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Goodridge, Stephen and Harding, Don and Lloyd, Peter

The University of Melbourne

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THE LONG TERM GROWTH IN UNEMPLOYMENT

by

Stephen Goodridge,

Don Harding

and

Peter Lloyd

The Institute of Applied Economic and Social Research

The University of Melbourne

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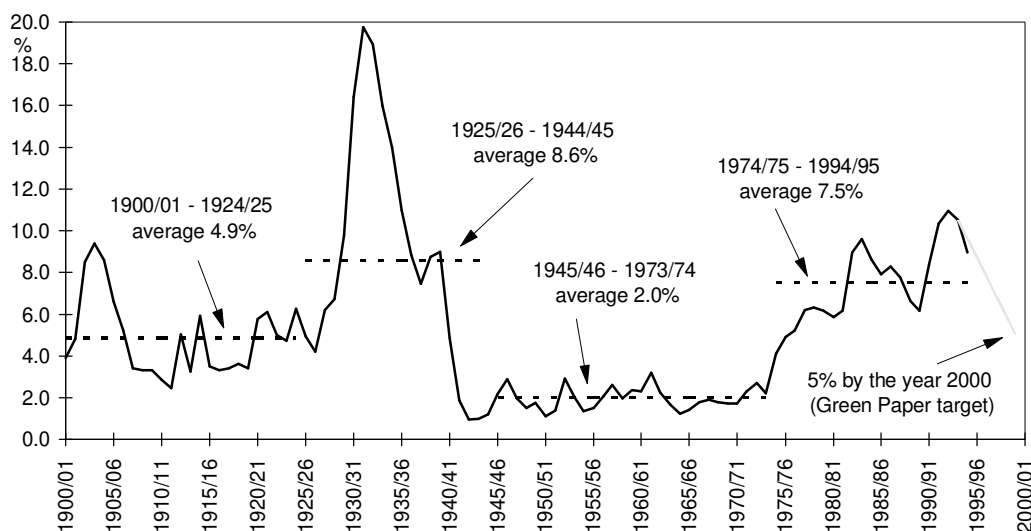
The Unemployment Rate Series

There has been a growing public concern over the growth in unemployment in Australia. This led the Government to bring down a Discussion Paper on Restoring Full Employment in 1993 (Committee on Employment Opportunities (1993)). In this paper the Government set the target of reducing the unemployment rate to 5 per cent by the year 2000.

The growth in unemployment in the last two decades is borne out by Figure 1 which shows the unemployment rate of the Australian labour force this century. This shows that the unemployment rate has been trending upwards since 1974.

This figure also shows the fall in the unemployment rate which was projected by the Committee on Employment Opportunities. "The general view is that the economy could reasonably be expected to grow over the remainder of this decade at about the average annual rate of the 1970s and 1980s, that is, around 3.5 per cent. Unemployment should then fall to around seven per cent by the year 2000, with the number of long-term unemployed at around 200,000 people. But restoring full employment requires us to do better than this. For Australia to reduce its unemployment rate to 5 per cent by the year 2000, the economy would need to grow at an average rate of between 4.5 per cent and 5 per cent." (Committee on Employment Opportunities (1993), page 5)

Figure1. Unemployment this Century

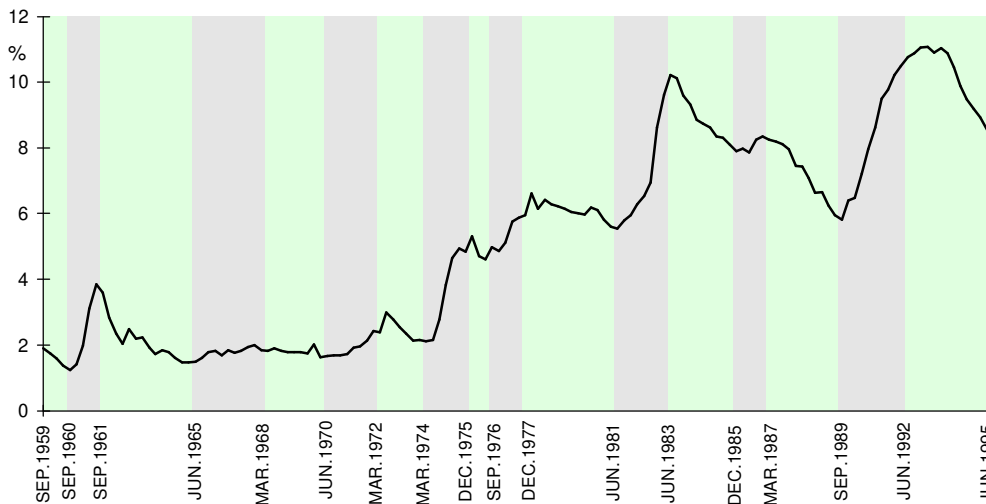


Sources: M. W. Butlin, *A Preliminary Annual Database 1900/01 to 1973/74*, Research Discussion Paper 7701, RBA; ABS, *The Labour Force, Australia* Cat. No. 6203.0; Committee on Employment Opportunities 1993, *Restoring Full Employment: A Discussion Paper*, AGPS, Canberra.

The achievement of this target would represent a substantial fall in the unemployment rate back to the levels which last prevailed in Australia in the late Seventies and, moreover, a fall which would be much larger than any experienced in the last 50 years of Australian economic history. All other factors being equal, the economy would have to grow for the remainder of the decade at a rate considerably faster than the annual average of the 1970s and 1980s for the 5 per cent target to be achieved.

Figure 2 plots the quarterly unemployment rate since the quarterly rates became available in September 1959. Inspection of the quarterly series shows that there are marked cycles in the unemployment rate as well as a trend over this period. In Figure 2 the turning points in the business cycle have been superimposed on the unemployment series. The turning points of the cycle have been identified independently from the turning points of macroeconomic series.¹ These cycles are the “growth cycles”. These are identified by periods of growth in the indicators which are above the trends, the expansion phase of the growth cycle, and periods which are below the trends, the contraction phase. There are eight such growth cycle contraction periods identified since 1959. These include the five Classical trade cycles of 60-61, 74-75, 76-77, 81-83 and the last cycle in 89-92.

Figure 2. Unemployment and the Business Cycle
(◻ Contractionary Phase, ◻ Expansionary Phase)



Sources: ABS, *NIF-10S Model Data Base*, Cat. No. 1342.0; Boehm & Liew (1994)

1. These turning points have been taken from Boehm and Liew (1994). The unemployment rate is one of the series used to construct the business cycle index.

The dating of the end of the 1989-1992 recession has been revised since this article was published from Q4 1992 to Q2 1992.

There is a very clear pattern. The periods of increase in the unemployment rate coincide with the periods of contraction in the business cycles; they begin in almost all cases in the quarter in which the growth contraction begins or the following quarter and they end with the onset of the growth expansion of the cycle or within 3 quarters thereafter. The increases in the unemployment rate are most pronounced in the five Classical business cycles but they occur to a lesser extent within each of the growth cycles.

If we exclude the short slowdown of December 85 - March 87, the unemployment rate falls during each expansion phase but the rate of decrease in the unemployment rate is slower than the rate of increase in the earlier contraction phase of the same cycle and the rate does not fall to the lowest level during the expansion phase of the previous cycle. Thus, there is a ratcheting upwards of the unemployment rate from cycle to cycle. It is this ratchet effect which fundamentally explains the upwards trend in the unemployment rate in Post-War Australia. Table 1 shows the effect of this ratchet on unemployment rate at the end of the expansion phases of the last 8 growth cycles in Australia.

Table 1. The Unemployment Ratchet

Last Quarter of Growth Above the Trend Rate	Unemployment Rate(%)
Sep. 1960	1.2
June 1965	1.5
June 1970	1.7
March 1974	2.1
Sep. 1976	5.0
June 1981	5.5
Dec. 1985	7.9
Sep. 1989	6.0
June 1995*	8.5

* The economy is currently expanding above trend rate.

The rate of increase in the unemployment rate has not been consistent over time. First, there is a difference between the sub-period 1959-74 when the unemployment rate was relatively stable with no discernible trend and the recent period 1974-present when there has been a strong upward trend in the unemployment rate. Ratcheting was also present but mild during the period 1959-74 while it has become pronounced since 1974.

Second, the pattern is different over a longer period. Returning to Figure 1, it can be seen that, in the very long term, unemployment is untrended over time. There appear to be strong forces within the economy which eventually return the unemployment rate to lower levels. However, this figure also reveals that we have not experienced behaviour in the unemployment rate similar to that which has occurred during the last 20 years.

How can we interpret this pattern? In particular, is the upward trend going to reverse itself?

Proximate Determinants of Unemployment - the Growth of Output and the Labour Force

Because of the association of changes in the unemployment rate with the growth of output in the economy, we examine the links between unemployment and the growth of output, labour productivity, the labour force, and the population.

For the Australian economy in the aggregate, let

Y = the aggregate output of the economy

y = output per member of the labour force employed

n = the fraction of the labour force employed

u = the fraction of the labour force unemployed = $1 - n$

l = the labour force participation rate

p = population of aged 15 years and older

It is then true, by the definition of these variables, that, in any period,

$$Y = ynlp \tag{1}$$

Consequently over time,

$$\dot{Y} = \dot{y} + \dot{n} + \dot{l} + \dot{p} \tag{2}$$

where $\dot{}$ indicates the proportional rate of change in a variable over time. Hence,

$$\begin{aligned} \dot{n} &= \dot{Y} - (\dot{y} + \dot{l} + \dot{p}) \\ &= \dot{Y} - \dot{z} \qquad \dot{z} = \dot{y} + \dot{l} + \dot{p} \end{aligned} \tag{3}$$

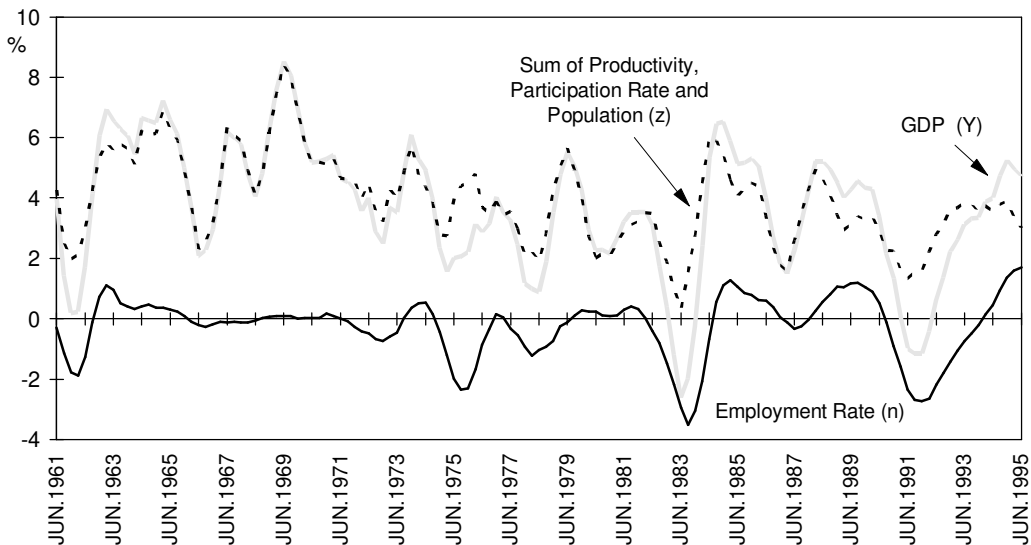
That is, the rate of growth in the employment rate over some period is determined by the difference between the rate of growth of output on the one hand and the rate of growth of labour productivity plus the rates of growth of labour force participation and population on the other. The unemployment rate is $u = 1 - n$. What affects the employment rate affects the unemployment rate in the opposite direction.

While these relationships are true by definition, they provide a useful approach to the analysis of the changes in the rate of unemployment. For any give labour productivity and labour force participation rate and population, growth in the aggregate output of the economy will lower the unemployment rate. For any given level of output, an increase (decrease) in labour productivity or the labour force participation rate or the population

will increase (decrease) the unemployment rate. Thus this decomposition tells us the proximate determinants of the change in the unemployment rate.

Figure 3 plots the average annualised growth rate of total output and the sum of the average annualised growth rates of labour productivity, the participation rate and the population, z , since June 1961. It also plots the growth in the employment rate, which is the difference between these two series. The integral of the change in the employment rate over any period of years gives us the cumulative change in the employment rate. This integral is negative for the whole period, reflecting the trend upwards in the unemployment rate. The periods of decline in the employment rate are the periods when the sum of the growth of labour productivity, the participation rate and population exceed the rate of growth of output. As shown above these are the period of contraction in the growth cycles, especially the three Classical business cycle contraction periods in 1974-75, 1981-83 and 1989-92.

Figure 3. The Employment Rate Decomposed into GDP and 'z'
(Average Annualised Growth Rates)



Sources: ABS, *Australian National Accounts*, Cat. No. 5206.0; ABS, *NIF-10S Model Data Base*, Cat. No. 1342.0

Table 2 decomposes the (negative) growth in the employment rate into its four components within cycles, that is, for both the contractionary phase and expansionary phase of each of the eight cycles. The average growth rate of both labour productivity and the participation rate is lower during the contractionary phase of the cycle than during the expansionary phase. During the contractionary phase firms hoard labour and some people exit, or at least refrain from entering, the labour force. As expected there is little difference in the rate of growth in population between the contractionary and expansionary phases of the cycle. Thus, the cyclical behaviour of these three series combined (z) tends to mitigate somewhat the cycle in output. This fact is graphically captured in Figure 3, which also shows that the cyclical swings in output are greater than those in z .

Table 2. Decomposition of Employment Growth Within Cycles

	Average Quarterly Growth Rate Over the Contractionary Phase (%)				
Contractionary Phase of the Growth Cycle	Employment Rate (n)	GDP(A) (Y)	Labour Productivity (y)	Participation Rate (l)	Population (p)
1960,Q4 - 1961,Q3	-0.671	-0.577	-0.377	na	na
1965,Q3 - 1968,Q1	-0.031	0.992	0.293	0.166	0.563
1970,Q3 - 1972,Q3	-0.110	0.675	0.237	-0.059	0.607
1974,Q2 - 1975,Q4	-0.473	0.332	0.244	0.104	0.457
1976,Q4 - 1977,Q4	-0.206	0.120	-0.064	-0.057	0.446
1981,Q3 - 1975,Q2	-0.636	-0.139	0.132	-0.125	0.490
1986,Q1 - 1987,Q1	-0.078	0.456	-0.013	0.011	0.536
1989,Q4 - 1992,Q2	-0.494	0.063	0.219	-0.036	0.374
Average	-0.337	0.240	0.084	0.001	0.496

	Average Quarterly Growth Rate Over the Expansionary Phase (%)				
Expansionary Phase of the Growth Cycle	Employment Rate (n)	GDP(A) (Y)	Labour Productivity (y)	Participation Rate (l)	Population (p)
1961,Q4 - 1965,Q2	0.161	1.662	0.945	na	na
1968,Q2 - 1970,Q2	0.018	1.734	0.928	0.180	0.608
1972,Q4 - 1974,Q1	0.039	1.356	0.577	0.232	0.507
1976,Q1 - 1976,Q3	0.116	1.349	1.356	-0.528	0.405
1978,Q1 - 1981,Q2	0.031	0.936	0.468	-0.014	0.451
1983,Q3 - 1985,Q4	0.256	1.498	0.605	0.179	0.458
1987,Q2 - 1989,Q3	0.247	1.233	0.260	0.230	0.495
1992,Q3 - 1995,Q2	0.166	0.954	0.414	0.065	0.309
Average	0.129	1.340	0.694	0.049	0.462

To understand the long term growth in unemployment rates over these cycles, it is more important to compare the labour productivity, participation rates and population from one cycle to another. Table 3 reports the average growth rate of these variables for each growth cycle. The rates are average quarterly rates; if multiplied by 4 they give the approximate annualised growth rates.

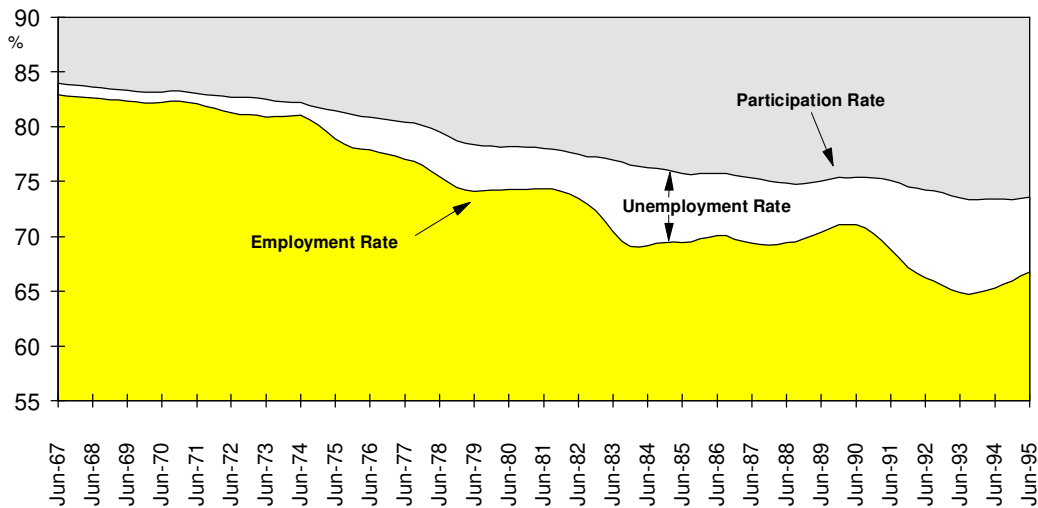
One possible explanation for the ratcheting up observed in the unemployment rate is that the rates of growth of labour productivity, the participation rate, and population have been trending upwards across progressive cycles whilst the rate of growth in GDP has remained constant. However, we see from Table 3 that this is not the case. The average rate of growth in the participation rate and the population appears to be untrended over the period. Furthermore, and perhaps most strikingly, the average rate of growth in labour productivity declined dramatically over the 1960-1990 period. Only in the current cycle has this trend been significantly reversed. Thus, the unemployment rate is not ratcheting upwards because of underlying changes in the growth of labour productivity, the participation rate or the population. Rather, it is simply because the average rate of growth in GDP has trended downwards at a faster rate than the other three components combined.

Table 3. Decomposition of Employment Growth Across Cycles

Growth Cycles	Average Quarterly Growth Rate Over the Cycle (%)				
	Employment Rate (n)	GDP(A) (Y)	Labour Productivity (y)	Participation Rate (l)	Population (p)
1960,Q3 - 1965,Q2	-0.014	1.191	0.667	na	na
1965,Q2 - 1970,Q2	-0.009	1.326	0.579	0.172	0.584
1970,Q2 - 1974,Q1	-0.030	1.038	0.418	0.096	0.553
1974,Q1 - 1976,Q3	-0.297	0.637	0.578	-0.085	0.441
1976,Q3 - 1981,Q2	-0.031	0.722	0.328	-0.025	0.450
1981,Q2 - 1985,Q4	-0.141	0.770	0.395	0.044	0.472
1985,Q4 - 1989,Q3	0.139	0.974	0.169	0.157	0.508
1989,Q3 - 1995,Q2	-0.121	0.566	0.329	0.021	0.337

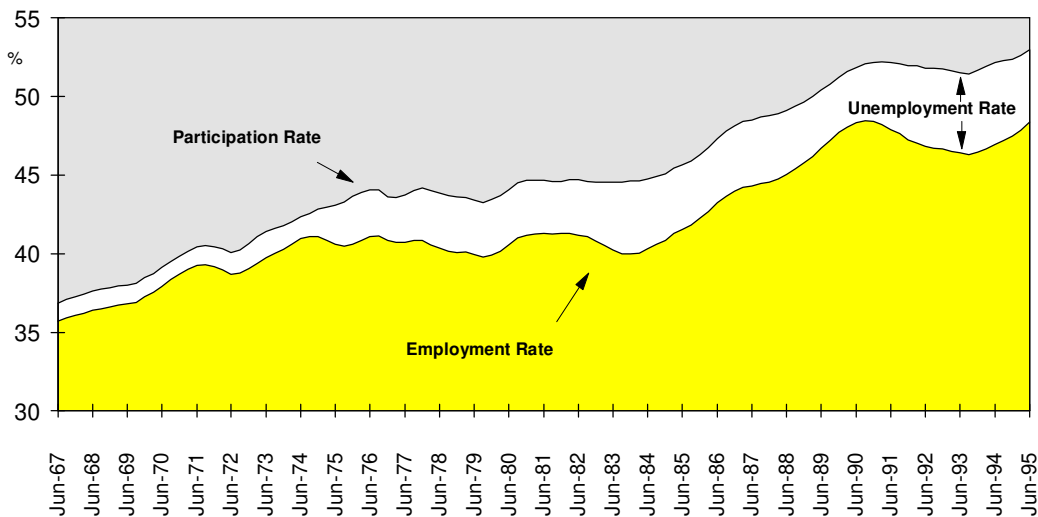
Figures 4 and 5 report the employment, unemployment and participation rates for male and female members of the Australian labour force. These are reported separately because of the very different trends in these rates between genders. The male participation rate has been trending downwards and the female rate upwards. Despite this difference in the trends, the female unemployment rate has shifted from being higher than the male to being lower than the male since 1991, as shown in Figure 6. The ratcheting upwards of the unemployment rate is predominantly a male worker phenomenon although it is to some extent evident in the female unemployment rate series.

Figure 4. Participation, Employment and Unemployment : Males
(As percentage of male pop. aged 15+ years, average annualised component)



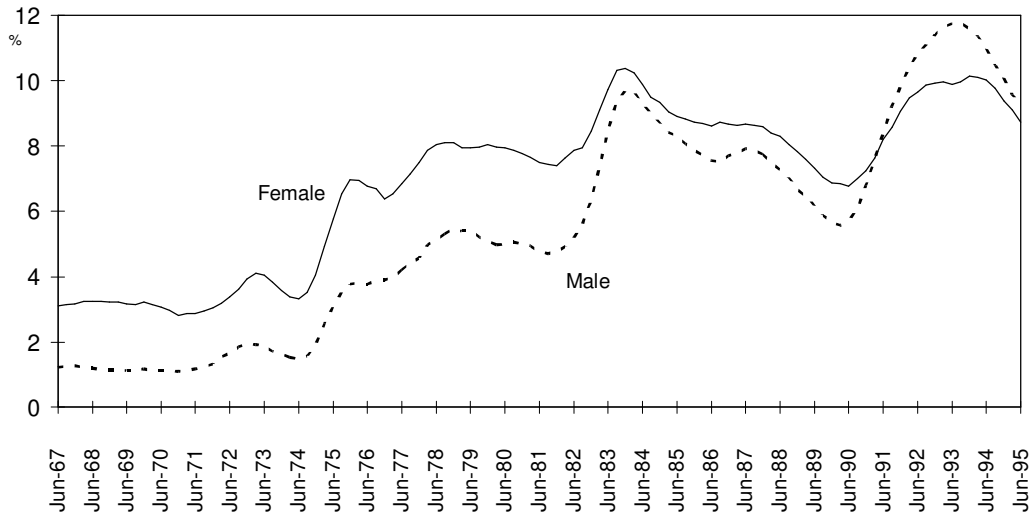
Source: ABS, *The Labour Force, Australia*, Cat. No. 6203.0

Figure 5. Participation, Employment and Unemployment : Females
(As percentage of female pop. aged 15+ years, average annualised component)



Source: ABS, *The Labour Force, Australia*, Cat. No. 6203.0

Figure 6. Male and Female Unemployment
(Average annualised component)



Source: ABS, *The Labour Force, Australia*, Cat. No. 6203.0

Towards an Ultimate Explanation of the Unemployment Ratchet

The decomposition of the changes in the unemployment rate highlights two key features of Australia's economic performance.

First, a slowdown in the rate of economic growth is the proximate cause of the ratcheting up in unemployment.

Second, this slowdown in economic growth was accompanied by a slowdown in the growth of labour productivity but at a slower rate.

This decomposition is, however, a purely mechanical device. The variables in the decomposition may not be independent of each other because they are functionally related or have a common cause. A theoretical framework is therefore required to explain why output growth and productivity growth slowed down in Australia. With such a framework, it will be possible to predict changes in the unemployment rate by predicting the proximate determinants of this rate. For example, measures that accelerate the growth rate of real output may or may not reduce unemployment, depending primarily on whether they also accelerate the rate of growth in labour productivity and to a lesser extent upon any induced changes in the labour force participation rate and population growth.

Frameworks capable of explaining the slowdowns in productivity and the slowdowns in rates of growth of output and labour productivity fall into two groups: those that see both slowdowns as having the same ultimate causes; and those that see the slowdowns as having separate ultimate causes.

Consider first explanations that see both slowdowns as having common ultimate causes. There are several explanations that are consistent with the broad facts.

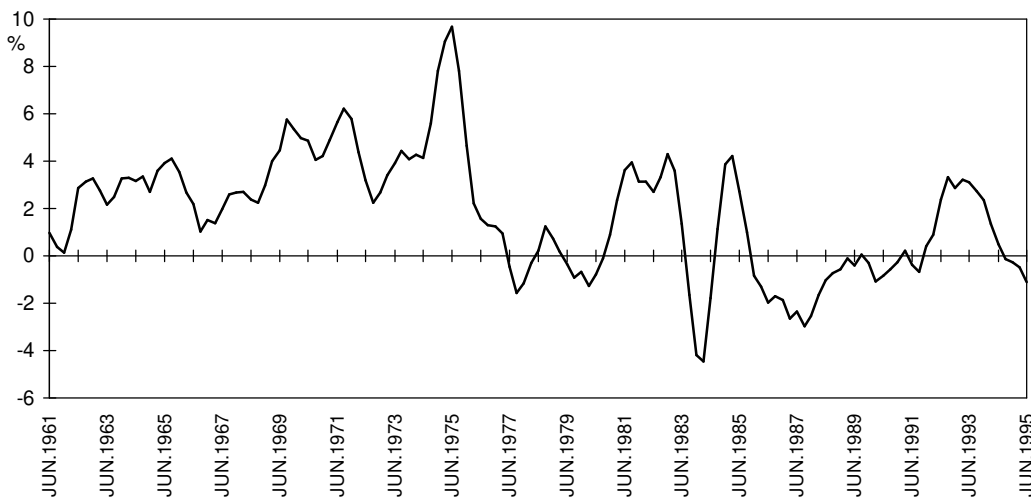
The first is a real business cycle explanation. The key components of this explanation are productivity shocks that hit a competitive economy. This framework will seemingly produce outcomes that are broadly consistent with the observed facts of the Australian experience. That is, more frequent and more severe productivity shocks will produce slower output growth and slower labour productivity growth.

However, while the simplest real business cycle models provide an explanation of variations in hours worked, they do not provide satisfactory explanations of unemployment. In order to develop satisfactory explanations of unemployment, real business cycles models require extensions that take account of the non-convexities and fixed costs that are part of most production processes. Those extensions are beyond the scope of this paper.

The second explanation is that human capital depreciates during spells of unemployment. According to this explanation, a business cycle shock hits the economy and creates some unemployment. During spells of unemployment, the human capital of unemployed workers depreciates thereby reducing the stock of human capital. The combined effect of the business cycle shock and the reduction in human capital is to reduce both the rate of economic growth and the rate of productivity growth.

However, like the real business cycle explanation, the human capital explanation requires some fleshing out in order to be persuasive. For example, why is it that real wages do not adjust downwards sufficiently to minimise the effect of adverse productivity shocks on employment? Indeed, the data on growth in real average weekly earnings (see Figure 7) suggests that, when compared to the 1950s and 1960s, the last 20 years has seen a substantial reduction in the rate of real earnings growth. Why couldn't workers achieve wage growth consistent with full employment? Did they collectively choose not to make the extra step? Or is there some market failure that prevents them from achieving the wage restraint that is consistent with full employment?

Figure 7. Growth of Real Average Weekly Earnings
(Average annualised component)



Source: ABS, *NIF-10S Model Data Base*, Cat. No. 1342.0

In order to be consistent with the observation that unemployment was low and stable in the 1950s and 1960s, both of the explanations offered above turn on the issue of whether

business cycle shocks were more frequent and more severe in the 1970s and 1980s than in the early post war period. This seems to have been the case. Looking first at the issue of frequency of shocks, Australia experienced an average of two growth cycles per decade in the 1950s and 1960s but experienced three growth cycles per decade in the 1970s and 1980s. Turning to the issue of severity of shocks, Australia experienced three classical recessions in the two decades between 1950 and 1971 but experienced four classical recessions in the 20 years between 1970 and 1991.

Tests of hypotheses of the cause of the unemployment ratchet will be carried out in a sequel paper.

Concluding comments

The Government has set a target of reducing unemployment to 5 per cent by the year 2000. Thus major public policy questions for the later half of this decade are whether this is a reasonable target? And, what policies might see it achieved or improved upon?

Answering these policy questions requires historical, empirical and theoretical perspectives.

History suggests two answers. One based on a short term perspective and the other based on a long-run perspective.

Viewed over the last twenty years, where unemployment has averaged 7.5 per cent, the government's target seems ambitious. To achieve this target would require Australia to grow at an average of 5 per cent per year compared with an average of about 3.5 per cent over the past 20 years.

Viewed over the first century of the Australian federation the task does not seem ambitious. For example, it means that Australia plans to move into the second century of the federation with unemployment higher than it was over the first quarter century and more than double that achieved in the quarter century following World War II.

Both perspectives are useful. The short-run perspective is, however, the more worrying. It demonstrates the magnitude of the change in Australia's labour market policies if the target of achieving 5 per cent unemployment is to be reached by the year 2000.

Our key empirical finding is that a slowdown in the rate of economic growth is the proximate cause of the ratcheting up in unemployment. This slowdown in growth was accompanied by a smaller slowdown in labour productivity growth. More frequent and more severe business cycles seem to be part of the proximate explanation of the ratcheting up of unemployment. However, this leaves the question of the ultimate causes of the ratcheting up of unemployment open to debate.

The key questions are whether the increased severity and frequency of business cycles is attributable to an increase in the frequency and severity of the macro-economic shocks hitting Australia? Or are the shocks hitting Australia similar to those in the past but the structure of the economy less flexible?

To answer these questions a coherent economic framework is required to interpret and shape the empirical findings. This is the area in which public policy on employment is most deficient in Australia. For example, compare the report of the Committee of Inquiry into the Financial System (J.K. Campbell chair) with the report of the Committee on Employment Opportunities (M.S. Keating chair).

The Campbell report contains detailed analysis of the financial system, its interrelations with other aspects of the economy and a detailed discussion of the appropriate role of government in the financial system. In contrast, the Keating report contains no such comparable analysis of the labour market. Aside from welfare, it does not explore in any detail the interaction of the labour market with other parts of the economy. We are left in the dark about how the industrial relations system and the labour market interact and in the dark about how the tax system and the labour market interact. Would a more flexible labour market make macro economic management easier? What is the appropriate role for government in the labour market? These questions are not discussed.

In subsequent papers we propose to spell out fragments of an economic framework that is suitable for formulating policy on unemployment.

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