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Policy Forum: The Murray Financial System Inquiry

‘Dog Days’ Full Employment without Depreciation: Can It Be Done?

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1. Overview

Garnaut, in his book *Dog Days: Australia after the Boom*, explores the outlook for the Australian economy as the China resources boom goes into retreat (Garnaut 2013). Modelling of this scenario was presented to the July meeting of the Melbourne Economic Forum (Dixon et al. 2014a, 2014b). We identified a smooth adjustment path to changed circumstances, which minimised the increase in unemployment and reduction in living standards, and also an alternative path of disorderly adjustment (DA), characterised by economic volatility and unemployment. The original DA scenario reported in Dixon et al. (2014a, 2014b) was predicated on inflexibility in wages and consumer behaviour. This article explores an alternative DA scenario in which the exchange rate is slow to adjust.

2. Recap of Dog Days

Over the remainder of this decade, economic growth in Australia will be strongly influenced by developments in the mining sector, including the winding-down of investment activity, which peaked in 2013, double-digit growth in export volumes, falling export prices, foreign ownership rates of around 80 per cent and large tax deductions for depreciation of a greatly expanded capital stock.

Other conditions forecast to influence the economy over the remainder of the decade include slow growth in multi-factor productivity (MFP), consistent with the recent trend, a probable increase in interest rates in the world’s major developed economies, the negative impact of population ageing on the adult participation rate and a rise in net direct taxation to place fiscal policy on a sustainable path, as described in the 2014 Federal Budget.

Forecasts of these variables from government agencies, including the Bureau of Resource and Energy Economics (Barber et al. 2014; BREE 2014), the Australian Treasury (Commonwealth of Australia 2010, 2014; Bullen, Kouparitsas and Krolkowski 2014), the Australian Bureau of Statistics (ABS 2013) and the Productivity Commission (Parham 2012), were built into the VIC-UNI model by Dixon et al. (2014a, 2014b). The model was used to evaluate the requirements for adjustment to these conditions without an increase in unemployment, a circumstance denoted as ‘orderly adjustment’ (OA).

To maintain full employment through the contraction in investment, weak consumption growth and declining terms of trade (Table 1, rows 1–3), the balance of trade needs to improve to replace lost demand. Therefore, the key requirement for OA is an improvement in international competitiveness, or real devaluation. The required real devaluation was shown in the VIC-UNI model to be 3.7 per cent per annum, or a total of 20 per cent from mid-2014 to 2020 (Table 1, row 4).

Real devaluation, as defined in the VIC-UNI model, is the ratio of the gross domestic product (GDP) deflator to the domestic

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Table 1 Results^a for Selected Variables for Orderly Adjustment (OA) and Disorderly Adjustment (DA) Scenarios, 2014–2016

Variable	OA	DA2	DA3
1 Terms of trade	-3.45 ^b	-2.89	-3.51
2 Investment	-2.73	-7.60	-7.60
3 Consumption	0.86	-0.87	-0.29
4 Real appreciation	-3.73	-2.34	-3.67
5 Exchange rate (nominal trade-weighted index)	-4.82	0.00	0.00
6 Consumer Price Index (CPI)	2.11	-2.11	-3.13
7 Gross domestic product (GDP) deflator	1.15	-2.34	-3.67
8 Real wage (CPI deflated)	-0.63	3.65	4.73
9 Wage (nominal)	1.46	1.46	1.46
10 Unemployment rate (2016 level)	5.80	12.40	13.51
11 Wage in foreign currency	-3.43	1.46	1.46
12 Real cost of labour	0.19	3.65	3.64
13 Employment (hours)	1.77	-1.86	-2.48
14 Real GDP	2.40	-0.06	0.95
15 Exports (volume)	10.56	7.28	10.42
16 Imports (volume)	-0.38	-2.78	-2.48
17 Government expenditure (volume)	1.25	1.25	1.25
18 Change in (100 × trade balance/GDP)	1.64	1.58	2.10
19 Real gross national product	1.56	-0.82	-0.07
20 Productivity	0.30	0.30	2.00

Notes: (a) All results are average annual percentage change over the 2 years to 2016, except rows 10 and 18. (b) Exogenous variables in each scenario are indicated in bold.

Source: VIC-UNI model.

currency price of imports. With an annual average increase in the Consumer Price Index (CPI) of 2 per cent¹ built into the simulation, the GDP deflator grows at 1 per cent² per annum. (The CPI growth exceeds growth in the GDP deflator because household expenditure is relatively import-intensive.) Assuming fixed foreign currency prices for imports, nominal devaluation of the exchange rate therefore averages 4.7 per cent per annum,³ a total of 25 per cent in the 6 years to 2020.

A second requirement for OA is a fall in real consumer wages. The average annual increase in money wages of 1.26 per cent over 6 years⁴ does not cover the 2 per cent per annum lift in the CPI.

A DA scenario reported in Dixon et al. (2014a, 2014b) explores the consequences of maintaining the real consumer wage at its 2014 level for 2 years, along with a lack of restraint in real aggregate consumption. Real devaluation is delayed and the unemployment rate increases by almost 1 percentage point over 2 years. It is assumed that rising unemployment induces changes in economic strategy, so that

after 2 years the economy gradually returns to its OA path. Total real devaluation of 20 per cent by the end of the decade is required to prevent a long-term increase in unemployment, whether the first 2 years were 'orderly' or 'disorderly'.

3. Disorderly Adjustment Driven by Exchange Rate Rigidity

In the 3 years since the terms of trade began to fall from its peak of September 2011, extraordinarily low interest rates in the world's major developed economies, relative to Australia, have attracted capital inflow, contributing to a high Australian dollar. Domestic conditions, particularly a highly priced housing market, have meant that the central bank is reluctant to reduce rates. In this environment, there is a risk that the nominal exchange rate will not adjust promptly from now on to achieve the real devaluation required to prevent an increase in unemployment.

In this article, I examine whether adjustment to the end of the mining boom is possible

without the depreciation of the Australian dollar. I evaluate a scenario in which the Australian dollar remains at its mid-September 2014 level for another 2 years. ‘Orderly adjustment’ conditions are then reinstated, including endogenous determination of the exchange rate, leading to a gradual return to the 2014 unemployment rate of 5.8 per cent. The domestic interest rate required to maintain the September exchange rate is calibrated to produce a fall in domestic investment of 5 per cent per annum, in addition to the fall of 2.7 per cent per annum that occurs in the OA scenario.

The real devaluation required to achieve OA could, in theory, be achieved without exchange rate depreciation, through internal price adjustments. However, with stickiness in nominal wages, internal price adjustments are not likely to be an effective mechanism for achieving real devaluation of the required magnitude of 3.7 per cent per annum for 2 years.

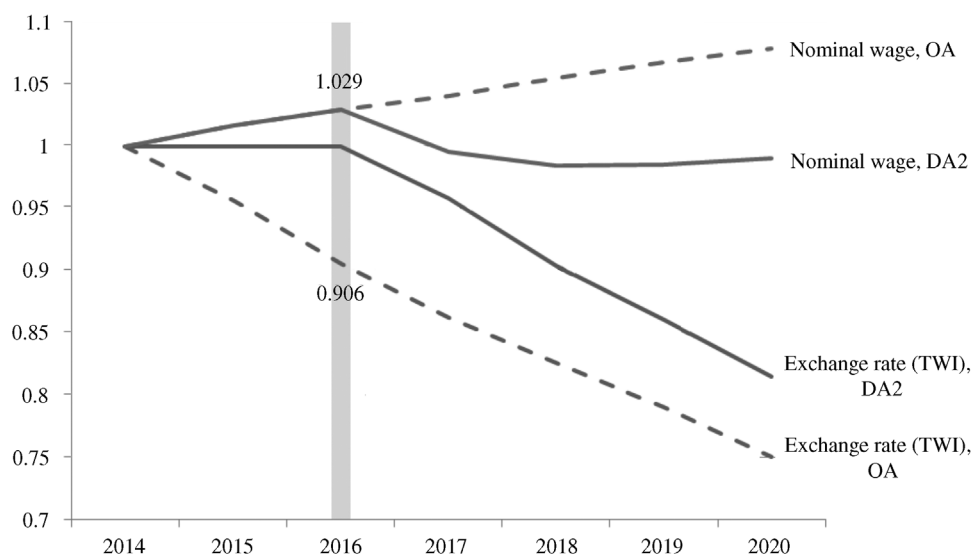
I run a scenario in which money wages follow their OA path for 2 years, growing by a total of 2.9 per cent, even as the exchange rate remains fixed. This momentum in money wages means that internal price adjustments do not facilitate a real devaluation. Maintaining a high exchange rate moderates domestic

inflation, and as a consequence, there is an increase in the real cost of labour. This leads to an increase in unemployment to 12.4 per cent in 2 years (Table 1, row 10) and reduced economic activity and real incomes. The simulation illustrates the risk of maintaining a high exchange rate without also controlling wage growth.

Productivity improvements are another possible path to real devaluation (McKibbin 2014). I investigate the impact of an alternative, high-productivity scenario with exchange rate rigidity and find that there is no realistic possibility for increasing productivity growth to maintain moderate unemployment when nominal exchange rate depreciation is restricted.

The OA simulation from Dixon et al. (2014a, 2014b) is treated as the baseline. In the OA simulation, to maintain unemployment at its 2014 level, the downturn in economic conditions embodied in Dog Days is manifest in a fall in real wages. Over the first 2 years, the necessary fall in real wages is 0.6 per cent per annum (Table 1, row 8). In the original DA simulation (denoted here as ‘DA1’) reported in Dixon et al. (2014a, 2014b), real wages remain at their 2014 level for 2 years, so that by 2016

**Figure 1 Exchange Rate and Nominal Wage,
Orderly Adjustment (OA) and Disorderly Adjustment (DA) (2014 = 1)**



Note: TWI denotes trade-weighted index.

they are 1.3 per cent higher than the level required to prevent an increase in unemployment. In the new DA simulation (denoted as 'DA2') introduced in this article, inflexible wages again impede the ability of the economy to cope with the adverse economic conditions of the Dog Days.

Under OA, in 2016 the exchange rate is 9.4 per cent below its 2014 level (Figure 1). Keeping the exchange rate fixed for 2 years is therefore equivalent to setting the exchange rate at 9.4 per cent above the level that was necessary in OA. The nominal wage grows by a total of 2.9 per cent in the 2 years to 2016 under OA and I assume that this growth also occurs under DA2.

Under OA, wages denominated in foreign currency in 2016 are 6.7 per cent lower than they were in 2014 (Table 1, row 11). Therefore, to achieve the necessary real devaluation via internal adjustment of wages under a fixed exchange rate, nominal wages would need to fall by 6.7 per cent (3.4 per cent per annum). A fall in nominal wages has not occurred since the 1930s. Indeed, the smallest annual increase in wages since 1998⁵ was 2.5 per cent in 2014. Nominal wage growth is already unusually low in the OA forecast.

As expected, maintaining a high exchange rate reduces prices in DA2 (Table 1, rows 6 and

7). By 2016, producer prices in DA2 are around 7 per cent lower than they would have been under OA (Figure 2). With growth in nominal wages fixed to the same level as in OA, the real cost of labour in DA2 is 7 per cent above the level required to maintain full employment (Table 1, row 12).

The elevated cost of labour in DA2 has a negative impact on employment. Instead of growing by 3.6 per cent by 2016 as it does under OA, employment falls by 3.7 per cent in DA2 (Figure 3), meaning a fall in employment of 7.3 per cent can be attributed to DA. This translates into an increase in the unemployment rate from 5.8 per cent in 2014 to 12.4 per cent in 2016.

Following 2016, in the DA2 scenario wages adjust in order to gradually return unemployment to its original 2014 level. The nominal exchange rate in DA2 gradually falls towards its OA level. Given that the unemployment rate needs to fall by 6.6 percentage points while the terms of trade continue to fall, a large fall in the real wage of 2.9 per cent per annum is required. This fall exceeds the assumed 2 per cent growth rate in the CPI, so a fall in the nominal wage is required. To give context to this hypothetical recovery, the only time since Federation when nominal wages fell was during the Great Depression—and during this period, inflation

Figure 2 Producer Price Index and the Real Cost of Labour, Orderly Adjustment (OA) and Disorderly Adjustment (DA) (2014 = 1)

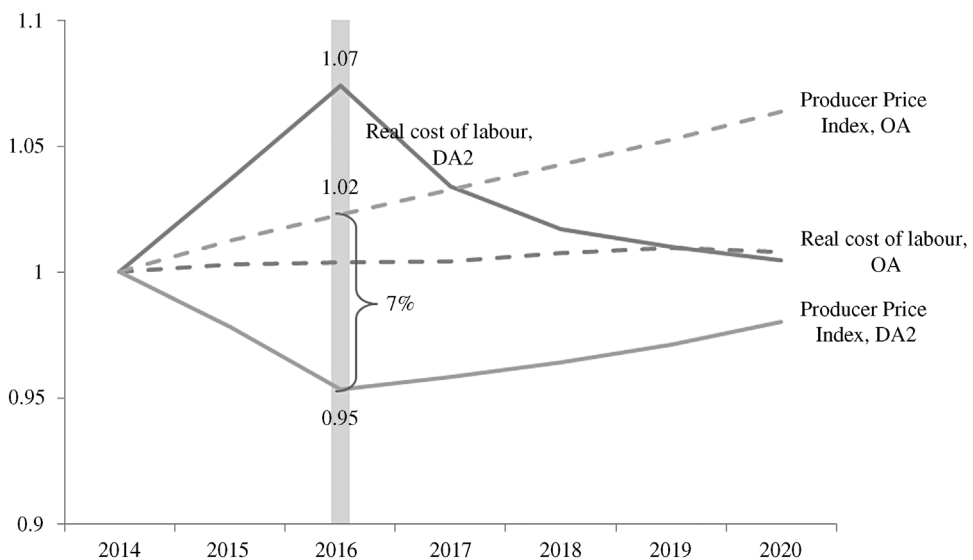
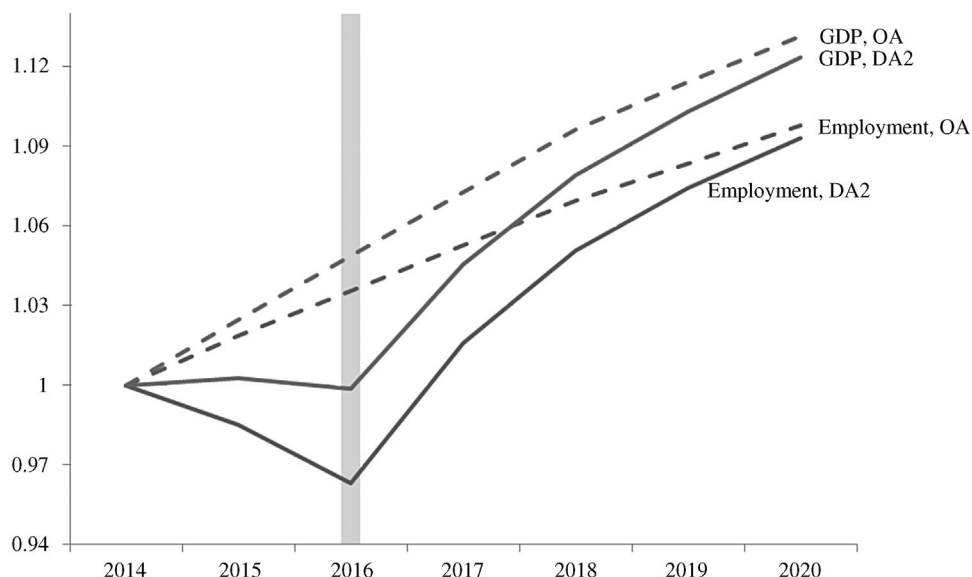


Figure 3 Gross Domestic Product (GDP) and Employment, Orderly Adjustment (OA) and Disorderly Adjustment (DA) (2014 = 1)

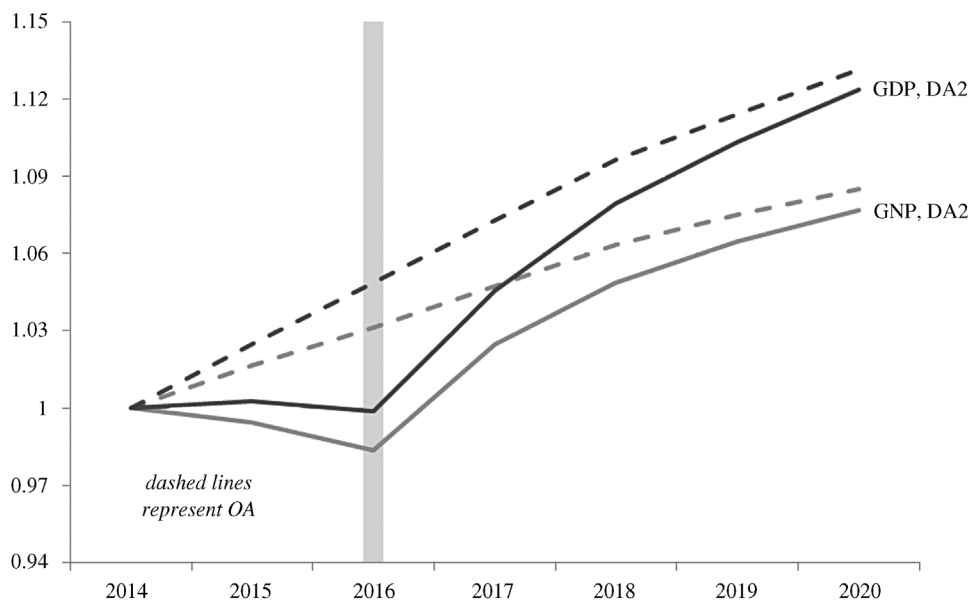


was also negative and real wages were stable (CBCS 1951).

As employment recovers after 2016 in DA2, so does GDP. However, a gap remains between the DA and OA levels of GDP (Figure 3) until 2020. This gap is due to investment lost between

2014 and 2016 in DA2. Consumption remains close to its OA path, reflecting the continued strong currency and the dampening effect on the CPI of reduced expenditure on investment and exports. By assumption, government expenditure remains on its OA trajectory.

Figure 4 Gross Domestic Product (GDP) and Gross National Product (GNP) under Orderly Adjustment (OA) and Disorderly Adjustment (2014 = 1)



The loss of competitiveness is mainly seen in a damped growth trajectory for exports in DA2, relative to OA (Table 1, row 15). Despite the high exchange rate in DA2, imports also decline relative to OA (Table 1, row 16), as the effects of weak investment and incomes prevail over relatively low domestic currency import prices. Therefore, the trade balance under DA2 does not deviate significantly from its OA path (Table 1, row 18) and the contraction in GDP is almost entirely absorbed by the 5 per cent contraction in investment. With little change in the trade balance, the path for net foreign debt under DA2 is similar to its path under OA. It follows that the gap between GDP and gross national product (GNP) remains as it was under OA (Figure 4). In both scenarios, annual growth in GNP is about 0.8 percentage points below annual growth in GDP (Table 1, rows 14 and 19).

4. Productivity

The OA scenario assumes modest growth in MFP of 0.3 per cent per annum in all sectors other than mining and ownership of dwellings. This growth rate is supported by estimates from the Productivity Commission (Parham 2012)

and discussed in further detail in Dixon et al. (2014a, 2014b). However, McKibbin (2014) identifies productivity improvements as a means of achieving real devaluation when there is exchange rate rigidity. I explore this idea in a simulation (denoted as 'DA3'), in which the exchange rate and nominal wages follow their DA2 path, and MFP outside the mining and dwellings sectors⁶ grows by 2 per cent per annum (Table 1, row 20).

A very optimistic MFP scenario with wage restraint improves the prognosis for adjustment under a fixed nominal exchange rate, if assessed in terms of GDP or GNP, because the path for real depreciation under DA3 is similar to its OA path (Figure 5). However, without depreciation of the nominal exchange rate, the balance of trade will not increase sufficiently to absorb all of the extra GDP that could have been produced as a result of this extra productivity. As a result of this restriction, the unemployment rate increases (Figure 6). Therefore, extra growth in MFP is not useful if the balance of trade is strongly restrained.

It seems fanciful to think that any feasible policy changes would lift MFP growth from the levels of the twenty-first century so far to 2 per

Figure 5 Real Appreciation under Orderly Adjustment (OA) and Two Disorderly Adjustment (DA) Scenarios (2014 = 1)

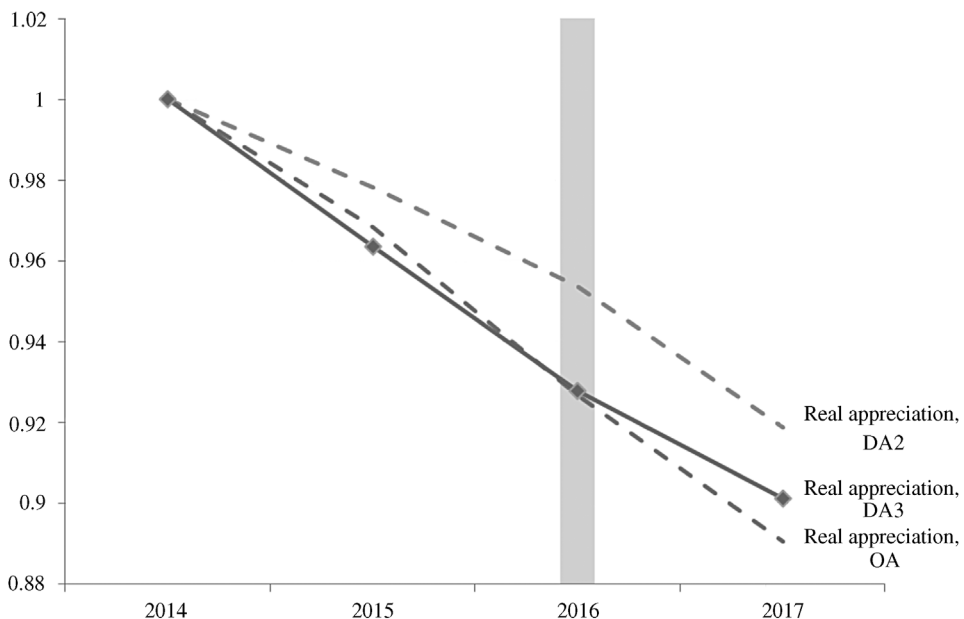
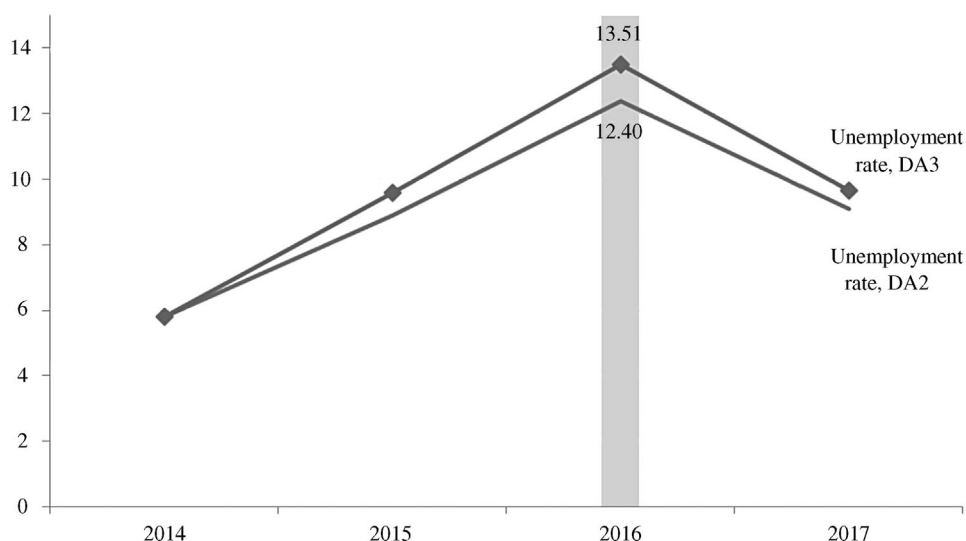


Figure 6 The Unemployment Rate under Two Disorderly Adjustment (DA) Scenarios

cent per annum within a time frame relevant to this analysis. Opportunities to improve productivity—for example, through smart investment in public infrastructure or regulatory reform—should be embraced regardless of whether circumstances prevent adjustment in the exchange rate. The results can be expected to come through over time and will be of limited assistance in the immediate adjustment challenge.

5. Conclusion

Improvement in competitiveness is crucial to orderly adjustment of the economy to the end of the resources boom. With conventional growth in nominal wages, this is achieved through the depreciation of the nominal exchange rate. While it is theoretically possible to achieve real devaluation while holding the exchange rate fixed, devaluation to the extent required in Dog Days would require a fall in nominal wages. Only when the unemployment rate reached 30 per cent during the Great Depression did nominal wages fall.

With modest growth in nominal wages and a fixed exchange rate, the unemployment rate could climb to 12 per cent in just 2 years, along with stagnant GDP and a decline in GNP.

Assuming that nominal wage growth remains positive, the nominal exchange rate

has a crucial role to play in maintaining growth in employment for the remainder of the decade. As Australia adjusts to the transition of the mining boom from its investment phase to the relatively less labour-intensive operational phase, the nominal exchange rate needs to fall by an average of almost 5 per cent per annum until 2020 to avoid an increase in unemployment. It is imperative that policy supports the required depreciation.

March 2015

Endnotes

1. Note that the growth in the CPI for the first 2 years of the simulation (2014–2016) is 2.11 per cent per annum, as reported in Table 1 (row 6).
2. 1.15 per cent per annum for the first 2 years of the simulation (Table 1, row 7).
3. 4.82 per cent per annum for the first 2 years of the simulation (Table 1, row 5).
4. 1.46 per cent per annum for the first 2 years of the simulation (Table 1, row 9).
5. The first year of the Wage Price Index series (ABS 2014).
6. Productivity in mining in the OA scenario was derived in Dixon et al. (2014a, 2014b) on the basis of BREE (2014) data on investment and output projections for the major mining commodities. I do not consider it likely that productivity in mining will differ significantly from its OA

path, so mining has not been included in the general increase in MFP in DA3. Productivity in the dwelling sector does not change in OA or DA3.

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