, expanded on the initial theory of Smith to propose that nations could benefit from trade on the basis of relative efficiency. Specifically, a nation should concentrate production on what it can produce relatively efficiently and trade the outputs for other goods that are produced more efficiently by other nations. Ricardo’s theory became known as the theory of comparative advantage, and it remains one of the most important theories of economics ever presented.

An explanation of comparative advantage is provided by Thirlwall (1999 p.425) :

“Consider the case of two countries, A and B, both with the capacity to produce commodities X and Y. The simple proposition of classical trade theory is that if country A has a comparative advantage in the production of commodity X, and country B has a comparative advantage in the production of commodity Y, it will be mutually profitable for country A to specialise in the production of X and for country B to specialise in the production of Y, and for the surpluses of X and Y in excess of domestic needs to be freely traded, provided that the international rate of exchange between the two commodities lies between the domestic rates of exchange.”

Comparative advantage predicts benefits will arise to countries through trade, as a consequence of each country producing what it is relatively more efficient at and exchanging this output with other countries. The theory of comparative advantage is based on a number of assumptions including constant returns to scale, zero transport costs, factor immobility, full employment of resources, undifferentiated products, perfect competition and a single factor of production. Such assumptions are important as they have led to criticism of the theory both generally and as the theory relates to the present international economy. Notably, the single factor of production assumption was relaxed by neoclassical economists, such as Heckscher (1919) and Ohlin (1933), who explained comparative advantage in terms of the factor endowments of countries.

Comparative advantage proposes that a higher total level of output can be achieved by countries specializing in what they do relatively best. This output translates into increased consumption. It is significant to note that the theory says nothing about the distribution of the gains from trade between the countries which participate in trade. Traditional trade theory did not claim to equalise income, but rather that total income would become higher through the process of trade (Elkan 1995).

The theory of comparative advantage was originally explained, and continues to be explained, with a simple two country, two commodity model. What the theory of comparative advantage predicts will happen to the consumption of the traded goods in each country within this model is dependent on the international rate of exchange. At some rates of exchange, it is possible that the consumption of one of the commodities in one of the countries is less after trade than before trade takes place. Even should the scenario described occur, the post-trade position is considered more beneficial than the pre-trade position, if those individuals who have gained through trade can fully compensate those who have become worse off, and there is still a surplus held by those who have gained. However, the actual compensation does not need to be fulfilled for the theory of comparative advantage to be upheld. It is in this arena that the theory is often misunderstood or criticised, specifically around the unequal trade relationships that may arise between developed and underdeveloped countries. Harberler, a strong advocate for the theory of comparative advantage, asserts that trade will benefit every country not that trade will remove international inequality (Harberler 1959).

Neoclassical economists developed further theories based on comparative advantage. Their main contribution was to explain the occurrence of comparative advantage through resource endowments or factor proportions. Specifically, in order to achieve gains from trade, a country should specialise in, and therefore export, goods and services for which the country has an abundance of the factors that are required inputs. Two of the most cited economists in relation to this are Heckscher (1919) and Ohlin (1933), referred to earlier. For developing countries this recommendation has the potential to lead these countries toward unattractive industries. Most underdeveloped countries have resource endowments in the areas of land and unskilled labour, and therefore should, according to neoclassical economists, produce agricultural commodities and simple manufactured goods. Such industries exhibit more significant fluctuations in prices and there is considerable discussion of the secular deterioration of terms of trade of agriculture. Further, the production of primary commodities and similar manufactured goods are not conducive with economic development. These issues are more fully explored in the next chapter.

Paul Samuelson (1948; 1949) made an important, albeit controversial, contribution to neo-classical trade theory by suggesting that free trade could lead to factor-price equalisation across countries. Specifically, Samuelson predicted free trade would both reduce the disparities between the prices of a factor of production between countries, but more significantly reduce the price differences between different factors of production. Samuelson's theory suggested equalisation of factor prices is achievable, however, Samuelson acknowledged that market imperfections and conditions, for example,

transportation costs, prevent factor price equalisation from being achieved. The more likely situation that would result, should the factor price equalisation theorem uphold, is that differences in factor prices fall as a consequence of trade. Because of factor-price equalisation, neoclassical economists promoted free trade as a means to bring about reduction in income differences between countries.

3.2.2 Additional benefits of trade

While the theory of comparative advantage remains one of the most upheld theories of economics, there are alternative benefits of trade which have been identified by economists over time. Myint (1955) makes reference to Adam Smith, rather than Ricardo, in identifying the benefits of trade and the ideas that international trade overcomes narrowness of the home market and also improves the division of labour and raises productivity levels.

Comparative advantage and the benefits of trade identified by Adam Smith are referred to as being static gains from trade. There are three key areas of static gains from trade which are firstly, a nation being able to obtain what it cannot produce domestically, secondly, a nation being able to alter its production pattern to produce what it can at relatively low cost and trade the output for products that it can only produce at a relatively high cost, and thirdly, the provision of a channel by which a nation can exchange surplus production which is not required for domestic consumption (Viner 1953).

In comparison to the static gains from trade identified by classical economists, other economists have identified dynamic or ongoing benefits of trade. Such benefits arise from widening production possibilities frontiers. Participation in international trade provides access to a range of factors that enhance production including capital, technology, machinery, tools and equipment, technical knowledge, know-how, skills, managerial talent and entrepreneurship (Harberler 1961). Many of these factors are highly relevant to developing countries that would not have access to them in the absence of trade. Further, participation in international trade reduces market imperfections, for example, monopolies in domestic markets, through increasing competition. Harberler also ties the volume of foreign trade to the volume of foreign capital that can be expected. In relation to capital and direct investments, Boeke (1953) suggests that underdeveloped countries have become richer because of the knowledge sharing, leadership and co-operation from developed countries. Boeke also makes reference to developed countries providing developing countries with infrastructure and the means to exploit resources at a time when the resources are demanded in the international economy, noting that the time may not be as opportune if developing countries need to wait until such time as they are in a position to export independently of any assistance from developed countries.

3.2.3 Criticisms of traditional trade theory

The theory of comparative advantage attracted much support through classical economists such as Mill (1848) and Marshall (1890) and the neoclassical economists previously referred to, however, the theory attracted considerable criticism also. Criticism of classical trade theory is not a recent phenomenon – the theory of comparative

advantage has been criticised since first being proposed (Harberler 1959). Some of the earlier economists that were critical of classical trade theory were List (1866), Schumpeter (1911; 1952), Young (1928) and Williams (1929). The strongest early criticisms of the theory of comparative advantage pertain to the theory being static in nature and the underlying assumptions being unrealistic. In reality the international economy is dynamic and constantly changing, however, the theory of comparative advantage looks at resource allocation and trade at a specific point in time, and does not encapsulate the dynamic and ever-changing nature of the international economy. The criticism of the theory as being static has been made by several economists including Baldwin (1955), Myint (1955), Nurske (1961) and Chenery (1968).

Some of the specific assumptions of the theory of comparative advantage that have attracted criticism for being unrealistic include equal production functions, absence of economies of scale, full employment of all resources, balanced trade, no capital flows and perfect competition. Williams (1929) challenged the assumption of fixed elements which in Williams' view were highly important to the effects and causes of international trade. Williams also questioned the assumption of immobility of factors of production, asserting that the movement of factors of production is at least equal to that of trade. Myint (1955) also discussed the assumption of factor immobility, while Baldwin (1955) questioned the assumptions of constant supply of resources and purely competitive domestic markets, noting such assumptions would not hold in the long-run. Myrdal (1956) was critical of the assumptions of resource immobility and implicit factor price equalisation and challenged the assumption of stable equilibrium stating that it has "no correspondence in

reality” and that “society does not naturally behave as a pendulum.” Hicks (1959) questioned the assumption that all factors of production in different countries were identical, noting that both labour quality and capital quality could vary greatly between countries.

Singer (1975) was critical of the theory of comparative advantage because it assumed a tendency to improve terms of trade for primary products against manufactured products through assuming the existence of a long-run equilibrium state. Singer further noted the theory implicitly assumed the absence of technical progress by the assumption of a stationary state. Chenery (1975) considered classical and neoclassical trade theory overemphasised the benefits of trade without considering the effects such as uncertain export prices and the need to move resources in response to changing market conditions.

While specialisation creates economic efficiencies, there are issues and potential costs associated with specialising in one or two main industries, as identified by Lewis (1955). Firstly, a country that specialises is likely to suffer if the demand for the services being specialised in diminishes. This point is of importance to developing countries. For various reasons, including specialising in a product for which a synthetic substitute emerges, or one that is also produced by developed countries and may be subject to pricing actions, such as dumping, by these countries. For agriculture there are supply side issues, for example, crop failure, which would have similar implications. Secondly, if trade breaks down, for example, due to war, specialisation may mean that countries cannot access required supplies. A third issue relates to lack of balance, for example,

biological imbalances in agriculture due to excessive cropping and associated problems of soil exhaustion or erosion. Finally, specialisation may lead to the formation of special interest groups of certain industry within a country, for example mining or fishing, which generate different opinions and perspectives to those from another country that specialise in the production of other goods or services. International co-operation becomes more difficult as a consequence of such special interest groups.

Schultz (1961) raised further concerns about locking underdeveloped countries into the unattractive industries, specifically the production of raw materials where the demand for the good is rising at a rate less than that of income growth of developed countries. Similarly, Linder (1967) made reference to the dilemma faced by underdeveloped countries, that the goods which they produce efficiently are not demanded by developed countries, and goods typically demanded by advanced countries tend not to be produced by developing countries' domestic markets. A contributing factor to developing countries not producing what is demanded is the functioning of markets within these countries. More specifically, in agriculture-producing developing countries, which is what the majority of the poorer developing countries are, output is typically based on subsistence farming, which both limits the scope of the market to send appropriate signals and for producers to respond to such signals.

The neoclassical trade theories which built on the theory of comparative advantage have also attracted criticism with Samuelson's Factor Price Equalisation theorem potentially being the most contentious. Economists that have been critical of this theory include

Myrdal (1957), Hicks (1959) and Hirschman (1977). Hicks questioned the underlying assumptions which in Hick's view were unrealistic. The criticism of both Myrdal and Hirschman pertained to the theory not representing what was being observed in the real world, specifically the growing income disparity between underdeveloped and developed countries.

3.2.4 Relevance of traditional trade theory to the current international economy

The current international economy is vastly different to the international economy that existed when the theory of comparative advantage was first published early in the Nineteenth Century. At that time, commodities dominated trade between nations. In the current international economy, commodities represent a diminishing share of world trade with advanced and intermediate goods being increasingly traded. Much of what is observed in the current international economy cannot be explained by comparative advantage, for example, dominance of MNEs, intra-industry trade, the break down of value chains and international sourcing of inputs, the significance of FDI and capital flows which substantially exceed trade flows (Skarstein 1997).

The criticism of comparative advantage as being static, premised on countries' fixed resource endowments have previously been discussed. Within the current international economy, comparative advantage is increasingly shifting, and is influenced by a range of factors, for example, targeting of industry by governments and MNEs (Porter 1990). As stated by Ohmae (1994), wealth is now created in the marketplace rather than in the soil.

Porter (1990) asserted that within the present international economy a development strategy based on basic factor advantages, as was predicted by neo-classical economists, is no longer sustainable and such a strategy may actually limit the potential standard of living for a nation. Porter further suggested that a nation without abundant natural factors has an advantage in economic development as it avoids the temptation of relying too much on natural advantages. The Japanese economy is an example of an economy that has succeeded without reliance on natural advantages since the end of the Second World War.

It is pertinent to consider the relevance of the assumptions of the theory of comparative advantage to the current international economy. Some of the assumptions which fail to hold pertain to constant returns to scale, absence of technological change, full employment of resources, a single factor of production, undifferentiated products, perfect competition and factor immobility outside of a nation. Returns to scale are rarely constant and the achievement of increasing returns is a significant reason why countries participate in international trade. Activities can also be subject to diminishing returns, which is often the case with the primary sector activities that dominate production in the least developed countries. Where an economic activity is subject to diminishing returns, further employment opportunities may be limited. Comparative advantage ignores technological change, however, technological change in the current international economy is rapid with technology being a key driver of globalisation through enabling increases in the speed in which information, goods and payments can be exchanged. Full employment rarely exists either in developing or developed countries. Due to the rate of technological change in

recent decades, resources have been displaced from employment and need to retrain or reskill for new employment opportunities, thereby resulting in temporary unemployment. The theory of comparative advantage assumed that labour was the only factor of production. In reality there are a number of factors of production, and in the current international economy, labour has a diminishing role due to technology and automation of production in many industries. Capital has become a critical factor in production. Notably, neo-classical trade theory did not assume a single factor of production, and capital was included as a factor of production. Comparative advantage was premised on immobility of factors of production, and within the current international economy, this is far from the case with capital moving rapidly around the globe. Labour is also not immobile and migration patterns over the past two centuries provide evidence of labour relocating in pursuit of better employment opportunities.

Neoclassical trade theory predicted that trade would occur as a consequence of differences in factor endowments. What has increasingly been observed within the second half of the Twentieth Century are countries with similar exports trading with each other. Linder (1961) explained this by focussing on the demand side rather than the supply side, as classical and neoclassical theory had. Specifically Linder suggested that countries with similar patterns of demand traded with each other, as a consequence of their manufacturing sectors already producing goods that were demanded in other countries.

When trade was based on commodities, as was the case when the theory of comparative advantage was first presented, products were largely undifferentiated. In the current international economy, trade increasingly involves advanced manufactured goods and intermediate goods and services, which can and are likely to be differentiated from competitive offerings. The theory of comparative advantage assumes perfect competition. In the present international economy competition is far from being perfect. Much of the globalisation literature references MNEs as the dominant players in the present international economy. Such organisations have significant influence on trade patterns and on nations, which are keen to attract or retain operations of MNEs due to the perceived benefits they bring to an economy, such as technology, employment, knowledge and skills. MNE activity is explored in more detail later in this chapter. Additionally, nations are increasingly participating in trading blocs to gain power and influence in trade negotiations, and some individual nations carry more weight than others in establishing and changing international trade regulations through the WTO.

3.2.5 Relevance of trade theory to developing countries

Two of the predominant contemporary issues surrounding comparative advantage and developing countries pertain to the distribution of gains from trade and that specialising according to comparative advantage potentially pushes developing countries into unattractive industries. More specifically, developing countries tend to possess comparative advantages in commodities and low-skilled labour, which are being used in lower proportions in production. This was discussed in the previous chapter.

The theory of comparative advantage has been criticised because what the theory proposes developing countries should specialise in to gain in accordance with comparative advantage may not be conducive to long term development for such economies. In this light comparative advantage is relatively focussed on short-term efficiency rather than what the longer term implications of such efficiency gains may be (Thirlwall 2003). This observation is an extension of the criticism that the theory is static in nature. In the case of the current international economy, least developed countries generally have an abundance of unskilled labour and land. Forcing, or encouraging, developing countries to specialise based on these factors of production may not be beneficial for these countries in the long-run. Specifically, over-working productive land can create soil-erosion and make the land less productive in the future, while bringing marginal land into production may not produce the same crop yields as land that is more arable. Similarly, building up industry that relies on unskilled labour does not provide opportunities for labour to attain skills, thereby constraining more advanced industry from emerging in these economies. More generally, primary production generally has limited backward and forward linkages.

There is general consensus among economists that gains from specialisation, in accordance with the theory of comparative advantage, exist. A main area of concern is the distribution of the gains that arise, specifically the gains from trade are more likely to be unequally distributed in favour of developed countries. Such arguments are extensions of those originally proposed by Prebisch (1950) and Singer (1950) which are explored in the following chapter. It is suggested that changes in the actions and trading policies of

developed countries could result in a greater share of the benefits of trade going to developing countries (Thirlwall 2003).

Factor-price equalisation has not occurred and there is evidence that income differences between countries have grown (The World Bank 2002). Hence, Samuelson's neo-classical Factor Price Equalisation theorem has not been proved. Linder (1967) asserted neoclassical trade theory is likely to be inapplicable to the world's poorest countries because the theory assumes that changing relative prices leads to reallocation of factors of production, which in reality does not occur in least developed countries. This is perhaps more a reflection of market imperfections in these areas, or a significant oversupply of certain factors of production.

3.2.6 Support for Classical and Neo-classical trade theory

In spite of the criticisms outlined, there has been continued support for the theory of comparative advantage, and the additional benefits that trade creates for countries. Two examples of such support arise from Lewis (1955) and Harberler (1959), both of which came at a time when a large number of new theories were being developed to shed light on the uneven development processes which had been observed over the past century.

Lewis (1955) noted that trade stimulates growth in many ways, one of which is specialisation. The benefits of trade, identified by Lewis, include the introduction of new goods to a community, thereby stimulating the desire to work to obtain these goods. Lewis discussed that in some societies work effort is limited due to limited wants and

therefore creating desire for new goods may stimulate work and productivity. He further suggested that trade generated new ideas, specifically in relation to consumption patterns, techniques and social relationships. The final benefit of trade alluded to by Lewis relates to specialisation, and in this area Lewis makes reference to the benefits that Adam Smith originally identified from specialisation.

According to Harberler (1959), international trade had made a large contribution to the development of underdeveloped countries in the 19th and Twentieth centuries. Harberler believed participation in international trade had benefits for every country and that trade had contributed significantly to the productive capacity of underdeveloped countries. Harberler acknowledged that the theory of comparative advantage had attracted criticism but indicated that it remained important for understanding the international economy. Further, trade brought about a number of dynamic benefits including providing the means for economic development through capital goods and raw materials and facilitating the transfer and dissemination of knowledge, ideas, know-how, skills, managerial talent and entrepreneurship. Trade also provides a vehicle to move capital from developed to underdeveloped areas and it promotes competition and discourages monopolistic behaviour.

3.3 Investment

As was discussed in Chapter 2, one of the aspects of globalisation has been strong growth in direct investment or FDI. This type of investment emerged following the Second World War (Aliber 1970). Prior to this, the majority of investment undertaken was

portfolio based. This new type of investment was distinct in that investors had control of assets, whereas with portfolio investment there was not a direct level of involvement (Casson 1990). To provide some context around growth, FDI inflows have increased from \$9 billion in 1970 to \$884 billion in 1999 (The World Bank 2001). Hand in hand with the growth of FDI has been the growth of MNEs, the vehicle by which FDI is carried out. With regard to MNE activity, foreign affiliates now represent approximately one third of world exports. It is notable in the context of the current research, FDI is largely a developed country phenomenon with approximately 68 per cent of FDI stock located within developed countries. Only 0.5 per cent of FDI stock is located in Least Developed Countries (UNCTAD 2002c). The reasons for this are explored later in this chapter.

The emergence of FDI and MNE activity is not explained by trade theory. The assumptions on which trade theory is based and their applicability to the current international economy have been discussed earlier in this chapter. More specifically, good and factor markets are not perfect, as assumed by trade theory, and in the absence of perfect markets, free trade is replaced by second best factors such as MNEs internalising market functions (Rugman 1980). The growth of oligopolistic market structures, which typify MNEs, is further evidence of market imperfections (Knickerbocker 1973). Trade theory also assumes immobile factors of production, however, factors of production are mobile and movement of factors of production is a substitute for trade in final products (Markusen 1983; Vernon 1974). FDI pertains to movement of capital, and MNE activity

also gives rise to movement of other factors of production, such as managerial experience.

A number of theories have been put forward to explain growth in both FDI and MNEs. These broadly fall into the areas of theories that assume perfect markets, those based on imperfect competition which encompasses internalisation of market functions, theories which examine oligopolistic market structures, models which take into account multiple factors, life cycle models and theories based on other factors. The emergence of multiple theories is explained by Caves (1971) as due to there being different types of FDI and reasons why MNEs undertake foreign investment. It is notable that there is some overlap between theories, with one area is overlap relating to firms being motivated by profit.

3.3.1 Theories of FDI

Perfect competition theories

The first group of theories to be examined assume perfect competition. As has been mentioned, one of the reasons proposed for MNE growth has been market imperfections, therefore, theories based on perfect competition have generally failed when tested empirically. There are three main theories within this group, which pertain to differential rates of return, portfolio diversification and market size.

The theory of differential rates of return proposes that capital will flow from countries with a low rate of return to countries with a high rate of return, to eventually equalise the rate of returns between all countries. One of the main issues associated with the theory is

its failure to explain cross movements in investment flows between countries, such as US investment in Europe and European and Japanese investment in the US (Buckley & Casson 1976; Kindleberger 1969; Moosa 2002). The theory assumes no risk, uncertainty or barriers to movement, which has been criticised for being unrealistic (Hymer 1976). The theory also fails to explain why it is MNEs that undertake investment, when capital flows purely based on rates of return could be made by financial companies or shareholders. That firms are making these decisions would suggest some link to the activities of the firm. Agarwal (1980) noted the theory of differential returns assumes profit maximisation on investment, which may not necessarily be the objective of investors, for example, a firm may look to maximise profit across all of its entities.

The portfolio diversification hypothesis built upon differential rates of return but also encompassed risk, such that investment decisions are based on rate of return and risk. The origins of this theory are associated with Tobin (1958) and Markowitz (1959). In applying the theory to the international economy, it also fails to explain why MNEs are the greatest contributors to FDI, and why FDI is preferred over portfolio investment. Additionally, it does not account for the differences in investments observed across industries (Agarwal 1980).

A third theory group that assumes perfect competition encompasses output and market size. Output hypothesis assumes a positive relationship between FDI and a firm's sales, while market hypothesis assumes a positive relationship between FDI and the size of the market, usually measured by Gross National Product (GNP) or GDP of a country. While

there is some empirical support for the positive correlation of these factors, the association is questionable (Agarwal 1980).

Imperfect competition theories

In recognition that markets are not perfect, and theories that assumed perfect markets failed to adequately explain the activity being observed around FDI and MNEs, a number of theories emerged based on imperfect competition. This group of theories commenced with the work of Hymer (1976), whose main contribution was recognition that a firm investing in a foreign country must have advantages that would overcome the disadvantages of operating in a foreign country. There are a number of forms of advantage that a firm may possess including access to capital, management, technology, marketing, raw materials, economies of scale or bargaining or political power. Hymer explained profit as the main motivator of foreign investment, which MNEs sought to achieve through advantage exploitation. Hymer saw motivation for vertical integration as ensuring supply and protection against input price movement. Empirical research undertaken by Hymer supported his theory, and identified that American foreign operations were concentrated in a few industries with a comparatively small number of firms. Also, within the industries in which these foreign operations occur, there are also foreign entities investing in the United States.

Kindleberger, who was Hymer's doctoral research supervisor, extended the work of Hymer. Kindleberger (1969) proposed that advantages possessed by firms may be the result of imperfect competition in either goods or factor markets, or economies of scale. Kindleberger also introduced the concept of defensive investment, which pertains to

earning a less than optimal return abroad, but where the difference between the gross return and the loss that would have resulted from not participating in a market provides an acceptable rate of return on a marginal basis.

While a number of the other theories proposed to explain FDI and MNE activity have stemmed from the work of Hymer-Kindleberger, their theories have attracted some criticism. Aliber (1970) asserts they are more theories of firm growth applied to the international economy rather than theories of foreign investment. Buckley and Casson (1976) assert that Hymer-Kindleberger theories take the advantages of the firm as given and ignore the costs of acquisition, and therefore do not fully explain the growth of firm-specific advantages in the post-war period.

A sub-group of theories that emerged based on imperfect markets focussed on internalisation of market functions as a response to imperfections in market functions. Internalisation theory was initially proposed by Coase (1937) not within the context of the international economy, but in order to explain why firms were created and function in general. Coase suggested the main reason why firms were established was because there were cost advantages over utilising markets or the price mechanism, and that in forming an organisation and allowing some authority to direct resources, certain marketing costs were saved. Internalisation on an international scale results in MNE activity and FDI.

Buckley and Casson (1976) acknowledge their work as an extension of the work of Coase and application of it to the international economy. They assert it is the difficulty in

organising markets in certain intermediate markets which has changed business organisation and lead to the growth of MNEs. Firms internalise markets for intermediate products such as human capital, knowledge, marketing and management expertise, in order to avoid the imperfections of external markets. Buckley and Casson studied MNEs and noted that multinationality tend to be greater the larger the firm, and MNEs are concentrated in industries that are characterised by high concentration and high research and skill intensity. Further, most MNEs are diversified horizontally and large MNEs are vertically diversified, although few are conglomerately diversified.

McManus (1972) undertook analysis to explain both why FDI occurred and why it existed in only some industries, which resulted in the development of a theory of the internal firm. McManus noted that there must be organisational advantages in operating as a firm, in comparison to operating individually. These advantages are likely to relate to cost or efficiency. McManus undertook empirical research on FDI in Canada, which supported his theory. Hennart (1982) followed the approach of McManus, and proposed that for FDI to take place, exchanges must be more efficiently organised within firms than across markets. Hennart noted that transaction costs, information costs and bargaining costs are reduced within a MNE in comparison to open markets.

Caves (1982) attributed the level of MNE activity in an industry to the importance of intangibles in that industry, specifically R&D, advertising, marketing and distribution. Caves asserted that the MNE is explained as a multiplant firm that spreads across national boundaries and a transactional approach explains why decentralised plants fall under

common ownership. A single ownership structure enables attainment of lower costs or higher revenues. Caves proposed that vertical integration occurs in order to internalise the market for an intermediate product, just as horizontal integration internalises the market for intangible assets. Diversified investments are utilisation of a parent's R&D activities. Markusen (1984) suggested that MNEs deliver increased technical efficiency by eliminating the duplication of joint input that would occur with independent firms. One example of a function which would be duplicated across firms is R&D. Markusen noted that production facilities may need to be geographically dispersed, but functions such as marketing and R&D are able to be centralised. Rugman (1980) integrated internalisation with other theories of FDI in order to produce what he termed as a general theory of internalisation. Rugman suggested that while the existence of market imperfections is the reason for formation of an internal market, it is the firm specific advantages that enable the market structure to be maintained.

Theories have been proposed which focus on MNEs operating in oligopolistic market structures. Knickerbocker (1973) developed what has come to be known as the oligopolistic reactions hypothesis, which states that if one firm in an oligopolistic market structure engages in FDI, its competitors will undertake a similar action in order to maintain market share. Knickerbocker noted that product pioneering firms compete in foreign markets to protect the advantages they acquired within home markets and seek to optimise corporate-wide returns from their core capabilities rather than returns from individual foreign operations. Knickerbocker studied United States MNEs in the post Second World War period and found that industrial concentration caused oligopolistic

reaction amongst MNEs except at very high levels of concentration, where there may be collusion. The main criticism of Knickerbocker's theory is that it does not explain what the initial cause of FDI is (Buckley & Casson 1976).

Lall and Streeten (1977) also contributed to the theory on oligopolistic market structures, noting that in such a structure, no firm can ignore the actions of its rivals. Lall and Streeten explored the sources of oligopolistic advantages, which include access to cheaper sources of capital, exchange rates, management capability, process technology, product differentiation technology, market capability encompassing market research, advertising and promotion and distribution, access to raw materials, economies of scale, and bargaining and political power. They noted that these advantages have a cumulative and dynamic effect, and are more important the more the monopolistic a market structure is. The decisive factors are marketing and technology, and marketing superiority is a more fundamental precondition for expansion than technological superiority, however the other factors add to and reinforce these factors. Flowers (1976) suggested that the industrial concentration of industries may explain the strength and timing of up to half of all FDI. Further, FDI tends to occur in clusters, in response to the actions of a first firm investing and reactive FDI generally occurs within three years of the initial investment.

Dunning's OLI Theory

Dunning (1973) introduced a theory which is referred to as OLI or eclectic theory, with OLI referring to ownership, location and internalisation. This theory combined earlier theories of FDI that focussed on market imperfections, industrial organisation,

industrialisation and location, in order to explain why demand is met by foreign production and why investment is chosen as a means of business expansion. Dunning noted that industrial organisation explained why firms could successfully compete, however, it was the locational determinants that explained why FDI is utilised as the means to service foreign markets. Dunning identified three conditions for FDI to occur, firstly, a comparative advantage due to ownership of intangible assets, secondly, a benefit to the firm to use advantages directly, and thirdly, a benefit to the firm to use the advantages with factor inputs located in the country that investment occurs within. The OLI model is more of a framework for analysing determinants of international production rather than a predictive theory of multinational activity. Dunning noted that FDI is both a means of exploiting ownership advantages and of growing these advantages, for example, using strategic alliances to capture technological or marketing synergies offered by firms in other countries.

Dunning later extended the initial OLI model to apply it to explain the changing international position of countries as they passed through different stages of development (Dunning 2001). The resultant theory, Investment Development Path (IDP), stated that as a country develops, the OLI advantages faced by the foreign owned firms that invest in the country, and the firms within the country that invest overseas, change. The IDP application of the OLI model provided a dynamic element to the model, which was a response to earlier criticisms that the OLI model was static. Rugman (1982) noted that there is no substantial difference between Dunning's eclectic theory and internalisation theory, once an assumption is made that market imperfections are exogenous.

Casson (1990) produced a theory of FDI that brought together other theories and referred to this theory as an integrated theory of FDI. In developing his theory, Casson noted the theory of FDI is a 'logical intersection' of the theory of international capital trade, the theory of the international firm and the theory of international trade. Casson asserted the integration of the theory of international capital markets with the theory of theory of trade is less problematic than integrating the theory of the firm with the theory of trade. One of the main areas of difficulty in integration is that the theory of the firm assumes imperfect markets, whereas the theory of trade assumes efficient markets.

Product Life Cycle

Vernon (1966) proposed products go through life cycles that create opportunities for both exporting and FDI. The model developed by Vernon became known as Product Life Cycle (PLC) and focussed on the timing of innovation. The main purpose of Vernon's model was to explain United States foreign investment abroad in the post Second World War period. There are three phases in the model. In the first phase production occurs within the home country, predominantly due to demand being largely domestic and a need for greater control, monitoring over, and coordination, between activities. In the second phase, the product is more mature and exporting from the home country to other countries may occur. FDI may also be used to meet demand in countries other than the home country. The third phase pertains to product standardisation and within this phase, foreign production may be established as a means of achieving cost advantages over competitors. This phase may also involve production techniques which are no longer

proprietary to the innovating firm. Hirsch (1976) generalised Vernon's model to relax the rigid sequential phases.

There is some empirical support for the PLC theory, and it is aligned to the foreign expansion of US manufacturing enterprises during the 1950s and 1960s (Knickerbocker 1973), however, more recent trends in FDI have outdated it (Vernon 1979). Petrochilos (1989) noted that the model applies well to manufacturing. PLC has been criticised for simplifying the decision-making firms go through and does not account for the increasing proportion of FDI which is not export-substituting (Buckley & Casson 1976). The theory also does not explain ownership and fails to consider the determinants of FDI (Hennart 1982). It has also been suggested that the theory is only relevant to innovative industries (Solomon 1978).

Magee (1977) developed a technology cycle that paralleled Vernon's PLC. The stages of Magee's cycle are invention, innovation and standardisation. The first stage occurs before the product is commercially observable while the next stage is equivalent to the Vernon's first two stages. The third stages of the two cycles are largely equivalent. Magee's theory recognised that new information is created in the early stages of a new product and less as the product matures. There is considerable variation across products and processes in the extent to which a private firm can appropriate returns from investments in information. Magee also developed a theory of appropriability, which he acknowledged to be an extension of the work of Hymer. This proposed that MNEs are specialists in the production of information which is more efficient to transmit through firms than markets,

and therefore is a theory of internalisation. Magee asserted that appropriability is more significant early in the life cycle of a product and appropriability costs are lower in an oligopolistic market structure.

Other theories of FDI

There are other theories of FDI that do not fall into the areas discussed previously. One such theory, proposed by Barlow and Wender (1955), suggests that FDI will occur as a consequence of reinvestment of profits. Specifically, a MNE will make a limited initial investment in a foreign subsidiary, and then will invest a proportion of the profits generated by the subsidiary back into it. While there is some empirical support for the theory, the empirical evidence is mixed (Agarwal 1980).

Cyert and March (1963) developed a model that suggested the process of decision making in a firm is consistent with behavioural theory of the firm. They concluded that the firm has multiple, changing and aspiration-level goals and that within firms, problems in different decision areas tend to be solved independently and decisions are based on previous learnings and experience and may be altered based on feedback. Drawing on the work of Cyert and March, Aharoni (1966) proposed that there must be an initiating force for foreign investment to occur, which may come from either within or external to the firm. Within the firm, there may be strong interest by one or more executives, or underutilised resources. An example of a catalyst outside the firm would be proposal from a foreign government. A notable aspect of Aharoni's work is that goals by different

decision-makers may be conflicting and not be about profit-maximisation. Agarwal (1980) noted that the work of Aharoni does not lead to a testable hypothesis.

Aliber (1970) explained FDI by currency differences, and that firms from countries with strong currencies would undertake FDI in countries with weak currencies. Agarwal (1980) cautioned that exchange rates are only one factor influencing FDI decisions, and it is likely that exchange rates influence when an investment is made rather than the actual decision of whether to invest. Buckley and Casson (1976) noted that currency differences do not explain the post-war expansion of MNEs, capital flows within currency areas or cross-investment between currency areas. Hennart (1982) also recognised that Aliber's theory did not explain the continued growth of both American and British investment in spite of weakness in their currencies.

In addition to the theories that have been outlined, a number of general factors have been proposed to influence FDI, including political and country risk, tariffs and taxation and government policies and incentives. Moosa (2002) noted these factors are secondary factors, and will influence where a MNE choose to make investments, rather than influencing the decision by a MNE to utilise FDI as a means of expansion.

3.3.2 Decisions about investment or trade

Now that the main theories on FDI have been reviewed, it is pertinent to consider the relationship between trade and investment, and how firms make decisions about one vis-

a-vis the other. The importance of intrafirm trade has already been noted. A proportion of trade is driven by the location decisions made by MNEs.

Hymer (1976) noted that the industries in which international operations occur are those in which trade was or is important. Further, patterns of international operations will be determined by patterns of trade. Where countries do not trade, international operations are unlikely to eventuate. International operations may be established to replace exports or produce imports. Kindleberger (1969) proposed that investment will be used rather than trade, when there is no excess capacity within production facilities in the home country. Consideration was also given to the lower production costs that may be incurred through foreign production. Further Kindleberger made reference to trade barriers as an important factor in the decision to trade or undertake foreign investment. Both Knickerbocker (1973) and Lall and Streeten (1977) also noted the importance of cost and discussed avoidance of barriers to trade. Horst (1972) and Caves (1982) also highlighted avoidance of barriers to trade. Hirsch (1976) elaborated on cost, suggesting that the decision to invest or export will be made in favour of exporting where the market is a high cost country, and in favour of investing when the market is a low cost country. He commented that this was consistent with US investment patterns. Hirsch further noted that investment would be more prevalent in industries where capital was important.

Other reasons for foreign production rather than trade noted by Knickerbocker (1973) include management of the exploitation of special capabilities, achieving closer contact between the producer and seller, adaptation to foreign taste or local technical

requirements, or the existence of an important customer that has established a foreign presence. If any of these factors are important to a firm, it is likely to consider foreign production as an alternative to trade. Lall and Streeten (1977) also noted the importance of government policies, the prominence of marketing in the industry operating and anticipated oligopolistic reaction. Marketing encompasses product differentiation, model changes, advertising and retailing, and where these factors are important there is more impetus to establish foreign operations. Horst (1972) noted the importance of the size of the firm in the investment decision and suggested that larger firms were more likely to undertake FDI, specifically, due to their ability to spread fixed costs, to manage risks and access to finance. The size of the foreign market is also an important consideration. There may also be strategic motivations that come into play in the decision between investment and trade such as pre-empting competitors or trying to increase market power (Jovanovic 2001).

Dunning (1973) used his OLI paradigm to explain the trade and investment decision, asserting that firms may service foreign markets from their home country due to the location advantages of the home market, whereas investment is the means by which firms draw on the locational advantages of foreign countries. Life cycle models explain the decision to trade or invest being influenced by where a product is at in its life cycle.

Preference for direct investment over licensing

When a firm decides there is benefit from participating in a foreign market rather than servicing the market through trade, it still has a decision of operating directly or entering

the market utilising into a licensing agreement with another firm. In general, the lower the domestic competition, the more attractive the market, the newer the technology being utilised and the larger and more internationally involved the company making the decision, the more direct investment will be favoured over licensing. Licensing may be used when a host government establishes barriers to foreign operation.

3.3.3 FDI in developed and developing countries

As has been discussed, the majority of FDI flows occur between advanced countries. One of the main reasons for inward FDI flows to developing countries is due to cheap labour, which is a locational advantage. Agarwal (1980) noted that ownership advantages tend to be more important than locational advantages for FDI, and therefore, attraction to cheap labour should not be overemphasised as a reason for FDI.

FDI is strongest among comparable, mainly highly developed countries (Jovanovic 2001). The industries which receive the largest proportion of FDI are those that utilise advanced technology and skilled human resources, which are more aligned with developed rather than developing countries. Other reasons why MNEs locate in developed countries are the size and growth prospects of the markets, access to technology and communication, resource availability and local suppliers. Empirical research indicates there are certain factors that dispose countries to attract MNEs, including short cultural distances to host countries, strong innovative performance, large market size and availability of raw materials (Caves 1982). Other than the last factor, most of these factors are not strongly present in developing countries.

3.4 Conclusion

This chapter considered the relevance of classical and neoclassical trade theory to the most recent period of globalisation. The theory of comparative advantage remains one of the most upheld tenets of economics and certainly the most accepted one pertaining to trade. It has attracted considerable criticism because of its static perspective and due to the assumptions on which it is based. Criticisms have arisen since the theory was first proposed, and there have been specific criticisms pertaining to the present international economy and the implications of the theory for developing countries. In addition to the benefits of trade proposed by the theory of comparative advantage, other more dynamic benefits of trade arise, specifically relating to the expansion of production possibilities, increased competition and access to elements that can improve production but were not previously available. By and large, classical and neo-classical trade theory promote that trade has clear and obvious benefits for all countries, including developing countries.

Traditional trade theory does not explain a key phenomenon of globalisation, the importance of FDI and MNE activity. This chapter reviewed the various theories that have been put forward to explain the growth in activity observed since the end of the Second World War. There are a number of theories, the majority of which focus on market imperfections and the profit motivations of firms. The reasons why firms undertake foreign investment rather than trade were also considered, and again profit motivations are important with much of the literature focussing on the attainment of cost benefits and the avoidance of barriers to trade, which add cost to production. Finally, it was discussed how FDI flows have largely occurred in developed countries, and the

reasons for this, which largely relate to underdeveloped countries, in particular least developed countries like Bangladesh and Tanzania, being under equipped to deal with the technological and resource skill requirements of MNEs.

Within the next chapter, theories pertaining to disparities that have arisen within the international economy between developed and underdeveloped countries are examined. These theories largely attribute the unevenness of development to trade.

4 Theory pertaining to trade and developing countries

4.1 Introduction

The previous chapter discussed trade and investment theory, encompassing the theory of comparative advantage which is perhaps the most prominent trade theory and one that has been upheld for the past two centuries. The relevance of comparative advantage is that it predicts the benefits that arise to countries through participation in trade. From the middle of the Twentieth Century economists became increasingly focussed on the income disparity between underdeveloped and developed countries, noting that despite the predictions of neo-classical trade theory, there was an absence of evidence that the disparity was reducing, and many economists were reporting instances where income disparity was actually increasing (United Nations 1964). Further, economists were questioning how the benefits of trade were being distributed, specifically focussing on what went to developing countries. Schools of thoughts emerged that developing countries did not get their fair share of benefits from trade and that perhaps developing countries were actually worse off from participating in trade than they might otherwise be. A large number of theories and models were developed to explain what was observed and perceived to be occurring.

The initial theories focussed on uneven relationships between developed and underdeveloped countries. Such theories are largely associated with Prebisch (1950), Singer (1950) and Lewis (1955). Economists that went beyond the uneven distribution of gains to suggest that underdeveloped countries could actually become worse off through

participation in trade with developed countries include Myrdal (1956), Hirschman (1958) and Bhagwati (1958). A third area of theory focussed on exploitative relationships between developed and underdeveloped countries, with Baran (1957) and Frank (1969) contributing most prominently to this school of thought. This chapter explores the theories proposed by these economists, their subsequent developments, their criticisms, and the empirical evidence which supports or refutes them.

4.2 Trade and development theory

4.2.1 Uneven development

Raul Prebisch and Hans Singer are generally credited with being the founding contributors to the school of thought surrounding uneven development, and their names continue to be associated with principles of adverse economic relationships between developed and underdeveloped countries. At around the same time, in the late 1940s and early 1950s, Prebisch and Singer independently devised similar theories which have since been collectively referred to as the Prebisch-Singer doctrine. Both economists were associated with the United Nations Economic Commission for Latin America (ECLA). The significance of the Prebisch-Singer doctrine is that it establishes that gains from trade will be unequally distributed between those exporting predominantly primary products and those exporting mainly manufactured products, and that the inequalities between developed and underdeveloped countries will increase as a consequence of trade. The negative effects on terms of trade of primary producers are influenced by differences in product and factor markets and the accrual of benefits from technical progress.

Before reviewing the Prebisch-Singer doctrine in detail, it should be considered how the doctrine relates to the neoclassical and classical theories of trade that were discussed in the previous chapter. Singer (1984b) asserted that through his work and that of Prebisch, the validity of doctrine of comparative advantage was not questioned, rather the equality in distribution of gains that resulted and the impact on developing countries of specialising according to the comparative advantage. That being said, specific ideas raised by classical and neo-classical economists were challenged by the group of economists that examined uneven development. For example, classical economists predicted that the value of manufactured goods relative to agriculture would fall. Neo-classical economists, such as Samuelson (1949), predicted convergence of factor prices. Prebisch and Singer asserted that the price of agricultural commodities would fall relative to the price of manufactured goods, and considered that factor-price equalisation would not come about.

Prebisch (1950) proposed that terms of trade move against underdeveloped countries in a free trade situation, due to the nature of the products underdeveloped countries produce and export to other countries. The approach adopted by Prebisch involved classifying economies as belonging to either the centre and or the periphery, where centre was the industrialised economies and periphery the underdeveloped economies. Prebisch proposed that terms of trade moved against periphery economies due to both demand and supply side factors alike. On the demand side, income elasticities of demand differ markedly between the imports of the centre and periphery. The primary commodity imports to the centre have low income elasticity, whereas the industrial imports to

periphery economies have higher income elasticity. Therefore, as incomes rise in the centre economies, demand for the exports of the periphery countries do not increase at the same level. However, as incomes rise in periphery economies, demand for the exports of centre economies rise at a higher rate than income. Further, demand for the periphery's exports is price inelastic, whereas the demand for exports from centre economies is price elastic. Thus, when output levels in periphery economies are raised, large price declines result. Because the exports of centre economies are price-elastic they do not experience the same price movements when production is increased. Technological progress that raises output levels in periphery countries' export industries results in reductions in exports prices and deterioration in terms of trade. The benefits of technological progress in the periphery are transferred to centre economies because of the deterioration in terms of trade. On the supply side, factor incomes rise more slowly in periphery countries due to higher population growth rates and the surplus labour resources that tend to exist in these countries. The absence of such factors in the centre creates upward pressure on factor incomes and thereby final good prices, which then become exports to periphery countries. As a result, periphery countries pay more for the goods and services they need to import from the centre.

Prebisch (1950) conducted empirical research to support his theory. This research was based on the UK commodity terms of trade over the time period of 1870 to 1938. Prebisch used the UK terms of trade as being representative of all developed countries and the inverse movement of the terms of trade as being representative of all

underdeveloped countries. This approach attracted significant criticism, which will be explored later in this chapter.

Singer (1950) explored structural differences between industrial countries and exporters of primary commodities and noted the tendency of terms of trade for primary products to decline relative to manufactured goods, which in turn unequally distributed income in favour of the producers of manufactured goods. Singer found that since the 1870s there had been a trend for prices to move against sellers of food and raw materials in favour of sellers of manufactured articles, noting “industrialised counties have had the best of both worlds, both as consumers of primary commodities and as producers of manufactured articles, whereas the underdeveloped countries had the worst of both worlds, as consumers of manufactures and as producers of raw materials.” Singer suggested that specialisation by underdeveloped countries in the export of food and raw materials has been detrimental to these countries for three reasons. Firstly, secondary and cumulative benefits were transferred back to the investing country. Secondly, there was concentration of activities that offered less scope for technical progress. Thirdly, adverse terms of trade movements have lessened the benefits that would accrue. Singer also identified that foreign trade tends to be more important proportionately to an economy when incomes are low, and that fluctuations in the volume and value of trade tend to be proportionately more violent for underdeveloped countries.

Other economists of the same period provided support for the theories of Prebisch and Singer, including Baldwin (1955, pp.262-3), who noted

“A major reason for the declining export prices of the peripheral countries relative to the export prices of the centre would seem to be a high price and income demand elasticity for manufactured products and a low price and income elasticity for primary commodities. The peripheral countries together with the industrial nations helped to keep up the process of industrial commodities by their comparatively large increase in demand for these goods as real income rise.”

Lewis (1955) acknowledged the contribution that participation in trade could make to an economy, however highlighted the cost of specialisation to an economy. The first issue referred to by Lewis pertained to the impact on an economy if demand for the commodity being specialised is significantly diminished. This is analogous to putting all of one's eggs in the same basket. The second issue identified by Lewis pertained to the breakdown of trade, for example, in the event of war, which meant that supplies could not be accessed. A third issue raised by Lewis related to the lack of balance within the domestic economy, for example, increased pressure on the agricultural industry could give rise to biological imbalances due to excessive cropping and associated problems of soil exhaustion or erosion. A further issue highlighted by Lewis pertained to development of special interest groups surrounding the industry which is being specialised in, and the added complexity this brings to international co-operation. Nurske (1961) also warned against extreme specialisation for less developed countries in primary commodities and raw materials describing issues of deteriorating terms of trade and potential for displacements by synthetics or alternative products.

4.2.2 *Increasing inequality*

Myrdal (1956) asserted that the economic inequalities between developed and underdeveloped countries had been increasing and traditional economic theory failed to account for this inequality and its tendency to increase. Myrdal was specifically critical of the classical economic theory assumption of a stable equilibrium state, and proposed that rather than this occurring in the real world, an economic system was likely to move in the same direction as an initial change but much further, resulting in a process which was cumulative and moving with accelerating speed. Myrdal made reference to variables being locked into a causal mechanism, with one change triggering further changes, and termed this phenomenon as “cumulative causation”. He asserted that cumulative causation moves underdevelopment away from traditional economic theory, stating that “if left to take its own course, economic development is a process of circular and cumulative causation which tends to award its favours to those who are already well endowed and even to thwart the efforts of those who happen to live in regions that are lagging behind.” Myrdal asserted that trade exhibits the same bias in favour of richer and progressive regions and that freeing up markets would provide benefits more to the countries that are already established than to the less developed countries. Myrdal discussed back setting effects and that trade and capital movements were the channels by which economic progress in developed countries have back setting effects on underdeveloped countries, which triggered the process of cumulative causation. Myrdal also introduced spread effects, which were the means by which economic activity transferred between countries. He attributed expansionary activity in developing countries not impacting developing countries to weak spread effects.

Both Singer and Myrdal highlighted concerns about comparative advantage forcing underdeveloped countries to operate in unattractive industries, with Myrdal elaborating in relation to the large labour supplies in underdeveloped countries causing technological improvements to translate into lower prices for outputs or exports, rather than higher wages.

Hirschman (1958) proposed a country should focus on one or two key sectors in order to develop centres of economic growth, stating that “once growth takes a firm hold in one part of the national territory, it obviously sets in motion the certain forces that act on the remaining parts.” Hirschman noted that growth in one economy could have numerous impacts on other economies some of which will be favourable and others adverse. The key favourable impacts related to trickling down effects on the other economies, for example, the purchasing of inputs from these economies and the provision of advanced goods and services to the economies. There may also be some absorption of hidden unemployment. In relation to the adverse effects that growth in one economy may have on other economies, referred to by Hirschman as polarization effects, advanced or industrial activities in the economies which are not developing may become depressed and skilled labour may migrate to the economies that are advancing. Hirschman asserted his belief that trickling down effects will be stronger than the polarization effects, however, acknowledged that where advanced countries develop their own agricultural sectors or means to supply primary products, underdeveloped countries could be left worse off. Notably, Hirschman considered that in the long run market forces of supply and demand will correct this situation. Further, trickling down effects will be more powerful

in countries that have resources that are valued by industrialised countries. Where a country had nothing essential or attractive to trade with industrialised countries, it is likely to experience less of the beneficial trickling down effects. Hirschman echoed similar sentiments to Myrdal but made reference to polarization effects rather than backwash effects and trickling down effects rather than spread effects.

Bhagwati (1958) proposed that the deterioration in terms of trade articulated by Prebisch could result in a loss of welfare in excess of any increase in wealth achieved by higher production and export levels, thereby resulting in a net decline in a nation's welfare. Bhagwati termed this net loss in welfare as immiserizing growth.

4.2.3 Exploitative relationships

According to Baran (1957), underdeveloped countries were largely exploited by developed countries, specifically "the underdeveloped world as a whole has continually shipped a large part of its economic surplus to more advanced countries on account of interest and dividends.". Baran focussed his criticism on the colonial arrangements that had been created by developing countries and noted that while there were some benefits from foreign capital in the underdeveloped countries, these benefits were largely outweighed by the detrimental consequences of such arrangements, making reference to "exploitation and stagnation" as the prevailing rule. He also suggested that the activities of the developed countries making the investments were at odds with the development needs of the underdeveloped countries. The empirical evidence utilised by Baran to support his statements pertained to the world income over the two centuries preceding the

1940s, and the lack of change in the condition of underdeveloped countries during this time period. Baran suggested that domestic conditions in underdeveloped countries prevented advancement, for example, lack of infrastructure, lack of innovation and fragmented property ownership. Domestic factors within underdeveloped countries that constrained development were also referred to by Myrdal (1956; 1957).

Frank (1969) also focussed on the exploitative relationships between developed and underdeveloped countries, referring to the underdeveloped countries as satellites and developed countries as the metropolis. The concepts introduced by Frank can be aligned to the centre and periphery, respectively, as introduced by Prebisch. Frank claimed developed countries extract the economic surplus from the underdeveloped countries and use such surpluses for their own economic development. Frank attributed the lack of development in underdeveloped countries to not having access to their own surpluses. Frank considered underdevelopment was caused not from the isolation of underdeveloped countries from capitalist or developed economies, but rather as a consequence of the economic and political relationships underdeveloped countries have with developed countries. Staelin (1974) also referred to a potentially exploitative relationship between developed and underdeveloped countries, however more focussed on developed countries capturing productivity gains of underdeveloped countries, and preventing underdeveloped countries from harnessing the benefits associated with such gains.

More than two decades after the original Prebisch-Singer hypothesis, Singer continued to demonstrate conviction for his original view of underdevelopment, writing that

underdeveloped countries are poor because they have no industry and have no industry because they are poor, concluding that “one thing leads to another, but nothing leads to nothing” (Singer 1975). At that stage Singer indicated support for Myrdal’s concept of backwash effects, the harmful effects that developed countries have on underdeveloped countries. Specific examples of backwash and adverse effects on underdeveloped countries cited by Singer include high consumption due to the introduction of unsuitable technology and training methods, developed countries economising on the use of raw materials that are abundant in developing countries, the development of synthetics and substitutes to compete with the exports of developing countries, limited research and development expenditure specifically for poor countries contributing to inappropriate production methods or disparity in production methods across industries within underdeveloped countries, brain drain, harmful policies and aid conditions, creation of expectations of a welfare state within underdeveloped countries, creation of elite classes in underdeveloped countries, and demonstration effects. Singer asserted that rapid development of advanced countries were “doubtfully helpful and possibly positively harmful” to the development of underdeveloped countries.

Beyond the initial theories developed during the 1950s and 1960s to explain the uneven relationships between developed and underdeveloped countries, the subsequent decades saw the development of further theories and models to explain the observed phenomena and also the conduct of empirical and theoretical studies to support, expand upon, or disprove the initial theories developed. Specific models that were developed include

those by Findlay (1981), Brecher and Choudhri (1982), Krugman (1990) and Redding and Venables (2004).

Findlay (1981) developed a simple dynamic model which used terms of trade as the variable that made the growth rate of underdeveloped countries conform to the exogenously given growth rate of developed countries. He concluded that under certain conditions the model was consistent with secular deterioration in terms of trade for underdeveloped countries. Findlay cautioned his findings by noting the existence of a long-run equilibrium level to which terms of trade movements converge, from either direction, and therefore concluded that in the long-run there are no significant variations in terms of trade.

Brecher and Choudhri (1982) developed a model to demonstrate that the international flow of capital caused a decline in the terms of trade of the country which is the recipient of the investment. The model provided analytical support for the Prebisch-Singer doctrine, in relation to analysis of terms of trade deterioration. A notable aspect of the Brecher and Choudhri analysis was the incorporation of foreign investment, which is more relevant to the patterns of economic activity which have more recently emerged.

Krugman (1990) presented a theoretical model to explain uneven development. The model predicted that if a nation had a small head start with an industrial sector, this pattern would cumulate over time, giving rise to the creation of an industrial centre within that nation, at the expense of industry development in another nation. Krugman claims

the model captures “the essence of the argument that trade with developed nations prevents industrialisation of less developed country.”

Using a structural model of economic geography, Redding and Venables (2004) conveyed the importance of geography to development, highlighting the reluctance of firms to move production to low wage countries because of issues associated with market remoteness. Redding and Venables asserted that even if institutional and other trade barriers can be removed geographically remote countries are unlikely to be drawn into trade relationships, which may have beneficial development implications.

4.3 Alternative perspectives on trade and developing countries

The theories presented in this section are distinct because they neither provide support for the theory of comparative advantage nor contribute to the school of thought surrounding uneven development, commenced by Prebisch and Singer. Specifically, these theories propose alternative relationships between trade and development.

Kindleberger (1956) undertook empirical research into terms of trade and concluded the reverse relationship to that of Prebisch and Singer, specifically that poverty had adverse implications for terms of trade because of the inflexibility and lack of adaptability it created. Essentially, Kindleberger found that poor countries were poor because they did not produce what the world wanted, and had an inability to alter production to respond to market demands. Kindleberger noted that favourable terms of trade came about from flexibility and capacity to enter new industries and leave old ones, while poor terms of

trade resulted from inflexibility and being unable to change production. Specifically then, developing countries suffer from a lack of structural adjustment.

Linder (1967) considered factors other than trade that affect the prospects of developing countries. Linder proposed that when these other factors disappeared, the country becomes an advanced country and the role of trade is one as set out in conventional trade theory. Implicit in Linder's theory is the role that domestic and other factors play in a country's development, and further, that trade is not a factor which causes development or keeps a country from attaining development.

Oniki and Uzawa (1965) formulated a dynamic model of international trade in order to analyse the interactions between trade and capital accumulation. The model suggested the dynamic path of capital accumulation tended to be stable and the capital to labour ratio of each country converged to a long-run stationary ratio. This ratio was specific to each country and depended on factors such as the propensity to save and technological change. The implication of the work of Oniki and Uzawa is that developing countries can do little to influence their capital to labour ratio beyond a certain level, without changing the domestic economy. Hence it is the domestic economy which will ultimately influence the capital to labour ratio, often associated with economic development, and trade is less relevant than the domestic economy.

4.4 Alternative schools of thought pertaining to underdevelopment

An alternative school of thought to those already presented is that countries develop independently of trade activity, and the problems associated with underdevelopment are unrelated to trade. A number of contributions to this school of thought have been made since the middle of the Twentieth Century. Some of them are briefly reviewed in order to complete the picture that there are views that trade and development might not be related at all.

Rosenstein-Rodan (1943) noted the need for industry to be of sufficient size for industrialisation to occur. This became interpreted as the need for a “big push” or rapid investment, or virtuous circles, whereby underdeveloped countries could not develop until they got the circle moving (Krugman 1981). The implication of this school of thought is that there is a distinct hurdle for underdeveloped countries to get over in order to commence development, and the initial need for large scale industry is beyond the capability of the poorest countries. The concept of a big push was criticised in later years, for example, by Hirschman (1981) who advocated that developing countries could focus on few key sectors to achieve development.

Rostow (1960) proposed that there is a set path for economic development and all countries follow the same path. Rostow’s theory predicted that it was a matter of time before underdeveloped countries passed through the stages, and development occurred as countries passed through the relevant phases. The theory was criticised for being “excessively deterministic” and not recognising the issues of late starters as being distinct

from developed countries (Kuznets 1953a; Streeten 1981). In contrast to Rostow, Gerschenkron (1966), suggested there could be multiple paths to achieve development, and therefore underdeveloped countries were not as constrained as Rostow initially suggested, albeit there were still paths by which underdeveloped countries achieved development.

Kuznets (1953b) noted the importance of scale for many industries which is often unattainable for developing countries with small domestic markets for the output of such industries. Similarly, Hicks (1959) proposed new enterprises will prefer to locate in an area in which there is already industry and trade established. While such centres may lose their geographical advantage over time they will continue to grow because of the concentration that exists. The implication of Hicks' theory is that underdeveloped countries are disadvantaged from attracting new enterprises because they have less industry and trade than developed countries. Hicks also referred to a tendency for the world to fall into two groups based on what countries produce, specifically manufacturing countries and primary producing countries, because of the tendency for new enterprises to locate in areas where there is already industry. More generally, Hicks found the existence of external economies of scale and economies of scope are influential in industry location.

Nurske (1961) emphasised the need for developing countries to simulate expansion domestically, in order to develop, rather than being reliant on trade. Nurske considered the principles of comparative advantage were valid, however acknowledged doubts that

comparative advantage could provide all the guidance underdeveloped countries need for development. Similarly, Lewis (1980) asserted that developing countries should follow their own development path irrespectively of what happened in advanced countries. Prior to this Nurske (1952) had attributed underdevelopment to domestic market conditions and related economic development to capital accumulation, asserting less developed areas had less capital. Nurske proposed that capital formation had both supply and demand sides and that in underdeveloped countries circular relationships existed on both these sides which kept capital formation low. On the supply side, due to low incomes, there was small capacity to save, which reflected low productivity, caused by low capital levels due to low savings levels. On the demand side, the small buying power of people caused low inducement to investment, but this was due to small real incomes which were influenced by productivity. Productivity was low because of low capital levels. Hence low income and productivity were common to both the supply and demand side of the situation. The inducement to invest for domestic industries in underdeveloped countries was low due to the size of the market. Nurske was critical of the adverse implications of conspicuous consumption on capacity to save in underdeveloped countries. Notably, this is something that Lewis (1955) considered stimulated demand and desire to work.

Viner (1953) attributed the issues of underdeveloped countries to poverty and backwardness, and noted the existence of a number of obstacles to economic development in underdeveloped countries, including an unfavourable physical environment, the quality of the working population, scarcity of capital, low savings rates

and problematic inflation. Meier (1958) also attributed underdevelopment to issues associated with domestic conditions.

4.5 Comparison of the development process of the Nineteenth and Twentieth Centuries

Some economists who examined the gap between developed and underdeveloped countries in the Twentieth Century tended to look at the differences that existed between the international economy in the first half of the Twentieth Century and the one that existed in the previous century. Such economists have suggested that the Twentieth Century had less favourable conditions for underdeveloped countries than the earlier time periods. For example, Myrdal (1956) noted that the 1950's presented more significant challenges to development than earlier time periods. Some of the specific challenges referred to by Myrdal include commencement from a lower level of development, less open capital markets, fewer underdeveloped countries to utilise as sources of raw materials and larger populations reliant upon resources. Myrdal also made reference to the loss of human resources and other scarce factors and the deterioration of handicrafts and industry within underdeveloped countries.

There has been consensus amongst economic historians that trade has acted as an engine of growth with countries such as Canada, Argentina, Australia and New Zealand having benefited from trade participation (Thirlwall 2003). Nurske (1961) asserted that the "forces making for growth transmission from advanced to less developed countries are not as powerful in the trade field" as they had been in the past and the contribution of

trade to the development of the present-day poor countries had been positive but considerably less than in the nineteenth century when trade acted as an “engine of growth”. By the term “engine of growth” Nurske meant that trade was the vehicle by which the economic growth being experienced in advanced countries was transmitted to less developed countries.

4.6 Criticisms of Prebisch-Singer and associated theories

The Prebisch-Singer doctrine, while having many supporters, has attracted significant criticism since being proposed in the early 1950s. Criticisms have been made on both theoretical and statistical grounds. Most criticism from a statistical perspective focuses on the fact that the empirical evidence provided by Prebisch was for a single country over a relatively short time period. More generally, economists have criticised the Prebisch-Singer doctrine and the theories which followed as being excessively pessimistic for underdeveloped countries (see for example, Chenery 1975). Notably, the majority of criticisms were raised within two to three decades following the original publications by Prebisch and Singer, and from the 1980s renewed support for the original doctrine emerged, as a consequence of the continued gap between the incomes of developed and underdeveloped countries and economists taking a renewed interest in exploring this gap.

Viner (1953) was critical of the Prebisch-Singer doctrine for a number of reasons. From a theoretical perspective, Viner asserted the doctrine was based on improbable postulates, and from an empirical perspective, Viner noted there was no uniform trend of secular decline in the terms of trade between agricultural and manufactured goods, with some

researchers in fact having identified the opposite trend. Viner was critical of the linking of agriculture to poverty which is implicit within the doctrine, noting that underdevelopment is associated with the domestic conditions that exist within underdeveloped countries. He acknowledged that primary commodities do exhibit a wider fluctuation in price than manufactured goods, however suggested higher prices were achieved on upward swings of the cycle which primary exports can benefit from.

Baldwin (1955) pointed out that terms of trade represents only one part of the overall picture as to how international trade has impacted on a country. Baldwin was critical of over-reliance on terms of trade, noting that terms of trade only translated into income change if all other things remain the same which is highly improbable in the long run. According to Myint (1958), Prebisch and Singer overly focussed on attacking classical theory without acknowledging what has occurred within the international economy, and that more recent performance of underdeveloped countries was specific to the international economy of the time. Meier (1958) was critical of Myrdal for over-emphasising the significance of international trade as a mechanism for inequality and questioned the empirical and analytical bases of Myrdal's criticism of classical theory.

Harberler was one of the strongest critics of the Prebisch-Singer-Myrdal theories, writing a number of articles during the 1950s and 1960s. Harberler initially stated the theories were based on "grossly insufficient empirical evidence" and "the attempted explanation of the alleged facts is fallacious" (Harberler 1959). In relation to the empirical evidence provided by Prebisch, Harberler asserted that there was no evidence that the trends

described in the theories would continue in the future. He also noted that the time period of the study was relatively short, and acknowledged the analysis over a longer time period may have presented different results, and secondly, the specific events that transpired during that time period, such as the Great Depression, influenced the results that were observed.

From a theoretical perspective, Harberler (1968) claimed that Prebisch-Singer confused absolute and relative prices, and focussed on absolute prices when relative prices were more relevant to the study. A further criticism was that the Prebisch-Singer analysis failed to consider real world influences such as innovation. Harberler asserted that a decline in terms of trade would not necessarily translate into a change in welfare and that the changes proposed by Prebisch-Singer, should they occur, would come about gradually and countries and producers would have time to adjust, and therefore there would not be the severity of adverse consequences proposed. There was also criticism by Harberler for ignoring the benefits that trade could bring to developing countries.

In addition to being critical of Prebisch and Singer, Harberler (1968) was also critical of Myrdal for discounting the favourable effects of trade relative to the unfavourable ones, asserting capital flows have occurred from rich to poor countries. Harberler was also critical of other aspects of Myrdal's theory, such as demonstration effects and disguised unemployment. Notably, Schultz (1961) was also critical of disguised unemployment, stating "The doctrine that a part of the labour working in agriculture in poor countries has a marginal productivity of zero... rests on shaky theoretical presumptions."

Harberler identified a number of economists that presented theories that directly contradicted Prebisch and Singer, but asserted that neither school was entirely correct, because terms of trade tend not to move in a single direction, but change direction depending on the factors present within the international economy. Further, the terms of trade for different commodities are likely to exhibit different behaviours, rather than there being a uniform movement for terms of trade pertaining to different commodities.

Flanders (1964) asserted that there were logical weaknesses in the arguments of Prebisch pertaining to market structures and productivity gains. Streeten (1974) thought that the empirical evidence supporting the Prebisch-Singer doctrine was based on the arbitrary selection of base year, and was therefore dubious. Streeten suggested the deterioration of agricultural terms of trade relative to industrial products was overstated by Prebisch and Singer for three reasons. Firstly, product innovations occur in industrial products, so that worsening terms of trade reflects better industrial products. Secondly, new industrial products tend to be initially high in price and decrease as they become more widely utilised. Thirdly, export prices of agricultural products are based on commodity market prices which are free on board, and therefore lower transport costs will not be reflected in prices.

Macbean and Balasubramanyam (1976) asserted the arguments of Prebisch were based on “dubious empirical evidence and rather imprecise theorising”. Further, that the poor price performance of commodities in the period studied by Prebisch was utilised to support a theory of long-term price deterioration of primary commodities. Macbean and

Balasubramanyam asserted that demand for primary products has not proven to be as price-inelastic or income-inelastic as proposed by Prebisch and other economists that followed the same school of thought, and that the experiences of developing countries have been significantly more diverse than would be expected by the Prebisch theory.

Morgan (1963) reviewed the empirical research conducted around the same time as that of Prebisch and noted that there was contrast in the findings that emerged. Morgan asserted the British terms of trade appreciation would be exaggerated due to technological innovation and transportation costs not being taken into account in terms of trade analysis. Kindleberger (1956) conducted a study which indicated none of several other European countries researched experienced a significant trend in their net barter terms of trade in the same way that Britain did. Research conducted by Martin and Thackeray (1948) also concluded that the British experience was not replicated across other countries, and more specifically that there was no regularity in the movements of terms of trade during the trade cycles between 1870 and 1938. Similarly, Lipsey (1963) studied the net barter terms of trade for the United States for the same period and found that no trend could be established in relation to terms of trade movement.

Spraos (1980) conducted research into terms of trade movement of primary commodities relative to manufactured goods, and concluded that while Prebisch had the direction of movement correct, that if there was indeed a deterioration in the terms of trade of commodities relative to manufactured goods, this movement was exaggerated by

Prebisch by a factor of three. Grilli and Yang (1988), based on their own empirical research, also asserted Prebisch exaggerated the deterioration in terms of trade.

In addition to providing empirical evidence that did not support the Prebisch-Singer doctrine, Kindlberger (1956) warned against overemphasising terms of trade in economic analysis, noting that trade volumes were a significant factor in international trade. Similarly, Wilson et. al. (1969) recommended that attention should be paid to exports and their impact on income rather than to terms of trade. From an empirical perspective, Patel (1959) studied the Indian economy and noted that its growing trade imbalance was caused by export volumes declines rather than any terms of trade change.

It is notable that some of the economists that have criticised the Prebisch-Singer doctrine also provided support for some of the ideas implicit within the doctrine. Harberler (1968) acknowledged the rewards of technological progress have been retained by producers in the form of higher prices rather than being passed onto consumers in the form of lower prices. However, Harberler questions whether this has genuinely hurt underdeveloped countries. Streeten (1974) noted that despite all of the criticism aimed at the theory, the core of the Prebisch Singer theory, namely that there are unequal forces at work that have lead to uneven distribution of gains from trade and economic progress, has survived. Macbean and Balasubramanyam (1976) acknowledged that prices and earnings from exports are more volatile for developing countries, but suggested this is less important than the lack of growth of export proceeds. The research of Spraos (1980) previously

referred to, indicated that Prebisch and Singer did have the direction of movement correct, albeit exaggerated the impact.

4.7 Empirical evidence relating to the Prebisch-Singer doctrine

There have been considerable empirical studies relating to primary commodities and to the experience of developing countries over the past half a century. As has been discussed, the empirical evidence used to support the original Prebisch-Singer analysis was based solely on the UK over the period 1870 to 1938, when there were significant international events that had the potential to influence findings. The criticisms of this approach and the empirical studies that supported these criticisms were considered previously. Hence the focus of this section is on the additional empirical studies that have been conducted.

By and large there is a large amount of empirical evidence to support the deterioration of the terms of trade of primary commodities from developing countries. Sarkar (1986) refers to a number of empirical studies that were conducted in the 1980s that support deteriorating terms of trade for primary products. Sarkar noted that the empirical basis to support the Prebisch-Singer hypothesis was much stronger in the 1980s than in the early years. Similarly, Elkan (1995) noted that while the Prebisch thesis has been open to many objections, the post Second World War period indicates Prebisch was right to warn underdeveloped countries against relying on primary product exports.

Yates (1959) studied the forty year period between 1913 and 1953 and noted deterioration in the terms of trade of primary products relative to manufactured goods during the interwar period, and improvement in the post-war period, albeit not restoring terms of trade to their original 1913 level. Lewis (1980) researched the relationship between the growth in industrial production and primary commodities between 1873 and 1913 and concluded that growth in primary products was 0.87 times the growth of industrial production. The implication of the findings of Lewis was that growth in developing countries was strongly tied to growth in industrial countries, albeit that the growth experienced by developing countries was likely to be less than that experienced by industrialised countries. The findings of Lewis reinforce the trickling down effects identified by Hirschman. Bairoch (1972) studied the developing and less developed countries of Europe in the late 19th century and found that the effects of participating in trade were negative for less developed countries.

A report by the United Nations (United Nations 1964) on economic development pointed to a buoyant international economy existing in the late Nineteenth and early Twentieth Centuries, during which time industrialised countries demanded primary commodity imports from developing countries. The report noted the import coefficient (that is, imports divided by domestic consumption) of the United Kingdom rose from around 18 per cent in 1850 to around 36 per cent in 1880-84, and the rest of Europe exhibited a similar phenomenon but not to the same extent. This level of activity was broken by the Great Depression which resulted in contractions in exports and a slow down in growth rates, and thereby, persistent trade imbalances for underdeveloped countries. The primary

sectors of industrialised countries had advantages over the primary sectors of underdeveloped countries due to the technological advancements that could be availed of and because of the protectionism afforded to primary sectors in developed countries. Following the Second World War industrialised countries increased their share of world trade, whereas underdeveloped countries reduced their share of the world. There was deterioration in both terms of trade of primary commodities relative to manufactured goods, and of underdeveloped countries relative to developed countries.

Singer (1975) noted a chronic tendency of weakness in terms of trade for agricultural goods relative to manufactured goods in recent years, at the time of writing. Singer explained terms of trade for underdeveloped countries had been relatively favourable during the 1950s, which meant that theories of pessimism in relation to underdeveloped countries had not been proven during that decade. Singer noted that there was not the strong improvement in terms of trade forecast by Lewis (1955) or Clark (1960), and that Myint (1958) was incorrect in his analysis. Singer noted that by the 1970s it had become quite apparent that there was not a homogeneous third world, with some countries showing significant development and others becoming poorer. The growth of developing countries during the 1950s and 1960s was also noted by Chenery (1975), however Chenery highlighted the persistence of structural issues in underdeveloped countries, including the inability to absorb growing labour forces and inequality in income distribution. Wilson et.al. (1969) conducted empirical analysis for the period of 1950 to 1965 and concluded that the terms of trade for underdeveloped countries deteriorated during this time.

Singer (1984a) noted that the terms of trade of least developed countries' exports relative to manufacture exports deteriorated during the period of 1957 and 1982 in the commodity areas of food, beverages, agricultural raw materials and metals. Additionally, the terms of trade of the world's poorest countries deteriorated in comparison to middle and higher income developing countries between the period of 1960 to 1973, thus indicating that any improvement in developing country terms of trade was not achieved by the poorest countries. Further, Singer noted that while world trade volumes increased between 1948 and 1970, the export volumes of the least developed countries increased by a smaller amount than world trade itself, indicating a diminishing role for these countries in international trade.

Empirical research by Grilli and Yang (1988) found that non-fuel commodity prices fell between 1900 and 1986 by approximately 40 per cent. On average the relative prices of all primary commodities fell by 0.5 per cent a year and those of non-fuel primary commodities by 0.6 per cent annum. This supports the findings of Prebisch, at least in terms of direction of trend, although the magnitude is slightly less than the empirical research of Prebisch revealed. The study found the decline in relative prices of non-fuel commodities has not been uniform across commodity groups. Metal and non-food agricultural commodities showed a larger decline, and in some cases a real appreciation was evidenced. Non-food agricultural commodities experienced a strong and steady decline relative to internationally traded manufactured goods, which makes sense because this group consisted of commodities in which there had been synthetic product substitutions introduced since the 1950s. Regional and country differences in experiences

were also noted. Grilli and Yang asserted that immiserising growth may have occurred for specific commodities or in specific time periods, but its existence cannot be assumed. Notably, Grilli and Yang warned against concluding that trade has been detrimental for developing countries on this basis, as there are compensating effects, such as productivity growth that need to be considered in determining the overall effect of trade on underdeveloped countries.

Thirlwall (2003) reviewed a number of studies that had emerged after the work of Prebisch, that had put the rate of terms of trade deterioration at between 0.5 and 1.2 per cent annum. This is consistent with Prebisch, who had originally established a rate of deterioration of 0.9 per cent per annum. Thus, these additional studies provide general support for the work of Prebisch. As previously mentioned, Spraos (1980) had found a rate of deterioration of only 0.3.

More recently there has been an emergence of literature that points to long-run deterioration in commodity prices from the 1960s. For example, the 2002 report on Least Developed Countries refers to the long-term downward trend in real non-fuel commodity prices since the 1960s (UNCTAD 2002b). The report notes that “the adverse influences on developing countries that Prebisch and Singer warned against 50 years ago are at work in almost all of the worlds poorest commodity exporting countries”. Similarly, a study by the IMF (Borensztein et al. 1994) in the 1990s into non-oil commodity prices concludes that there has been secular and persistent weakness in real commodity prices over the preceding three decades.

4.8 Conclusion

This chapter has reviewed the literature that emerged from the middle of the Twentieth Century pertaining to the impact of trade on developing countries. The basis for the emergence of this literature was the persistence in income disparity between developing and developed countries. The early contributors to this school of thought were Prebisch and Singer, who proposed that trade perpetuated an uneven relationship between developed and underdeveloped, or developing, countries. Extensions of the work of Prebisch and Singer referred to the inequality being cumulative and growing. There was consideration given to the negative effects of trade outweighing any positive effects, from which the term immiserising growth was coined. Baran and Frank moved from uneven development to proposing the relationship between developed and underdeveloped countries could be exploitative. Later economists, such as Krugman and Venables and Redding, delivered theories to explain how situations of unevenness developed. Alternative theories suggested that trade had little to do with underdevelopment and that underdeveloped countries were unable to participate in trade due to structural constraints and because they could not produce what was being demanded.

This chapter also considered the criticisms of these new theories. Criticisms were largely based on theoretical and statistical grounds. Despite the original empirical evidence to support the theories that emerged being limited and the subject of significant criticism, the subsequent empirical evidence that has emerged has provided a reasonable level of support for deterioration of developing countries' terms of trade relative to developed countries, so much so that it has been noted in the reports of international agencies such

as the United Nations and the IMF. It has also been noted that terms of trade is just one factor within the relationship between developing and developed countries, albeit a very important factor. Other aspects include the volume of what is exchanged, and the other benefits that may be transferred to developing countries, such as investment and technical knowledge.

There are strong similarities between the arguments reviewed in this chapter and those put forward about developing countries participating in the current international economy, which were discussed in Chapter 2. To provide some examples, Singer claimed developing countries were stuck in unattractive industries and discussed the inappropriateness of production methods of developed countries for developing countries. Lewis highlighted the disadvantages of a high level of specialisation. Hicks noted that industry was likely to locate where other industry was already located, and this trend directly disadvantage developing countries. Myrdal discussed that the growth going on in developed countries was unlikely to spread to developing countries, thus giving rise to patterns of exclusion. Baran asserted that the low levels of infrastructure in developing countries impeded development. Kindleberger asserted underdevelopment was a consequence of not producing what the world was demanding, and being unable to alter production patterns.

This chapter completes the review of the literature on economic theory and globalisation. The following chapter presents a review on the literature pertaining to measuring development.

5 Measuring Development

5.1 Introduction

One of the key aspects of this research is the creation of a composite index by which to measure development. The index created will be aligned to the overall research objectives established in the first chapter of this thesis. The purpose of this chapter is to review the literature on the measurement of development, in order to understand how development has been measured historically, as this will influence the index created for the current research. The chapter commences with a brief definition of development and an overview of the approaches to measuring development and then goes on to examine one of the simplest ways development has been measured, which is via standard income measures such as GNP or GDP. Around the middle of the Twentieth Century, economists started to look for alternative ways to measure development, and the various measures that were proposed are examined. One of the measures proposed was the HDI, by the UNDP. This measure, originally proposed in 1990, has become the most enduring measure of development, and is the one that the index created in the current research is based upon. To better understand this measure of development and to assist in determining how it should be modified for the purposes of the current research, consideration is given to criticisms and suggestions for improvement, and how the UNDP has altered the HDI since its original inception.

5.2 Defining and measuring development

In the most general sense, development refers to progression from a simpler or lower level to a more advanced, mature, or complex form or stage. Thus, economic development can be considered as the progression of an economy, and human development as the advancement of the people within an economy. One perspective is that an economy does not progress unless the lives of its people are made better, and therefore economic development is intrinsically linked to human development. Such a perspective is supported by McGranhan (1972) who suggested that economic and social development are integrated aspects of the same thing and therefore cannot be separated. For the purposes of this research the term development is used on the understanding that the overall goal is improvement in the lives of people.

There are a number of approaches to measuring development, including single indicators, multiple indicators, composite indices and normative models. An example of a single measure is GDP, or adjusted GDP, which was the approach followed by Nordhaus and Tobin (1973) in creating the Measure of Economic Welfare (MEW). The MEW transformed GDP by changing the treatment of non-market activities, leisure time, government expenditure, consumer durable goods, defence expenditure and environmental damage. Multiple indicators refer to taking a number of different measures but considering progress against each individually without attempting to combine the indicators into a single index. This approach has been followed by the United Nations (1954) and the OECD (1976). Composite indices involve representing multiple indicators by a single value. Examples of composite indicators include the Human Development

Index and the Physical Quality of Life Index (Morris, 1979). Normative models involve establishing a minimal desired level of development and estimating the resources required to bring all countries to this level. Leontief (1963) developed a normative model.

5.3 Measuring development through measures of income

Interest in development can be traced back to Karl Marx and Adam Smith (Basu 2001). Prior to the middle of the Twentieth Century, development was predominantly measured by economic output, specifically by GDP or GNP. This view is reinforced in the writings of Pigou (1932), who suggested income could be utilised as a measure of wellbeing. Around the 1950s, consistent with the emergence of development economics as a field of study, economists began to express dissatisfaction with measuring development by income and started to explore other measures. In 1953 Kuznets wrote that "investigators interested in quantitative comparisons will have to take greater cognizance of the aspects of economic and social life that do not now enter national income measurement" and "national income concepts will have to be either modified or partly abandoned, in favour of more inclusive measures" (Kuznets 1953a, p.178).

There are a number of criticisms of utilising GDP or national income in order to measure development. Perhaps most significantly, GDP is a measure of output, not of consumption nor living standards (Nordhaus & Tobin 1973). More generally, economic indicators are not considered adequate for analysing social conditions or as objectives for development planning (Drewnowski 1972) and GNP is not a measure for "the rate or the level of combined social, political, and economic process on which sustained

development depends" (Morris, 1979). Measures of economic growth, such as those based on GDP, omit important aspects of changes in living standards (Crafts 1999). Seers (1972) pointed out that GDP can change without any improvement in poverty, unemployment or inequality. Anand and Sen (2000) noted that income is not a good indicator of achievements in health and survival, as it depends on how resources are utilised, while Yeh (1976, p.70) stated "Basic to the social indicator movement is the recognition that economic aggregates such as the GNP and related monetary accounts were not intended to, and do not provide adequate measures of the level of living or welfare, and that the important dimensions of society and the people's well-being should be subjected to monitoring as a basis for policy and planning."

GDP includes what economists have termed 'regrettable necessities'(Morris, 1979), such as defence spending, which may not directly improve the living standards of people. This point can be debated, as defence spending may actually make people feel more secure. GDP does not measure qualities of life such as health and literacy, and more subjective considerations such as freedom and happiness, and fails to consider damaging aspects such as pollution and environmental degradation (Moss 1973). Numerous activities within an economy escape monetary measurement and this tends to be more prevalent in undeveloped countries than developed countries.

5.4 Alternative measures of development

In the late 1940s, economists started to search for alternative and more comprehensive measures of development than income based measures. One of the earliest interests in

alternative measures of welfare or development was Davis (1945), whose approach was theoretical and involved the concept of a plane or content of living, which he referred to as a “complex combination of consumption, working conditions, possessions, freedoms, and atmosphere”. Davis asserted differences in planes of living were not proportional to differences in consumption levels and consumption was merely to sustain life.

The first attempt to produce a composite indicator was undertaken by Bennett (1951), who devised a composite index based on consumption incorporating nineteen indicators. He employed a hundred point scale on which to measure countries for each component in the composite index, and weighted the components in the construction of the overall index. Notably, limited justification was provided by Bennett for the unequal weighting of components.

The United Nations (UN) established a committee in 1954 to report on “the most satisfactory methods of defining and measuring standards of living and changes therein in various countries, having regard to the possibility of international comparison” (United Nations 1954). In its findings, the committee recommended that the problem of levels of living must be approached in a pluralistic manner by analysis of various components and by the use of various statistical indicators, and emphasised the need for quantitative indicators of welfare in order to establish objective standards by which levels of living in countries could be measured (United Nations 1954).

Also in 1954, a working party was formed by a number of UN agencies, including the International Labour Office (ILO), the Food and Agricultural Organisation (FAO), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and the World Health Organisation (WHO), in order to progress the systems of components and indicators recommended in the earlier UN report. The findings of the working committee were published in 1961 in a report titled “International Definition and Measurement of Levels of Living: An Interim Guide” (United Nations 1961). The main contribution of this working party was to narrow, and further articulate, the components of levels of living proposed by the UN committee established in 1954. The 1961 report proposed the components of level of living to be health, food consumption and nutrition, education, employment and conditions of work, housing, social security, clothing, recreation and human freedom. The working party did consider income and expenditure as important, but recommended these be part of a general category of “basic information” rather than directly considered as part of the level of living. The report proposed the specific indicators that should be considered for each component of level of living. Notably, this consideration of indicators was the limit of the report and there was no attempt to combine indicators into a single measure or composite index. The United Nations formed the United Nations Research Institute of Social Development (UNRISD) in 1962 for the purpose of research into the social dimensions of problems affecting development. This institution is associated with much of the subsequent research conducted in the areas of measuring development and levels of living, including the research of McGranahan (1972,1985) and Drewnowski (1972,1974), which are explored later in this chapter.

Harbison and Myers (1964) constructed a composite index to measure the relative level of educational development in different countries. The Harbison-Myers index encompassed the sum of secondary school unadjusted enrollment rates plus an arbitrary weight of five times the third level enrollment rate. The significance of the Harbison-Myers index is that it was one of the earliest composite indices to measure a facet of human resource and educational development. The index formed the basis for future work by Harbison to classify and compare countries on the basis of indicators of development.

Adelman and Morris (1967) contributed to the empirical knowledge of the interdependence of economic and non-economic aspects of the development process through the utilisation of social, political and economic indicators. The research of Adelman and Morris focussed specifically on underdeveloped countries, rather than the general development experience of all countries. Their approach involved forty one indicators that encompass both quantitative variables and indicators of qualitative characteristics. Seventy four underdeveloped countries were classified for each indicator, for the period of 1957 to 1962. Factor analysis was utilised to derive systematic underlying associations. The rationale for utilising factor analysis was that it “reduces a complex, unclear phenomenon to its basic components and provides insights into the relative importance of the forces that each component represents”. Sheldon and Moore (1968) published an approach to social well-being that involved indicators being divided into structural, distributive and aggregative features.

Harbison, Maruhnic et.al. (1972) proposed means to classify and compare countries or regions on the basis of indicators of development and modernization. This involved a synchronic data matrix which used forty indicators, representing the broad categories of economic, cultural, health and nutrition, human resource development and demographic factors. One hundred and twelve countries were analysed, grouped by regions. These regions represented the main developing regions of the world with a group of developed countries also being included in the analysis. A taxonomic method was utilised for ranking, classifying and comparing countries. This approach involved the construction of seven indices representing specific aspects of development and the construction of a composite index drawing together most of data of the individual indices. The composite index was utilised as a proxy for overall development and modernization. A notable aspect of the work of Harbison, Maruhnic et.al. was the exclusion of variables that had low correlations with other variables, which is unusual as researchers generally look for variables that are not highly correlated with one another.

Hellwig (1972a) proposed mathematical models for the purpose of analysing human resource indicators. More specifically, Hellwig (1972a) proposed the Wroclaw Taxonomy, as a means to measure a country's development level with respect to Human Resources. This approach was adopted by Harbison, Maruhnic et.al (1972) in research published the same year.

UNRISD commissioned a study to analyse and measure development in its combined economic and social aspects, which was lead by McGranahan. The initial report of this

study was published in 1972. McGranahan, Richard-Proust et.al. (1972) formed an index with eighteen variables. Indicators were transferred to a common scale, which involved assigning zero points as the lowest potential outcome and one hundred as the highest, and then weighting each country according to where it lay between these extremes for the indicator. A system of shifting weights was used in index construction, based on the development levels of individual countries.

Drewnowski (1972) attempted to measure social conditions through a methodology that involved scaling of indicators and assigning weights to indicators in order to reflect preferences. Drewnowski indicated support for indicators to be individualised to countries to reflect country preferences. Drewnowski's most significant contribution to measuring social conditions came about in his 1974 publication, 'On Measuring and Planning the Quality of Life' (Drewnowski 1974), which presented outcomes of research conducted at UNRISD from 1964 to 1969. In this publication, Drewnowski constructed a Level of Living Index to measure the flow of welfare. The Level of Living was defined by Drewnowski as "the level of satisfaction of (its) needs attained per unit of time as a result of the goods, services and living conditions which the population enjoys in that unit of time." The Level of Living index was similar to the HDI in terms of transformation of indicators and formation of a composite index, however Drewnowski utilised twenty seven indicators, representing nine categories, that fell into three broad groups. Drewnowski also developed a State of Welfare Index that was designed to measure where an individual or population was at a specific point in time in response to needs

satisfaction, as opposed to the Level of Living index, which measured the flow of welfare over time.

Chenery and Syrquin (1975) undertook research within the World Bank on patterns of development between 1950 to 1970. Their objective was to provide a comprehensive description of the structural change that accompanied the growth of developing countries and to analyse their interrelations. In response to the objective, a uniform statistical procedure was developed to measure variations in different aspects of economic structure in relation to income level and other factors. Twenty seven variables were utilised that described ten basic processes relating to accumulation, resource allocation and income distribution. The ten processes were considered to describe the dimensions of the structural transformation from a poor country to a rich country. While Chenery and Syrquin were more focussed on economic variables, they did consider a number of social indicators, including indicators relating to education, mortality and income distribution.

In response to growing concern about social well-being and desirability of economic growth, the OECD formed the Social Indicator Programme in 1970. The initial objective of the programme was to identify the social concerns of common interest to OECD governments. The list was published in 1973 (OECD 1973) with twenty four concerns being identified and grouped into eight primary goal areas. A second phase of the programme was then instigated to develop a set of social indicators to reveal the level of wellbeing for each social concern and to monitor changes in the level over time (OECD 1976). The outcomes of this phase were published in 1976. Notably, the OECD perceived

the 1976 publication as a step toward the measurement of quality of life, rather than an end solution in itself. The OECD approach involved the analysis of individual indicators, as opposed to the formation of a composite index. Since the OECD comprises the more advanced countries of the world, the primary purpose of the analysis was to assist OECD members, and its approach did not focus on the development efforts of the underdeveloped countries.

In 1979 Morris presented the Physical Quality of Life Index (PQLI) (Morris, 1979). Morris' team, the Overseas Development Council within the United Nations, determined three criteria on which development policy could be assessed for effectiveness - fewer deaths among infants, longer lives and literacy as a surrogate for individual capacity for effective social participation. These criteria lay the foundations for the three indicators included in PQLI which were infant mortality, life expectancy at age one, and basic literacy. The PQLI was limited as it only reflected health and education, and did not measure command over resources, which could have been represented through the inclusion of a measure of income (Chowdhury 1991). Morris emphasised the purpose of the PQLI was not to measure "total welfare" but to provide an index that complements GNP.

Humana (1986) published the World Human Rights Guide, which was essentially a country-by-country survey of human rights. Its aim was to demonstrate how members of the United Nations honoured their human rights obligations. The current analysis relies on Humana's work, firstly, because human rights and personal freedom are key aspects of

development, and, secondly, because Humana's index is a composite index, which is what will be produced. The work of Humana assessed the human rights performance of one hundred and twenty countries. Forty questions were asked about ninety of the one hundred and twenty countries, and for the remaining countries a summary was utilised due to inability to collect responses to the questions during the survey period. The responses were graded and questions were weighted according to their significance to human rights. From this, countries were assigned a percentage score based on how close they came to the maximum standard established, and ratings of fair, bad or poor were assigned to each individual country based on their percentage score.

Estes (1984) led a project of the International Council on Social Welfare (ICWS) which was commissioned out of concern for the widening development gap between rich and poor nations, and the lack of emphasis many development assistance organisations were placing on social problems. The associated research commenced in 1974, and involved the construction of world social welfare development index, referred to as the Index of Social Progress (ISP). The ISP is multidimensional in that it included social, economic and political factors, represented by forty-four indicators and eleven sub-indices. All components were assigned equal statistical weight in the overall index. In 1988, Estes published an updated version of the ISP, referred to as ISP83, recognising when the subsequent research commenced, which incorporated thirty-six indicators divided into ten sub-indexes (Estes 1988). The differences between the two indices were fewer items and one less sub-index, thus supporting more simplistic indices. Estes noted the ISP measured the "changing capacity of nations to provide for the basic social and material needs of

their populations as a whole”. In the 1988 publication Estes presented a weighted index, the Weighted Index of Social Progress (WISP), which encompassed differing contributions of the ten sub-indexes. For the WISP, varimax factor analysis was utilised to derive statistical weights for the sub-indexes of the ISP. The rationale provided for the weighting was enablement of more precise estimates of national social development gains over time and realignment in comparative development rankings of countries. One hundred and twenty four countries were included in the 1988 study.

In 1985 McGranahan published a report with two other colleagues from UNRISD, Pizarro and Richard (McGranahan, Pizarro & Richard 1985), titled “Measurement and Analysis of Socio-Economic Development”. This report focussed more on methods of analysis, rather than the generation of an index. The associated research involved conducting extensive testing and experimenting with methods of analysis. Some of the areas explored include correlation, analytic line-fitting, data transformation and linearisation of pattern analysis, typological analysis and causality analysis over time. The work was more exploratory in the application of these methods and did not make any firm recommendations in the measurement of development. The report recommended the use of development profiles rather than indices, but recognised the need and purpose of indices.

In the early 1980’s, The Economic Commission for Latin America and the Caribbean (ECLAC), a division of the United Nations, devised an approach to measure poverty, referred to as dissatisfaction of basic needs (DBN). The DBN approach focussed on

housing quality and basic education. If a household failed to meet any of seven criteria, it was considered poor. The underlying philosophy of the DBN is summarised as “Poverty is thus a state in which any one of the several basic needs is unsatisfied” (Desai 1995a). In 1995, Desai (1995b) proposed a social progress index (SPI) that was based on longevity, consumption of private goods and access to public goods. The SPI for an individual country was measured as the difference between lifetime deprivation and lifetime well-being.

The HDI was first produced in 1990, and from that point, research in the area of development measurement has predominantly been aimed at refining and building upon the HDI. The HDI is extensively presented in the next section, so at this stage it is enough to note that it only utilises three indicators. Thus, despite the vast number of indices and approaches to development that preceded the HDI, most of which included large numbers of variables and more complex construction methods, none have been more enduring and more widely accepted than the HDI. That being noted, the HDI does clearly draw on many of the earlier measures of development, in both construction and the indicators utilised.

A composite index that has been more recently developed is the Economic Freedom of the World Index (Gwartney et al. 2002) which measures economic freedom, rather than development, and comprises twenty three components. It is constructed similarly to the HDI in that countries are assigned a ranking for each component based on progress against set maximum and minimum values. The addition of the components differs from

the HDI by utilising weighting based on principal component analysis. This index was first produced in 2000 but is yet to receive the acceptance of the HDI.

5.5 The Human Development Index

The HDI was first published in 1990, as part of the Human Development Report (HDR) by the UNDP, and has been recalculated for each country and published on an annual basis as part of the HDR. It is a composite index, which measures deprivation of indicators of development. The HDI since inception has contained the three elements of longevity or health, education and income. These elements are the most basic human capabilities and support for their inclusion is provided in the first HDR:

“Human development is a process of enlarging people’s choices. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living.”

(UNDP 1990 p.10)

The longevity / health and education components of the index are measures of wellbeing, while income is a surrogate or catch-all for aspects of well-being not reflected in the other components. Income, therefore, serves as an indirect indicator for other capabilities for which data is not available, such as access to land or credit (UNDP 1990). Anand and Sen (2000), in reviewing the HDI, note that education and longevity are aspects of good life and reflective of the “capability to do other things”, while GDP is reflective of command over resources or an “instrument to do other things.”

The most recent version of the HDI measures longevity by life expectancy at birth, educational attainment by a combination of adult literacy and the combined measure of primary, secondary and tertiary enrolment and standard of living by GDP per capita, expressed as purchasing power parity in US dollars. For educational attainment, adult literacy has a weight of two-thirds and enrolment one third. In calculating the overall index, logarithms are utilised for the income component because “achieving a respectable level of human development does not require unlimited income” (UNDP 2002). For each component, a country is assigned a score based on where it is situated between a maximum and minimum value for that component. Fixed minimum and maximum values for each indicator have been established on the basis of what has been observed over the past thirty years, and what is expected to be observed over the next thirty years (UNDP 1999).

Hence, the index for each component, except for income, is computed according to the general formula:

$$\text{Index}_i = \frac{X_i - \text{Min}(X)}{\text{Max}(X) - \text{Min}(X)}$$

Where X = the component and i = the country

The index for income is calculated replacing X with $\ln X$. The overall index is then the arithmetic mean of the three components.

5.5.1 Acceptance of the HDI

Since its inception, the HDI has received widespread acceptance as a useful measure of development. Cahill and Sanchez (2001) assert that the HDI has become the standard way to compare levels of development, while Sagar and Najam (1998) indicate that the HDI is an “important alternative to the traditional unidimensional measure of development”.

While other development and composite indices have been produced, none have been more enduring than the HDI. Notably, no other index has continued to be produced on an annual basis nor has attracted the interest that the HDI has. Khusro (1999) states:

“The methodology of preparing the HDI goes a long way towards removing many of the limitations which other indicators have and turns out to be the best used until now for assessing an aggregate level of development for each country and meaningful comparison with levels of other countries” (Khusro 1999 p. 88)

Crafts (1999) notes that the HDI has been “established as an important contribution to the measurement of living standards” and embraced by economic historians who focus on changes in welfare rather than production measures. Crafts (1999) used the HDI to examine changes in living standards since 1870. Floud and Harris (1996) and Costa and Streckel (1995) both utilised the HDI in empirical studies related to health. Eusufzai (1996) utilised the HDI to examine the relationship between openness, economic growth and development. Notably, openness in this study pertained to the elimination of trade

barriers rather than participation in the international economy. Further, Mazumdar (2002) utilised the HDI to measure convergence in living standards between 1965 and 1995.

5.5.2 Criticisms of the HDI, subsequent changes and alternative indices

Despite its high level of acceptance as a means to measure development, the HDI has received a large amount of criticism and recommendations for improvements. These criticisms and suggestions for change fall into three main areas, specifically, construction of the index, the components used, and the data collection methods employed. The HDRO have responded to some criticisms, through modifying the HDI in subsequent years, however, there are a number of criticisms that have not been addressed, some of which are contradicted by various critics, and others which it would seem the HDRO does not perceive a need to address.

Before examining the criticisms, it is notable that some broad statements of defence have been made in response to criticisms of the HDI and development indices generally. For example, Basu (2001) indicates that critics of the HDI have not appreciated the enormity and ambition of generating a development index and “that some vagueness in target is inevitable” for such a task, while Fukada-Parr (2001) states the HDI is representative of development and is not intended to be totally representative of all aspects of development, and the HDI and other development indices “are by no means the final word on measuring human development.”

Construction of the HDI

One of most highly criticised aspects of the HDI has been the treatment of income. In the initial index income beyond a certain level was assigned a zero weighting. This maximum level was set at a defined poverty line, which was the average official poverty line income in nine industrial countries, adjusted by purchasing power parities, a figure of US\$4,861. It was encompassed in the HDI through the maximum value for the income component. Following criticism of the severity of this treatment (for example, Kelley 1991), in the 1991 HDI an approach was implemented which counted income at higher levels, albeit at heavily discounted rates, on the basis of the diminishing returns higher levels of income provides. More formally, the new variable, represented by W , was calculated, as follows:

$$W = y \text{ for } y \leq y^* \quad (1a)$$

$$W = y + 2(y - y^*)^{1/2} \text{ for } y > y^* \quad (1b)$$

The fractional weight assigned to income above the poverty line was calculated by:

$$W(y) = \frac{1}{1-\varepsilon} y^{1-\varepsilon}$$

$\varepsilon = 0$ put full weight on all income, with no diminishing returns. As ε approaches 1, $W(y)$ becomes $\ln y$. In equations (1a) and (1b), the assumption was that $\varepsilon = 0$ for $y < y^*$ and $\varepsilon = \frac{1}{2}$ for $y > y^*$.

This treatment of income and extent of discounting continued to attract criticism (including Achayra & Wall 1994; Doessel & Gounder 1994; McGillivray & White 1993). In 1999, the HDRO adopted the approach of utilising logarithms for the income

component. This practice has continued in subsequent years. While the application of logarithmic values is still a form of diminishing returns, its treatment to higher levels of income is not as severe as previous treatments.

The second issue that attracted much attention in the early stages of the index, which has since been remedied, is the selection of maximum and minimum values for each component of the index. Initially, these values were determined on an annual basis based on the highest and lowest values observed during that period. This practice was criticised because it resulted in “moving goal posts” and it meant that a country’s HDI ranking could change over time with the change unrelated to any actual changes in development in that country (Kelley 1991). In 1994 the HDRO acknowledged the approach prevented “meaningful comparisons over time” (UNDP 1994) and established fixed goal posts for maximum and minimum values, based on the recommendations of Anand and Sen (1993). The maximum and minimum values established were noted as not observed values in the best or worst-performing countries but extreme values observed over the past thirty years for minimum values, or expected to be observed over the next thirty years for maximum values.

Another highly criticised aspect of the HDI has been the simple averaging utilised in the construction of the index and the equal weighting applied to the components. A number of reviews have suggested that weighting of the components is arbitrary and there is limited justification for equal weighting (for example, Hicks, D. 1997; Khusro 1999; Murray 1991; Palazzi & Lauri 1998). Hopkins (1991) stated that there is no a priori

rationale for adding the components that measure different aspects of development. It has been acknowledged that subjective decisions tend to be required with such an index, but is recommended that the subjectivity be made explicit to enable technical improvements to the index (Noorbakhsh 1998a). In the 1993 HDR, the HDRO utilises principal component analysis (PCA) to provide justification for equal weighting of components (UNDP 1993). Noorbakhsh (1998b) also undertook analysis using PCA and concluded “the equal weighting of the components is not very inappropriate.” Despite the HDRO applying equal weights to the components of the HDI, this equal weighting is not necessarily achieved due to the selection of the minimum and maximum values and the application of diminishing returns to the income component.

A further criticism related to the construction of the HDI is that arithmetic averaging runs counter to the notion of the components being essential and hence non-substitutable (Chowdhury 1991; Kelley 1991; Sagar & Najam 1998). The implication is that a country can mask a deficiency in one component with achievement in another component. This issue is not only problematic but contrary to the UNDP’s own explanations of development (Fukada-Parr 2001). In response to this problem, Sagar and Najam (1998) suggested the overall index should be the product of the three composite indices, that is, the index should be the geometric rather than the arithmetic mean of the components, in order to reduce the impact of performance in one indicator offsetting performance in another.

Some researchers have attempted to apply more complex techniques for constructing a development index but the results have been highly correlated with the HDI. Bhatnagar (2001a) utilised an alternative multi-step formulation of the utility function, but found correlation between the existing HDI ranks and the corresponding revised ranks to be very high. Del Valle Irala (1999) utilised multifactor analysis and weighted PCA to calculate a new index but concluded “this analysis gives us an order very similar to the (Tweeten & McGlelland)”. Nissan and Shahmoon (2001) proposed a metric based on axioms of Euclidian distance, establishing an anchor point in three dimensional space which becomes the standard against which countries are measured, but found “the rankings are somewhat similar” (to the HDI) with the correlation between the two sets of rank at 0.99.

An exception where an attempt to produce a modified index achieved some notable difference to the original HDI was by Palazzi and Lauri (1998), who used a modified development index to rank 175 countries in a single year. Their conclusion stated “change in ranking is in many cases striking, and in our view significant”. The basis for this conclusion was not a low correlation between indices, but rather that 93 of the 175 countries examined changed rank for the year (1997) examined, and for 30% of these countries, rank changed by more than five places. The approach of Palazzi and Lauri involved complex mathematical techniques and utilisation of PCA to define a line that interpolated country points.

Other researchers who have developed alternative indices have continued to use arithmetic averaging in the construction of indices, but have changed other index aspects, such as the weighting of components. Paul (1996) developed a modified HDI which gave achievements in the longevity / health and education components larger weightings at higher levels, on the basis that an increase in the value of an indicator at a higher level represents a greater achievement than an equal increase at a lower level. Kelley (1991) proposed that income should receive a higher weighting in the index than the other component on the basis that it increases people's choices and achieves improvements in the other components.

Adjusting only the income component of the HDI to reflect diminishing returns has attracted criticism on the basis of suppressing differences in this component relative to the other components in the index (Acharya & Wall 1994). Noorbakhsh (1998a) asserted that diminishing returns applies to the educational components as well, since early units of education are more valuable than later ones.

In defence of the criticisms made in relation to construction of the HDI, the simple construction is one of the benefits of the HDI and one of the main reasons why it has been widely accepted. As noted by Doraid (1997) the HDI has "the advantage of being simple requiring basic statistical data and mathematical knowledge" and is easily understood by non-specialists. Applying some of the more complex construction methods discussed or introducing further weighting of components jeopardises the simple

construction of the index, and there is yet to be strong empirical evidence that would justify such changes.

Index components

The second aspect of the HDI that has attracted some level of criticism is the components included in the index. In defence of the three components utilised, they have been noted as being the most important aspects of human development (Murray 1991) and “basic, desirable elements irrespective of national heritage, wealth or religion” (Nissan & Shahmoon 2001).

According to Smith (1991), it is more appropriate for countries to set their own standards and objectives for development, based on relevant and specific measures, rather than being measured by the indicators in the HDI. The obvious disadvantage to this approach is that progress against other countries cannot be easily compared when countries set their own standards. McGillivray and White (1993) suggest the physiological limits on life expectancy and one hundred percent ceiling on literacy restrict the disparity that these variables can display. The comparability of the indicators between countries has also been questioned, when, for example, literacy standards involve learning different languages, and schooling is vastly different amongst countries (Hopkins 1991; Murray 1991; Srinivasan 1994).

There is a group of economists that suggests human development can be represented by a single indicator, such as GDP. The benefits of allowing development to be represented by

a single element, rather than a multidimensional index, are that data is more readily available and issues related to construction of an index, such as use and weighting of components, do not arise. Chowdhury (1991) found that the HDI is highly correlated with its components, and can therefore be represented by any one of them including GDP per capita. However, Khusro (1999) considered the correlation between the HDI and its components as providing realism and acceptability to the index, rather than indicating it is not required. More generally, McGillivray (1991) found “a systematic and positive relationship” between GNP per capita and social and human welfare, and subsequently concluded that development indices such as the HDI are not required. Kelley (1991) suggested the HDI offers limited insights beyond those obtained by small modifications to simple measures of economic output.

Ogwang (1994) supported measuring development by a single indicator rather than a composite index such as the HDI, however, recommended identifying and utilising one component which is most reflective of what is trying to be measured in order to avoid many of the problems of the HDI. When Ogwang undertook analysis of the three components of the HDI to determine a single variable to measure development by, it was life expectancy rather than income which was identified as the most appropriate variable.

Calculations of correlations between the HDI and its components by critics of the HDI have mainly been performed across many countries for a single time period, rather than for a single country over an extended period. The high correlation between the HDI and GDP per capita across several countries does not account for the experience of a single

country. There may be divergences for a single country based on how GDP is distributed and utilised within that country and the priority the country places on social goals. Anand and Sen (2000) stress the importance of how income is utilised in developing countries. The 1999 HDR (UNDP 1999) indicated the correlation between GDP per capita rank and human development rank is lowest for low human development countries, the countries most likely to be the focus of development studies. This is consistent with the findings of Islam (1995).

There have also been suggestions for the inclusion of additional components, which have the potential to make the HDI more comprehensive and meaningful. Possibly, the most recommended inclusion is a measure for distribution and equity (Anand & Sen 1993; Hicks, D. 1997; Sagar & Najam 1998). Desai (1995) suggests the inclusion of social and political freedom. There is also support for encompassing environmental aspects, such as degradation and sustainability (Desai 1995a; Neumayer 2001; Sagar & Najam 1998). Notably, there is divergence as to how environmental aspects could be added into the index, which is explored further in Chapter 8.

The HDRO have noted the trade-off that exists between providing multi-faceted representation of development, which potentially removes focus from the most critical aspects of development and creating an index which is easy to interpret and use (Doraid 1997). This trade-off is recognised by Anand and Sen (2000):

“In so far as more variables are added... the already-included ones decline in significance and emphasis. There is thus a real dilemma in choosing what to include in the list.”

The difference to the index that the inclusion of additional indicators makes is also questionable. Cahill and Sanchez (2001) calculated an alternative development index which included thirty six indicators and concluded that the results were highly correlated with the HDI and that “the HDI captures most of the information in the larger set of indicators.” The evolution of composite measures of development over the past sixty years further supports the inclusion of a lower number of indicators.

Data utilised within the HDI

The third area of criticism of the HDI pertains to the actual data utilised by the HDRO. Much of the values are estimates, necessitated on the basis of censuses only taken in many countries only every seven years (Murray 1991). Rates of mortality decline for many countries are based on assumed models rather than actual data, with the result that countries for which models are applied demonstrate similar levels of improvement. Additionally, changes in education data are often estimations derived from income changes. With respect to the income component, local estimates of GNP and GDP have been shown to vary substantially from UNDP estimates. Srinivasan (1994) also makes reference to the weakness of data, especially in developing countries due to incomplete coverage, measurement errors and biases and indicates the extent of these problems are not comparable across countries. Also problematic, is data capture and collection

methods employed in developing countries. Cahill and Sanchez (2001) state “Data for developing countries in particular are often suspect, and using only a few series increases the possibility that any given country is depicted incorrectly.” Hopkins (1991) recommends spending financial resources and effort on improving the quality of data than working on computational problems of the HDI.

5.6 Conclusion

This chapter has reviewed measures of development. It commenced with providing a definition of development and an overview of the main ways in which development could be measured. It then looked at the criticisms of utilising income to measure development, before going on to examine the various multidimensional approaches that have been implemented to measure development. The HDI is one such multidimensional approach. Many of the approaches that preceded the HDI involved complex construction methods and large numbers of variables. The HDI was first introduced in 1990 and has since become a widely accepted composite index measure of development. One of the reasons for acceptance of the HDI is its simplicity and ease of understanding. Despite this acceptance, the HDI has attracted criticism and suggestions for improvement within the areas of construction of the index, components included in the index and the data utilised. These criticisms aside, the HDI has now been produced by the HDRO for almost two decades, making it the most enduring measure of development. It has been noted that the HDI provides the most value in comparing similar groups of countries, in terms of development levels (McGillivray & White 1993), which aligns it with the purposes of the current research. In Chapter 8, a modified development index will be created, based on

the HDI but taking into account some of the criticisms and suggestions identified in this chapter. The next chapter discusses the methodology that will be followed in order to further contribute to the body of knowledge pertaining to the experience of the poorest developing countries in the international economy.

6 Methodology

6.1 Introduction

The previous chapters have reviewed the literature on globalisation, trade and investment and measuring development. The purpose of this chapter is to present how the current research contributes to the body of knowledge on the impact of globalisation on developing countries. The actual analysis which will be undertaken contains a number of components, for example, selection of countries, selection of a time period, and most significantly determining how development should be measured. Each of these issues is discussed in detail. A considerable part of this chapter is devoted to describing how development will be measured, the decisions that need to be made and factors taken into consideration in order to arrive at a useful measure of development.

6.2 Research design

6.2.1 Country selection

In light of the conflicting views within the literature on globalisation, this research sought to understand the experience of two of the world's poorest countries. The rationale for choosing the world's poorest countries is that through them, this research is able to consider the experience of the world's most disadvantaged people. The United Nations designates world's poorest countries as "Least Developed Countries" (LDCs). The vast majority of these countries are in Africa and Asia.

Two countries, one from each of Africa and Asia were selected to be the focus for this research. This made it possible to compare and contrast their experience. With the countries being from different geographical areas, the implications of regional trends and developments can be also considered. The two countries selected for research are Bangladesh and Tanzania. These countries selected are vastly different in terms of production and exports. Chapter 7 examines these countries in detail, with specific regard to the transition they went through during the globalisation period. The chapter also explores regional differences and trends observed for the LDCs as a group.

6.2.2 Period of study

After selecting countries, the next step of research design was to determine the period over which data would be collected and analysed. Much of the literature points to the late 1980s as the commencement of the most recent period of globalisation. In light of this, for the purposes of the current research the commencement for the most recent period of globalisation was set at 1988. There is no indication that the most recent period of globalisation has ended, although literature on the subject tapered off early in the new millennium. Because the current research aims to understand if there has been a difference in the experience of the subject countries during the globalisation period, the end of the research period is set at the end of the Twentieth Century, or 1999. Thus, the globalisation period for this research is defined as 1988 to 1999. This period captures more than the first decade of the most recent globalisation period, and therefore will enable comparison and contrast of the experience of the two countries to the period preceding globalisation. The period preceding globalisation has been set at 1960 to 1987,

mostly because of the lack of reliable data prior to 1960. This period is considered large enough to compare and contrast the globalisation period to.

6.2.3 Measuring globalisation

The first aspect of data collection involved determining how participation in the global economy should be measured. In selecting a measure it was paramount to bear in mind that the main economic components of globalisation are trade and investment. It was considered that participation in international economic activity should be measured by openness. Various models of openness have been developed, two commonly cited being Leamer (1988) and Syrquin and Chenery (1989). These models, however, have largely been designed to examine trade policies and the extent of protectionism, while the purpose of this research is to measure participation in the international economy. Additionally, as was discussed in Chapter 2, a significant part of globalisation is investment flows, which are excluded from measures of trade.

In light of the absence of formally developed models that suit the specific purposes of the current research, it was decided to adopt the same methodology as United Nations Conference on Trade and Development (UNCTAD) in the World Investment Report (see e.g., UNCTAD 2000). UNCTAD measures trade as the total of the values of export flows plus import flows as a percentage of GDP, and investment as the total of the values of FDI inflows plus FDI outflows as a percentage of GDP. Given that both trade and investment are components of globalisation, the total of both will be used for this

research, though, analysis will be also undertaken as to how each of these changed during the globalisation period, compared to the pre-globalisation period.

Trade data was sourced from the Penn World Tables (PWT) which were originally developed by Summers and Heston (1991). The PWT is a set of national accounts economic series covering a large number of countries. Efforts on the PWT commenced in 1954 and the version utilised for this research, Version 6.1, was published in October 2002 (Heston, Summers & Aten). The PWT are “the standard database on which researchers around the world test their hypotheses concerning growth” (Dowrick 1994). By 1994 the annual citation rate for the PWT was more than one hundred and increasing on an annual basis. In addition to being utilised for measuring growth, the PWT has been adopted for similar research to the current research, for example, Dina, Coondoo, et al. (2000) utilised the PWT in their analysis of the relationship between environmental degradation and per capita real income. Investment data was sourced from the UNCTAD Foreign Direct Investment Database (UNCTAD).

6.2.4 Measuring the impact of globalisation on selected countries

The subject of this thesis is the impact of globalisation on human lives, or development, in two of the world’s least developed countries.

Measuring Development

While one way to measure development is to use income as a proxy, there is a vast body of knowledge referring to the inadequacy of utilising income to measure development, along with the construction of models that are based on more relevant data, and / or alternative measurements of development. A comprehensive literature review was undertaken, along with considerable research into the most enduring means by which to measure development, which the measure devised for this research was based on. This literature review was presented in Chapter 5. A brief synopsis of the findings is presented here, as these findings have defined the methodology for measuring development.

At the most elementary level, development could be measured by a single indicator, adjusted versions of a single indicator, a group of indicators without combining the individual indicators into a single indicator, or a composite index so that a number of indicators are brought together into a single indicator.

Development, or the improvement of people's lives, is very much a multi-faceted phenomena. Prior to the emergence of development literature in the 1940s and 1950s, it was measured with income as a proxy for advancement. As was discussed in Chapter 5, this approach has attracted much criticism because although income is a means by which the lives of people can be improved, there is not a direct correlation between income and development, as the way income is distributed and spent also determines whether or not the lives of people improve. Similarly, it is not appropriate to use one aspect of development, such as health, as a proxy, because improvements in this single factor could

have been made at the expense of other factors. That there have been numerous attempts to measure development by multiple factors provides further support for measuring development by a single factor being an inferior approach. Moreover, measuring development by an adjusted version of a single indicator does not capture the multi-faceted nature of development, either.

The selection of a group of indicators without combining these indicators into a single index is also problematic for measuring development. While selecting a group of indicators acknowledges the multi-faceted nature of the development process, it is not possible to determine if the population of a country is better or worse from examining a group of statistics, unless all of the statistics move in the same direction, and researchers that have adopted this approach, for example, the United Nations (1954), have not attempted to draw such conclusions. Thus such an approach is not appropriate for the current research which seeks to understand at an aggregate level if the lives of the populations of the subject countries have been made better, worse or remained the same.

The third approach to measuring development is to produce a composite index, whereby a number of different components representing aspects of development are combined into a single index. Although the majority of approaches to measuring development and associated factors, such as social well-being or quality of life, over the past forty years have involved the construction of composite indices of some sort, the production of a composite index has been criticised for various reasons, including that too many arbitrary

decisions must be made in constructing an index (for example, Gostkowski 1972). It is the approach of a composite index which will be followed in this research.

Constructing a composite index

In constructing a composite index, the first decision to make is what factors should be included to reflect the overall goal or purpose of the index. In the case of development, two of the most fundamental factors are health and education. Health may be reflected in the current state of health but also longevity of life. The UNDP use the term “to live a long and healthy life” in referring to the health component of the HDI. Some researchers have extended the number of factors to include other aspects such as political freedom, however all researchers who have constructed composite indices have included measures for both health and education. For the index constructed as part of this research, health and education will be included, along with income, as a ‘catch all’ for other factors that are difficult to measure. This approach is consistent with that of the UNDP in constructing the HDI.

Following selection of the components that will be included in the index is the selection of the actual indicators that will be used to measure these factors. A number of elements are influential in this selection, including, the availability of data series that most accurately reflect the purpose of the research and reliability of data in terms of consistency of definition between countries and accuracy. Clearly, data must be available – there is no point in selecting indicators for which data cannot readily be obtained for the period of the study. Further, any indicator that is included must reflect the purpose of the

study. As an example, the World Development Indicators includes in the category of health the total population. It is virtually impossible to infer anything about the quality of health in a country purely by looking at changes in the number of people residing in a country. Consistency of definition between countries is also significant if the index is going to be used to compare countries, which is most relevant with education definitions and how literacy is measured in different countries with different languages and what constitutes primary and secondary education. Accuracy of data is also critical, specifically, there should be confidence that data has been properly collected and recorded and that an indicator is an accurate reflection of how a country is performing with respect to what is being measured.

In light of the factors that need to be considered in including an indicator within a composite index, it makes sense to keep the number of components to a minimum and to only include time series that are clearly indicative of a change in the level of development. For the purposes of the index used in this research, it was decided to select only one indicator for each component. This is largely consistent with the HDI approach of a small number of indicators, and also consistent with another composite indicator commonly referred to in the literature, the Physical Quality of Life (PQLI) (Morris, 1979).

In selecting each component in the composite index the factors previously referred to were considered, however, an additional element of responsiveness to change was also considered. One criticism of the HDI is that the components are slow to change over time

(Doraid 1997) and given the purpose of this research is to examine the impact of globalisation which has been defined by a relatively short time period of twelve years, it was critical to review potential indicators to ascertain which were most responsive to change.

After selection of appropriate indicators, consideration was given to how the components would be represented in the index and how the index will be constructed. A fundamental, and contentious, issue that arises with respect to index construction is how each component will be weighted. In indices prior to the HDI, various weighting approaches were tried, and the equal weighting of the components of the HDI has been criticised for being arbitrary (for example, Chowdhury 1991). This being said, more complex models of weighting have not produced conclusively superior results. Upon review of the equal weighting of the HDI components, (Noorbakhsh 1998b) found that the equal weighting of the components was not inappropriate. As an example of an attempt to develop a more complex model of weighting, Hellwig (1972b) proposed mathematical models in constructing a composite index to measure human resource development, and after testing five different approaches to weighting concluded that weighting should be based on the purpose of the analysis being conducted, which is to say that there is no “best” approach to the issue of weighting.

Weighting comes into play for both the components of the index and the indicators used to represent these components. That is to say, for example, if there were four components, with each of these represented by four indicators, decisions would need to

be made as to the weight that is assigned to each component in the overall index, and also to the weight each indicator had for its relevant component. This issue is simplified for the current research, because each component of the composite index will only be represented by a single indicator. Consistent with the approach of the HDI, each component of the modified development index produced in this research will be assigned equal weighting, which is essentially saying that the given measures of health, education and income are equally important.

Before each component is weighted, it is necessary to convert each component into a measure that can be encompassed within the overall index. This is necessary because different raw data series cannot be aggregated, for example, the average years of schooling for a nation cannot readily be combined with the nation's mortality rate. An approach to this issue is to establish "critical points" that represent key aspects of accomplishment or otherwise for the series, and measure where individual countries sit between these points for an indicator. The approach of critical points was pioneered by Drewnowski (1970) and has been utilised in the most recent HDI. Drewnowski defined critical points as representing characteristic levels of satisfaction of needs expressed by an indicator, and defined the lowest point as a level whereby the need is not satisfied at all, a middle point where the minimum accepted level is comparable to a poverty line, and finally, the full satisfaction point where the level of satisfaction is fully adequate. The HDI approach uses only two critical points of minimum and maximum levels for an indicator. For the current version of the HDI, these amounts are fixed values based on previously observed values and on values that are expected to be observed over an

extended time period. The rationale for this approach is that it provides fixed goal posts to measure a country's movement between. A similar approach has been adopted for the current research, with the fixed values taken from observed values of the chosen indicators. Each country is ranked between zero and one for each component based on where it lies between the established critical points.

The most basic way to construct an index is to derive an unweighted arithmetic average, to enable each country's rating to be a value between zero and one. This approach has been criticised for its simplicity, and because it enables positive movement in one indicator to offset negative movement in another (for example, Kelley 1991). Despite these criticisms and attempts to develop more complex models, there is an absence of accepted alternatives. One element that is considered in the current research is the impact of constructing the composite index via geometric rather than arithmetic mean. The rationale for calculating the geometric mean is that it reduces the impact of performance in one indicator offsetting performance in another (Sagar & Najam 1998). In response to some of the criticisms of the HDI, which are explored in Chapter 7, inclusion of a measure of inequality into the index being constructed was investigated. Similarly, given that some of the globalisation arguments focus on adverse environmental impact, consideration was also given to including an environmental indicator within the composite index.

6.2.5 *Data analysis*

Following the construction of indices via both arithmetic and geometric means, the correlation coefficients between the two indices are examined to determine if it is acceptable to proceed using only one of resultant indices. If there is a high level of correlation, then only the index constructed via arithmetic mean for each country will be further analysed. Secondly, the correlation coefficients between the components of the index and the index itself are calculated to ascertain the correlation between components, and the correlation of the components to the overall index. The rationale for this analysis, firstly, is to understand how the components have moved in relation to each other, and secondly, because the components of the HDI are highly correlated with the composite index (Chowdhury 1991) and it will be interesting to establish if the same trend exists with the composite index that has been produced within this research. This analysis will be further broken down to ascertain if different trends were observed during the globalisation period, to what was observed within the globalisation period.

Following the analysis of the structure of the resultant development index, analysis will be undertaken as to how the index moves over time in comparison with the measure of openness for each country. Widely utilised econometric techniques will be utilised in the analysis, including tests for cointegration and Granger causality. The purpose of this analysis is to ascertain, firstly, if there is any relationship between openness and development, and secondly, if a relationship exists, the nature of the relationship, and more specifically whether openness precedes development. This will shed light on whether the impact of participating in a globalised economy has been positive or negative

for development, while consideration of openness will shed light on whether the two countries that are the subject of this research have been impacted or by-passed by the most recent period of globalisation.

6.3 Conclusion

This chapter has presented the methodology for this research. It has explained the relevance of the literature reviewed in the past three chapters and provided an understanding of the analysis which will be undertaken and discussed within the remaining chapters. In summary, the design of this research has encompassed selection of how globalisation will be measured and the time period over which globalisation will be measured. It has also involved establishing a period of time prior to globalisation so that what is observed during the globalisation period can be better understood as either being distinct or a continuation of earlier trends. A second aspect of the research design has been the selection of subject countries. Bangladesh and Tanzania have been chosen, largely because of the regions that these two countries are located in, and because both countries are recognised as being amongst the world's poorest countries. Finally, a major component of this research is the generation of a new means by which to measure development. This chapter has presented the stages to generate this new measure of development, and how it will be utilised to assist in the understanding of the impact of globalisation on the selected countries. It has also outlined how the measures of openness and development will be analysed for the purposes of achieving the research objectives, set in Chapter 1. In the next chapter Bangladesh and Tanzania are examined in detail.

7 Bangladesh and Tanzania

7.1 Introduction

The purpose of this chapter is to review the two countries which are the subject of this study. The chapter commences with a brief overview of LDCs and their performance during the late Twentieth Century. The chapter then moves on to consider the regions in which each of the countries is located, and differences in the economic and trade performance of the regions is discussed and explored. Following on from this, the countries are examined in detail. Some of the factors that are considered pertain to economic performance in the period prior to globalisation, changes during globalisation, domestic reform programmes undertaken, changes in export patterns in terms of volume, value, specific exports and trading partners, and foreign investment. The experience of each country is compared and contrasted. Understanding each country, the regions in which they are located and the broader economic group in which they are designated will assist in interpreting results of the quantitative research which is undertaken in subsequent chapters of this thesis. It also provides some empirical evidence to support or contradict the literature that has been reviewed in earlier chapters, in relation to economic theory and globalisation.

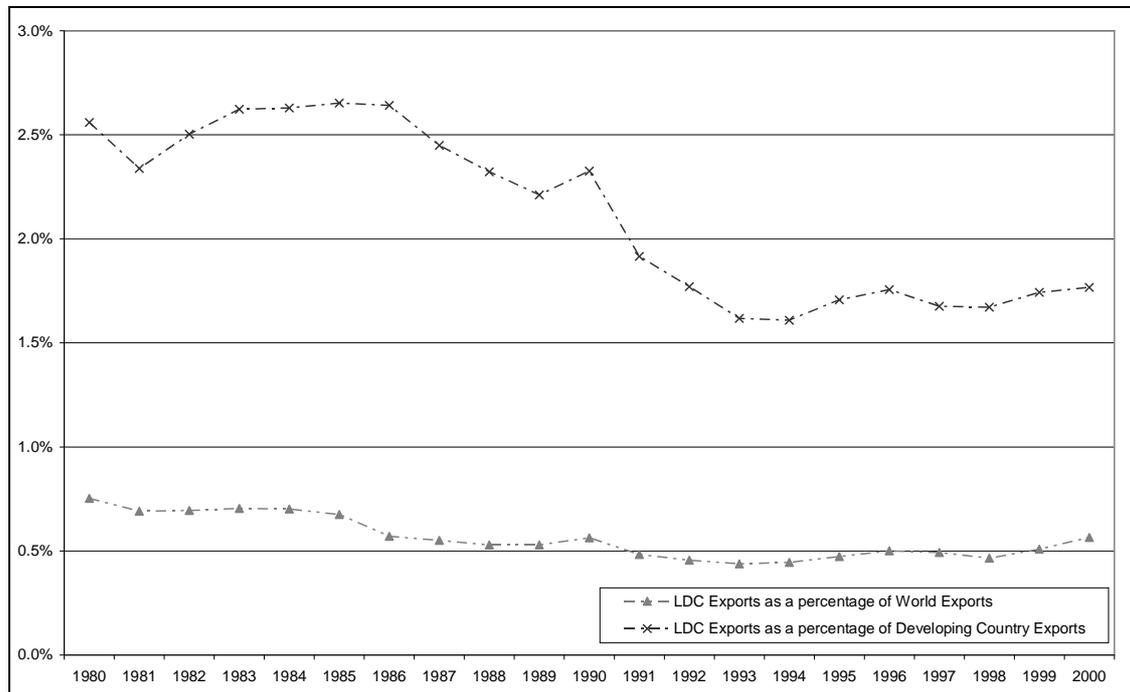
7.2 Least Developed Countries

The LDCs are, put simply, the world's poorest countries. There are currently fifty LDCs of which thirty-four are located in Africa, fourteen in Asia and the Pacific region and one

in each of Western Asia and the Caribbean (United Nations). LDCs are designated by the United Nations. These countries are characterised by low income, weak human assets and economic vulnerability (UNCTAD 2007). LDCs are reasonably well integrated in the international economy. During 1997-1998 exports and imports represented on average 43% of GDP for these countries, which is comparable to the world average (UNCTAD 2002b).

The poorest LDCs suffer from primary commodity dependence. Since 1960 there has been a long-term downward trend in non-oil commodity prices, which means that incomes for the LDCs with primary commodity dependence have declined (UNCTAD 2002b). The situation is further exacerbated because these LDCs typically have a narrow range of exports, and therefore any movement in the prices of the commodities which are exported are severely felt. Globalisation has adversely affected LDCs though reinforcing exposure to a narrow range of commodities and making it difficult for LDC producers to participate in global markets. The trends that have been evidenced during the most recent period of globalisation, as outlined in Chapter 2, have made it increasingly difficult for producers from LDCs to participate in international economic activity. Between 1980 and 2000, the group of LDCs lost ground both in terms of their contribution to overall world exports, and to the exports of developing countries, as depicted in Figure 7.1. LDC exports fell from 0.75% of world exports to 0.59% between 1980 and 1999, but fell to a low of 0.44% in 1992 and 1993. During the same period, LDC exports fell from representing 2.56% to 1.83% of developing country exports.

Figure 7.1: LDC export performance between 1998 and 2000



Source: UNCTAD Foreign Direct Investment Database (2007)

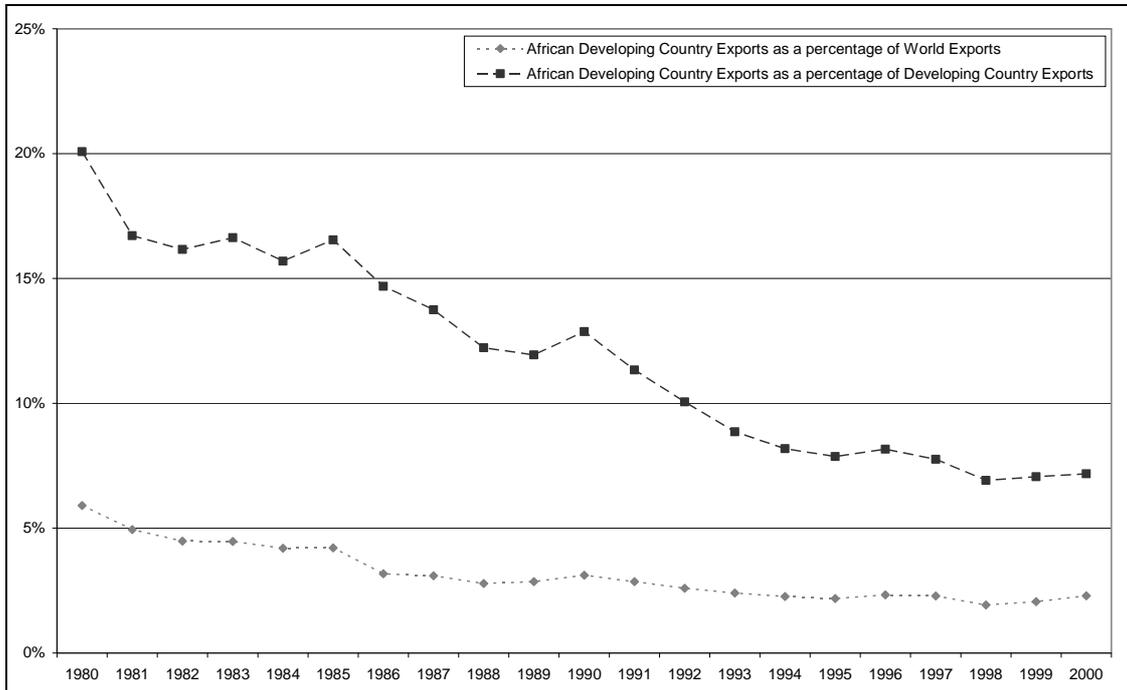
In the last few years of the Twentieth Century, both the export and economic performance of the group of LDCs improved. However, this observation of aggregate group performance masked the trends observed for individual countries. Between 1997 and 2000, thirteen of the countries within the LDC group experienced negative GDP per capita annual growth, despite a similar number of other LDCs experiencing growth in excess of 3% per annum during the same period (UNCTAD 2002b). Further, while aggregate export levels of the LDC group appeared high within the same period, more than one third of LDCs experienced contraction of their trade during this period. As would be predicted, the countries that performed better were those that export predominantly manufactured goods and / or services, which were largely the Asian LDCs.

Capital flows followed similar patterns to those of trade. The 1990s saw a reduced amount of foreign aid but a higher level of private capital flows to developing countries, including the LDCs. There was actually a decline in real long-term capital inflows per capita to LDCs of 21 per cent between 1990 and 2000 (UNCTAD 2002b). There was also disparity in the experience of individual countries, with 33 of the then 46 LDC countries receiving lower aggregate net resource flows in 1999-2000 than in 1994-1998, while a small number of countries received higher net resource flows.

7.3 Regional comparison of performance

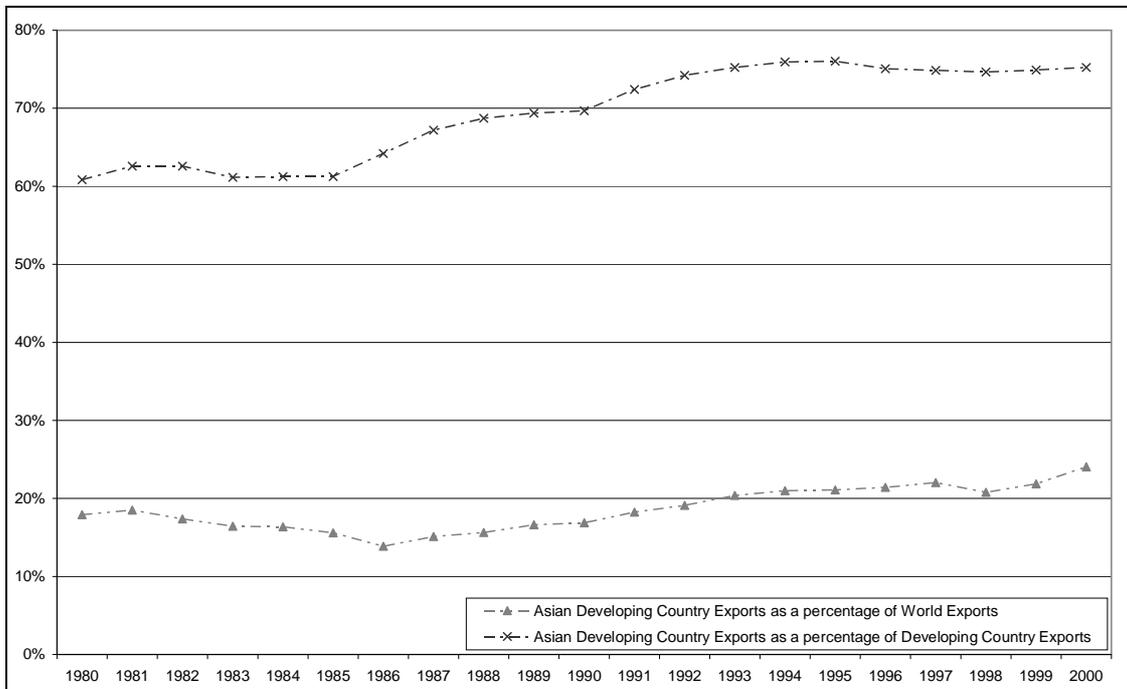
As was touched on in the previous section, the export performance of African developing countries (DC) has been weak in comparison to the performance of Asian DC. Figures 7.2 and 7.3 demonstrate this. Africa DC exports have fallen from 5.9% to 2.3% of world exports between 1980 and 2000, but fell to below 2% in 1997. Similarly, in 1980, Africa DC produced around 20% of the developing world's exports, however, by 2000 this had fallen to 7%. The participation of Africa DC in the international economy has more than halved during a period when DC exports have actually increased as a proportion of world exports from 29 to 32%, as shown in Figure 7.4. The improved overall performance of DC is therefore due to other regions, such as Asia. Between 1980 and 2000, Asia DC exports averaged a growth rate of 7% per annum, whereas Africa DC exports grew at only 1% per annum (UNCTAD 2003).

Figure 7.2: African developing country export performance 1980 - 2000



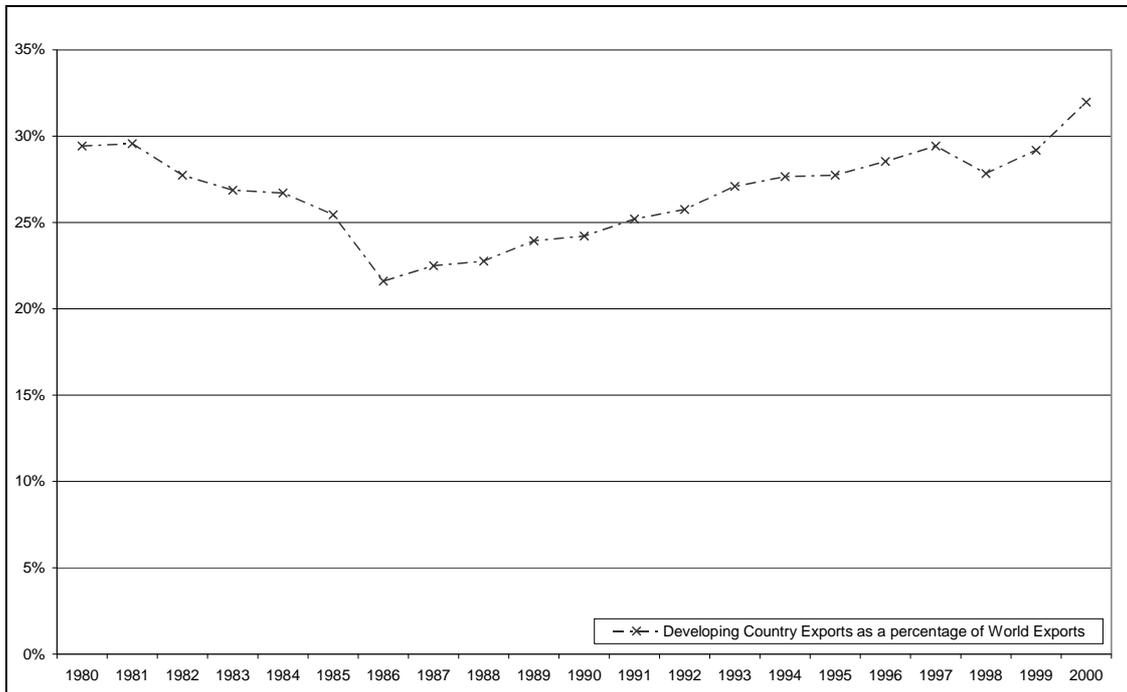
Source: UNCTAD Foreign Direct Investment Database (2007)

Figure 7.3: Asian developing country export performance 1980 - 2000



Source: UNCTAD Foreign Direct Investment Database (2007)

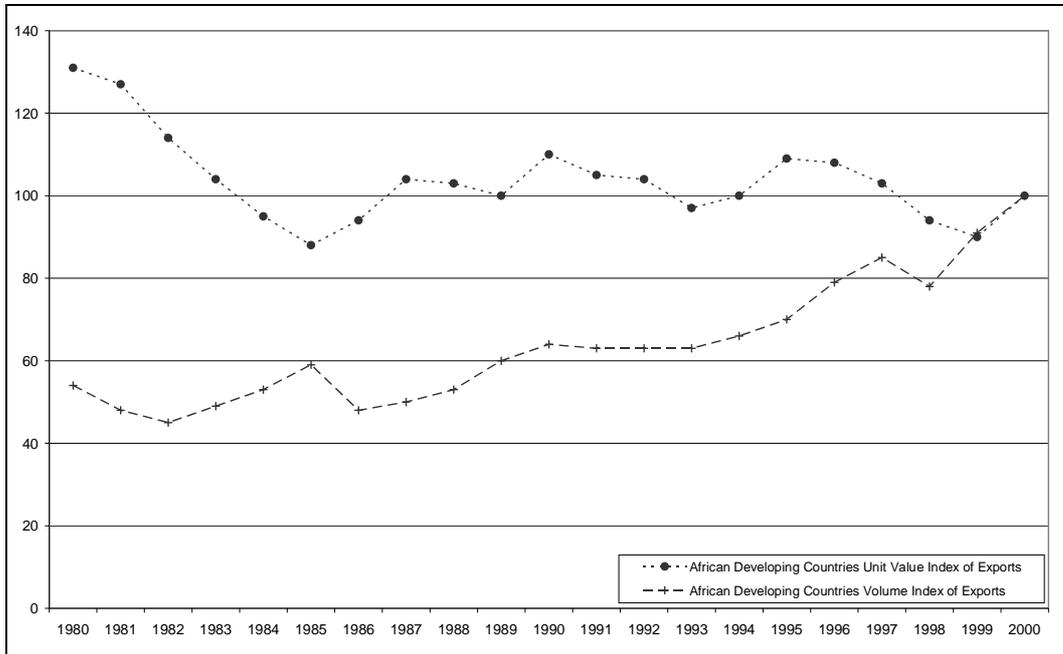
Figure 7.4: Developing country export performance between 1980 and 2000



Source: UNCTAD Foreign Direct Investment Database (2007)

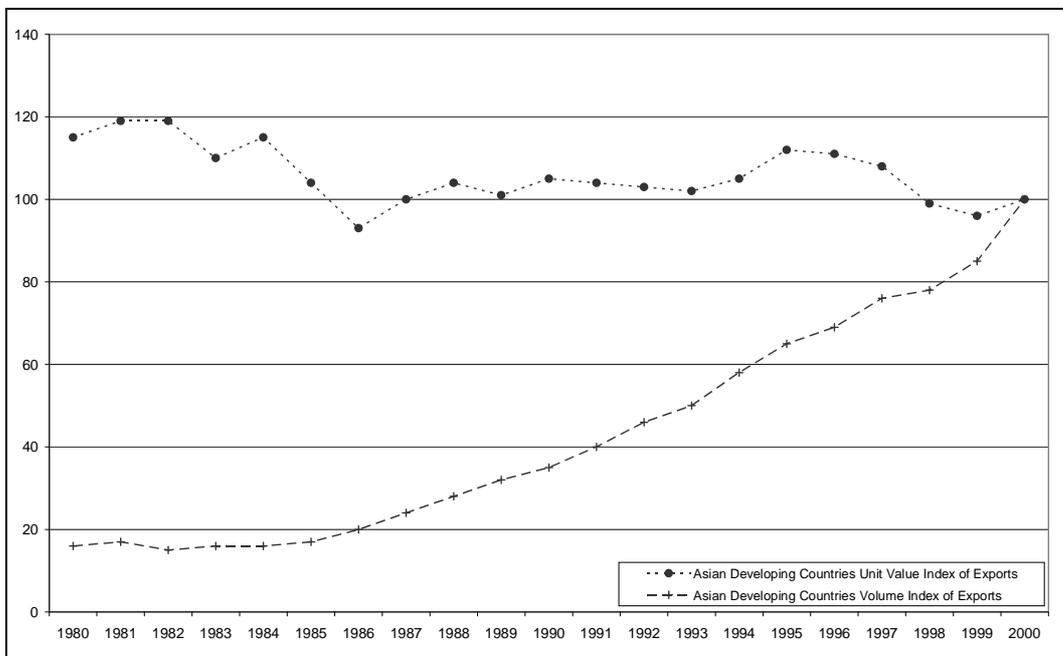
Examination of Africa DC exports in more detail reveals that between 1980 and 2000 the volume of exports actually rose, while the unit value of exports declined, as presented in Figure 7.5. Hence, African DC were exporting a higher volume of goods and services, but receiving less export income from these goods and services. This is largely attributed to the composition of these exports, and supports the notion of a persistent decline in the prices African countries received for their exports. In contrast, the Asian experience, as presented in Figure 7.6, demonstrates a larger increase in volume of exports and a smaller decline in the unit value of exports.

Figure 7.5: African developing countries – value and volume of exports (base year 2000)



Source: UNCTAD Foreign Direct Investment Database (2007)

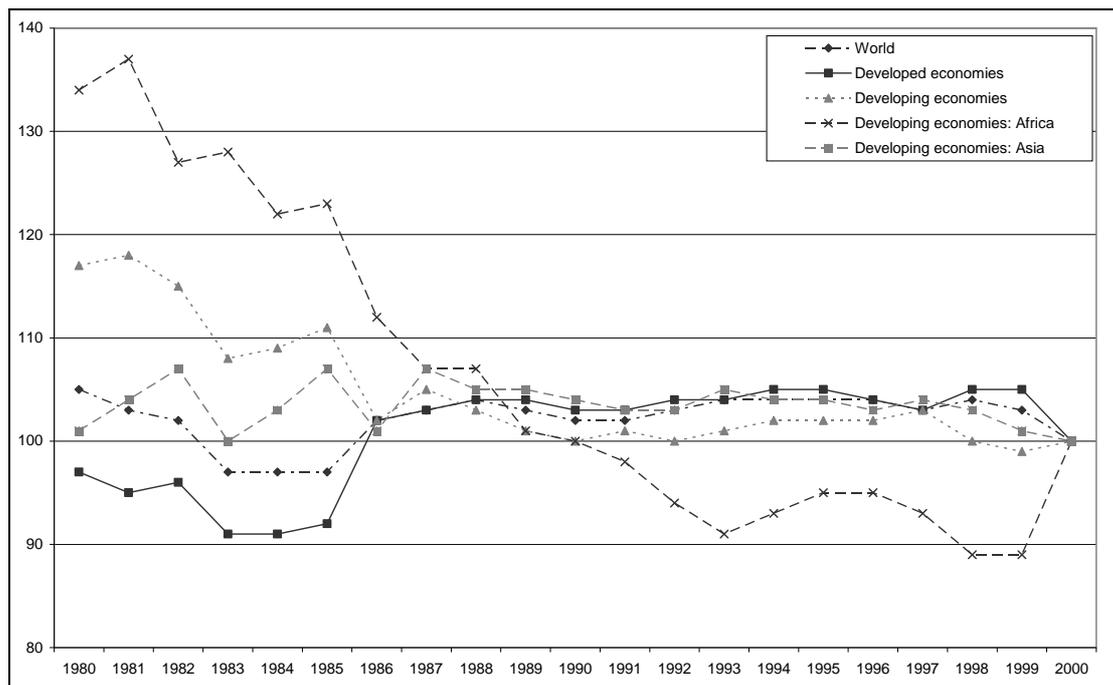
Figure 7.6: Asian developing countries – value and volume of exports (base year 2000)



Source: UNCTAD Foreign Direct Investment Database (2007)

The terms of trade for both African and Asian developing countries, along with the terms of trade for developing countries as a group, developed countries and the world for the period 1980 to 2000 are presented in Figure 7.7. It is evident that African developing countries have experienced the largest trend decline and volatility in terms of trade of the groups presented. Notably, most of the decline occurred prior to 1993, and the terms of trade for African developing countries actually improved during the 1990s. Between 1980 and 2000, the terms of trade for Asian developing countries as a group remained relatively stable and from 1987 onwards largely moved in line with world terms of trade.

Figure 7.7: Terms of trade performance (base year 2000)



Source: UNCTAD Foreign Direct Investment Database (2007)

World trade in primary commodities has been growing at a lower rate than trade in manufactured goods. Between 1980 and 2000, the average rate of growth in the trade of

primary commodities was only one-third of the annual growth rate of world trade in all products (UNCTAD 2003). In 1980, 75% of developing country exports were agricultural commodities. During the following twenty years, the pattern changed such that by the turn of the century developing country exports comprised 70% of manufactured goods (UNCTAD 2003). African developing countries, however, did not follow this pattern, with their manufacturing exports increasing from 20 to only 30% of total exports between 1980 and 2000. Exports of this group remained predominantly primary commodities. In 2000, Africa produced less than 1% of the world's manufactured exports, and had a growth rate of manufactured goods which was less than half the growth rate of Asia's and Latin America's growth rate for manufactured goods (UNCTAD 2003).

In the trade of agricultural commodities, Africa lost market share to producers in both developed and other developing countries during the last decade of the Twentieth Century. For example, market share of cocoa, tea and coffee was lost to producers in Asia and Latin America and market share of cotton and sugar was lost to producers in the US and Europe (UNCTAD 2003). Some of the lost market share can be attributed to subsidies and other protectionist policies implemented by competitors and importing countries. A further issue was a change to the type of agricultural commodities which were being traded, with non-traditional commodities such as fish and seafood and some types of fruit and vegetables being increasingly demanded. Such commodities typically have higher income elasticities of demand than traditional commodities and lower rates of protection in developed countries. Traditional commodity exports also faced competition from the introduction of substitutes, for example, the introduction of

synthetic fabrics reduced demand for cotton. Finally, commodities were increasingly differentiated in terms of quality, country of origin and environmental and social conditions of production. All of these changes in the nature of commodity exports were disadvantageous for African commodity producers. Thus, Africa lost ground in traditional exports, combined with an inability to diversify according to global demand.

Part of the reason why African countries were unable to diversify was due to structural constraints. Agricultural productivity remained low as a consequence of land tenure, small-scale farming, low levels of technology and government investment, and the lack of promotion of innovation. Infrastructure in African countries was typically poor with underdeveloped road and rail networks, unreliable communication systems and information technology not readily available. Agricultural producers were unable to obtain access to finance, logistics, capital resources and skills that producers in other continents were able to access. Further, the private sector in many African economies was not well developed and as a consequence, domestic producers did not face the same competitive pressures as producers in other economies. A further problem was that the narrow range of exports each African country tended to be reliant upon, resulted in exposure to instability of commodity prices and supply-side shocks, such as weather conditions. These constraints meant that inroads to changing commodity exports to meet the changing nature of global demand were largely not been able to be made. Some of the other problems experienced by African countries pertained to poor health, as a consequence of AIDS and Malaria, and high levels of external debt, which required servicing and repayment.

7.4 Country review

7.4.1 Geography and population

Geography

Bangladesh is located in South Asia, on the northern coast of the Bay of Bangal and has a land area of approximately 147 square kilometres. It is surrounded by India with a small common border with Myanmar in the southeast. Tanzania is located on the east coast of Africa and has a land area of 886 square kilometres, with a coastline of 1,424 km. It includes mainland and the islands of Mafia, Pemba, and Zanzibar. Neighbouring African countries are Uganda, Kenya, Burundi, Rwanda, Congo, Mozambique, Zambia, and Malawi.

Population

Bangladesh is one of the world's most densely populated countries. Between 1988 and 1999, population density increased from 720 people per square kilometre to around 880 people per square kilometre. During the same period the annual population growth fell from 2.28% to 1.61% (The World Bank 2001). These growth rates were lower than the years preceding the study and were a consequence of government efforts to control population growth. During the period of the study, population rose from 106 to 128 million people. The proportion of the population under 15 fell from 45% to 39%, with this change being picked up by the age group between 15 and 64. The proportion of the population over 65 remained static for the period, at 3%.

In comparison to Bangladesh, Tanzania has a much lower population density, which increased from 27 to 37 people per square kilometre between 1988 and 1999 (The World Bank 2001). The annual population growth rate decreased from 3.14% to 2.44% during the period of study. The fall in population growth rate was largely attributed to disease prevalence, specifically AIDs and Malaria, rather than conscious actions by the government to control population growth. During the period of study, the Tanzanian population rose from 24 to 33 million. For Tanzania, the population under 15 remained static at 46% of the population, as did the proportion of the population over 65 at only 2% of the population.

7.4.2 Health and education

Health

Table 7.1 presents changes of some of the main health indicators for each country during the period of study. These indicators assist in explaining the population trends observed in the previous section. The crude death rate fell in Bangladesh between 1990 and 1999, from 12.4 to 9.1 deaths per 1,000 people, reflecting an improvement in health. During the same period, the crude death rate rose in Tanzania from 13.6 to 16.7 deaths per 1,000 people (The World Bank 2001), due largely to AIDS and Malaria. The crude birth rate fell in each country. In Bangladesh this can be attributed to the increased prevalence of contraception. Infant mortality and under 5 mortality rates fell in both countries, although the decrease was much larger in Bangladesh than in Tanzania. Adult mortality rates fell in Bangladesh, but rose in Tanzania, during the period of study, largely reflecting mortality attributable to the diseases mentioned previously. Life expectancy rose by 6

years for Bangladesh, however, fell by 5 years for Tanzania, from a lower starting position. Adverse economic conditions and balance of payment constraints adversely affected the provision of health services in Tanzania during the 1990s (EIU 2001b).

Table 7.1: Bangladesh and Tanzania health indicators

| | Bangladesh | | Tanzania | |
|---|------------|-------|----------|-------|
| | 1990 | 1999 | 1990 | 1999 |
| Death rate, crude (per 1,000 people) | 12.4 | 9.1 | 13.6 | 16.7 |
| Birth rate, crude (per 1,000 people) | 32.7 | 28.0 | 43.8 | 40.0 |
| Mortality rate, adult, female (per 1,000 female adults) | 308.2 | 290.0 | 373.3 | 500.0 |
| Mortality rate, adult, male (per 1,000 male adults) | 321.7 | 276.0 | 444.3 | 542.0 |
| Mortality rate, infant (per 1,000 live births) | 90.6 | 61.2 | 114.8 | 94.8 |
| Mortality rate, under-5 (per 1,000 live births) | 136.0 | 89.0 | 175.0 | 152.0 |
| Life expectancy at birth, total (years) | 54.7 | 60.7 | 50.1 | 45.0 |

Education

The adult illiteracy rate in both Bangladesh and Tanzania declined during the period of the study. For Bangladesh, the adult illiteracy rate fell from 65.8% to 59.2% between 1989 and 1999. Similarly, in Tanzania, the adult illiteracy rate fell from 37.5% to 25.3% (The World Bank 2001). Hence, Tanzania started with a much lower adult illiteracy rate than Bangladesh, and made a larger improvement during the period.

In Bangladesh, there are large disparities in literacy rates between urban and rural and male and female populations (EIU 2001a). The government is the main provider of

educational services in the primary sector, while secondary education is largely provided by private schools. Since 1993, education has been universal, compulsory and free. Primary school enrolment increased markedly during the 1990s with the number of primary school children growing from 12 million in 1990 to 17.7 million in 2000 (The World Bank 2001). Notably, however, less than half of children complete five years or more of primary education.

Tanzania has placed a high priority on education since the 1960s, as part of the socialist philosophy. Education has been free and officially compulsory (EIU 2001b). Due to economic conditions total primary school enrolment fell during the 1980s and early 1990s, but increased in the second half of the 1990s. Government spending on education increased during the second half of the 1990s.

7.4.3 Resources

Natural resources

Bangladesh has rich and fertile soil. In 1999, 61.4% of land was arable, down from 70.6% in 1989 (The World Bank 2001). The amount of arable land in 1999 was slightly less than 8 million hectares. Around 30% of arable land in Bangladesh is subject to serious flooding (EIU 2001a). The proportion of cropland that was irrigated in Bangladesh increased from 29% to 46% between 1989 and 1999. Urbanisation reduced the land available for cultivation, and by 2000 there was limited additional land which could be brought into production. Bangladesh is poor on non-energy minerals, and the main energy resource is natural gas.

Despite Tanzania having a much larger land area than Bangladesh, it has had a smaller amount of arable land. The percentage of land considered to be arable increased from just 3.94% to 4.24% of land between 1989 and 1999. The total amount of arable land in 1999 was 3.75 million hectares, less than half that of Bangladesh. The proportion of this land that was irrigated remained static at around 3.3% between 1989 and 1999. Tanzania has substantial mineral resources including nickel, iron, coal, gold, diamonds and other gemstones. It also has petroleum deposits and natural gas.

Infrastructure

In the late 1980s, infrastructure was relatively underdeveloped in Bangladesh. Throughout the 1990s considerable improvement was made on the infrastructure especially the road network. Between 1991 and 2000, the road network grew from 14,104 km to 20,958 (EIU 2001a). The use of rail transport declined during the period of study as freight and passengers were increasingly transported by road. Waterways, the main means of organised transport in 1990, diminished in use for transportation during the period of study, but remained important for some of the remote parts of the country. In 1990 Bangladesh had two major sea ports and a number of smaller ones. Telecommunications and postal services remained underdeveloped throughout the period of the study, and in 2000 Bangladesh had one of the lowest telephone densities in the world. Local press was reasonably well developed in the late 1980s, and did not change much during the period of study.

The infrastructure of Tanzania was largely underdeveloped during the period of study. Historically, there has been underinvestment in infrastructure in Tanzania, although in the 1990s donor-led investment resulted in improvement to infrastructure, including the road network. In 2000, the country had 10,000 km of main roads, but was in the process of creating a further 3,000 km of new main roads. In addition, there were a further 70,000 km of minor roads. In comparison in 1990, there was 55,900 km of roads of which only 2,660 were bitumised. In 1999 Tanzania had approximately 2,600 km of rail network which had not changed during the period of study. The rail network was considered to be in relatively poor condition (EIU 2001b). Also in 1999 Tanzania had three international airports and four major harbours, which was the same as in 1990. The ports of Tanzania serviced cargo for land-locked African countries, in addition to servicing cargo for Tanzania. Postal and telecommunication services were poor for the duration of the study. A number of newspapers emerged during the 1990s, and a television service was introduced. Radio was the predominant means of mass communication.

Energy

In Bangladesh in 1999, there was a lack of reliable electricity supply, which was a deterrent to foreign investment. Gas is the main energy resource in Bangladesh and there are large natural reserves. In 1999 approximately half of the gas extracted was used for power generation, with the remainder being used for fertiliser production, household cooking and other industrial uses. Commercial energy consumption was among the lowest in the world throughout the period of study. Around 85% of households had no electricity in 2000, less than 60% of electricity was being paid for and system losses were

around 37% of electricity generated. In 2000 some 3.23 million tonnes of oil was imported, in comparison to just under 2 million tonnes in 1989. Households without access to other energy supplies relied on fuelwood (EIU 2001a).

Tanzania met around 90% of its energy needs by biomass fuels, particularly wood in 2000. Petroleum and electricity accounted for 8% of energy needs and coal and other energy sources for less than 1%. This pattern was consistent throughout the period of study. Households predominantly used biomass fuels, while the commercial sector utilised the other fuel types. Some hydroelectric power was generated, which was dependent on erratic rainfall. Tanzania was able to meet around 35% of its demand for petroleum from domestic sources, while importing the remainder. Coal was also produced domestically.

7.4.4 The economy

Recent economic history including reform programs

Both Bangladesh and Tanzania undertook economic reform during the 1980s. This section reviews the circumstances that led to the programs being introduced and the reforms that were introduced. The following section examines the economic performance of each country after implementation of reforms.

Bangladesh became independent from Pakistan in 1971. The war of independence resulted in a period of economic instability, however recovery occurred toward the end of the 1970s, along with both economic and political stability. A significant reform program

was implemented from the 1980s in order to foster market-lead, export-oriented growth (Muqtada, Singh & Ali Rashid 2002). The key reforms implemented pertained to macroeconomic stabilisation, fiscal control, balance of payment control, structural adjustment reforms, productivity growth in agriculture and improving the business environment (ODI 2005). Macroeconomic stability involved controlling inflation and inflationary expectations, and limiting government borrowing. Domestic revenue and public expenditure were kept low. The balance of payments improved as a consequence of success of non-traditional exports in the form of ready-made garments. Remittance receipts also grew. Bangladesh only made use of concessional lending, which assisted in avoiding debt problems. Controls were removed on domestic prices and investment, and foreign investment was encouraged in the areas of telecommunication and natural gas. State-based monopolies in financial services and agricultural input supply and marketing were abolished. Productivity in agriculture rose through improved seed and fertiliser technology and irrigation, which increased the cropping intensity of land. Improvements in the business environment enabled the garment industry to grow, for example, through factor markets channelling capital, business skills and labour supplies to the industry. New enterprises grew as a consequence of low barriers to entry. Export Process Zones (EPZs) were established in order to encourage foreign investment (EIU 2001a).

Tanzania became independent from the UK in 1961. At the time of independence, the economic policies which were implemented during colonialism continued to be followed. In the late 1960s Tanzania implemented a socialist strategy, with the government taking control of most aspects of economic activity, including finance, trade and price setting. A

key aspect of the socialist strategy was the establishment of villages to promote co-operative agriculture. This was a significant step as the majority of Tanzania's population worked in subsistence farming. Economic performance deteriorated during the 1970s and the first half of the 1980s, and by the mid 1980s, economic performance was at its lowest since independence. The cause of the crisis was considered to be the macroeconomic environment and central control of economic activity (Government of the United Republic of Tanzania & The World Bank 2002). The crisis was evidenced across a number of aspects of the economy including production and output, the agricultural sector, balance of payments, foreign exchange, inflation, infrastructure, interest rates and the public sector. More specifically, between 1980 and 1985 GDP growth averaged 1 per cent per annum, and GDP per capita growth was negative. Poor agricultural sector performance resulted in food shortages and declining volumes of traditional commodity exports. Balance of payments issues arose as a consequence of declining export volumes and export prices, rising import prices and debt-servicing obligations. The currency was overvalued and there was shortage of foreign exchange. Inflation was rising, as was the budget deficit, the latter caused by government borrowing. Social and physical infrastructure declined as the government was financially unable to maintain it. Aid flows declined or foreign aid donors withdrew support, largely because of the socialist reforms which had been implemented and the government's refusal to compromise on these reforms.

In response to the crisis, the Tanzanian government implemented two successive internal stabilisation programs in 1981 and 1982, to restore growth and improve agricultural

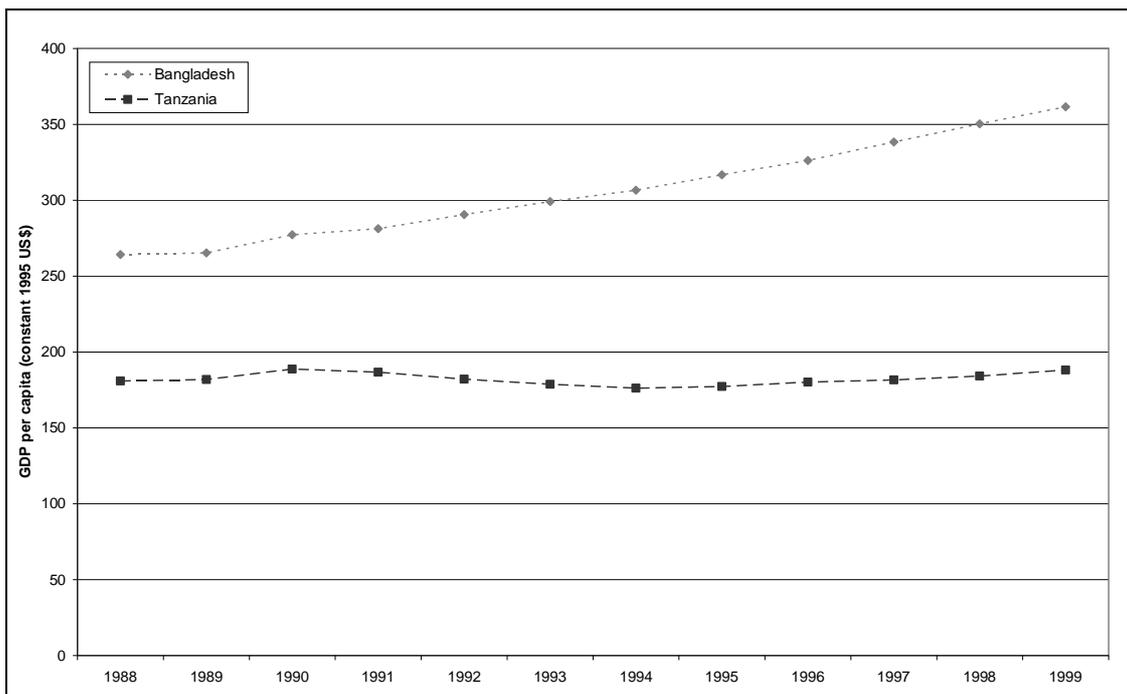
output. These programs were of limited success, because they did not address the structural issues of the economy, or achieve a satisfactory level of foreign exchange. In 1986 a more comprehensive reform program was put in place with the assistance of the World Bank and the international Monetary Fund (IMF). One of the key aspects of the program was dismantling the state-controlled enterprises. By 1989, some improvements were evidenced, GDP growth improved to around 4% per annum, which was largely the result of improvements in agriculture, but also improvements in industrial output and trade. Manufacturing utilisation improved and exports increased. Despite the improvements evidenced, economic growth continued to be limited by a number of factors including inadequate investment in infrastructure, high inflation, weak balance of payments, a declining trend in the provision of social services, and weakness in the systems that supported agricultural production. A subsequent program was commenced to continue the progress that was being made and address some of the gaps that remained. The result of this program was also mixed, for example, inflation improved but agricultural performance declined. Reform programs continued throughout the 1990s with the assistance of the IMF, with the objectives of macroeconomic stabilisation, increased production, efficient resource allocation, growth of the private sector and poverty reduction.

Overview of economic performance during the period of study

As discussed in the previous section, both countries implemented reform programs during the 1980s. While Bangladesh was able to successfully implement a number of reforms, the success of Tanzania was more constrained. In 1998, the GDP of Bangladesh was

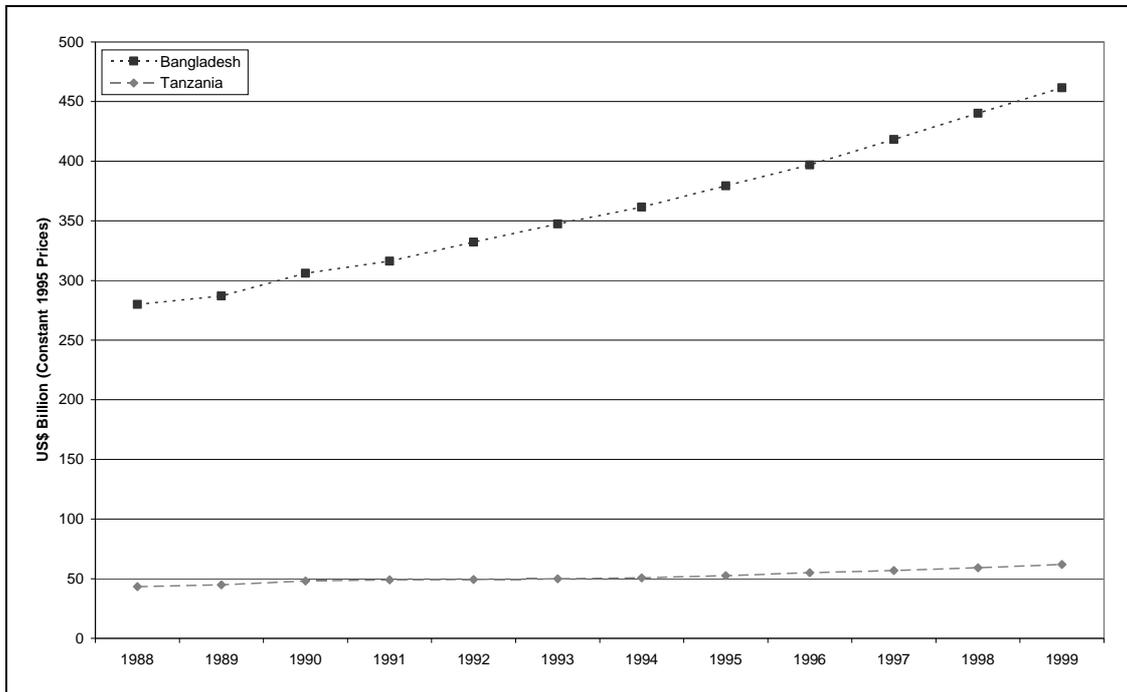
\$280B. In comparison the GDP of Tanzania was less than \$50B in the same year. This translated into GDP per capita of \$264 and \$181 for each country respectively. Between 1989 and 2000, Bangladesh averaged an annual GDP growth rate of 4.7%, while Tanzania averaged a lower annual growth rate of 3.3%. GDP per capita measured at constant 1995 US Dollars remained largely unchanged during the period for Tanzania, as demonstrated in Figure 7.8. In comparison, it rose to \$362 for Bangladesh. Figure 7.9 demonstrates movement of GDP for each country during the period of study.

Figure 7.8: GDP per Capita – US Dollars (Constant 1995)



Source: World Development Indicators (2001)

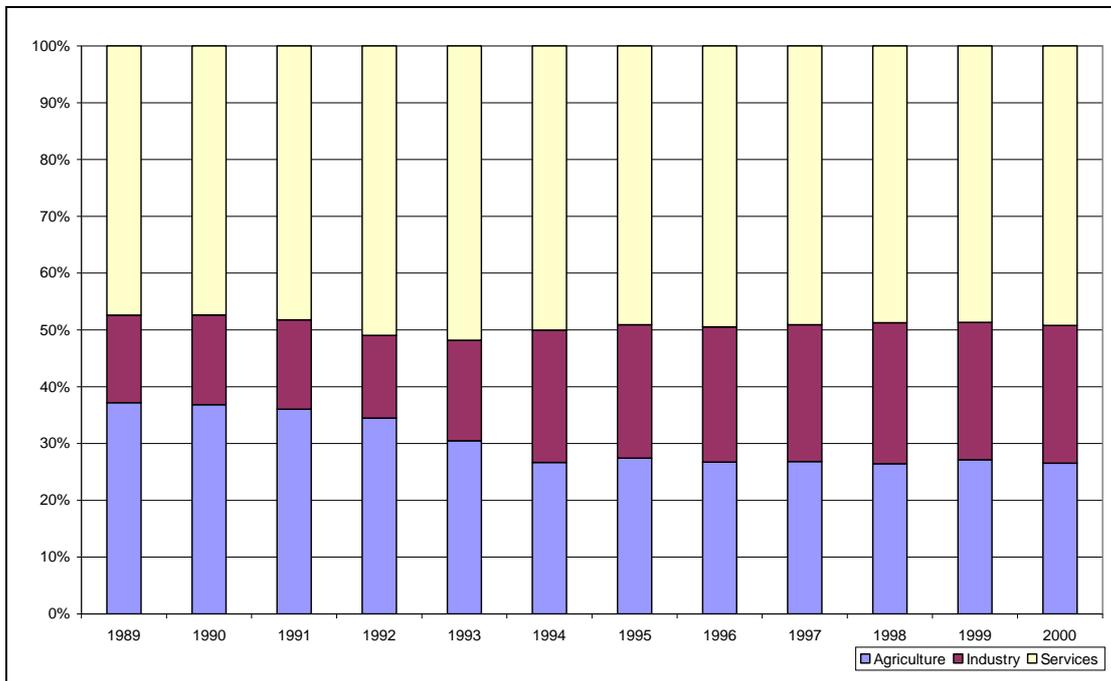
Figure 7.9: Gross Domestic Product – US \$Billion (Constant 1995)



Source: World Development Indicators (2001)

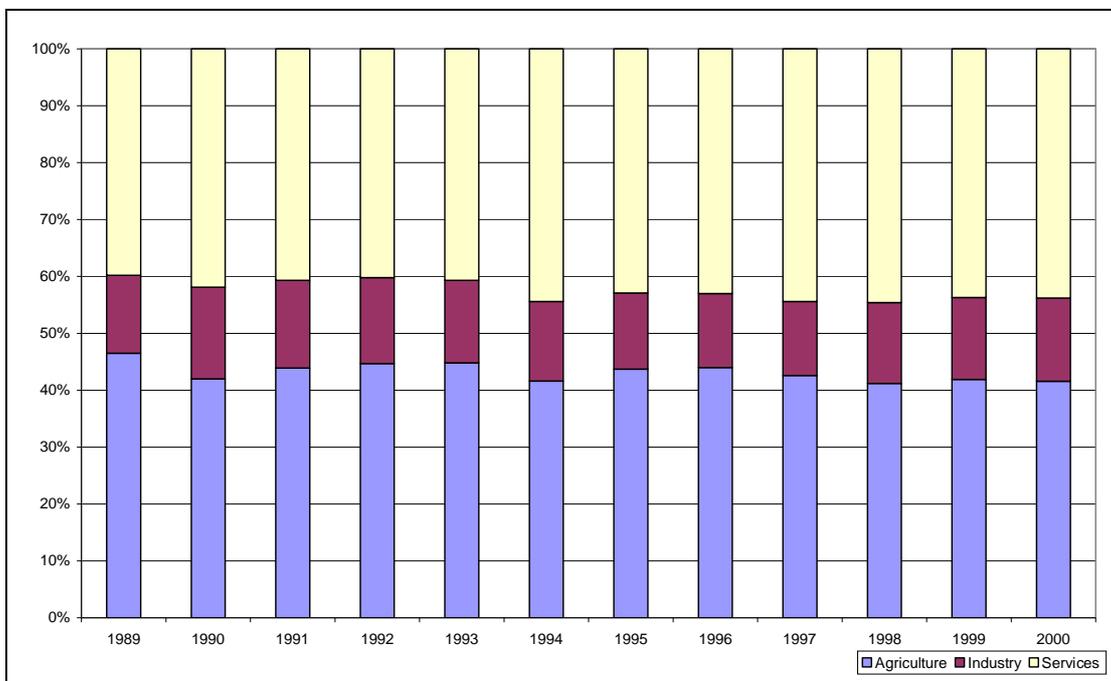
In reviewing the sectoral composition of GDP for each country, for Tanzania there was limited change during the period of study. Agriculture declined in importance by slightly from 46% to 42% of GDP between 1988 and 2000, with services increasing in importance the same amount, largely as a consequence of tourism. Industry remained static. In comparison, agriculture became less important to the economy of Bangladesh, as the manufacturing sector grew during the period of study. Agriculture fell from 37% of GDP in 1988 to 26% of GDP in 2000, while manufacturing rose from 15% to 24% of GDP. The sectoral composition of the two economies for each year of study is presented in Figures 7.10 and 7.11.

Figure 7.10: Sectoral composition of GDP – Bangladesh



Source: National Income Section, Bangladesh Bureau of Statistics (various years)

Figure 7.11: Sectoral composition of GDP – Tanzania



Source: Bureau of Statistics, Planning Commission, National Accounts of Tanzania, 1987-97 and The Economic Survey (1998)

Overview of Bangladesh economy during the period of study

The Bangladesh economy has historically been vulnerable to natural disaster and heavily reliant upon annual rain fall. In 1990, the Bangladesh economy was largely agrarian, with the majority of the population engaged in farming and fishing. Agriculture produced a large proportion of national product and the industrial sector largely involved processing of agricultural raw materials. Most non-agricultural raw materials, machinery and equipment were imported. Large quantities of fuel were imported and there was a heavy reliance on aid assistance. Despite its reduced contribution to GDP by 2000, agriculture continued to have a large role in the economic activity of Bangladesh, employing around 60% of the labour force, providing for food requirements and inputs into manufacturing and agro-processing sectors (EIU 2001a). By the year 2000, Bangladesh had achieved food self-sufficiency and a diversified crop base.

The role of aid diminished in the economy of Bangladesh during the period of the study, largely due to Bangladesh achieving self-sufficiency in food production. More specifically, foreign aid as a percentage of GDP fell from 7.6% in 1990 to around 2% in 2000 (The World Bank 2001). Similarly, the incidence of poverty fell, although poverty remained prevalent in rural areas, where agricultural production contributed to both seasonal and disguised unemployment.

Throughout the 1990s Bangladesh continued the economic liberalisation programs it had commenced in the 1980s, reducing the role of the government, encouraging the private sector and attracting foreign investment. Bureaucratic control over private investment

was reduced and areas previously reserved for the public sector were opened up to private investment. There was liberalisation of exchange controls and reduction of import controls. The taxation system was also modified to encourage investment. As a consequence of macroeconomic stability, inflation has remained low in Bangladesh, as has wage growth.

Overview of Tanzanian economy during the period of study

Agriculture is of large importance to the Tanzanian economy. In addition to contributing to more than 40% of GDP per annum for the period of study, it employed 80% of the Tanzanian workforce, mostly in subsistence and smallholder cash cropping. The lack of diversification in Tanzania's structure has resulted in vulnerability to external shocks. In 1997 and 1998 the El Nino and La Nina weather patterns resulted in extensive flooding and drought with adverse implications for agricultural production.

Tanzania has been heavily indebted and reliant on foreign aid. In 1999, Tanzania's external debt was equivalent to 913% of Gross National Product (GNP) and 634% of its annual export of goods and services. Foreign aid as a proportion of Gross National Income (GNI) fell from 22% in 1989 to 11% in 1999, but peaked at 30% in 1992 (The World Bank 2001). This reduction in foreign aid is reflective of the increased scarcity of foreign aid, but also improvements in the Tanzanian economy during the 1990s.

As a consequence of the reform programs implemented, by the end of the period of study, Tanzania had largely achieved macroeconomic stability and had progressed privatisation and liberalisation.

The primary sector in each economy

As has been discussed, both Bangladesh and Tanzania had a strong reliance on agriculture during the period of study. In Bangladesh, agriculture has a diminished albeit still significant role within the economy. Crops are the most important aspect of agriculture for Bangladesh, although fisheries, livestock and forestry also contribute to the sector. As at 2000 crop yield were below attainable levels. Use of chemical fertilisers has been uneven and sporadic (EIU 2001a). The land area under cultivation reduced as a consequence of population growth, urbanisation and river erosion during the 1990s. Fragmented ownership of land and uncertainty of land tenure adversely impacted long-term investment in the land. Smaller farmers came under threat of those able to afford to implement technology. Flooding has also adversely impacted crop yields.

The major crops produced in Bangladesh during the 1990s were rice, wheat and jute. Rice production increased from 17.8 million tonnes on 1990/91 to 24.4m tonnes in 2000/01 (EIU 2001a). This increase was the consequence of the introduction of high-yielding varieties of rice, increased irrigation and fertiliser use. Wheat output also grew rapidly, and around 2 million tonnes were produced in 2000/01, as a consequence of new varieties that were introduced. The land area under jute cultivation declined as a consequence of more land being used for rice production. In 2000/01 400,000 ha of land

were under jute cultivation, compared with 570,000 ha in 1997/98. Other important crops are tea, sugarcane, tobacco and cotton.

In relation to other aspects of agriculture, the livestock sector of Bangladesh grew strongly in the 1990s. Its main purpose was the provision of non-human farm energy and fertiliser. Forests constituted around 17% of the total land area of Bangladesh. Commercial felling of timber was limited, and what was produced was used predominantly as sawn timber and pulp for the paper and newsprint industries. Forestry provided the major source of firewood for the rural population. The fisheries sector exhibited growth during the 1990s, with the total catch rising from 848,000 tonnes in 1989/90 to 1.67 million tonnes in 1999/2000. Mining accounted for less than 1% of the GDP of Bangladesh.

Tanzania's primary sector consists of agriculture, livestock, forestry, fishing and mining. As at 2000, Tanzania's agricultural sector was highly labour-intensive, with land being largely underutilised. The land that was in use was dominated by small-scale subsistence farmers. The main subsistence crops were maize, sorghum, millet, cassava, rice, plantains, wheat and pulses. Food crops were produced without technology or fertilisers, and were highly vulnerable to drought. Cash crops included coffee, cotton, tobacco, cashew nuts, sisal and tea. The first three cash-crops were grown mainly by small landholders, whereas sisal and tea were grown mainly on large estates. Coffee and cotton were traditionally the most important export crops, but declined in importance toward the end of the period of study, with cashew nuts becoming the most important from 1997.

Livestock in Tanzania encompassed cattle, goats, sheep and poultry. The cattle herd is predominantly short-horn Zebu which numbered around 13 million in 2000, according to government estimates (EIU 2001b). There were also dairy and beef herds. Goats numbered 10.7 million, sheep 3.5 million and poultry 27 million in 2000. Meat production totalled 268,000 tonnes in 1989/99, an increase on the 219,000 tonnes produced in 1993/94. Milk production also rose substantially during the same period from 555,000 litres to 687,000 litres. Exports of forest products remained relatively constant during the period of study. Fishing produced a total catch of 310,000 tonnes in 1999, comprising of 260,000 tonnes from fresh water and 50,000 tonnes from the sea. The capacity of the fish catch is estimated at 730,000 tonnes, however, production has been constrained by lack of infrastructure.

The role of manufacturing in each economy

As reflected in contribution to GDP, manufacturing was more important to Bangladesh than it was for Tanzania during the period of study. During the 1990s the manufacturing sector of Bangladesh grew at an annual rate of 6.9%. Prior to the period of study, the manufacturing sector was largely involved processing of domestically produced agricultural produce. In the late 1980s, there was expansion into the areas of ready-made garments (RMG) and fertiliser manufacturing. The sector was dominated by state owned enterprises during most of the period of study, however, toward the end of the period there was private sector investment within the industry. By the year 2000, there were around 1.4 million workers employed in the RMG sector and clothing accounted for around 70% of the export earnings of Bangladesh. The chemical industry was established

due to the abundance of natural gas and it largely produced urea fertiliser for domestic demand. Toward the end of the period of study, the government allowed investment in the industry in order to facilitate exports. Bangladesh is the world's second largest producer and largest exporter of manufactured jute products. Export earnings from jute products fell during the 1990s, as a consequence of decline in production of jute and competition from synthetic substitutes. Specific items produced from jute include carpet backing, twine and sacking. In addition to the industries already outlined, a number of small manufacturing enterprises emerged in Bangladesh during the 1990s, producing goods like matches, cigarettes, bicycles, tyres, tubes, batteries, pumps, motors and engines, radios and television sets. There was also some expansion into electronics.

Export processing zones (EPZs) are a significant part of encouraging manufacturing in Bangladesh. The first EPZ was opened in the early 1980s, and was dominated by garment manufacturing. A second EPZ opened in Dhaka in 1993 that focussed on high-technology. By 2000, an additional three EPZs were being developed and a further two were being planned. By the beginning of 2000, EPZs had accumulated investment of US\$453M and export income of US\$891M. In 1999/2000, exports from EPZs accounted for 15.5% of total exports and firms within EPZs employed more than 100,000 workers. Investors in EPZs have mainly been other Asian countries. In 2000, South Korea and Japan were the largest investors in EPZs, while other Asian countries that had invested included China, Malaysia and India, and non-Asian investor countries that had invested included the United States and the United Kingdom.

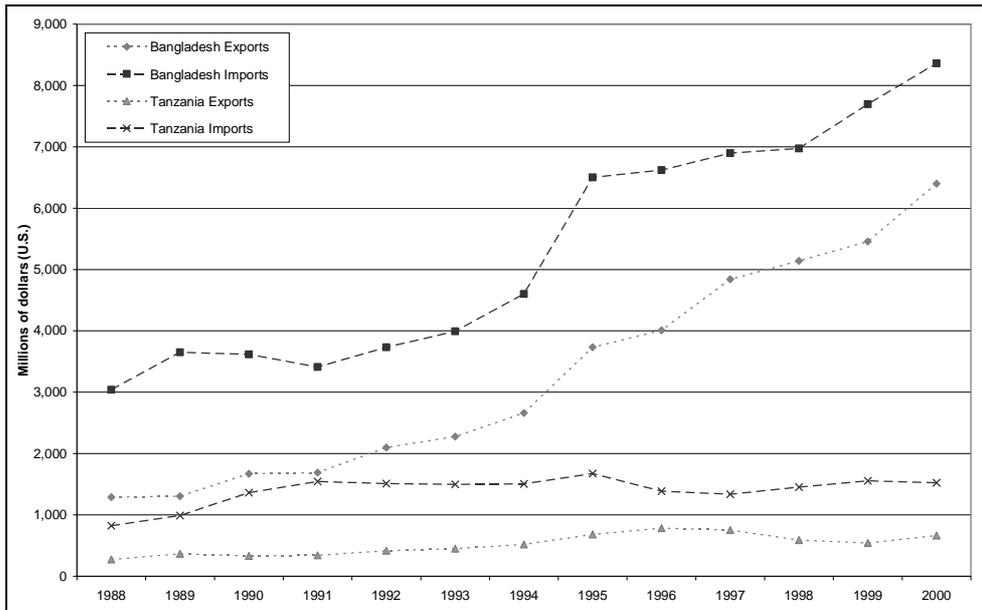
Like in Bangladesh, the manufacturing sector of Tanzania was largely dominated by state owned enterprises, although foreign investment started to be encouraged toward the end of the period of study. Development of a manufacturing sector in Tanzania was adversely impacted by the economic issues previously outlined, and then infrastructure constraints in the 1990s, especially electricity supplies. Events in the international economy, such as oil price movements were also detrimental to the advancement of Tanzania's manufacturing sector. Industry's share of GDP largely remained static during the period of study, as did employment in the sector. The sector exhibited some growth toward the end of the period of study, which was largely in the areas of food products, edible oils, detergents and beer. Manufacturing activity remained concentrated in Tanzania's capital city, Dar es Salaam.

The external sector

The value of exports and imports for Bangladesh was consistently higher than the values of exports and imports for Tanzania for the period of study, however, trade as a proportion of GDP was consistently higher for Tanzania, as presented in Figures 7.12 and 7.13. Between 1988 and 2000, the exports of Bangladesh rose from \$1.3bn to \$6.4bn, while imports rose from \$3bn to \$8.4bn. This represented annual growth rates for exports and imports of 14.8% and 9.4%, respectively. As a proportion of Bangladesh's GDP, trade rose during the period from 20.4% to 33.2%. Tanzania experienced slower growth of its external sector during the same period, with exports rising from \$275mn to \$663mn and imports rising from \$823mn to \$1.5bn. The exports of Tanzania averaged an annual growth rate of 8.9% while imports averaged an annual growth rate of 6.1%. During the

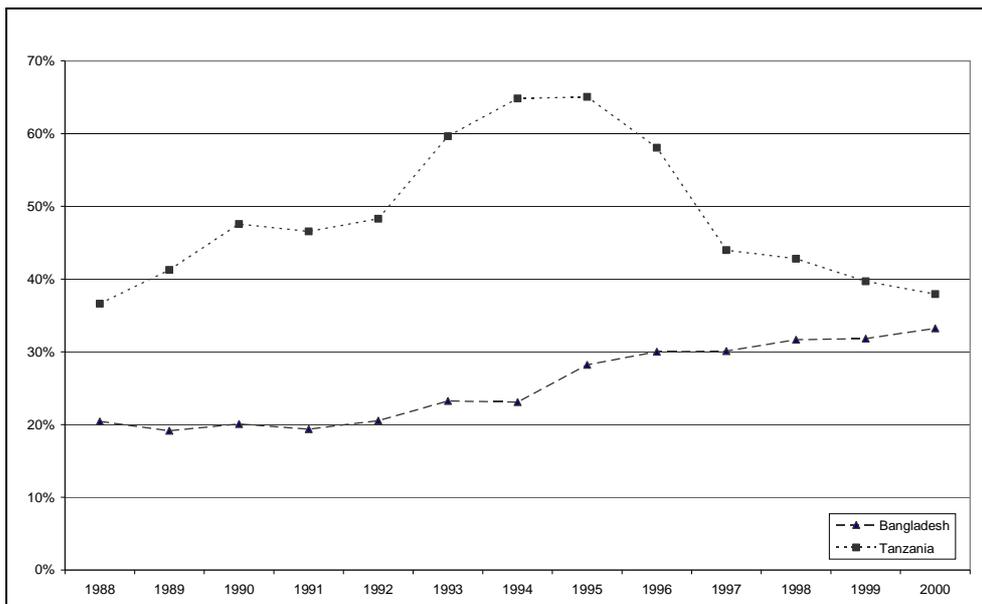
first half of the period trade as a proportion of GDP rose from 36.6% peaking at 65% in 1995, then fell to 37.9% by 2000. Both countries undertook deliberate policies to liberalise trade during the period of study.

Figure 7.12: Bangladesh and Tanzania export and import volumes



Source: UNCTAD Foreign Direct Investment Database (2007)

Figure 7.13: Trade as a proportion of GDP

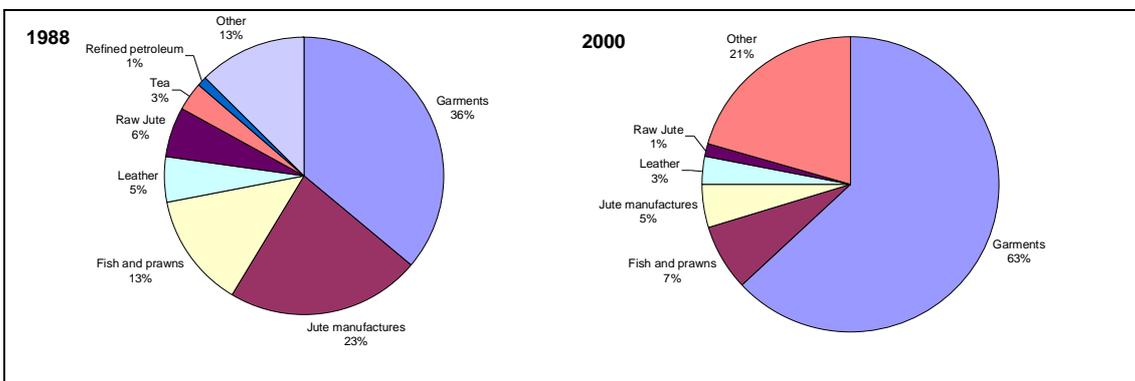


Source: UNCTAD Foreign Direct Investment Database (2007)

Garments remained Bangladesh’s large export. The value of garment exports increased from 15bn Taka in 1988 to 157bn Taka in 2000. Further, the proportion of export income achieved by the RMG sector increased from 36% to 63% over the same time period (EIU 2001a). The main exports of Bangladesh in 1988 and 2000 are presented in Figure 7.14. Other exports such as jute manufactured goods, raw jute and seafood diminished in importance as sources of export earnings. Imports were largely industrial inputs, specifically capital goods or equipments or raw materials for the RMG sector.

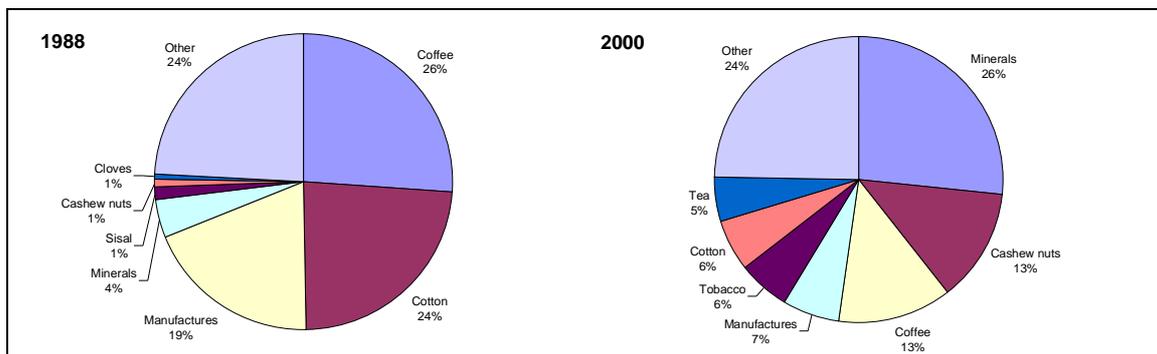
For Tanzania, the main export item changed from coffee to minerals during the period of study, as presented in Figure 7.15. In 1988, coffee represented 26% of export income, which fell to just 13% of export income by 2000. Similarly, cotton fell from earning 24% of export income to 6% of export income. Minerals increased from earning 4% of export income to earning 26% of income. Another commodity which also showed improvement were cashew nuts, increasing from 1% to 13% of export earnings. Tanzania’s main imports during the period consisted of fuel, capital goods and food products.

Figure 7.14: Main exports – Bangladesh



Source: The Economist Intelligence Unit (2001)

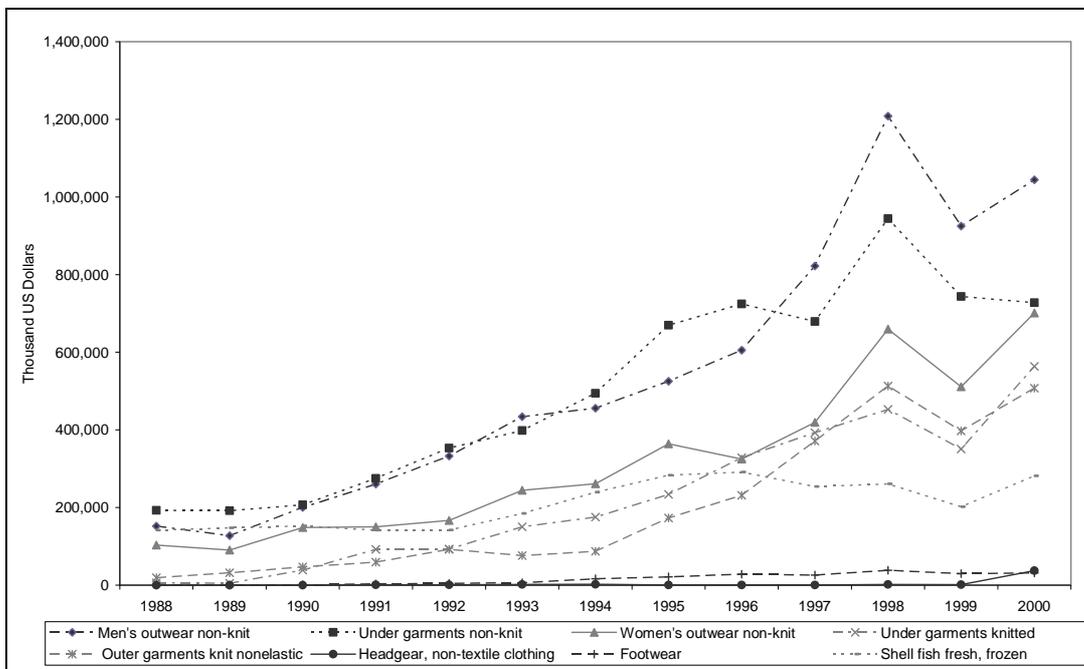
Figure 7.15: Main exports – Tanzania



Source: The Economist Intelligence Unit (2001)

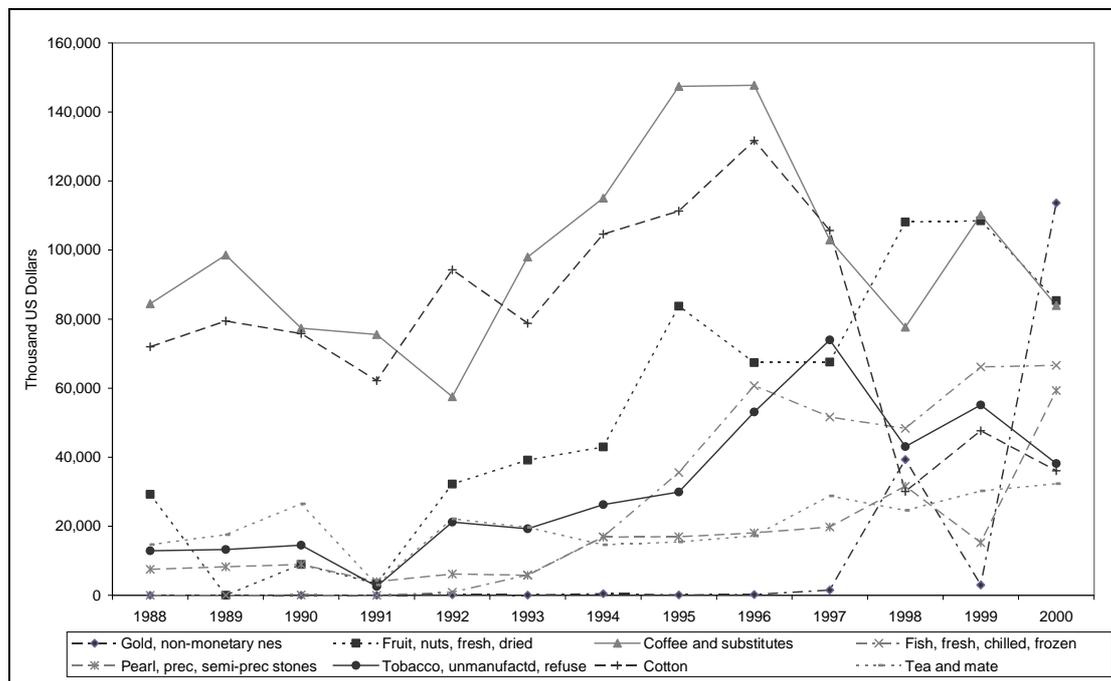
The export performance of the major exports by SITC classification for Bangladesh and Tanzania for the period of study is presented in Figures 7.16 and 7.17 respectively. The exports of Bangladesh are mainly products of the RMG sector and largely demonstrate a consistent upward trend. In comparison, the exports of Tanzania are commodities and demonstrate much greater volatility.

Figure 7.16: Major export performance – Bangladesh



Source: UNCTAD Foreign Direct Investment Database (2007)

Figure 7.17: Major export performance – Tanzania



Source: UNCTAD Foreign Direct Investment Database (2007)

In relation to the direction of trade, for Bangladesh the proportion of exports that went to developed countries increased from 71% to 76% between 1988 and 2000, although peaked at 87% in 1988, as presented in Table 7.2. The major export recipient countries at the end of the period of study were the United States, Germany, the United Kingdom and France. These countries were also the main export markets at the beginning of the period of study. Japan declined in importance as a recipient of imports. The proportion of exports that went to developing countries declined from 24% in 1988 to 9% in 2000, which is largely a consequence of the change in the nature of production, and the demand for garments by developed countries. The opposite pattern was observed for imports. Specifically, imports from developed countries fell from 46% to 26% from 1988 to 2000, while imports from developing countries rose from 34% to 56%. The increase in imports

from developing countries is largely accounted for by imports from other Asian countries, predominantly imports for use in the garment industry.

Table 7.2: Direction of imports and exports (%) – Bangladesh

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Exports | | | | | | | | | | | | | |
| Developed economies | 71 | 68 | 75 | 77 | 79 | 79 | 81 | 83 | 86 | 84 | 87 | 76 | 76 |
| Developed economies: Europe | 35 | 32 | 37 | 45 | 38 | 41 | 42 | 45 | 49 | 43 | 47 | 41 | 41 |
| EU 25 | 33 | 28 | 35 | 43 | 37 | 40 | 41 | 45 | 48 | 43 | 46 | 40 | 40 |
| United States and Canada | 27 | 29 | 32 | 28 | 37 | 35 | 35 | 34 | 33 | 37 | 38 | 33 | 34 |
| Japan | 6 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 1 |
| Developed economies: Other | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| South-East Europe and CIS | 5 | 7 | 5 | 2 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| Developing economies | 24 | 25 | 20 | 20 | 19 | 18 | 18 | 15 | 14 | 15 | 12 | 9 | 9 |
| OPEC | 4 | 4 | 3 | 5 | 4 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| Developing economies: America | 1 | 1 | 0 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| Developing economies: Africa | 5 | 6 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| Developing economies: West Asia | 6 | 5 | 5 | 5 | 6 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 3 |
| Developing economies: Other Asia | 11 | 13 | 10 | 11 | 10 | 10 | 10 | 9 | 8 | 9 | 7 | 5 | 5 |
| Unallocated | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 15 | 15 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Imports | | | | | | | | | | | | | |
| Developed economies | 46 | 41 | 44 | 37 | 34 | 36 | 32 | 31 | 29 | 29 | 25 | 28 | 26 |
| Developed economies: Europe | 19 | 16 | 21 | 17 | 14 | 16 | 12 | 14 | 13 | 15 | 12 | 12 | 11 |
| EU 25 | 16 | 14 | 19 | 15 | 13 | 14 | 10 | 12 | 12 | 13 | 11 | 10 | 10 |
| United States and Canada | 9 | 10 | 8 | 9 | 10 | 5 | 7 | 7 | 4 | 6 | 4 | 6 | 3 |
| Japan | 16 | 13 | 13 | 9 | 8 | 13 | 11 | 9 | 10 | 7 | 6 | 7 | 9 |
| Developed economies: Other | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 2 |
| South-East Europe and CIS | 2 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 |
| Developing economies | 34 | 37 | 41 | 42 | 48 | 47 | 50 | 58 | 54 | 60 | 58 | 53 | 56 |
| OPEC | 8 | 9 | 6 | 6 | 7 | 5 | 4 | 4 | 4 | 6 | 4 | 6 | 7 |
| Developing economies: America | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 |
| Developing economies: Africa | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Developing economies: West Asia | 7 | 8 | 5 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 2 | 4 | 5 |
| Developing economies: Other Asia | 25 | 27 | 34 | 34 | 40 | 41 | 44 | 52 | 49 | 52 | 53 | 47 | 48 |
| Unallocated | 17 | 19 | 13 | 20 | 17 | 16 | 16 | 9 | 15 | 10 | 16 | 18 | 17 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source: UNCTAD Foreign Direct Investment Database (2007)

Table 7.3: Direction of imports and exports (%) – Tanzania

| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Exports | | | | | | | | | | | | | |
| Developed economies | 80 | 70 | 54 | 60 | 51 | 52 | 49 | 47 | 45 | 53 | 55 | 49 | 59 |
| Developed economies: | | | | | | | | | | | | | |
| Europe | 69 | 60 | 43 | 50 | 42 | 40 | 38 | 35 | 34 | 43 | 44 | 38 | 52 |
| EU 25 | 68 | 60 | 41 | 49 | 42 | 40 | 37 | 34 | 33 | 38 | 42 | 37 | 50 |
| United States and Canada | 6 | 5 | 7 | 4 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 3 | 2 |
| Japan | 5 | 5 | 4 | 5 | 6 | 8 | 8 | 8 | 8 | 7 | 8 | 7 | 5 |
| Other | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| South-East Europe and CIS | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Developing economies | 19 | 29 | 43 | 37 | 46 | 45 | 47 | 50 | 52 | 47 | 45 | 50 | 40 |
| OPEC | 5 | 3 | 2 | 2 | 4 | 6 | 7 | 7 | 4 | 7 | 2 | 3 | 2 |
| Developing economies: | | | | | | | | | | | | | |
| America | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Africa | 5 | 4 | 9 | 11 | 16 | 17 | 16 | 16 | 15 | 15 | 14 | 18 | 19 |
| West Asia | 2 | 2 | 2 | 1 | 1 | 3 | 4 | 5 | 1 | 1 | 1 | 2 | 2 |
| Other Asia | 12 | 23 | 32 | 25 | 28 | 25 | 27 | 29 | 35 | 30 | 29 | 29 | 19 |
| Unallocated | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 1 | 0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Imports | | | | | | | | | | | | | |
| Developed economies | 83 | 81 | 73 | 57 | 50 | 49 | 41 | 36 | 34 | 46 | 49 | 49 | 45 |
| Developed economies: | | | | | | | | | | | | | |
| Europe | 65 | 64 | 61 | 43 | 39 | 37 | 31 | 25 | 25 | 32 | 33 | 26 | 24 |
| EU 25 | 61 | 59 | 59 | 42 | 37 | 35 | 30 | 24 | 24 | 29 | 31 | 24 | 22 |
| United States and Canada | 6 | 6 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 6 | 6 | 8 | 6 |
| Japan | 12 | 11 | 8 | 9 | 8 | 8 | 6 | 6 | 5 | 7 | 8 | 11 | 9 |
| Other | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 2 | 5 | 6 |
| South-East Europe and CIS | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Developing economies | 16 | 18 | 24 | 40 | 47 | 48 | 56 | 61 | 63 | 52 | 50 | 51 | 54 |
| OPEC | 0 | 0 | 12 | 16 | 15 | 15 | 12 | 10 | 12 | 10 | 11 | 11 | 10 |
| Developing economies: | | | | | | | | | | | | | |
| America | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 2 | 3 | 3 | 2 |
| Africa | 1 | 4 | 4 | 7 | 5 | 10 | 20 | 27 | 26 | 17 | 19 | 19 | 21 |
| West Asia | 1 | 1 | 12 | 15 | 15 | 18 | 15 | 14 | 16 | 9 | 11 | 12 | 11 |
| Other Asia | 14 | 13 | 6 | 18 | 25 | 20 | 20 | 20 | 20 | 25 | 17 | 18 | 20 |
| Unallocated | 0 | 0 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 1 | 0 | 0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

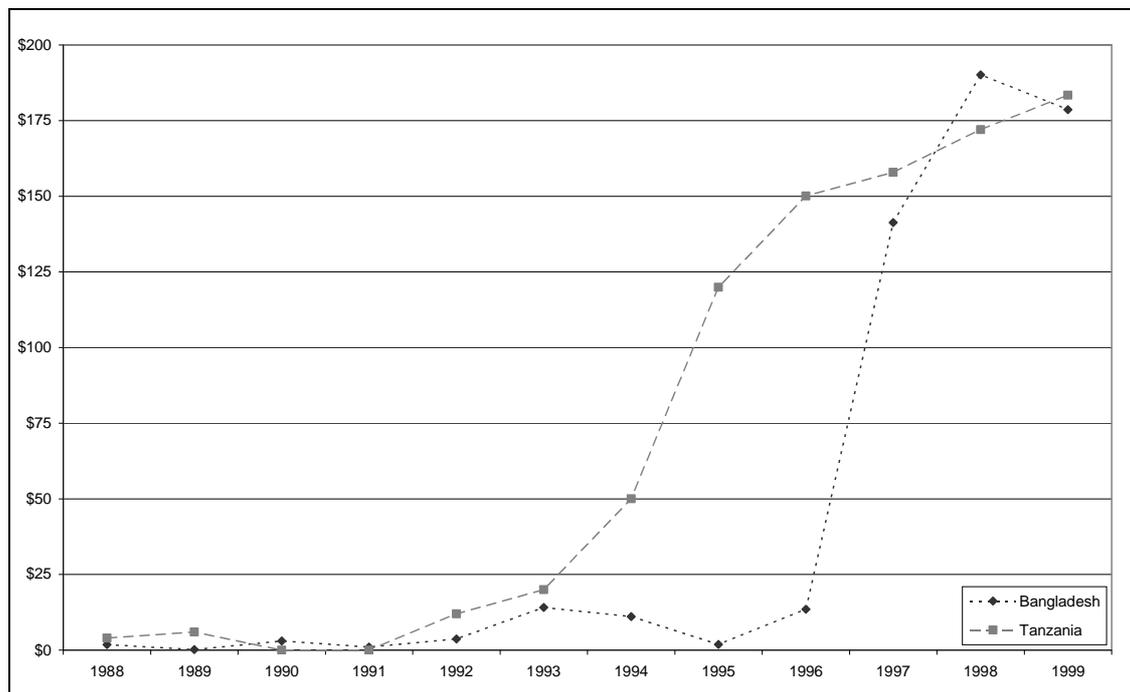
Source: UNCTAD Foreign Direct Investment Database (2007)

For Tanzania, the proportion of exports that went to developed countries fell during the period of study from 80% in 1988 to 59% in 2000, and in the middle of this period fell to less than 50% of exports, as presented in Table 7.3. In 1988, Tanzania's main export markets were West Germany and the United Kingdom. By 1999, India had become the largest recipient of exports. Exports to other developing countries also increased during the period, with exports largely going to developing countries in the African and Asian regions. Imports from developed countries fell from 83% of imports in 1988 to just 45% of imports in 2000. As with exports, imports from developing countries rose, largely from the African and Asian regions. In 1988, the two largest sources of imports were the UK and Japan, whereas in 1999, South Africa became the largest supplier of imports to Tanzania.

Foreign direct investment

For both Bangladesh and Tanzania, FDI was negligible during the first half of the period of study, as demonstrated in Figure 7.18. FDI rose rapidly from 1993 in Tanzania and from 1996 in Bangladesh. In 2000, both countries attracted around \$180mn in FDI. In Bangladesh, foreign investment was directed toward gas exploration and the construction of power plants. In Tanzania foreign investment occurred in the tourism sector and the mining industry.

Figure 7.18: Foreign Direct Investment – Net inflows (BoP, current US\$Million)



Source: World Development Indicators (2001)

7.5 Conclusion

This chapter overviewed the performance of LDC group of countries and the regions in which Bangladesh and Tanzania are located, and then went on to explore each of these countries in detail, focussing on how each economy changed during the course of the period of study, and how interactions within the global economy changed. The performance of each economy is aligned with the information presented on LDCs and the regional comparison. Specifically, the section on LDCs discussed the vastly different performance of LDCs during the late Twentieth Century, and noted that those LDCs that were able to diversify into manufacturing exports performed better than the LDCs that remained reliant on commodity exports. Similarly, a review of regional performance found that Asian developing countries were largely able to diversify into manufacturing

and performed better than African countries that remained highly dependent on primary commodities. In examining each of the individual countries, it is evident that Bangladesh achieved higher GDP growth and export earnings growth during the period of study than Tanzania. Bangladesh was also more successful in implementing reform programs, largely because of the foundations that were set in the earlier period.

8 Modified Development Index

8.1 Introduction

Chapter 5 reviewed measures of development including the vast number of composite indices developed during the past six decades. It also considered the HDI, which has been the most enduring and widely accepted development index to date. The purpose of this chapter is to produce and calculate a modified development index, based upon the HDI, however taking into account criticisms of the HDI, recommendations for improvement and the objectives of the current research.

The modified index will include the three original components of the HDI, in terms of income, longevity or health, and education. However, alternative indicators for these components will also be reviewed to identify indicators that are more relevant to the goals of this research. Where suitable alternative indicators are identified, and data are available, these indicators will replace the indicators utilised in the original HDI. Support for the substitution of variables within the HDI and the inclusion of additional variables is provided by Doraid (1997), who states:

“To reflect country-specific priorities and problems and to be more sensitive to a country’s development level, the basic components of the HDI appearing in the global HDRs could be supplemented or replaced by other more relevant components”

and

“... the usefulness and versatility of the HDI as an analytical tool for human development... would be enhanced if countries choose components that reflect their priorities and problems and are sensitive to their development levels.”

For the current research that compares and contrasts the development of two different countries, common indicators need to be identified and utilised for both countries. In addition to changing the indicators utilised to represent the components of the HDI, consideration is given to including other indicators in the modified index. In the early part of the chapter, a measure for inequality is considered, although abandoned later, due to lack of data. After the modified index has been produced, consideration is given to further modification to include an environmental indicator, however, this also is not progressed, largely due to lack of a suitable indicator for which data are available.

8.2 The modified index

8.2.1 Construction of the index and potential inclusion of additional components

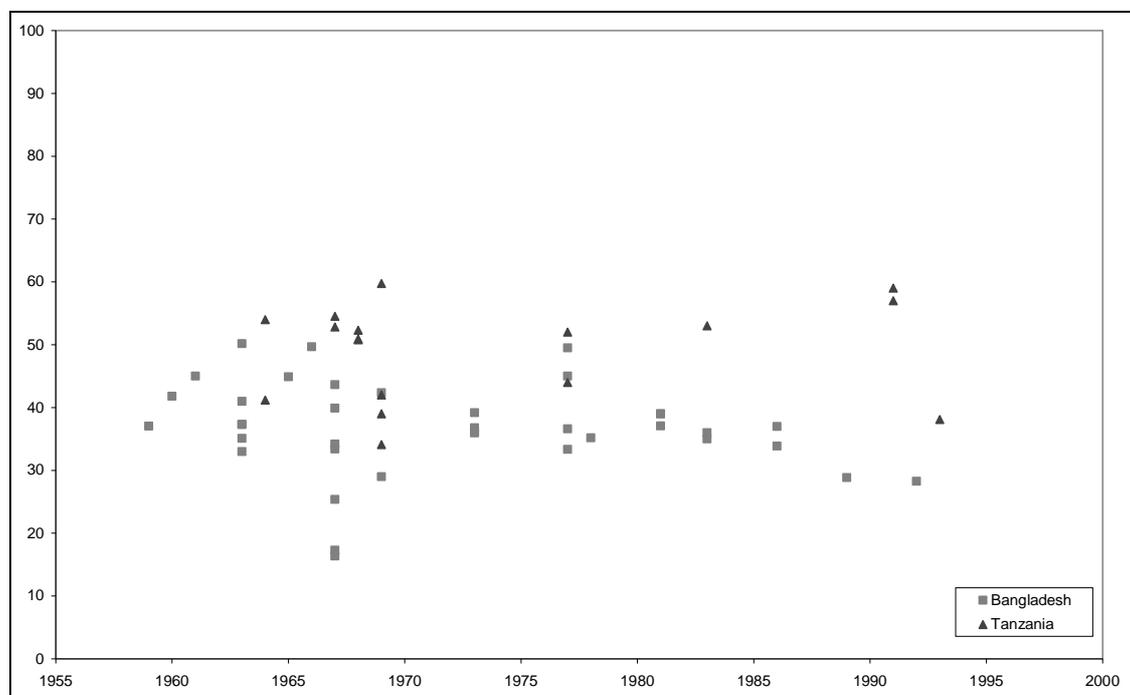
As discussed in Chapter 5, the outcomes of alternative calculations do not provide compelling justification for adding complexity to the construction of the original HDI. Therefore, the same construction approach as used by the UNDP is used for the modified index, in terms of assigning a ranking for each component based on where the country is situated between a maximum and minimum value. Maximum and minimum values are set as the observed maximum and minimum value for each component over the period of the study across all countries for which data is available. For each component, the

country and year is noted for the maximum and minimum values. This differs from the approach of the HDRO which also consider future values that may be observed in establishing minimum and maximum values. The proposed approach is considered appropriate for the nature of the current research, analysis of historical time series, whereas also considering future values is more appropriate for forecasting trends. The arithmetic mean of the component indices is calculated, and consistent with the recommendations of Sagar and Najam (1998), the geometric mean is also calculated.

Consideration was given to the inclusion of distributional aspects into the modified index, such as by gender or regional grouping as is consistent with the recommendations of Anand and Sen (1993), Hicks (1997) and Sagar and Najam (1998), however this was not possible due to the lack of data. Incorporating a measure for inequality into the modified index was also investigated. The Gini coefficient is possibly the most recognised measure of inequality. It evaluates the extent to which the distribution of income among individuals or households within an economy deviates from perfectly equal distribution (The World Bank 2001). The Gini coefficient is represented by a number between zero and one hundred, where zero reflects perfect equality and one hundred means perfect inequality. The most comprehensive source of Gini coefficient calculations, Deninger and Squire was reviewed for data on the two countries that are the subject of this research. The Deninger and Squire Dataset (Deninger & Squire), produced in conjunction with the World Bank, collates Gini coefficients from various sources for all countries into a single dataset. Notably, the Deninger and Squire Dataset does not provide Gini coefficients beyond 1993 for Tanzania and 1992 for Bangladesh. Efforts have been made to identify

more recent coefficient calculations from alternative sources, such as World Bank databases and publications, but these efforts were relatively unsuccessful. The most recent calculation for Bangladesh that was identified was for 1995-6 in the World Development Indicators 2001 print edition (The World Bank 2001), but there were no more recent Gini coefficient calculations for Tanzania beyond 1993. Additionally, the Deninger and Squire Dataset does not list coefficients for every year of the present research (1960 to 2000) and there are no clear trends by which estimates can be made for the missing values. Finally, there is a difference of up to twenty-seven between coefficient estimates for single years from different sources. Figure 8.1 demonstrates the difficulty with incorporating a distributional element based on Gini coefficients. Because of the lack of availability of data, incorporating inequality into the modified index could not be progressed.

Figure 8.1: Gini coefficient estimates – Bangladesh and Tanzania



Source: Deninger and Squire (2007)

8.2.2 *The components of the modified index*

The approach for developing a modified index commenced with the question “What value do the components of the current HDI provide and should these be utilised in the modified index or discarded for more relevant components?” Although the HDI contains an indicator of longevity, the HDRO relates this to “living long and well” (UNDP 1990 p.11) and describes health as a key factor in being able to live a long life. Therefore, the current research considers health and longevity fit into the same broad category. Support for the inclusion of longevity / health and education in a development index has been provided by Murray (1991) and Nissan and Shahmoon (2001). It would be difficult to argue that these are not critical aspects of development. Further, other development indices, such as the PQLI discussed in the Chapter 5, also contain these indicators, signifying their fundamental importance to development. Therefore, these components are retained in the modified index.

Doraid (1997) notes that the indicators of longevity/health and education used in the HDI, namely life expectancy and adult literacy, respectively, are slow to change. In light of this criticism and given that the period that has been defined as that of globalisation for the purposes of this research is relatively short (twelve years), alternative indicators for these components are examined with the objective of identifying alternative indicators that are still representative of the overall component but which are more responsive to change in the short term.

Income

The income component is also retained in the modified index, recognising that it represents “command over resources” and is a catch-all for a broad range of other indicators for which there is insufficient data to include in the index (UNDP 1990). There is no evident alternative to income and GDP per capita estimates are taken from the Penn World Tables as this source contains estimates for both countries for the entire period of the study. Notably, the source of health / longevity and education data, the World Development Indicators (WDI) database of the World Bank, does also provide income and purchasing power statistics. However, for the countries that are the focuses of this research, the WDI does not provide data for all years of the study, specifically, data series for GDP per capita based on Purchasing Power Parity (PPP) for Bangladesh commences in 1975 and Tanzania in 1988. Notably, the calculation of GDP per capita differs between the PWT and WDI, as different purchasing power parity (PPP) formulae and base years are utilised by the different sources.

In the HDI, the UNDP transforms income by utilising logarithms of observed values. The purpose of this transformation is to reduce higher income values, recognising that marginal income at higher income levels is relatively less valuable than at lower income levels. Given that both of the countries that are the subject of the current research are amongst the world’s poorest countries and have relatively low income per capita levels, this transformation was not considered necessary, and is therefore not undertaken.

Health

In order to ascertain what alternatives could be provided for health / longevity and education, the WDI database produced by the World Bank (2001) was consulted. This is the most comprehensive database of international information available, drawing together information from many other sources, including United Nations bodies, such as United Nations Education, Scientific and Cultural Organisation (UNESCO) and the World Health Organisation (WHO). For many indicators for the countries that are the subject of this research, there are several years that data is not provided. In light of lack of data availability for the selected countries, data availability for other LDCs was examined, however, other LDCs had similar levels of data availability.

WDI allows searching by category. For longevity and health, a search was undertaken for the categories of 'Population' and 'Health'. From this, thirty-seven series were returned, with relatively good data availability at 53% however, for 'Health' alone this diminished to 23%. From this list, a number of series could immediately be removed as not providing a clear indication of health or longevity. The removed indicators predominantly related to population. Indicators related to gender were also removed. While inequality based on gender is an important aspect of development, it is not addressed in the research due to insufficient data being available across all index components. Twenty one indicators remained, as presented in Table 8.1.

Table 8.1: Potential health and longevity indicators

| All Series in Health and Population Categories | Group 1 | Group 2 |
|---|----------------|----------------|
| Age dependency ratio (dependents to working-age population) | Y | Y |
| Birth rate, crude (per 1,000 people) | Y | Y |
| Death rate, crude (per 1,000 people) | Y | Y |
| Fertility rate, total (births per woman) | Y | Y |
| Life expectancy at birth, total (years) | Y | Y |
| Mortality rate, infant (per 1,000 live births) | Y | Y |
| Mortality rate, under-5 (per 1,000 live births) | Y | Y |
| Births attended by health staff (% of total) | Y | |
| Health expenditure per capita (current US\$) | Y | |
| Health expenditure per capita, PPP (current international \$) | Y | |
| Health expenditure, private (% of GDP) | Y | |
| Health expenditure, public (% of GDP) | Y | |
| Health expenditure, total (% of GDP) | Y | |
| Hospital beds (per 1,000 people) | Y | |
| Immunization, DPT (% of children under 12 months) | Y | |
| Immunization, measles (% of children under 12 months) | Y | |
| Low-birth weight babies (% of births) | Y | |
| Malnutrition prevalence, height for age (% of children under 5) | Y | |
| Malnutrition prevalence, weight for age (% of children under 5) | Y | |
| Physicians (per 1,000 people) | Y | |
| Contraceptive prevalence (% of women ages 15-49) | Y | |
| Life expectancy at birth, female (years) | | |
| Life expectancy at birth, male (years) | | |
| Mortality rate, adult, female (per 1,000 female adults) | | |
| Mortality rate, adult, male (per 1,000 male adults) | | |
| Population ages 0-14, female | | |
| Population ages 0-14, male | | |
| Population ages 0-14, total | | |
| Population ages 65 and above (% of total) | | |
| Population ages 65 and above, female | | |
| Population ages 65 and above, male | | |
| Population ages 65 and above, total | | |
| Population density (people per sq km) | | |
| Population growth (annual %) | | |
| Population, female (% of total) | | |
| Population, total | | |
| Women ages 65 and above (per 100 men) | | |

Notes:

Group 1 represents all of the indicators remaining after series that did not provide a clear indicator of progress of health or longevity, or that related to one gender, were removed.

Group 2 represents all of the indicators remaining after data availability was considered.

The next step was to determine data availability for the remaining indicators over the period of the study. There were a number of indicators that had limited data available before 1990 for either country. When these indicators were removed from consideration, the potential indicator list diminished to seven indicators, as presented in Table 8.1.

The coefficient of variation was calculated for each of the remaining indicators for the period of the study for Bangladesh and Tanzania, in order to ascertain responsiveness which of these indicators changed most during the period of study. The arithmetic mean of the coefficients for the two countries was then taken to obtain an overall value. The results are presented in Table 8.2, in descending order of the value of the coefficient of variation.

Table 8.2: Coefficients of variation for health indicators

| Indicator | Coefficient |
|---|--------------------|
| Mortality rate, under-5 (per 1,000 live births) | 0.262697 |
| Death rate, crude (per 1,000 people) | 0.225899 |
| Mortality rate, infant (per 1,000 live births) | 0.189778 |
| Fertility rate, total (births per woman) | 0.181977 |
| Birth rate, crude (per 1,000 people) | 0.134948 |
| Life expectancy at birth, total (years) | 0.100080 |
| Age dependency ratio (dependents to working-age population) | 0.049302 |

Mortality rate, under-5 (per 1,000 live births) was the most responsive to change, and is therefore utilised as the health indicator in the modified index. It makes sense that this indicator is relatively responsive to change, as many health programs in developing countries are targeted at infant and child illnesses. Support for inclusion of this indicator is provided by Paul (1996), who included infant mortality in a modified development

index on the basis that it is an indicator of the availability of sanitation and clean water facilities in a country due to the susceptibility of infants to water-borne diseases. Notably, Murray (1991) indicates that because of the extent of health technology addressing child and infant mortality problems, child mortality is not a good predictor of life expectancy or mortality across all age groups. As a counter to this argument, utilising an indicator which is the recipient of health expenditure and social investment is more likely to capture the extent of change that is going on within the health sector of the countries that are the subject of the present research.

Data for the child mortality rate was not available for every year of the research for both countries, but given that it was available for the first and last years, and intermittently throughout the period of the study, values for the years for which data was not available were interpolated, by using arithmetic averages between available values. Figures 8.2 and 8.3 indicate the values that were interpolated linearly.

Figure 8.2: Child Mortality Interpolation – Bangladesh

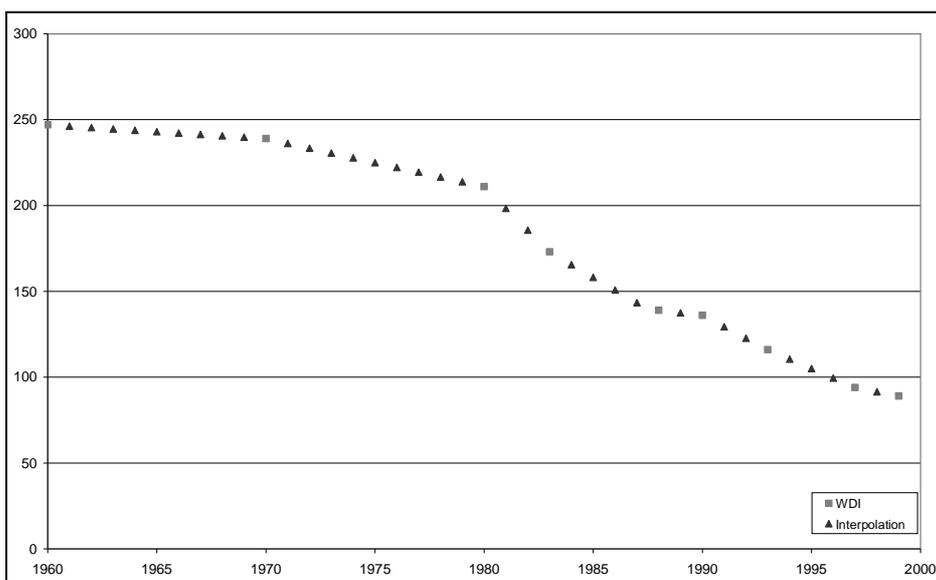
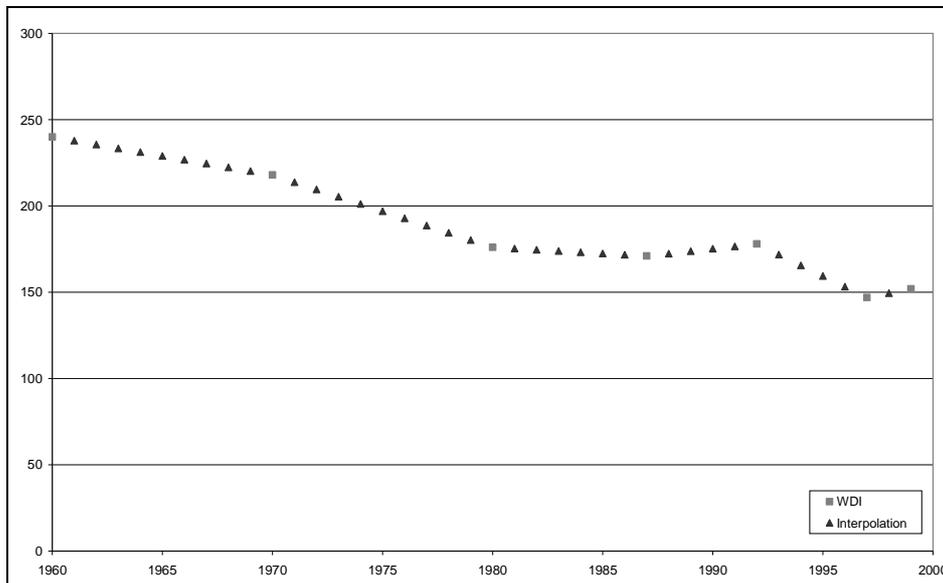


Figure 8.3: Child Mortality interpolation – Tanzania



Education

The same approach that was applied to health was applied to education to determine the indicator that would be included in the composite index. WDI was searched for the category of 'Education'. Forty-three series were returned, with data availability at only 31%. This dropped to only 27% when Bangladesh was examined solely, reflecting the low level of data availability for Bangladesh.

The next step undertaken was to determine data availability for these indicators over the period of the study. The rationale was that it was important only to consider series for which data would largely be available. No single indicator was available for Bangladesh from 1960 to the present. The series relating to illiteracy rates only contained data back as far as 1970. Other indicators did have data for some years, but this was relatively infrequent and inadequate for the purposes of the current research. Eleven indicators had

reasonable data available (more than 35%) for both countries for the period of the study, and had results for the commencement of the research period. From this list, all indicators that related to gender were removed, consistent with the approach for the health / longevity indicator, leaving only five indicators. The indicators and the two rounds of selection process are shown in Table 8.3.

Of the five series that remained, both 'Primary education, pupils' and 'Primary education, teachers' which reflected the number of pupils and teachers, respectively, were considered not meaningful without reference to population changes for the relevant age groups, for which data was not available. Gross school enrollment refers to capacity of an education system, not to the actual proportion of children who attend school or receive education. Therefore, the Pupil-Teacher Ratio for Primary Education is utilised as the education indicator in the modified index, as it is considered the most meaningful of the indicators for which a reasonable amount of data was available. Support for inclusion of an indicator related to primary education is provided by Tweeten (1997) who emphasises the importance of elementary schooling in broad-based development and Murray (1991) who indicates adult literacy rates are not reflective of the current social investment in education. A potential problem with the utilisation of an indicator related to primary education is the inconsistency of meaning between countries as what constitutes primary school. Notably, with the indicator chosen, the pupil to teacher ratio, this issue is less pronounced than with other education indicators, such as net school enrollment rates.

Table 8.3: Potential education indicators

| Series Name | Group1 | Group 2 |
|--|--------|---------|
| Primary education, pupils | Y | Y |
| Primary education, teachers | Y | Y |
| Pupil-teacher ratio, primary | Y | Y |
| School enrollment, primary (% gross) | Y | Y |
| School enrollment, secondary (% gross) | Y | Y |
| Primary education, pupils (% female) | Y | |
| Primary education, teachers (% female) | Y | |
| School enrollment, primary, female (% gross) | Y | |
| School enrollment, primary, male (% gross) | Y | |
| School enrollment, secondary, female (% gross) | Y | |
| School enrollment, secondary, male (% gross) | Y | |
| Education coefficient of efficiency (ideal years to graduate as % of actual) | | |
| Expenditure per student, primary (% of GNI per capita) | | |
| Expenditure per student, secondary (% of GNI per capita) | | |
| Expenditure per student, tertiary (% of GNI per capita) | | |
| Illiteracy rate, adult female (% of females ages 15 and above) | | |
| Illiteracy rate, adult male (% of males ages 15 and above) | | |
| Illiteracy rate, adult total (% of people ages 15 and above) | | |
| Illiteracy rate, youth female (% of females ages 15-24) | | |
| Illiteracy rate, youth male (% of males ages 15-24) | | |
| Illiteracy rate, youth total (% of people ages 15-24) | | |
| Net intake rate in grade 1 (% of official school-age population) | | |
| Net intake rate in grade 1, female (% of official school-age population) | | |
| Net intake rate in grade 1, male (% of official school-age population) | | |
| Persistence to grade 5, female (% of cohort) | | |
| Persistence to grade 5, male (% of cohort) | | |
| Persistence to grade 5, total (% of cohort) | | |
| Primary teachers with required academic qualifications (%) | | |
| Primary teachers with required academic qualifications, female (%) | | |
| Public spending on education, total (% of GNI, UNESCO) | | |
| Repetition rate, primary, female (% of total enrollment) | | |
| Repetition rate, primary, male (% of total enrollment) | | |
| School enrollment, preprimary (% gross) | | |
| School enrollment, primary (% net) | | |
| School enrollment, primary, female (% net) | | |
| School enrollment, primary, male (% net) | | |
| School enrollment, secondary (% net) | | |
| School enrollment, secondary, female (% net) | | |
| School enrollment, secondary, male (% net) | | |
| School enrollment, tertiary (% gross) | | |
| Secondary education, pupils | | |
| Secondary education, pupils (% female) | | |
| Teachers' compensation (% of current education expenditure) | | |

Notes:

Group 1 represents all of the indicators remaining after series were reviewed for data availability.

Group 2 represents all of the indicators remaining after those relating to gender were removed.

As the WDI database did not contain data for the two most recent years for pupil to teacher ratios, data was sourced the UNESCO Education Statistical Tables (UNESCO). This data assisted in achieving a more comprehensive data set for the research. Utilising UNESCO data was considered consistent with the other data for this indicator, as WDI cites UNESCO as the data source for education series (The World Bank 2001). Further, for the indicator chosen, data was not available for every year of the study. The values for the years for which data was not available were interpolated linearly. Figures 8.4 and 8.5 indicate data sourced from WDI, from UNESCO and values that were interpolated, for each country.

Figure 8.4: Pupil-Teacher Ratio for Primary Education interpolation – Bangladesh

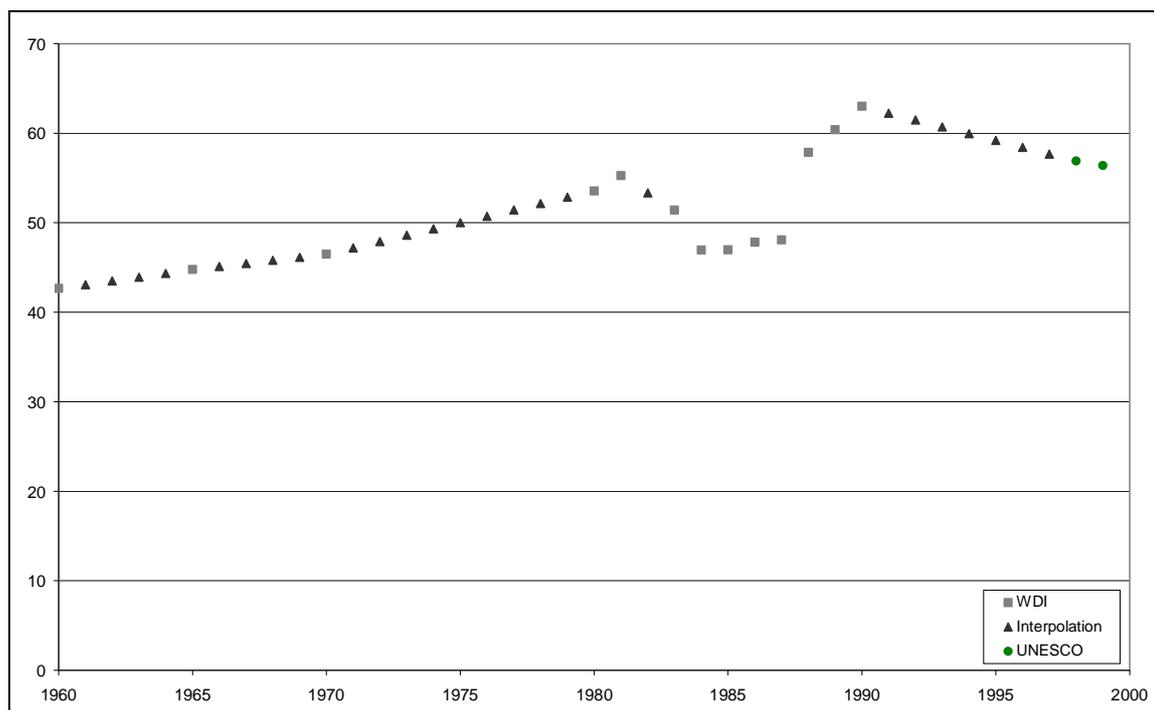


Figure 8.5: Pupil-Teacher Ratio for Primary Education interpolation – Tanzania



8.2.3 End points for indicators

The next step undertaken was to establish end points for each of the three indicators, by which the progress of each of the countries that are the subject of this research can be measured. The HDI refers to these endpoints as maximum and minimum values. Given that for two of the three indicators in the modified development index, a lower value indicates an improvement in the standard, to avoid confusion, the end points are referred to as “best” and “worst”, with best indicating the way the time series should move for improvement. Therefore the calculation of the value of each component is:

$$\text{Index}_i = \frac{X_i - \text{Worst}(X)}{\text{Best}(X) - \text{Worst}(X)}$$

Where X = the component and i = the country

The value of the end points chosen had to be relevant to the observations over the forty year span of the research. Therefore, the approach was to execute a query over all countries for which data was held for the time period 1960 to 1999 for each indicator to identify the most extreme values observed, both best and worst. For income the PWT database was utilised, for the health indicator the WDI database was utilised, and for education the WDI database and UNESCO statistics were utilised.

For income, the worst observation was US\$107 that occurred for Tanzania in 1961 and the best US\$44,322 that occurred for Luxemburg in 1999. For child mortality, the worst observation was Mali in 1960 at 517 per 1,000 live births, however, the next worst observation was 391 for Mali in 1970. The latter observation was utilised as the 1960 figure was not consistent with observations for other countries and would have impacted on ratings assigned. The best observation of child mortality of 4 per 1,000 live births was observed for Japan, Norway and Singapore in 1999. For pupil teacher ratio the worst observation of 91.56 (rounded to 92) pupils per teacher was observed for Chad in 1960 and the best of 5.23 (rounded to 5) pupils per teacher was observed for San Marino in 1996.

8.3 Calculation of index for Bangladesh and Tanzania

As it has been determined how each indicator will be measured and what the end points will be, the next step was the calculation of the index for Bangladesh and Tanzania. The calculated values of the indices for both countries for the period of study, constructed via arithmetic and geometric mean, are presented in Table 8.4. The index based on the arithmetic mean is referred to as 'AHDI' while the index based on the geometric mean is referred to as 'GHDI'.

For completeness, the value of each index is also presented graphically, with Figure 8.6 demonstrating the modified development index for each country constructed via arithmetic mean, AHDI, and Figure 8.7 demonstrating the value of the modified development index for each country constructed via geometric mean, GHDI. On these graphs, the globalisation period is differentiated from the earlier period by a vertical line. It is pertinent to note that for both countries, the value of AHDI is relatively similar. Bangladesh exhibits slightly higher values between 1960 and 1971, and from 1992 onwards, although Tanzania exhibits higher values in the middle period. GHDI reveals a similar picture, albeit Tanzania takes over much later and for a shorter period. Additionally, with GDHI, Tanzania starts in a much worse position than Bangladesh around 1960.

Table 8.4: Value of composite index constructed via arithmetic and geometric mean

| Year | AHDI | | GHDI | |
|------|------------|----------|------------|----------|
| | Bangladesh | Tanzania | Bangladesh | Tanzania |
| 1960 | 0.36 | 0.28 | 0.31 | 0.11 |
| 1961 | 0.36 | 0.28 | 0.31 | 0.04 |
| 1962 | 0.36 | 0.29 | 0.31 | 0.12 |
| 1963 | 0.36 | 0.29 | 0.32 | 0.14 |
| 1964 | 0.36 | 0.30 | 0.32 | 0.20 |
| 1965 | 0.36 | 0.31 | 0.32 | 0.20 |
| 1966 | 0.36 | 0.32 | 0.32 | 0.23 |
| 1967 | 0.36 | 0.33 | 0.32 | 0.24 |
| 1968 | 0.36 | 0.34 | 0.32 | 0.26 |
| 1969 | 0.36 | 0.34 | 0.33 | 0.27 |
| 1970 | 0.37 | 0.36 | 0.34 | 0.29 |
| 1971 | 0.37 | 0.36 | 0.34 | 0.30 |
| 1972 | 0.36 | 0.36 | 0.32 | 0.29 |
| 1973 | 0.36 | 0.36 | 0.32 | 0.31 |
| 1974 | 0.37 | 0.37 | 0.35 | 0.33 |
| 1975 | 0.37 | 0.37 | 0.35 | 0.33 |
| 1976 | 0.37 | 0.39 | 0.35 | 0.35 |
| 1977 | 0.38 | 0.40 | 0.36 | 0.37 |
| 1978 | 0.38 | 0.42 | 0.37 | 0.39 |
| 1979 | 0.39 | 0.44 | 0.38 | 0.40 |
| 1980 | 0.39 | 0.45 | 0.38 | 0.41 |
| 1981 | 0.40 | 0.45 | 0.39 | 0.41 |
| 1982 | 0.43 | 0.47 | 0.41 | 0.43 |
| 1983 | 0.45 | 0.46 | 0.44 | 0.42 |
| 1984 | 0.48 | 0.48 | 0.46 | 0.44 |
| 1985 | 0.49 | 0.50 | 0.47 | 0.46 |
| 1986 | 0.49 | 0.50 | 0.48 | 0.47 |
| 1987 | 0.50 | 0.51 | 0.48 | 0.48 |
| 1988 | 0.47 | 0.49 | 0.45 | 0.44 |
| 1989 | 0.46 | 0.49 | 0.44 | 0.44 |
| 1990 | 0.46 | 0.48 | 0.44 | 0.44 |
| 1991 | 0.47 | 0.48 | 0.45 | 0.44 |
| 1992 | 0.48 | 0.47 | 0.46 | 0.43 |
| 1993 | 0.50 | 0.48 | 0.47 | 0.44 |
| 1994 | 0.50 | 0.48 | 0.48 | 0.44 |
| 1995 | 0.52 | 0.49 | 0.49 | 0.45 |
| 1996 | 0.53 | 0.50 | 0.50 | 0.46 |
| 1997 | 0.54 | 0.50 | 0.51 | 0.45 |
| 1998 | 0.54 | 0.49 | 0.52 | 0.45 |
| 1999 | 0.55 | 0.49 | 0.53 | 0.45 |

Figure 8.6: Composite index constructed utilising arithmetic mean

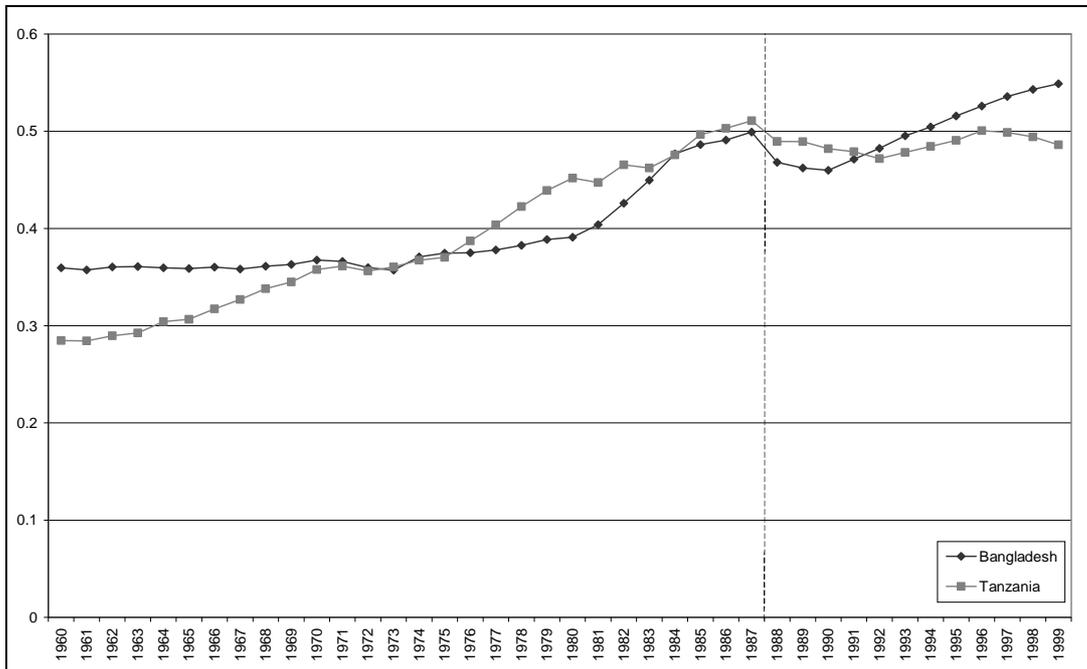
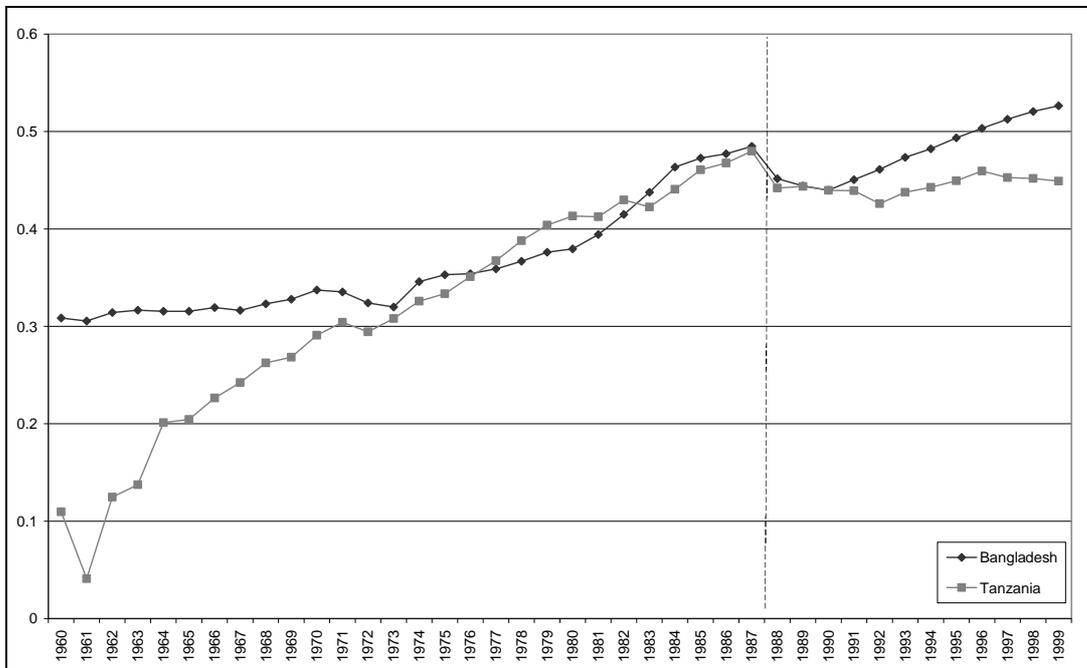


Figure 8.7: Composite index constructed utilising geometric mean



What is observed for each country can largely be explained by the investment that Tanzania undertook in development as part of its socialist philosophy, and the external borrowings it made to facilitate development in the 1970s and early 1980s. As Tanzania's economic performance deteriorated in the 1980s and through the 1990s, and less donor funds were made available, Tanzania became less able to fund development. Income, which is part of the modified development index, was also adversely affected by the economic crisis evidenced by Tanzania in the mid 1980s. In contrast, Bangladesh deliberately chose not to undertake extensive foreign borrowings during the middle period, which slowed its efforts in development. However, due to the success of reforms implemented, which saw income grow, and conscious development policies implemented, the performance of Bangladesh with respect to development exceeded that of Tanzania during most of the 1990s.

8.4 Analysis of development indices

8.4.1 Correlation of AHDI and GHDI

Correlation measures the strength or degree of linear association between two variables or time series. The rationale for examining the correlation between AHDI and GHDI was that if the two indices are highly correlated then it is sufficient to undertake the remaining analysis with just one of the indices.

Correlation coefficients were calculated between AHDI and GHDI for both Bangladesh and Tanzania from 1960 to 1999 inclusive. The results were 0.989 for Bangladesh and

0.968 for Tanzania. They indicate that AHDI and GHDI are strongly correlated for each of the two countries. Given the degree of correlation between the indices for both countries, it was decided that examining GHDI as well as AHDI was unlikely to provide largely different insights to only examining AHDI. Therefore, only AHDI was utilised for the remainder of the analysis.

8.4.2 Correlation of AHDI and its components

The correlation coefficients between the components of AHDI and the overall index were calculated for each country. Given that the modified development index has already been constructed, the outcomes of this analysis will not influence whether the overall index or one of its components will be used going forward. The analysis serves to understand the association between the components for the period studied. A further purpose of the analysis is to provide evidence to support, or otherwise, earlier findings that the components of the HDI are highly correlated with the original index (for example, Chowdhury 1991; Khusro 1999).

Based on previous research and the construction of the index by arithmetic mean, it would be expected that the individual components of the index be highly correlated with each other and the overall index. This is because each component represents an aspect of development. More generally, it is expected that development improves over the period of the study. The rationale for this is that international agencies, such as the United Nations, have instigated numerous programmes aimed at improving development in the LDCs. Additionally, governments of these countries have also allocated expenditures to

key development areas, such as health and education. The correlation matrices for each country from 1960 to 1999 inclusive are presented in Tables 8.5 and 8.6.

Table 8.5: Correlation matrix – Bangladesh AHDI and its components

| Bangladesh 1960 to 1999 | | | |
|-------------------------|--------------|---------------|---------------|
| | Education | Health | Income |
| AHDI | -0.69521 *** | 0.979347 *** | 0.965755 *** |
| Education | | -0.818353 *** | -0.847049 *** |
| Health | | | 0.988801 *** |

Note:

*** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level

Table 8.6: Correlation matrix – Tanzania AHDI and its components

| Tanzania 1960 to 1999 | | | |
|-----------------------|--------------|--------------|--------------|
| | Education | Health | Income |
| AHDI | 0.928888 *** | 0.968245 *** | 0.975377 *** |
| Education | | 0.834820 *** | 0.844266 *** |
| Health | | | 0.954255 *** |

Note:

*** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level

As was determined earlier in this chapter, income is represented by GDP per capita (PPP adjusted), education by the pupil-to-teacher ratio and health by the child mortality rate (per 1000 births). For income, the higher the value of the indicator the better, whereas for the education and health indicators, the lower the value of the indicator, the better. For Bangladesh, the education component of the index has a negative association with the other components, while the health and income components are highly correlated. For

Tanzania, the income and health components are also highly correlated. In contrast to Bangladesh, the education component for Tanzania does have a positive association with the two other components, however, the strength of association is less than between the income and health components. The most interesting aspect of this analysis is the education indicator for Bangladesh, which justifies further analysis.

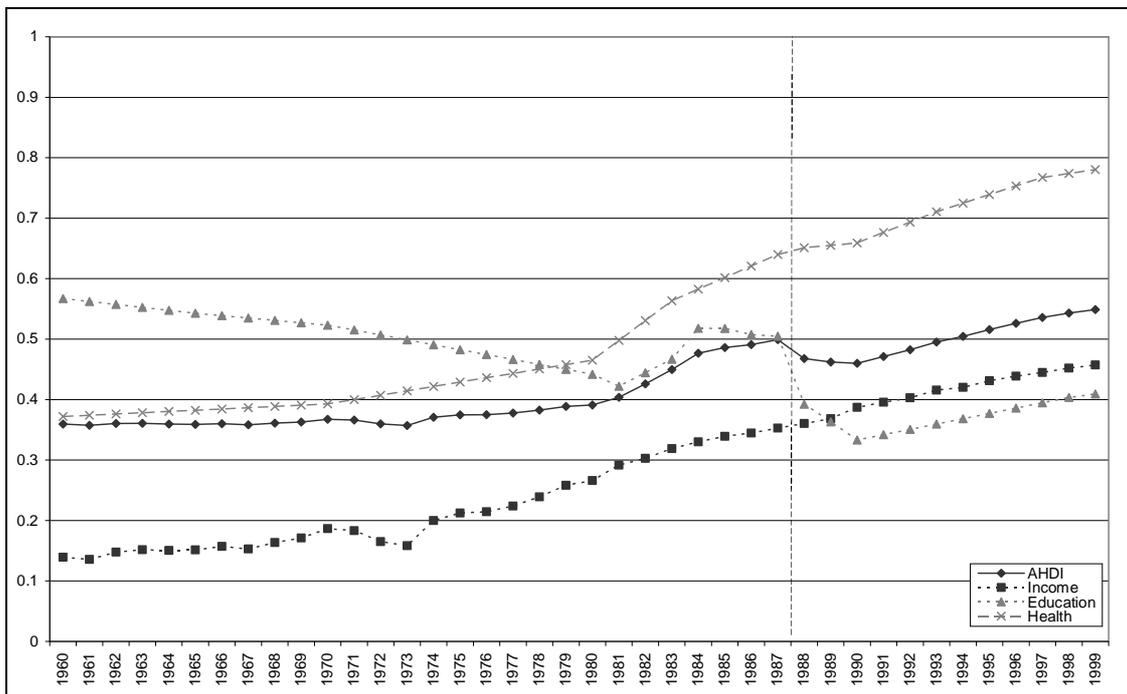
From Figure 8.4 it is apparent that the Bangladesh education time series has a breaking trend component. From 1960 up until around 1980, the Pupil-Teacher Ratio increases, then decreases between 1980 and 1984 before rising sharply to peak at 63 in 1990. The ratio then decreases for the remaining period of the study. Notably, with this indicator, a decrease in the value, that is, less pupils per teacher, indicates an improvement, and alternately, an increase in the value indicates deterioration, that more students need to share a teacher. As previously mentioned, it is expected that the indicators of development exhibit an improvement over time, which does not occur with this indicator. In summary then, up until 1980 the education indicator declines, but then improves sharply, before declining again, but improves beyond 1990.

The trends observed in the Pupil-Teacher Ratio are explained by a large increase in primary education pupils between 1960 and 1980 from 3.4 to 8.2 million, without a corresponding increase in teachers, as the number of teachers less than doubled over the same period from 80,000 to 153,000 (The World Bank 2001). As broad reforms were introduced in the Bangladesh economy in the 1980s, education increased in priority and both public sector funding and foreign aid was directed toward the sector (The World

Bank 1999). The result of these reforms was that the Pupil-Teacher Ratio exhibited some fluctuation during the 1980s as reforms were implemented and primary education became compulsory. However, the Pupil-Teacher Ratio demonstrated consistent lowering during the 1990s, as the results of reforms became evidenced within the Bangladesh economy.

To contrast the behaviour of the education component with the other components of the index and the overall index for Bangladesh, all three components and the summary index are plotted in Figure 8.8. Notably, the vertical dotted line indicates where the period of globalisation is considered to commence for the present research.

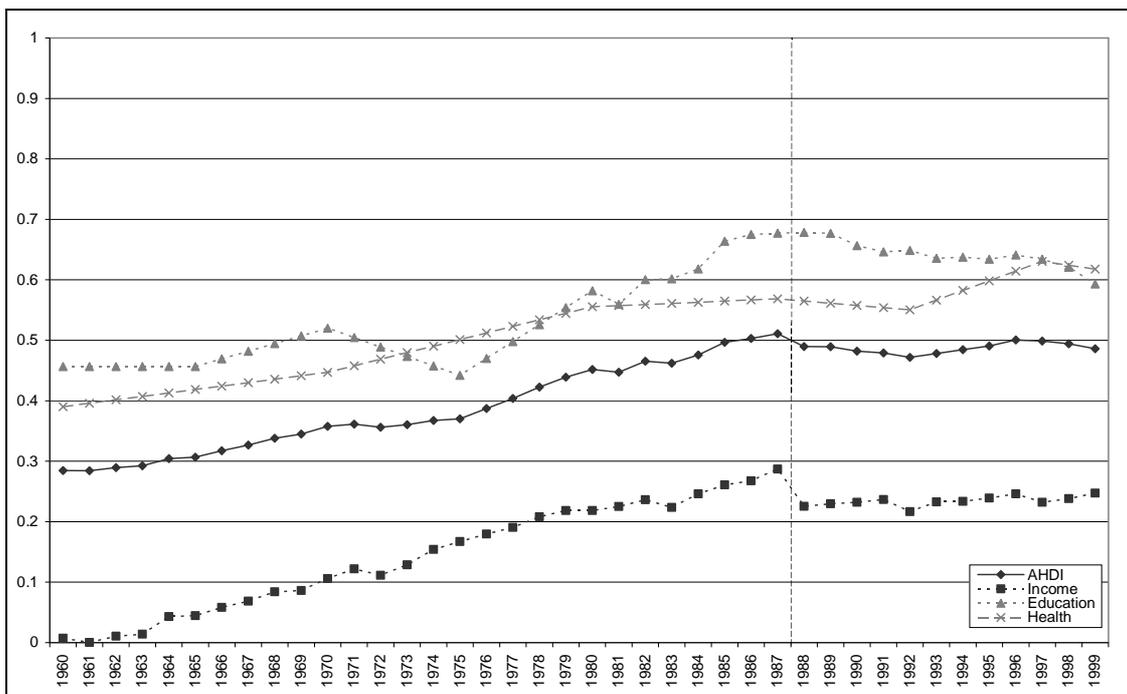
Figure 8.8: Development index (AHDI) and components – Bangladesh



The income and health components of the index exhibit upward trends over the period considered which influences the overall index, AHDI. The education component exhibits different behaviour to the other two components, that being a downward trend, or decreasing contribution to development, over the majority of the period.

To contrast this for the experience of Tanzania, ADHI and its components for Tanzania are presented in Figure 8.9.

Figure 8.9: Development index (AHDI) and components – Tanzania



For Tanzania, the education component exhibits a trend more consistent with the other index components, however does decrease slightly from 1990 onwards. This may be attributed to the high value that the Tanzanian government placed on education as part of

its Socialist policies between 1960 and 1990. However, as economic performance deteriorated during the 1980s and remained weak during the 1990s, the Tanzanian government was less able to invest in the education sector.

8.4.3 Changes in the development index during the globalisation period

The purpose of this section is to compare and contrast how the development index and its components changed for each country during the pre-globalisation and globalisation periods. The pre-globalisation time period is defined as 1960 to 1987, and globalisation as 1988 to 1999. To commence the analysis, a time trend was fitted onto the development index for each country to determine if the slope was the same during the two periods. Chow tests for structural break were undertaken for each country, with the breakpoint set at 1988, the commencement of the globalisation period. The Chow test is used to determine the occurrence of a structural change in a time series at the point specified (Quantitative Micro Software 1999). The results indicated that at the 5% significance level, there is no break in case of Bangladesh, but there is a break in the case of Tanzania. This suggests that the same trends observed for the development index in the pre-globalisation period carried forward to the globalisation period for Bangladesh, but for Tanzania, the trends differed during the two periods. As a consequence of this finding, if analysis was only being carried out on the overall index, for Bangladesh it would be unnecessary to study each period separately. For Tanzania, there would be merit in studying the two periods separately. Given that the analysis encompasses not only the overall index but also the components of the index, consideration of the time periods will be included.

In the second step of the analysis, correlation coefficients for the two different periods, pre-globalisation and globalisation, were examined for the overall development index and its components, in order to determine distinct trends between the two periods for each country. The correlation coefficients for the entire time period of the study were included to enable comparing and contrasting with the coefficients of the two individual time periods. Further, t-tests were performed to test the significance of the sample correlation coefficient. The results for Bangladesh are presented in Table 8.7 and for Tanzania are presented in Table 8.8 below.

Table 8.7: Correlation coefficients – Bangladesh

| Bangladesh 1960 to 1999 | | | |
|--------------------------------|--------------|---------------|---------------|
| | Education | Health | Income |
| AHDI | -0.69521 *** | 0.979347 *** | 0.965755 *** |
| Education | | -0.818353 *** | -0.847049 *** |
| Health | | | 0.988801 *** |
| Bangladesh 1960 to 1987 | | | |
| | Education | Health | Income |
| AHDI | -0.265105 * | 0.977028 *** | 0.927981 *** |
| Education | | -0.444769 *** | -0.589955 *** |
| Health | | | 0.97060 *** |
| Bangladesh 1988 to 1999 | | | |
| | Education | Health | Income |
| AHDI | 0.810921 *** | 0.986431 *** | 0.93883 *** |
| Education | | 0.726034 *** | 0.585500 ** |
| Health | | | 0.970824 *** |

Note:

*** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level

Table 8.8: Correlation coefficients – Tanzania

| Tanzania 1960 to 1999 | | | |
|------------------------------|---------------|---------------|--------------|
| | Education | Health | Income |
| AHDI | 0.928888 *** | 0.968245 *** | 0.975377 *** |
| Education | | 0.834820 *** | 0.844266 *** |
| Health | | | 0.954255 *** |
| Tanzania 1960 to 1987 | | | |
| | Education | Health | Income |
| AHDI | 0.909453 *** | 0.976174 *** | 0.982557 *** |
| Education | | 0.812000 *** | 0.824961 *** |
| Health | | | 0.988124 *** |
| Tanzania 1988 to 1999 | | | |
| | Education | Health | Income |
| AHDI | -0.205586 *** | 0.739999 ** | 0.566139 *** |
| Education | | -0.757623 *** | -0.585053 ** |
| Health | | | 0.586519 ** |

Note:

*** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level

It is notable that for Bangladesh the correlation coefficients of the education indicator with the other components are positive during the designated globalisation period, although these correlations are still lower than the correlation between income and health. The change in the direction of association during the globalisation period is attributed to the reforms discussed previously and improvements being evidenced in the education sector. The correlation between the components and overall index increases during the globalisation period, which is attributed to all of the indicators moving in the same direction.

Interestingly, for Tanzania in the globalisation period the association between education and the other components of the index becomes negative, reflecting the decreasing value of the education component of the index noted previously. Additionally, the strength of correlation between the other two components, health and income, weakens in the globalisation period. The income component, while fluctuating, exhibits neither a clear upward nor a downward trend during the globalisation period. The health indicator exhibits an upward trend. As the overall index is the arithmetic mean of the three components, it is influenced by the different directions of the components during the globalisation period, and is therefore less highly correlated with the components in this period than in the pre-globalisation period when all components generally moved in the same direction.

8.5 Inclusion of an environmental indicator

In the final section of this chapter, consideration is given to including an environmental indicator in the modified index that has been created. Inclusion of an environmental indicator is one aspect that has been raised as a potential enhancement to the HDI. For example, Sagar and Najam (1998) recommend to incorporate sustainability concerns into the HDI. Sagar and Najam point out that if a country is destroying its natural capital to achieve a certain level of development, then the development achievements are not necessarily sustainable. Similarly Neumayer (2001) suggests linking the HDI with sustainability would enable the UNDP to check whether a country is ‘mortgaging the choices of future generations’.

Environmental aspects that could be considered for inclusion in a development index fall into the broad categories of sustainability and quality. Sustainability refers to preserving environmental resources for future generations, while quality pertains to the standard of environmental resources available to the present inhabitants of an area. In this sense, quality is about the now, whereas sustainability is about the future. Quality is desirable both in its own right and because of the detrimental effects impairment of environmental quality gives rise to. Clean water and fresh air are desirable by-products of an unspoiled environment, while lower levels of human health and reduced economic productivity are adverse consequences of environmental damage (The World Bank 1992).

There are two economic issues associated with the consumption of environmental resources. The first is undervaluation of resources, so that they are consumed in such a way that does not reflect their true cost. Not taking into account resource depletion for future generations is an example of this. A second issue for economists is that of environmental externalities, whereby those creating the adverse effects do not pay for them, or that those that are negatively impacted by an activity are not compensated. An example of an externality is manufacturing industries generating pollution.

In the context of globalisation, one of the adverse environmental implications for developing countries discussed in Chapter 2 pertained to overexploitation of natural resources, for example, overworking agricultural land or undertaking excessive fishing practices. Such activities reduce the natural resources available for future generations, and are therefore issues of sustainability. A further problem in developing countries is

urbanisation without adequate infrastructure reducing environmental quality, for example, through water pollution because of poor sanitation. Manufacturing activity also has a tendency to generate pollution. For most developing countries that are keen to develop manufacturing sectors or attract foreign investment, the external costs of manufacturing are not taken into consideration.

There have been prior attempts to consider environmental implications within the HDI. The approach taken by Desai (1995a) was to construct a second index broadly utilising the same methodology as the HDI, referring to this index as the Ordinal Green Index (OGI). Notably, Desai constructed the OGI for a single year with the purpose of comparing the rankings of countries. In linking the OGI with the HDI, Desai proposed calculating either the arithmetic or geometric mean of the rankings for the two indices. Further, Desai utilised different sets of variables for rich and poor countries, providing the following justification:

It can be argued... that the environment problem is a very different one for rich and poor countries.... Thus, it may make sense to measure the environmental state of a country by variables appropriate to its income and overall development level.”

For poor countries, the indicators used by Desai are population with access to safe drinking water, annual rate of deforestation, change in fuelwood since 1979, greenhouse emissions and energy efficiency. Poor data availability, however, prohibits this approach for measuring change in a nation’s environmental well-being over time.

Neumayer (2001) also proposed a means to incorporate environmental considerations with the HDI. The approach of Neumayer involved producing an index to be used in conjunction with the HDI, to reflect the sustainability of a country's achieved level of human development. Neumayer provided four reasons why environmental issues should not be directly integrated within the HDI. Firstly, there is no direct relationship between resource exploitation, environmental degradation and the level of human development. Secondly, the existing variables in the HDI provide an unambiguous indication of improvement whereas environmental goals do not provide the same clarity (for example, reducing pollution to zero is not an achievable goal). Thirdly, including a new variable that attempts to measure environmental issues would strengthen the claims of critics of the HDI that components should be separately examined. Finally, without recalculating the index with the new formula for preceding years, structural comparison of earlier years would be impossible. Neumayer also pointed out that constructing a green HDI alongside the standard HDI, as Desai proposed, would not find a lot of interest. This is supported by the fact that Neumayer's contribution occurred six years after Desai's and there had been no attempt to build on Desai's work in that time period.

The contribution of Neumayer focussed on sustainability, whereas Desai's approach incorporated aspects of both environmental quality and sustainability within the index developed. Neumayer analysed for which countries depreciation of natural resource stock should be calculated. The criteria established involved both positive net savings rates and resource rents large enough to influence genuine savings rates. Less than twenty countries met the criteria.

The 1992 edition of the World Development Report (The World Bank 1992) was dedicated to exploring the links between economic development and the environment, and was therefore reviewed in anticipation of providing some basis for incorporation of environmental indicators into the modified development index being created in the current research. The Report summarises the environmental issues faced by developing countries as being unsafe water, inadequate sanitation, soil depletion, indoor smoke from cooking fires and outdoor smoke from coal burning and indicates these problems are different, and more life threatening than the environmental problems faced by developed countries, such as carbon dioxide emissions and depletion of the ozone layer (The World Bank 1992). This synopsis of issues is largely aligned to the analysis of Desai.

Data availability for measuring changes to the environment is extremely poor. The WDI lists sixty eight potential environment indicators, however, data was available for only twenty six of these indicators for the period of the study for Bangladesh and Tanzania, and these indicators, although categorized under environment, were not such that meaningful indication of change in environmental conditions could be gauged. To support this statement, the list of indicators is provided in Table 8.9.

Table 8.9: Potential environmental indicators

| |
|---|
| Agricultural machinery, tractors |
| Agricultural machinery, tractors per hectare of arable land |
| Cereal yield (kg per hectare) |
| Crop production index (1989-91 = 100) |
| Fertilizer consumption (100 grams per hectare of arable land) |
| Fertilizer consumption (metric tons) |
| Food production index (1989-91 = 100) |
| Land area (hectares) |
| Land area (sq km) |
| Land use, arable land (% of land area) |
| Land use, arable land (hectares per person) |
| Land use, arable land (hectares) |
| Land use, area under cereal production (hectares) |
| Land use, irrigated land (% of cropland) |
| Land use, irrigated land (hectares) |
| Land use, other (% of land area) |
| Land use, permanent cropland (% of land area) |
| Livestock production index (1989-91 = 100) |
| Population density, rural (people per sq km) |
| Rural population |
| Rural population (% of total population) |
| Rural population growth (annual %) |
| Surface area (sq km) |
| Urban population |
| Urban population (% of total) |
| Urban population growth (annual %) |

An alternative information source for one potential indicator, carbon dioxide emissions, is the Carbon Dioxide Information Analysis Center (CDIAC). The data from the CDIAC was initially examined for the two countries that are the subject of the research, however, the levels of carbon dioxide emissions did not change markedly during the period of the study, and more so, the levels of carbon dioxide emissions for these countries were extremely low in comparison to levels for advanced countries. This finding provides

support for the statements of Desai and the International Bank for Reconstruction and Development (IBRD), that underdeveloped countries face different environmental problems to developed countries. To demonstrate the low levels and low rate of change, the same approach was adopted as for the other development index components in terms of establishing a maximum and minimum level based on observed values across all countries and then calculating a ratio between 0 and 1 for where each country was placed between the maximum and minimum.

The maximum level of emissions was set at 5.75 (observed for the United States in 1977), and the minimum level at zero. During the forty annual observations, the emission level changed in Bangladesh from 0.02 to 0.05, and in Tanzania from 0.04 to 0.02. Calculating an index component with these observations provided a very high value (0.99) for each country, which skewed the value of the overall modified development index when an arithmetic or geometric mean of all components was utilised to construct the development index. To demonstrate this point, the development index for each country with the environmental indicator included and excluded is presented in Figures 8.10 and 8.11 below.

As a consequence of being unable to identify a meaningful environment component, for which data is readily available, incorporating this aspect into the modified index was abandoned. Thus, the development index that will be utilised for the remaining analysis comprises of indicators for health, education and income. This is not altogether inappropriate as income can be a proxy for improvement in environmental standards,

because rising incomes in developing countries enable more consideration of environmental issues.

Figure 8.10: Development index with environmental indicator – Bangladesh

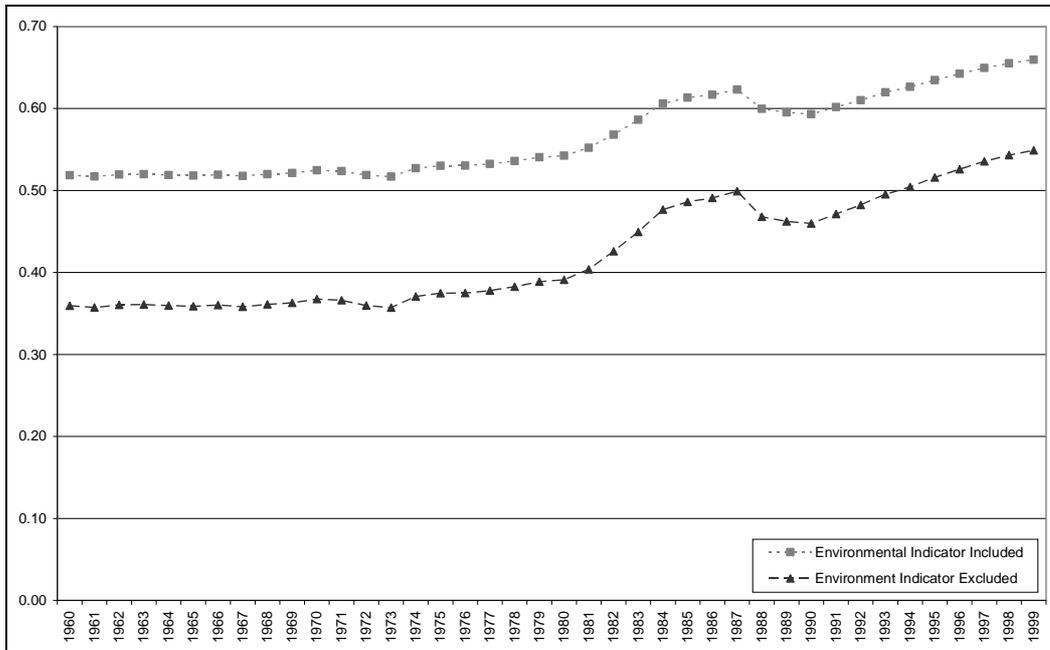
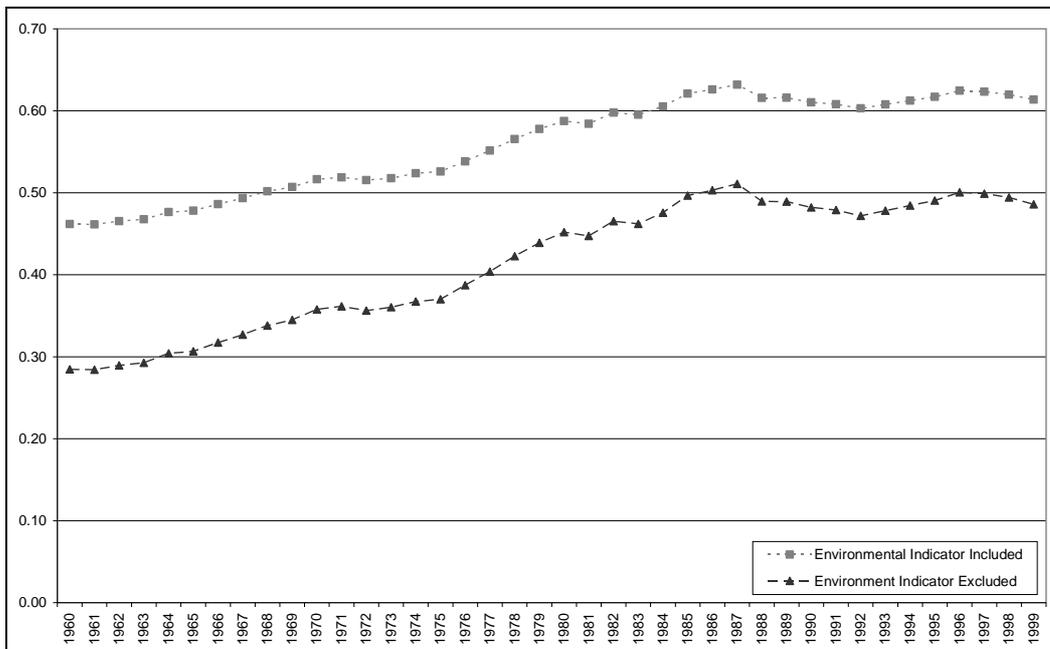


Figure 8.11: Development index with environmental indicator – Tanzania



8.6 Conclusion

This chapter presented the generation of an alternative or modified development index, based on the widely accepted Human Development Index. In creating the new index, criticisms and suggestions of the HDI were taken into consideration. The purpose and objectives of the current research were also taken into consideration, and therefore one of the criteria for the components of the modified index was responsiveness to change. Some of the areas explored for inclusion in the modified index were inequality and the environment, however, largely due to data constraints and lack of suitable indicators within these categories, the new index continues to utilise the three broad components utilised by the HDI, that is, income, health and education. Different indicators were identified for health and education, to those presently utilised within the HDI.

Consideration was given to constructing the modified index utilising a geometric rather than arithmetic mean of the components, however, upon doing so, the two indices were highly correlated for both of the subject countries. Therefore, the index was constructed using the arithmetic mean of the values of the three components, which is consistent with the approach of the HDI. The three components of the index were assigned equal weighting, as there has been limited justification for more complex weighting systems. In order to avoid criticism of arbitrariness of determining the minimum and maximum values for indicators, upon which progress or change would be measured, values for end points for each index component were examined across all countries for the entire period of study. The end points were fixed for the duration of the study, in order to avoid an issue of shifting goals posts, which was one of the early criticisms of the HDI.

The modified development index was calculated for each country between the period of 1960 and 1999. As would be expected, there was improvement in the development of each country over time. Bangladesh started and ended at a higher level of development than Tanzania, based on the modified index, although Tanzania did rise above Bangladesh between 1977 and 1991. In contrasting the globalisation and pre-globalisation periods, Bangladesh exhibited a consistent level of improvement during the pre-globalisation and the globalisation periods, whereas Tanzania exhibited stronger improvement during the pre-globalisation period, but there was little change in the value of the development index during the globalisation period.

In examining the correlation of components within the composite index, for Bangladesh the health and income indicators were correlated for both the overall period studied, the pre-globalisation and the globalisation period. The education indicator moved in the opposite direction to the other components during the pre-globalisation period, however, this changed during the globalisation period, which is likely to be attributed to the progressive reforms of the Bangladesh education sector that were implemented during the 1980s. For Tanzania, there was positive correlation between all components for the overall period studied, and for the pre-globalisation period. However, the correlation between the education component and the other components was negative during the globalisation period, which could be attributed to the economic performance issues experienced by Tanzania in the 1980s, discussed in Chapter 7, the impact of which would carry over onto development during the 1990s.

In the next chapter the modified index will be analysed with a measure of openness in order to provide some understanding of the impact of globalisation on development in Bangladesh and Tanzania.

9 Openness and Development

9.1 Introduction

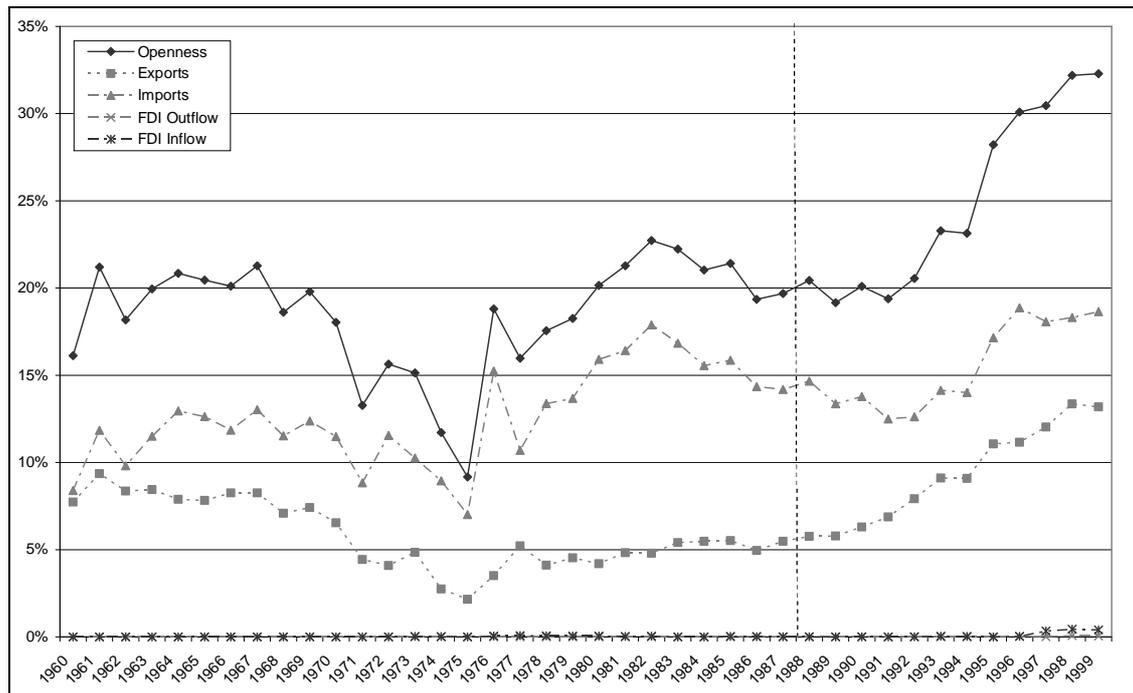
In the previous chapter a modified development index was created, based on the Human Development Index, with the purpose of measuring the development of Bangladesh and Tanzania, over designated globalisation and pre-globalisation periods. In this chapter, the modified development index is compared to a measure of openness, with the objective of determining if a relationship between openness and development exists, and if so, what that relationship is. This will shed some light on whether the impact of globalisation on development has been positive or negative, or whether there has been no impact on the subject countries. Because there are arguments in the literature to support each of the three possible outcomes, it is difficult to predict what the relationship will be, however, given the extent of debate within the literature it is likely that there are both positive and negative factors that come into play and these may well counterbalance one another. Additionally, factors specific to the countries being studied are likely to be influential to the results observed, which may mean that different outcomes are observed for each country.

The chapter commences with measuring openness for the two countries, and looks at how openness has changed in both the pre-globalisation and globalisation periods for each country. Should the countries not have become more open during the globalisation period, this could be indicative that the countries have been unable to participate in the most recent period of globalisation.

9.2 Openness

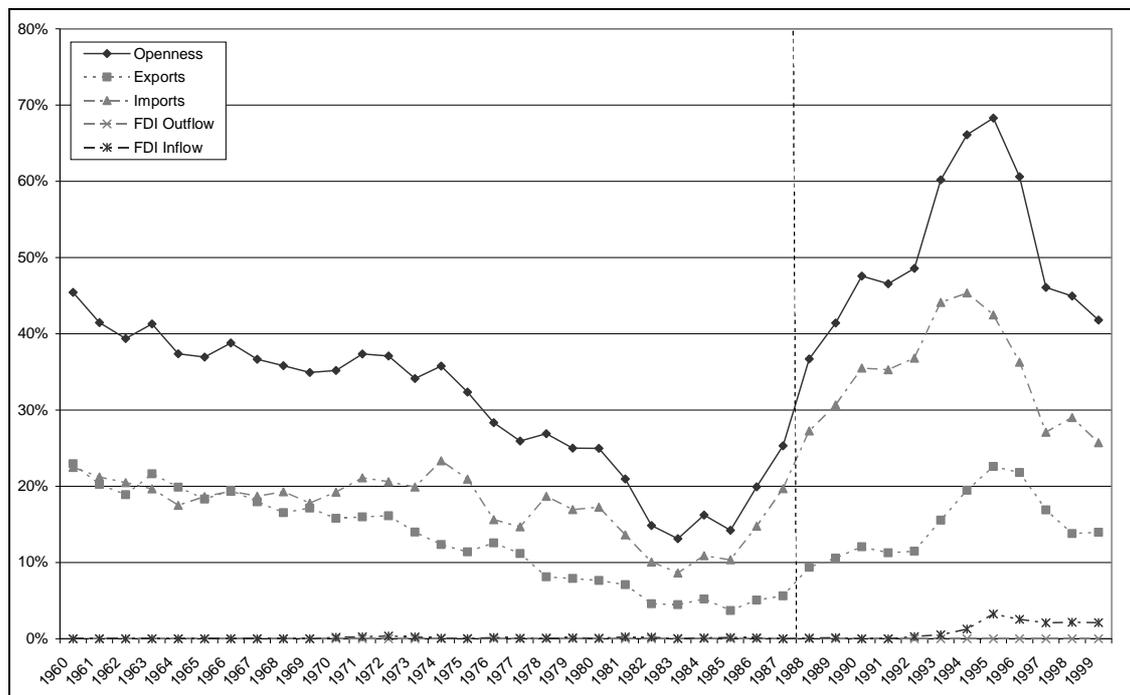
As outlined in Chapter 6, openness is measured by the proportion of the sum of trade and investment flows to GDP. Trade is measured as the total of exports plus imports, while investment is measured as the total of FDI inflows plus FDI outflows. This is consistent with the approach of UNCTAD in the World Investment Report. The measure of openness along with its four components for Bangladesh and Tanzania, for the period of study, are presented in Figures 9.1 and 9.2. The vertical dotted line in these figures indicates the commencement of the globalisation period.

Figure 9.1: Openness composition – Bangladesh



Source: Penn World Tables and UNCTAD Foreign Direct Investment Database

Figure 9.2: Openness composition – Tanzania



Source: Penn World Tables and UNCTAD Foreign Direct Investment Database

It is notable that both countries were more open in the globalisation period than the preceding thirty year period. More specifically, the export levels of each country actually fell during the pre-globalisation period. Openness in the globalisation period was largely driven by trade rather than investment in each country, with FDI inflows and outflows only really occurring in the last few years of the study, and their levels being relatively small in comparison to trade for both countries.

Given the change in openness experienced by each of the two countries especially in the early part of the globalisation period, it is evident that neither country has entirely been by-passed by the most recent period of globalisation. Somewhat interesting is the decline in openness experienced by Tanzania between 1995 and 1999, by around 26% of GDP.

This decline is mainly accounted for by a fall in imports. The country analysis conducted in Chapter 6 demonstrated a decline in import volumes from 1995 and export volumes from 1997. These declines occurred despite continued growth in Tanzania's GDP. Summarily then, what has been evidenced with respect to Tanzania's openness during the latter part of the globalisation period can be accounted for by the fact that GDP of Tanzania has continued to grow while trade volumes have declined. In contrast to Tanzania, Bangladesh exhibited a continuous, albeit volatile, increase in openness during the globalisation period.

9.3 Analytical approach

The overall objective of the analysis undertaken is to test for Granger causality, or precedent, to determine if openness has preceded development. Prior to being able to test for Granger causality, the properties of the time series being dealt with need to be established to reduce the likelihood of spurious results. In order to do this, unit-root and cointegration tests are performed. The econometric software package EViews¹ is used, which influences the specific tests performed. The analysis is undertaken for the total period of the study, 1960 to 1999, and then the period prior to the designated globalisation period, 1960 to 1987, and the designated period of globalisation, 1988 to 1999, in order to compare and contrast the results for the different time periods and identify any differences in the results for the period of globalisation.

¹ Full outputs of all EViews tests are available upon request.

As mentioned, the techniques selected for the analysis are among the most common econometric techniques for analysing time series. Correlation was used in analysing the development index in the previous chapter, however, as noted in the EViews V3.1 User Guide:

“Correlation does not necessarily imply causation in any meaningful sense of that word. The econometric graveyard is full of magnificent correlations, which are simply spurious or meaningless.”

Therefore, alternative analytical techniques are required to understand if a relationship exists between the development index and openness.

Unit root testing is utilised to ensure that stationary time series are being dealt with, as spurious regressions can result from the use of non-stationary variables (Thomas 1997). Unit root tests will be performed on the levels and first differences of the time series in order to find out whether they are stationary or have at most two unit roots. Two unit root tests will be utilised, the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller 1979) and the Elliott-Rothenberg-Stock (ERS) DF-GLS test (Elliott, Rothenberg & Stock 1996). The ADF is the most commonly used unit root test, although the test has been criticised by Maddala and Kim (1998) and others for lacking power. The Elliott-Rothenberg-Stock (ERS, 1996) is similar to the ADF but has better performance in terms of small sample size and power (Baum 2003), and is therefore considered superior to the ADF. This is specifically relevant to the globalisation period in the current research which contains a small number of observations for each country.

Cointegration occurs when two time series are not stationary, but their linear combination is stationary. The presence of cointegration allows the analysis to progress as if the time series are stationary (Halcoussis 2005). If time series are cointegrated, causality tests are undertaken on their level. For cointegration testing, the VAR-based cointegration test developed by Johansen (1995) is utilised, as this is the standard cointegration test performed by EViews.

The final test performed is for Granger causality. Granger (1969) approached causality by identifying how much of the current variable can be explained by past values of the variable and then seeing whether adding lagged values of a second variable can improve the explanation. Granger causality therefore does not indicate causality in the usual sense of the term, but is more of a test of precedence.

9.4 Analysis

9.4.1 Correlation coefficients

The first part of the analysis of the development index and measure of openness involved calculating the correlation coefficients. Prior to calculating correlation coefficients, the time series were plotted, using 1980 as a base year, in order to assist in understanding the correlation coefficients. The results of this plotting are presented in Figures 9.3 and 9.4.

Figure 9.3: Openness and development index – Bangladesh

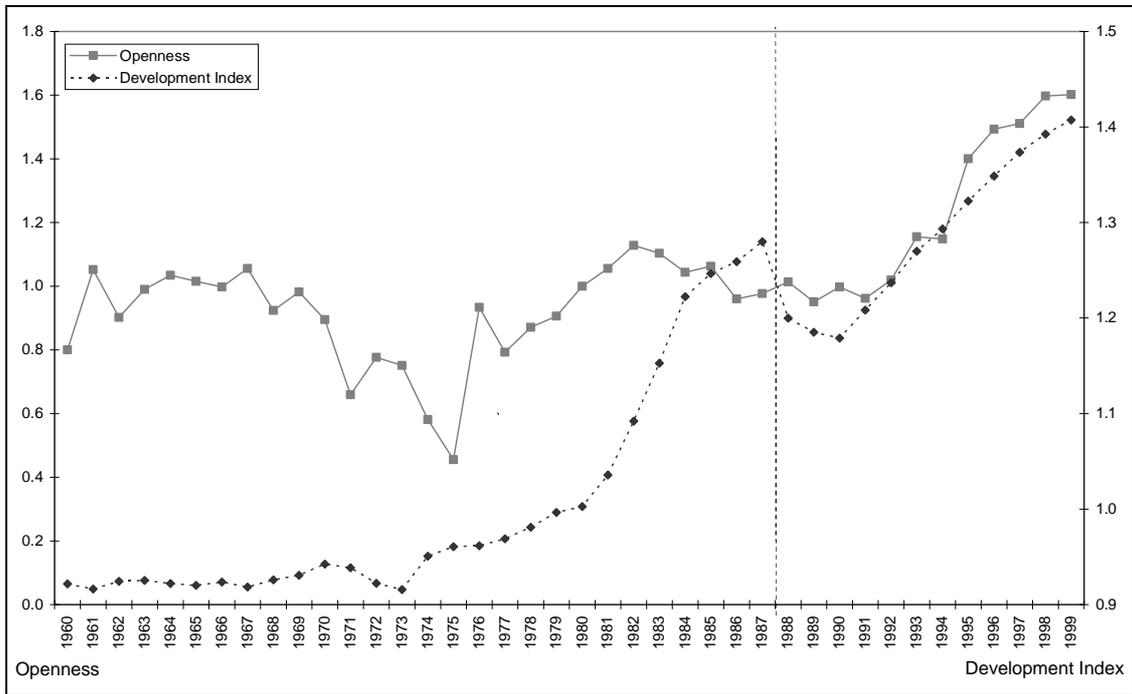
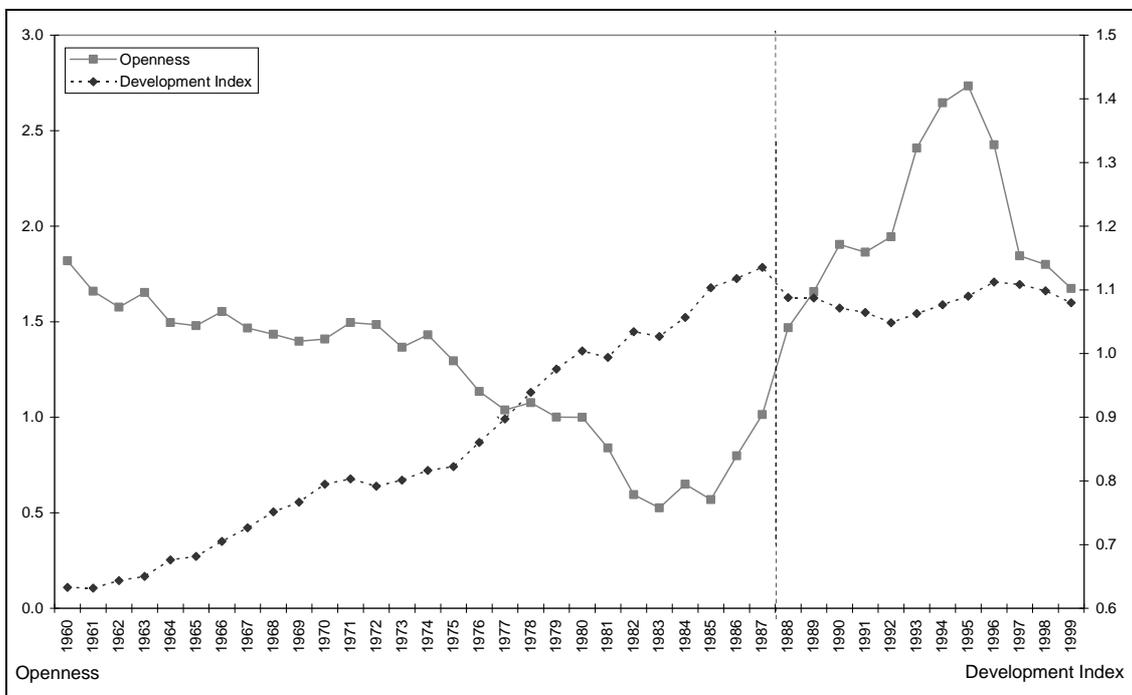


Figure 9.4: Openness and development index – Tanzania



The correlation coefficients between the development index and openness for the three different time periods (the full period of the study, the pre-globalisation period, and the period of globalisation) are presented in Table 9.1.

Table 9.1: Correlation coefficients between the development index and openness

| | Bangladesh | Tanzania |
|-------------|--------------|---------------|
| 1960 - 1999 | 0.732783 *** | 0.015474 |
| 1960 - 1987 | 0.351797 ** | -0.925960 *** |
| 1988 - 1999 | 0.975233 *** | 0.011776 |

Notes:

*** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level

As depicted in Figure 9.3, for Bangladesh, both time series display a clear upward trend during the globalisation period, which contributes to the reasonably high value of the correlation coefficient between the series for this period. Openness exhibits greater variance and less increase than the development index in the early time period, which contributes to the lower correlation coefficient between the two time series in this period. As depicted in Figure 9.4, for Tanzania, openness actually declines in the earlier time period while the value of the development index increases, therefore the correlation coefficient between the two series is negative. The correlation coefficient becomes slightly positive in the globalisation period, and is slightly positive overall. Openness increases rapidly from about 1985 to 1995 before diminishing. At the same time, the value of development index is relatively stable during the globalisation period.

9.4.2 *Unit root testing*

The second step of the analysis was to test for unit roots. As previously discussed, the two tests utilised for unit root testing were the ADF and the ERS test. Lag lengths were selected utilising Schwartz Information Criteria (SIC). The results of the ADF test are presented in Table 9.2 and the results of the ERS test are presented in Table 9.3. A summary of the test results are presented in Table 9.4. According to at least one of the tests performed each pair of time series are integrated of the same order, and there was consistency with the time periods, specifically, for the globalisation period the time series of both countries were stationary at their levels, whereas for the full period of study and the pre-globalisation period, the time series were stationary at the first difference.

Table 9.2: Unit root test results – Augmented Dickey Fuller test

| | Lag Length | Maintain / Reject null hypothesis of time series has a unit root | Conclusion |
|--------------------------------|------------|--|------------|
| Bangladesh 1960 to 1999 | | | |
| Development Index | | | |
| Level | 2 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Openness | | | |
| Level | 0 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Bangladesh 1960 to 1987 | | | |
| Development Index | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_0 | |
| Second Difference | 0 | H_A *** | I(2) |
| Openness | | | |
| Level | 0 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Bangladesh 1988 to 1999 | | | |
| Development Index | | | |
| Level | 3 | H_0 | |
| First Difference | 3 | H_0 | |
| Second Difference | 3 | H_0 | NS |
| Openness | | | |
| Level | 3 | H_0 | |
| First Difference | 0 | H_A ** | I(1) |
| Tanzania 1960 to 1999 | | | |
| Development Index | | | |
| Level | 0 | H_0 | |
| First Difference | 1 | H_0 | |
| Second Difference | 0 | H_A *** | I(2) |
| Openness | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Tanzania 1960 to 1987 | | | |
| Development Index | | | |
| Level | 0 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Openness | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Tanzania 1988 to 1999 | | | |
| Development Index | | | |
| Level | 3 | H_A ** | |
| First Difference | 0 | H_0 | |
| Second Difference | 1 | H_A *** | I(2) |
| Openness | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_0 | |
| Second Difference | 3 | H_0 | NS |

Notes: Asterisks denote the one-sided P values at which null hypothesis is accepted or rejected – *** is 1%, ** is 5% and * is 10%. ADF utilises critical values developed by MacKinnon (1996). The lag lengths for tests were selected using Schwartz Information Criteria (SIC). For the test on the level, both linear trend and intercept were included, while for the first and second differences only the intercept was included.

Table 9.3: Unit root test results – Elliott-Rothenberg-Stock test

| | Lag Length | Maintain / Reject null hypothesis of time series has a unit root | Conclusion |
|--------------------------------|------------|--|------------|
| Bangladesh 1960 to 1999 | | | |
| Development Index | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Openness | | | |
| Level | 0 | H_0 | |
| First Difference | 3 | H_0 | |
| Second Difference | 4 | H_0 | NS |
| Bangladesh 1960 to 1987 | | | |
| Development Index | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A ** | I(1) |
| Openness | | | |
| Level | 0 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Bangladesh 1988 to 1999 | | | |
| Development Index | | | |
| Level | 2 | H_A ** | |
| First Difference | 2 | H_A * | I(0) |
| Openness | | | |
| Level | 3 | H_A * | |
| First Difference | 0 | H_A *** | I(0) |
| Tanzania 1960 to 1999 | | | |
| Development Index | | | |
| Level | 0 | H_0 | |
| First Difference | 1 | H_A ** | I(1) |
| Openness | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Tanzania 1960 to 1987 | | | |
| Development Index | | | |
| Level | 0 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Openness | | | |
| Level | 1 | H_0 | |
| First Difference | 0 | H_A *** | I(1) |
| Tanzania 1988 to 1999 | | | |
| Development Index | | | |
| Level | 2 | H_A *** | |
| First Difference | 0 | H_A * | I(0) |
| Openness | | | |
| Level | 1 | H_A * | |
| First Difference | 0 | H_A * | I(0) |

Notes: Asterisks denote the one-sided P values at which null hypothesis is accepted or rejected – *** is 1%, ** is 5% and * is 10%.

The lag lengths for tests were selected using Schwartz Information Criteria (SIC).

For the test on the level, both linear trend and intercept were included, while for the first difference only the intercept was included.

Table 9.4: Summary of unit root test results

| | ADF test | ERS test |
|--------------------------------|----------|----------|
| Bangladesh 1960 to 1999 | | |
| Development Index | I(1) | I(1) |
| Openness | I(1) | NS |
| Bangladesh 1960 to 1987 | | |
| Development Index | I(2) | I(1) |
| Openness | I(1) | I(1) |
| Bangladesh 1988 to 1999 | | |
| Development Index | NS | I(0) |
| Openness | I(1) | I(0) |
| Tanzania 1960 to 1999 | | |
| Development Index | I(2) | I(1) |
| Openness | I(1) | I(1) |
| Tanzania 1960 to 1987 | | |
| Development Index | I(1) | I(1) |
| Openness | I(1) | I(1) |
| Tanzania 1988 to 1999 | | |
| Development Index | I(2) | I(0) |
| Openness | NS | I(0) |

9.4.3 Cointegration

The next step was to test for cointegration, and for this the Johansen cointegration test was utilised. The Johansen test is the most popular multi-equation method for cointegration relationships (Maddala & Kim 1998) and is based on canonical correlation methods. Cointegration tests were performed for the total time period and the pre-globalisation period for each country. The globalisation period for both countries could not be tested for cointegration as both pairs of time series were found to be stationary at the level for this period. Two scenarios were tested for each pair of time series, that there were no cointegrating relations and there was at most one cointegrating relations. The results of the Johansen cointegration tests are summarised below in Table 9.5. It was

found that there was no cointegration for either country, for the total time period examined or the pre-globalisation time period.

Table 9.5: Cointegration test results

| Period | Conclusion |
|-------------------------|--------------|
| Bangladesh 1960 to 1999 | Not CI (1,1) |
| Bangladesh 1960 to 1987 | Not CI (1,1) |
| Tanzania 1960 to 1999 | Not CI (1,1) |
| Tanzania 1960 to 1987 | Not CI (1,1) |

Notes:

All hypotheses were rejected at the 1% level.

The test used allows for linear deterministic trend in data, intercept (no trend) in Cointegrating Equation (CE) and test VAR (Quantitative Micro Software 1999 p.492)

The lag lengths for tests were selected using Schwartz Information Criteria (SIC).

9.4.4 Granger Causality

The final test performed was for Granger causality. The Granger causality test is explained by Gujarati (2003):

“The Granger causality test assumes that the information relevant to the prediction of the respective variables, X and Y , is contained solely in the time series data on these variables. The test involves estimating the following pair of regressions:

$$X_t = \sum_{i=1}^n \alpha_i Y_{t-i} + \sum_{j=1}^n \beta_j X_{t-j} + u_{1t}$$

$$Y_t = \sum_{i=1}^n \lambda_i Y_{t-i} + \sum_{j=1}^n \delta_j X_{t-j} + u_{2t}$$

where it is assumed that the disturbances u_{1t} and u_{2t} are uncorrelated.

The first equation above postulates that X is related to past values of itself as well as that of Y while the second equation postulates a similar behaviour for Y .

Since the future cannot predict the past, if variable X (Granger) causes variable Y , then changes in X should precede changes in Y . Therefore, in a regression of Y on other variables, including its own past values, if past or lagged values of X are included, and it significantly improves the prediction of Y , then it can be said that X Granger-causes Y . A similar definition applies if Y Granger-causes X .”

Within this explanation, Y or X are levels, first differences or second differences depending on the order of integration. If both time series are stationary at the level or they are cointegrated, Granger causality is tested using levels. Otherwise, Granger causality is tested using the difference at which the time series becomes stationary.

Granger causality was tested both ways, that is whether openness Granger-causes development, and whether development Granger-causes openness. Because of the differences in the results for the two unit root tests, Granger causality was tested based on the results for each unit root test type. Because of the relatively small sample sizes, the lag length was set at two lags for all pairs of time series.

The results of the Granger causality tests are summarised in Table 9.6. They show that openness Granger-causes development in Bangladesh in the pre-globalisation period and in Tanzania during the globalisation period, but development Granger-causes openness in

Bangladesh during the globalisation period. All of these results occur at the 10% level and are based on the ERS unit root test results. No other instances of Granger-causality are observed.

9.5 Summary of test results

For Bangladesh, correlation between the development index and openness during the globalisation period is higher than during the pre-globalisation period. For Tanzania, there is no correlation between the development index and openness in the globalisation period or the total period studied, however, the negative correlation observed in the pre-globalisation period ceases in the globalisation period.

Both pairs of time series for the globalisation period were found to be stationary at the level, whereas all other pairs of time series were stationary at the first difference, according to at least one of the tests performed. When cointegration was tested for all pairs of time series for the full period of study and the pre-globalisation period it was found that there was no cointegration between any of the pairs.

For Bangladesh, there was no Granger-causality for the total period of study, however during the pre-globalisation period it was found that openness did weakly Granger-cause development and during the globalisation period that development did weakly Granger-cause openness. The only evidence of Granger-causality for Tanzania was during the globalisation period, whereby, openness Granger-caused development.

Table 9.6: Granger Causality test results

| Null Hypothesis | Order of Integration | | Decision | Conclusion |
|---|----------------------|----------|----------|---|
| | Development | Openness | | |
| Bangladesh 1960 to 1999 | | | | |
| Openness does not Granger cause development | 1 | 1 | H_0 | No Granger causality |
| Development does not Granger cause openness | 1 | 1 | H_0 | |
| Bangladesh 1960 to 1987 | | | | |
| Openness does not Granger cause development | 2 | 1 | H_0 | No Granger causality |
| Development does not Granger cause openness | 2 | 1 | H_0 | |
| Openness does not Granger cause development | 1 | 1 | H_A^* | Openness does Granger cause development |
| Development does not Granger cause openness | 1 | 1 | H_0 | |
| Bangladesh 1988 to 1999 | | | | |
| Openness does not Granger cause development | 0 | 0 | H_0 | Development does Granger cause openness |
| Development does not Granger cause openness | 0 | 0 | H_A^* | |
| Tanzania 1960 to 1999 | | | | |
| Openness does not Granger cause development | 2 | 1 | H_0 | No Granger causality |
| Development does not Granger cause openness | 2 | 1 | H_0 | |
| Openness does not Granger cause development | 1 | 1 | H_0 | |
| Development does not Granger cause openness | 1 | 1 | H_0 | |
| Tanzania 1960 to 1987 | | | | |
| Openness does not Granger cause development | 1 | 1 | H_0 | No Granger causality |
| Development does not Granger cause openness | 1 | 1 | H_0 | |
| Tanzania 1988 to 1999 | | | | |
| Openness does not Granger cause development | 0 | 0 | H_A^* | Openness does Granger cause development |
| Development does not Granger cause openness | 0 | 0 | H_0 | |

Notes:

Asterisks denote the level at which null hypothesis is accepted or rejected – * is 10%.

All pairs of time series were tested with a lag length of 2.

9.6 Discussion

The results of the analysis conducted in this chapter do not shed any conclusive evidence that globalisation, measured by openness, has had either positive or adverse effects on the subject countries, nor that either country has been by-passed by the process of globalisation. In the pre-globalisation period, openness was found to weakly Granger-cause development for Bangladesh, however, this reversed during the globalisation period, such that development Granger-caused openness, albeit only weakly also. The experience for Tanzania during the globalisation period was the opposite to that of Bangladesh, with openness weakly Granger-causing development.

It is interesting that in the pre-globalisation period openness weakly Granger-caused development for Bangladesh, because during this period there was not much change in the level of openness. Specifically openness fluctuated around 20% of GDP except in the 1970s when it fell down to below 10% of GDP. Development showed strong increase from the early 1970s to the end of the pre-globalisation period. Bangladesh exhibited much more openness in the globalisation period, especially from about 1992 onwards, as shown in Figure 9.1. A potential explanation for the experience of Bangladesh during the globalisation period is that as a consequence of a higher standard of living, its people were more able to participate in international economic activity, both through purchasing a higher level of imports and having the capability exporting more.

That openness weakly Granger-caused development for Tanzania during the globalisation period is also interesting. As demonstrated in Figure 9.2 Tanzania's openness rose

quickly during the early part of the globalisation period, but then fell just as quickly during the second half of the period, while the level of development largely stagnated. It could be interpreted that the rise in openness was beneficial for development, as development did improve slightly between 1991 and 1996, although given this was only observed for a short period of time, any such interpretation should be made with caution.

9.7 Conclusion

In this chapter the modified development index that was created in the previous chapter was compared to a measure of openness, in order to ascertain whether there is a relationship between openness and development for the period of globalisation, and whether this differed from the relationship in the period preceding the globalisation period. The objective was to ascertain if a statement could be made to the effect that globalisation has had either positive or negative implications for the subject countries, or whether the countries have been by-passed by the process of globalisation. A number of common quantitative techniques were utilised in the analysis, from correlation and co-integration through to Granger causality.

Both countries experienced a higher level of openness during the globalisation period than the preceding period, despite that Tanzania exhibited some decline in openness in the latter part of the globalisation period. Thus, neither country experienced the non-participation referenced in the literature on globalisation.

From the analysis, there could be no clear conclusion drawn that development in either country had been positively or negatively impacted by globalisation. This could be because the positive and negative forces of globalisation are counterbalancing each other. The analysis undertaken indicated that openness preceded development for Tanzania during the globalisation period, and despite their being some initial increase in openness, the increase in development was relatively small. Similarly, it was found that openness preceded development for Bangladesh during the pre-globalisation period, however, there was no marked change in the level of openness during this period. This relationship ceased during the globalisation period when Bangladesh became more open. What was also observed when Bangladesh did become more open was that development caused openness, which could be broadly interpreted that the economy was better able to afford imports and had the capability to produce a higher level of exports.

In the next chapter, the findings of this chapter are evaluated in light of the overall objectives of the research. Consideration is given to the limitations of the current research, the contribution to the body of knowledge that has been made, and areas for future research are proposed.

10 Research findings and contribution

10.1 Introduction

This chapter concludes the current research and draws together the results and implications of what has been learned. In the introduction an overall research objective was set, along with a number of specific objectives to assist in achieving the research objective. In this final chapter, the achievement of each of these objectives is reviewed and discussed. The contribution to knowledge that has been made is presented. The chapter concludes with proposing areas for future research.

10.2 Research objectives

The overall objective of this research was to provide an empirical study into the impact of globalisation on development in two of the world's Least Developed Countries, Bangladesh and Tanzania, and in doing so, draw some conclusion as to whether the impact has been positive, negative or neutral, or whether it is accurate that the world's poorest countries have largely been by-passed by the most recent period of globalisation. In order to achieve this overall objective, a number of more specific research objectives were set, that were outlined in Chapter 1.

The first objective set was to select a measurement of development that was responsive to change and reflective of the current issues facing developing countries. A large proportion of this research involved looking at how development has been measured

historically, at the accepted measures of development and how one very accepted measure of development could be further refined based on recommendations and criticisms from the literature and the needs of the current research. Eventually a modified version of the Human Development Index was created. Although consideration was given to additional modifications and the inclusion of more factors, such as inequality and the environment, due to a lack of suitable indicators and data, these were unable to be progressed. Hence, the modified development index includes the same three broad categories of income, health and education as the original HDI, albeit with different measures for health and education that are more appropriate to purpose.

The second objective was to select a measure of openness reflective of participation in the international economy. Following the approach by UNCTAD in the World Investment Report, openness was measured as the sum of exports, imports, FDI inflows and FDI outflows, as a percentage of GDP. While more complex measures of openness have also been developed, they largely measure changes in protection levels and do not encompass investment. As investment flows have become increasingly important during the globalisation period, and the need for a measure in the current research centred on participation in the international economy, the UNCTAD approach was considered the most appropriate measure to utilise.

The third objective was to select a time period representative of the current period of globalisation. As has been discussed throughout this thesis, there is no firm consensus as to when the most recent period of globalisation occurred. As the literature largely

identifies many of the globalisation trends emerging in the late 1980s, the start date for the globalisation period was set at 1988. While it is acknowledged that there is no evidence that the globalisation period has ended, for the current study, the end date was set at 1999, as this provided more than ten years to observe what has occurred.

The fourth objective was to analyse the movement of the measure of openness and the measure of development over the globalisation period, and in the period preceding the globalisation period, in order to ascertain differences between the two time periods. The period preceding globalisation was set from 1960 to 1987, providing a total of almost 40 years to analyse movements in the measures of openness and development. Bangladesh became much more open during the globalisation period than in the earlier period, especially from about 1992 onwards. Tanzania experienced a higher level of openness during the first half of the globalisation period, however, it became less for the second part of the globalisation period. Despite this decline, Tanzania was still more open in the globalisation period than in the pre-globalisation period. In the pre-globalisation period, the openness of Bangladesh fluctuated around the same level, whereas, the openness of Tanzania exhibited decline up to the mid 1980s. On the basis of the measure utilised, Tanzania was considerably more open than Bangladesh during the globalisation period.

In relation to development, Bangladesh exhibited a steady increase in development during the globalisation period, while the development of Tanzania largely stagnated over this period. In the period preceding globalisation, Bangladesh experienced stagnating levels of development up until the mid 1970s, and then exhibited growth, albeit with a

slight decline around the late 1980s. In comparison Tanzania experienced a steady growth in development during the pre-globalisation level. Based on the development index, both countries measured comparable levels of development, with Bangladesh exhibiting a higher result at the beginning and end of the study, but Tanzania exhibiting a higher result for a large part of the middle period.

The fifth objective was to analyse the relationship between the measure of development and openness during the globalisation period, the period prior to the globalisation period and the total period of study, to understand the relationship and any differences between the time periods. A number of common econometric techniques were utilised, culminating in a test for Granger causality, a test of precedence. The main objective of this test was to ascertain if openness preceded development, although Granger causality was tested for in both directions. The findings were that openness did precede development for Tanzania during the globalisation period, but that development preceded openness for Bangladesh during the same period. It is also notable that openness preceded development for Bangladesh in the period prior to globalisation. There were no other observations of precedence.

The sixth objective was to identify and consider factors that influenced development within Bangladesh and Tanzania during the globalisation period. As has been discussed, for Bangladesh development increased steadily during the globalisation period, whereas for Tanzania it stagnated. Chapter 6 of this thesis examined each of the two individual countries in detail, and noted that Tanzania experienced poor economic performance

throughout the 1980s, and while there was some recovery in the 1990s, performance was much weaker than that of Bangladesh, as evidenced by GDP growth. Tanzania also has had high levels of foreign debts, which have required servicing. Hence, Tanzania was not only earning lower levels of income but it also had large amounts of foreign debt to service from this income. This adversely impacted development, not only through lowering GDP per capita, but also through constraining government spending in areas such as education and health.

The seventh objective was to consider factors that have influenced openness in Bangladesh and Tanzania during the globalisation period. Bangladesh experienced strong and consistent growth in openness during the globalisation period. This may be attributed to the growth in its garment industry, which resulted in exports, but also necessitated imports. The government of Bangladesh also set up export processing zones and provided other incentives to foster foreign manufacturers establishing operations within Bangladesh. As has been discussed, Tanzania exhibited strong openness growth in the first part of the globalisation period, however, this fell during the second half. While there was some improvement in exports contribution, most of the rise in openness was caused by imports. This may be explained by the slight recovery in economic performance experienced, and the arrangements made in relation to foreign aid and economic assistance, during the late 1980s, plus pent up import demand from the period of recession, fuelled demand for imports. The decline in imports during the second part of the period could be explained by a lack of purchasing power, associated with the

continuance of stagnating economic performance. The increase in exports and then decline can largely be attributed to world commodity price movements.

The final objective was a comparison of the findings for each country to ascertain similarities and dissimilarities. This has largely been done with each objective, but to recapitulate, the openness of Bangladesh steadily increased during the globalisation period. For Tanzania, it increased during the first half of the period before falling. Bangladesh experienced consistent improvement in development, as measured by the modified development index, while the development level of Tanzania stagnated during the globalisation period. The openness of Bangladesh has been influenced by the growth of its garment sector and proactive government policies to establish a manufacturing sector. Tanzania's openness and improvement in development have largely been hampered by its lower economic performance, and absence of diversification of exports into manufactured goods.

10.3 Contribution to knowledge

This thesis has provided an empirical study into the impact of globalisation on two of the world's poorest countries. In doing so, it contributed to fill a gap in the current literature on globalisation, where there is an absence of empirical studies that consider the totality of effects of globalisation on individual countries.

The overall research objective was to establish whether the impact of globalisation has been positive or negative, or whether two countries, Bangladesh and Tanzania, have been

by-passed by the most recent period of globalisation. These are the three main themes that have emerged in the literature in relation to globalisation and developing countries.

Neither country has been by-passed by the most recent period of globalisation activity. Both countries experienced a higher level of openness during the specified globalisation period, than in the preceding period. It was largely trade that caused these higher levels of openness in each country. Additionally, both countries started to receive FDI during the globalisation period. For Bangladesh, foreign investment was directed toward exploration for natural gas and power plant construction. For Tanzania, foreign investment occurred in the tourism sector and mining industry.

No clear causality between openness and development could be established for either country. As such, it could not be concluded that the net effects of globalisation have been positive or negative for either country. It is likely that there have been both positive and negative effects, as predicted by the literature, and that these effects have counterbalanced each other.

10.4 Areas for future research

This research has contributed to an area where there is an apparent knowledge gap, that being empirical evidence in relation to the impact of globalisation on developing countries. In the current study, impact was measured by development and a modified measure of development was created and utilised. Only two countries were studied, which are both part of the group recognised as the poorest countries in the world.

One of the recommended areas for future research is widening the number of countries studied, both in terms of other LDCs, and also developing countries that are more advanced such as Malaysia or Thailand, and comparing and contrasting the findings. Studying other LDCs, both within the same and within different regions may shed some light on the implications of geographical location and regional developments or institution development. Further analysis on the two countries that are the subject of this research could be undertaken, to ascertain the specific factors that did influence the trends observed for development. Such analysis could then be expanded to additional developing countries.

The observation that in Tanzania openness preceded development could also be explored in more depth, especially given the change in levels of openness observed during the globalisation openness. Similarly the finding that development caused openness in Bangladesh could be further explored. Given the conclusion that was arrived at was that the positive and negative effects of globalisation are likely to have counterbalanced one another, further examination and separation of these effects is a further area of future research.

One of the largest constraints for the current research was the availability of data, for example, choice of indicators to include in the development index created was largely constrained by the limited number of alternative variables available. Similarly, inclusion

of an environmental indicator could not be progressed due to there not being a suitable indicator available. Further research is likely to encounter the same issues.

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