Discussion

1. Warwick J. McKibbin

The Dungey and Pitchford (DP) paper and the Debelle and Vickery (DV) paper are important contributions to the macroeconomic analysis of unemployment in Australia. Both papers focus on the question of what macroeconomic factors would reduce unemployment in Australia. Both papers use a rigorous theoretical framework as a basis for developing empirical relationships between unemployment, economic growth and real wages in Australia. The two papers have a similar theoretical basis and although different in implementation, reach the same policy conclusion: that unemployment can likely be significantly reduced by either or both, a reduction in real wages and an increase in economic growth. How this might be achieved either economically or politically is not addressed but the key result is that unemployment can be reduced by macroeconomic means.

Rather than agree in detail with the approaches taken in both papers, in these comments I will draw on my own general equilibrium modelling to illustrate two key issues that both papers treat insufficiently and which require further research. The first is to directly address the question: if macroeconomic shocks are responsible for increasing unemployment in Australia, is the reduction in unemployment also possible through macroeconomic policy or is it really in the microeconomic details of labour markets where answers lie? The second issue is the key difference between an open economy and a closed economy in how the labour market should be modelled.

Both papers conclude that macroeconomic changes such as real wage cuts or stronger economic growth will reduce unemployment. Surely a significant part of this result comes about because the period of the regressions includes both falls in economic growth and a sharp rise in real wages, both of which caused a rise in unemployment. Is it likely that by reversing the shock, the unemployment rate will fall just as it rose? A key stylised fact is that unemployment falls much more slowly than it rises.

The issue of symmetry in responses to macroeconomic shocks is important for the empirical results and their interpretation. There is some allowance for non-linearity in the DP paper although even this may not capture the issues posed by labour economists. Labour economists accept the role of macroeconomic shocks in generating the surge in unemployment but would also argue that the empirical observation that unemployment falls slowly after a shock goes away is to do with labour market structures. Are both papers then capturing the rise in unemployment as a macroeconomic phenomenon but missing the important microeconomic issues involved with reducing unemployment that show up in the asymmetric responses that are clearly in the data? I believe the debate is still open on this issue. In partial-equilibrium macroeconomic labour market analysis (and even in both papers I suspect), it is hard to capture the stylised facts of the asymmetric movements in aggregate unemployment. However, it is possible in general equilibrium to capture this through adjustments elsewhere in the economy that impact directly on the labour market. In particular, it is possible that the adjustment in the capital stock is what causes the asymmetric response in the labour market. This point will be

demonstrated below using a general equilibrium model with a macroeconomic labour market model with symmetric properties similar to that developed in both papers.

The second issue which is important and only partly touched upon in the DP model is the role of the open economy in labour market adjustment. In the DP paper it is belatedly recognised that in a small open economy, changes in the real exchange rate need to be taken into account. I feel this is the weakest part of both papers since the DV paper ignores the open economy completely while DP only consider one aspect of the impact of real exchange rate changes on inflation. This is through the changes in the price of imports on the price of the consumption bundle.

It is clear that the openness of the economy has important impacts that both papers ignore. First, a real depreciation has both income and price effects and therefore should be expected to impact on domestic demand through changes in real wealth. Domestic goods become cheaper in world markets and foreign goods become more expensive in Australian markets. Thus there is a substitution towards Australian products in the consumption bundle of Australians and foreigners, which will change the demand for Australian products. Secondly, and very importantly, imports are not just used for final consumption. In both the G-Cubed model (McKibbin and Wilcoxen 1998) and the MSG2 model (McKibbin and Sachs 1991), for example, imported inputs play an important role in aggregate supply and therefore in the demand for labour. In these models it is gross output rather than value added that determines the demand for labour. Gross output is produced by capital and labour but also by other inputs both domestically produced and imported. In a production technology for a closed economy, the difference between value added and total production is not important. However in a small open economy with imported inputs the difference between value added and gross output can be very important. In the MSG2 model for example, it is of little relevance for the United States but very important for Asian economies. Australia lies between these two extremes.

To see why this difference between value added and gross output production functions with imported inputs matters, consider an example. A depreciation of the real exchange rate makes imported inputs more expensive and leads to a substitution into other domestic inputs as well as contracting aggregate supply. Thus a shock that shifts aggregate demand will also shift aggregate supply through changes in the real exchange rate. Thus untangling the impact of real exchange rate changes is more complex than the simple approach of adjusting consumer prices advocated by DP.

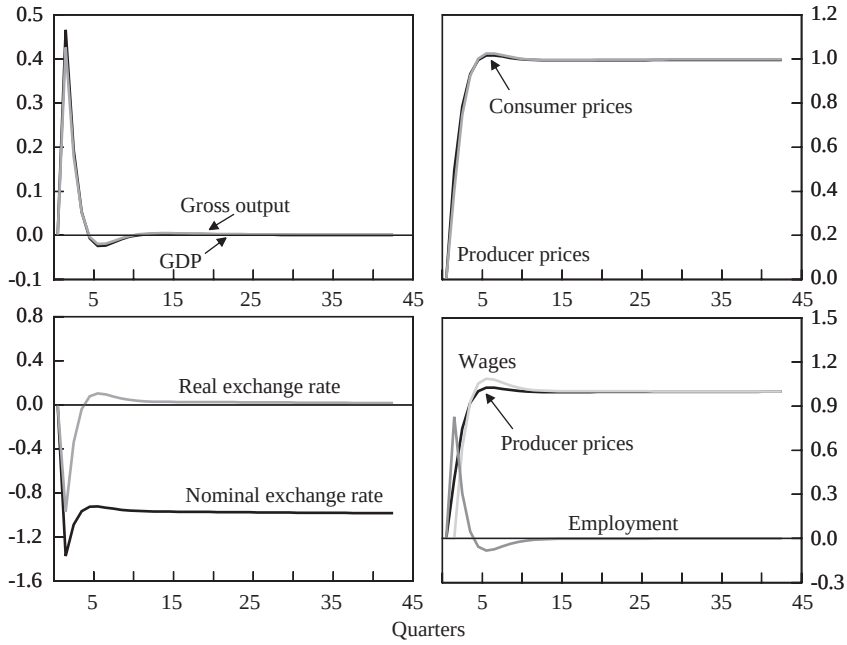
Are the supply effects of a change in the real exchange rate important? In estimating cost functions for the United States in the G-Cubed model, we find important substitution between capital, labour and other inputs such as materials and energy which are partly imported. Empirically, value added is not additively separable from other inputs in production although it is frequently assumed to be so in the theoretical specification of production. In various simulations we can show that the distinction between value added and gross output is important for the demand for labour in both the G-Cubed and MSG2 models.

To demonstrate that the role of imported goods in production is worth further exploration, some simulations are presented using the MSG2 multi-country model. A full description of that model can be found in McKibbin and Sachs (1991) and on the

internet at *www.msgpl.com.au*. In the context of the two papers being discussed, one key point to note is how the labour market is specified. It is assumed that the aggregate nominal wage adjusts slowly based on past and expected inflation and economy-wide employment relative to full employment. In each sector of the economy, firms are on their labour demand schedules hiring workers up to the point where the marginal product of labour (defined in terms of gross output) in that sector is equal to the economy-wide nominal wage relative to the output price of that sector. Thus a shock can cause a fall in employment that persists until the economy-wide wage has adjusted to absorb all unemployed workers. Along the transition path the physical capital stock can also change (but subject to adjustment costs) and so the adjustment can be quite drawn out depending on the effect of the shock on the return to capital.

Figure 1 contains results for a change in monetary policy in Australia where this is defined as a permanent increase in the money supply of 1 per cent. A temporary cut in short-term interest rates could also be simulated, but monetary policy is modelled in this example through shifting the money supply for ease of exposition. All results are per cent deviation from what otherwise would have been observed ('the baseline'). Many of the results are quite familiar. The rise in money supply reduces short-term interest rates which increases aggregate demand causing prices to rise which temporarily reduces real wages and stimulates employment and production. The nominal exchange rate depreciates by more than 1 per cent initially as does the real exchange rate, but as prices rise over a number of years the real exchange rate returns to baseline. The nominal exchange rate

Figure 1: Monetary Policy Expansion
Percentage deviation from baseline



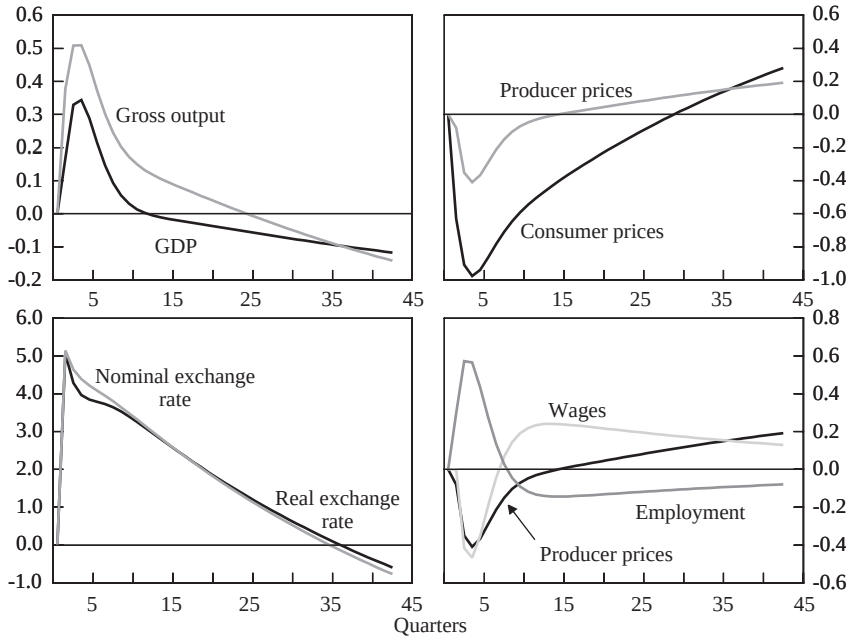
Note: Employment, gross output and GDP are in logs.

is permanently depreciated by 1 per cent which is the same as the rise in prices and the rise in the money supply. Production returns to baseline after a few years. Aggregate output and gross domestic product move very similarly because the real cost of imported inputs only changes temporarily.

In contrast to the monetary shock, consider the results in Figure 2 which are for a permanent fiscal expansion of 1 per cent of GDP financed by issuing government debt, announced and implemented in period 1. The fiscal stimulus raises aggregate demand directly through higher government spending. Interest rates rise and the real and nominal exchange rates appreciate by around 5 per cent initially and then gradually depreciate over time (although being appreciated relative to baseline for many years). This long-lasting fall in the relative price of imported intermediate goods, caused by the exchange rate appreciation, causes aggregate supply to expand at the same time as aggregate demand rises. The change in the relative price of imported inputs also causes firms to substitute away from domestic inputs such as capital and labour towards imported inputs. Notice that aggregate output rises by more than GDP since the difference is the use of imported intermediate inputs in production. What matters for the demand for labour is gross output, not just value added in this model.

Notice also that producer prices, in the top right hand panel of Figure 2, fall as a result of the fiscal expansion because, although domestic demand rises, the input price of imported goods falls and supply rises more than demand. The consumer price index falls further than the producer price because (as noted by DP), a nominal exchange rate

Figure 2: Fiscal Policy Expansion
Percentage deviation from baseline



Note: Employment, gross output and GDP are in logs.

appreciation would lower imported final goods and thus reduce consumer prices relative to producer prices. However, note that the adjustment to prices suggested by DP would not fully capture the effect of the exchange rate change on inflation.

Also note that the rise in employment is sharp but the fall in employment is quite drawn out reflecting changes in the capital stock over time. Thus although the labour market demand and supply curves are linear, the changes in the nominal wage and the capital stock cause an asymmetric response of employment.

These results illustrate that for real and persistent shocks that lead to large and persistence changes in real exchange rates, the role of imported intermediate goods in production can be important for the labour market and price outcomes for some shocks but not for others. Indeed this suggests that the standard use of value-added production functions rather than gross output production functions may be fine for a closed economy but can be problematic for a small open economy with a varying real exchange rate.

In summary, both papers are important contributions to the debate on the macroeconomics of unemployment but really need to be extended in future research to capture more fully both the general equilibrium and open economy issues raised in these comments.

References

McKibbin, W. and J. Sachs (1991), *Global Linkages: Macroeconomic Interdependence and Co-operation in the World Economy*, Brookings Institution, Washington, D.C.

McKibbin, W. and P. Wilcoxen (1998), 'The Theoretical and Empirical Structure of the G-Cubed Model', *Economic Modelling*, forthcoming.

2. John Nevile

There is a great deal in Dungey and Pitchford's paper with which I agree, indeed which I admire and wish that I had said myself. However given the time constraint I will confine my remarks to points where I think that the paper is lacking, or at least where more needs to be said than is in the paper. Similarly, I will not spend time complimenting Debelle and Vickery, but concentrate on disagreement or elaboration.

Dungey and Pitchford (DP) argue that 'the NAIRU has been highly variable' and for it 'to be a reliable concept for guiding macro policy the determinants of how it shifts would need to be well established empirically'. Hence DP offer the SIRG (or stable inflation rate of growth). To a fair extent, their comments on the NAIRU can be applied equally well to the SIRG. Over their estimation period, the SIRG was constant but most observers agree that the NAIRU was more or less constant over this period. Casual empiricism suggests big movements in the NAIRU have been accompanied by a noticeable movement in the SIRG. Despite this, I think that the SIRG is a better variable than the NAIRU to use as a macroeconomic policy target. For example it overcomes the problems of measuring the NAIRU that are thrown up by changes in the relative importance of unemployment, underemployment and hidden unemployment.

Apart from the need to be alert to changes in the SIRG, which DP themselves note, the key question in relation to the constancy of the SIRG is whether it is, in part, path-determined. DP's model implies that the NAIRU is, in part, path-determined (see the discussion of Figure 1). Although the SIRG is assumed to be constant in the estimated equations, DP's discussion of their model implies that the SIRG may also, in part, be path-determined. This has important policy implications. For example, it increases the desirability of raising the target growth rate a little above the SIRG when there is persistent deflationary pressure from import prices.

Although they do not use these terms, DP revive the old distinction between demand-pull and cost-push inflation. The SIRG relates to demand-pull inflation, of course, and import prices are currently the major source of cost-push inflation or disinflation. Nevertheless, other sources of cost-push inflation have been important in the past: taxation, for example, and the combination of Clyde Cameron's pay policies with the push for equal pay for women. Sources of cost-push inflation, besides import prices, could become important in the future.

However, currently the major question is how to deal with import price inflation. DP argue that policy should ignore this component of inflation when setting a growth policy target, at least for modest rates of inflation from import prices. DP seem happy to take advantage of import prices reducing the level of inflation by establishing a slightly higher growth target and are silent about how to react to a major inflationary impulse from import prices. I agree with their conclusion, as long as bouts of import price inflation are relatively short run. However, if they go on for a long time (say 5 to 10 years) then it may be no more prudent to ignore them than it is to ignore large short-lived bursts of import price inflation. As DP would no doubt agree, what policy must ensure is to avoid a depreciation-inflation vicious circle, even a slow-moving one.

My third point relates to a variable not mentioned in the paper – the current account deficit. Given John Pitchford's views that private sector overseas borrowing should not be a concern of policy this is not surprising. However, I doubt if life is that easy. There are at least three reasons for not leaving net private borrowing overseas entirely to market forces and a floating exchange rate:

1) Overshooting is likely and may cause unnecessary adjustment costs. (Despite Friedman, speculation seems to be destabilising rather than stabilising).
2) There is the possibility, already mentioned, of a depreciation-inflation vicious circle.
3) Even if there is not much overshooting, experience shows that, if it is left to markets, there is likely to be a rapid large adjustment as opposed to slower steadier structural change. The social costs of rapid adjustment are likely to be greater.

The real question is how much persistent large current account deficits influence speculative currency movements and how large is large? *A priori*, I am sure that persistent large current account deficits must increase the chance of speculative attacks on the exchange rate, or even just a large rapid, if perhaps delayed, depreciation. Empirically, I am not at all sure of the answer to the second question 'how large is large?'. Nevertheless, given the size of Australia's foreign debt, it seems distinctly imprudent to ignore the current account when determining monetary policy.

This brings me to the last comment on DP. Given that one of the sponsors of the conference is the Reserve Bank, it is natural to concentrate on monetary policy. However, DP hardly mention fiscal policy and only have a passing reference to incomes policy. In general it is a mistake, even if one frequently made today, to assign instruments to targets or to treat particular policy instruments in isolation. Many years ago Tinbergen taught us that policy is more likely to be successful if all instruments are considered as a package with the optimal values of each determined jointly.

Debelle and Vickery (DV) call their paper 'Macroeconomics of Australian Unemployment', but is in fact about the relationship between the average level of real wages and the size of the NAIRU in Australia. The relationship between these two is an important part of the macroeconomics of unemployment, but it is only a part. Calling it the whole lends to judgments which overstate the importance of this relationship. Consider their statement:

> 'The increase in the labour supply in the 1970s required a transitory decline in the real wage to enable the necessary investment to occur so that the additional labour could be employed. In fact the reverse occurred and the real wage rose. This rise is likely to have discouraged investment and led to a sub-optimal level of the capital stock, the effects of which have persisted, so that, despite the real wage falling to the levels of the early 1970s, the unemployment rate has remained well above those levels'.

This statement points to one important causal influence on the behaviour of unemployment over the past 25 years, but even at the macro level, other factors were also important. Obvious macroeconomic changes in Australia in the 1970s, which were also probably causal, include:

- A major change in the formation of inflationary expectations. (In the 1950s and 1960s, practical decision-making with a horizon greater than a year or two assumed a constant rate of inflation around 2 to $2^1/_2$ per cent.)
- A marked slowdown in the growth rate of potential GDP in Australia and other OECD countries.
- Even slower growth rates of actual GDP due to policies of fighting inflation first.
- A loss in the belief that governments could maintain full employment as understood over the previous 25 years.
- For all these reasons as well as real wage overhang, a decline in capital accumulation and hence a further decline in potential GDP and in labour productivity.

Turning now to DV's model itself, it assumes productivity growth is exogenous. This has at least three consequences. First it does not allow for any feedback between the average level of real wages and labour productivity. This is a complex but important issue. On the one hand there is the cost-minimisation argument that higher real unit labour costs will encourage investment, as they do in Equation (6) in the paper. On the other hand, as the passage already quoted implies, in the real world a lower profit share discourages animal spirits and reduces the marginal efficiency of capital and also makes it harder and more expensive for firms to finance investment. When the real wage falls both these effects are reversed but the second effect is, on balance, probably less important if the fall is rapid. The psychological animal spirits effects may not stand up to objective large cost-minimisation effects. While this will increase employment in the

relatively short run, if the adverse longer-run effects of reduced investment are to be avoided, there may be fairly tight limits on how quickly real wages, or more correctly real unit labour costs, should fall.

The second consequence of assuming constant productivity growth is indirect. DV state in various places that monetary policy does not have any impact on the long-run level of output or unemployment. Two points can be made about this. The first is a digression, but a worthwhile one. Long run in this context means long-run equilibrium: a hypothetical situation which may never be attained. As DV themselves say explicitly, monetary policy can and should reduce the average level of unemployment over a long period.

The second point is that both the assumption of constant productivity growth and the claim of neutrality of monetary policy as far as long-run equilibrium is concerned, only make any sense if monetary policy is considered in isolation and the stance of fiscal policy is assumed to be always neutral. If we adopt Tinbergen's approach and consider the joint use of monetary and fiscal policy (and indeed other macro policies), the long-run neutrality claim for monetary policy is no longer correct. The easiest way to illustrate this is to start with the statement, already quoted, that the capital stock for Australia is sub-optimal. This is true not only in an aggregate quantity sense, but also in that there is an imbalance between public sector and private sector capital with the stock of public sector capital relatively too small.

It is relatively easy to devise a fiscal and monetary policy mix which leaves total investment unchanged but increases the share of public sector investment, increasing labour and private sector capital productivity and reducing unemployment for a given real wage. It should be possible to devise a mix which also increases total investment if that is desired by the community. In the real world, both monetary and fiscal policy affect productivity growth and potential output.

The third consequence of assuming constant productivity growth is that it rules out any Salter effect, or an increase in the rate of growth of capital productivity as the rate of output growth rises. Thus, the model rules out of consideration a type of virtuous circle in which more rapid output growth increases productivity growth which raises the growth rate of potential output enabling more rapid output growth in the longer run.

Finally, let me just outline three further points. First, unlike DP, DV do not in effect disaggregate unemployment in the underlying labour market model and hence miss the desirability (apart from social reasons) of reducing long-term unemployment. Their recommendation to minimise the amplitude of the business cycle is very important in this respect.

Secondly, DV do not consider how the minimum wage should be reduced, apart from a brief comment about the possibility of 'reforms that permanently change the balance between insiders and outsiders in wage-setting'. Despite the Maritime Union of Australia, unions are a declining force in Australia, especially in the private sector, and market-based factors are becoming more important in making a division between insiders and outsiders. It may well be sensible to look for other ways, than lowering real wages, of reducing real unit labour costs. Reductions in payroll tax are a possible candidate, especially since most proponents of reducing real wages argue for actual or tax expenditures to help low-wage workers. If net revenue is to be reduced, why not go to the source of the problem and reduce payroll taxes?

Finally, with current labour market institutions, the easiest way to reduce average real wages is to work on the bottom end of the wage distribution. Casual, and especially casual part-time, employees are almost certainly a bigger proportion of workers at the lower end of workers ranked by wages. If this is the case, much of any increase in hours worked may be in the form of casual workers working more hours per week, or more weeks per year (for less annual pay) but with a relatively small increase in the actual number of people employed.

3. General Discussion

The two papers in this session argued that unemployment can be lowered through strong economic growth and/or real wage reductions. This led to discussion of three main questions:

- How can we determine the rate of economic growth that will help reduce unemployment without causing an acceleration of inflation?
- How can the aggregate real wage be lowered?
- How should the gains from productivity growth be shared?

There was much discussion about how Pitchford and Dungey's estimated steady inflation rate of growth (SIRG) accords with other judgments about a feasible rate of non-inflationary growth. It was considered that, in practice, the SIRG, like the natural rate of unemployment, is likely to be time-varying, complicating the policy-makers' task of seeking to stimulate growth. Estimates are also likely to be sensitive to the method of modelling the inflation process – in particular, the domestic component of it – and also the sample period used. Reflecting this, some participants thought the estimated SIRG may be too high. However, others thought that it may be feasible given the structural improvements in productivity that have occurred over the current expansion.

While most participants agreed that reducing the level of the real wage would aid the reduction of unemployment, there was no clear view on how this could be achieved in the absence of a formal incomes policy. Some participants claimed that, in the absence of an incomes policy, there was a need to change the balance of power between insiders and outsiders in the labour market to deliver lower average real wages. Other participants claimed that the likelihood of this occurring was limited by the probable existence of hysteresis in unemployment. A number of participants noted that, without a return to centralised or co-ordinated wage-setting, the main mechanism for achieving reductions in the aggregate real wage was to suppress wages growth for those remaining in the administered stream. The use of the relatively small administered stream of bargaining for this purpose was considered undesirable and inequitable by those participants who argued that wage relativities were less important to labour market outcomes than average real wage levels. For others, it was considered an appropriate mechanism for achieving necessary changes to both relativities and the average level of real wages, particularly if it were linked to income compensation through either the welfare system or the tax system.

Finally, there was discussion about how the gains from productivity growth should be allocated to wages, profits and prices. Some participants emphasised that if real wages grow in line with productivity, the effects of productivity growth on output and employment will be dissipated by the effects of higher real wages. They stressed that output and employment prospects will be further inhibited if wage claims are based on overly optimistic assessments about actual or anticipated productivity growth. It was argued that a key interface between macroeconomics and labour market economics was the decision about allocating productivity gains, and that the opportunities for employment would be enhanced by some increase in the returns to capital and/or some lowering of product prices. Developments in enterprise bargaining could provide greater scope for making these allocation decisions.