Business Cycles in Australia

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*The authors thank Steven Kennedy for comments and suggestions. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

ABSTRACT

Business cycles can be identified, with varying degrees of precision, for most of the past two centuries of Australia's history. For the period covered by quarterly national accounts, there are clear 'classical' downturns in the early 1960s, mid-1970s, early 1980s and early 1990s. The current economic expansion is the longest in at least a century, but this does not in itself make a recession inevitable. Expansions are only ended by shocks or a buildup of imbalances.

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1. INTRODUCTION

Business cycles clearly exist in the sense that quarterly observations of real GDP are not just randomly scattered around a long-run trend. If economic activity is weak this quarter, it is most likely to be at least somewhat subdued the following quarter as well. But the use of the term 'cycle' brings to mind an image of activity moving in inevitable regular patterns which is not a realistic description. This paper clarifies some of the terminology surrounding business cycles in section 2, distinguishing between 'classical' cycles involving contractions in real GDP and milder 'slowdowns'; and between those caused by 'exogenous shocks' and those due to an 'endogenous' accretion of imbalances.

The following section suggests dates for Australian business cycles. While the dating exercise goes back to the earliest recession in the late 1820s, it concentrates on the period since 1960, and contrasts the differing nature of recessions. The current expansion is shown to be the longest since the Australian nation was formed in 1901. Section 4 provides some international evidence on the length of expansions. It suggests that expansions do not inevitably 'die of old age'. A final section provides some concluding remarks.

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2. WHAT DO WE MEAN BY "BUSINESS CYCLES"?

2.1 Classical business cycles

The existence of a business cycle has been long acknowledged.[2] Perhaps the most influential work on dating them is Burns and Mitchell (1946). They define business cycles as "a type of fluctuation found in aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic".[3]

A similar definition is still in use today by the successors to Burns and Mitchell. The NBER's website gives the following definition; "a recession is a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales". More loosely, a 'recession' is regarded as a period when activity is low and unemployment is high. On this thinking it would encompass both the period of contraction and the initial stages of the subsequent recovery.

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[2] Laidler (2003) quotes Alfred Marshall's (1923) citation of Lord Overstone's (at the time, Samuel Jones Lloyd) 1837 characterisation of cycles; "the state of trade revolves apparently in an established cycle. First we find it in a state of quiescence – next, improvement – growing confidence – prosperity – excitement – overtrading – convulsion – pressure – stagnation – distress – ending again in quiescence". Marshall went on to describe them as being exaggerated by fluctuations in commercial credit. Maddison (1991) cites Juglar (1856) as the first to argue for some regular periodicity in cycles. Juglar observed that cycles in France, the United Kingdom and United States were roughly synchronous.

[3] An early detailed application of the approach to Australian data is Mallyon (1966), although Phillips (1962) may be the first. Ernst Boehm has probably done the most work on dating business cycles in Australia; see Boehm (1979) and his other works in the bibliography.

Some analyses of the business cycles, such as Gillitzer, Kearns and Richards (2005) and some of the papers by Boehm, have used a wide range of indicators for dating cycles. These are then either averaged or a statistical technique is applied to extract a 'common factor'. Turning points are then identified in this composite measure. But most discussion of business cycles uses a much simpler, univariate, approach. The single best indicator of economic activity is real gross domestic product (GDP).

A commonly-used 'rule of thumb' for identifying contractions/recessions, especially by the press, is 'two consecutive falls in real GDP'. An obvious weakness of this definition is that it would mean three consecutive quarters where GDP fell by 1 per cent, rose by 0.1 per cent, and then fell by another 1 per cent would not qualify as a recession. This has led some to propose an alternative rule of thumb of identifying as a recession a through-the-year contraction in real GDP.

These definitions tend to focus on the level of aggregate activity in the economy, rather than on per capita variables. This can be thought of in terms of a '3 P's' (population, participation, productivity) framework for GDP; Henry (2003). There is always a natural barrier to recessions in the rate of population growth, which in Australia has always been positive and stable from year to year, and relatively high for an advanced economy.[4] Looking forward, Australia is expected to have significantly slower population growth as the population ages. This means that the population growth will be less of a support, and a shock to participation and productivity that might not have in the past caused a recession might now lead to one in this lower population growth scenario.

[4] The one exception to this rule in the past century is the period of World War I, when the population contracted in 1916 and 1917.

Another option is to use labour market conditions as an indicator, perhaps defining a recession as a through-the-year or year-on-year fall in employment.[5] Similarly, Caton (2005) suggests defining a recession as being when the unemployment rate increases by one percentage point. Businesses tend to hoard labour in the initial stages of a downturn, and use overtime rather than hiring new workers in the early stages of an uptown. It is therefore likely that business cycles identified using employment data would lag the timing using GDP data by two or three quarters.

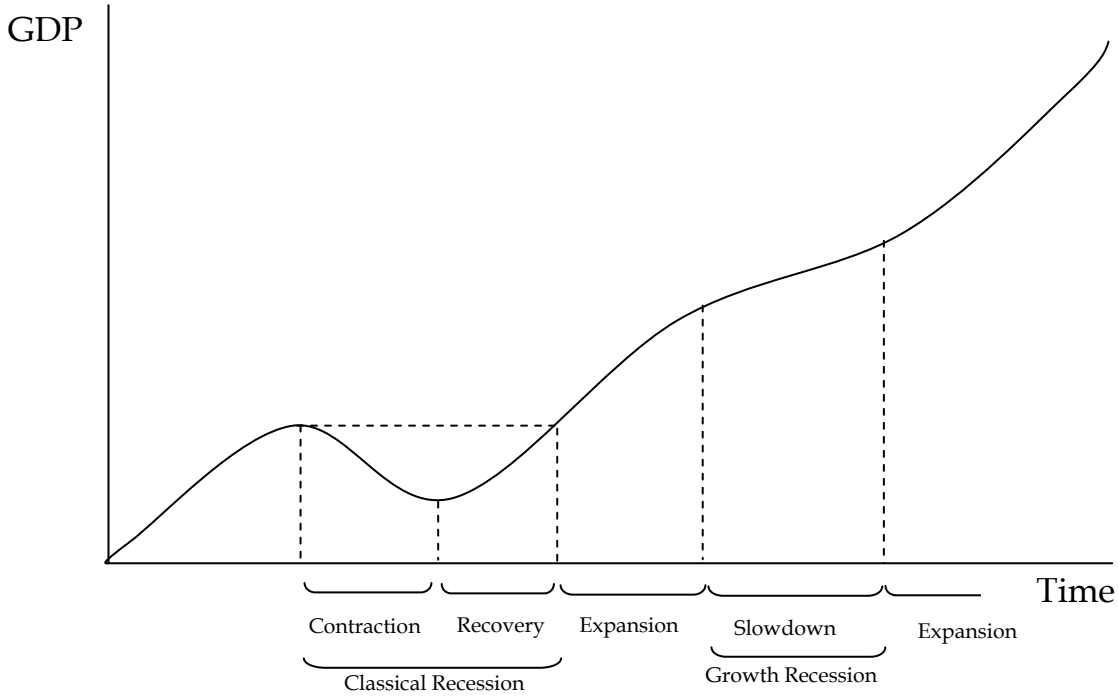
There is considerable variation in the periods between successive recessions, as we later show for Australia in Table 1 on page 29. Bergman et al (1998) suggest a usual range of two to eight years for a business cycle and Cotis and Coppel (2005) regard around five years as typical. Pagan (1997) suggests between four and eight years.

2.2 Moderate cycles

'Classical' business cycles refer to expansions and contractions in the *level* of activity. There are also references to cycles in which the weaker period does not quite reach this stage but there is a marked *slowdown*.

[5] This would be in line with the aphorism that defines a recession as "when your neighbour loses his job" and a depression as "when you lose your job".

Chart 1: Cycle definitions



"Growth recessions" refer to "detrended" series; Pagan (1997). Some people interpret this as below-trend growth, and others as the level of GDP below trend, but these two approaches would give different timing, and both imply that every economy is in 'recession' about half the time. It also implies that a fast-growing economy like China's could be regarded as in a recession when growth is around 6 per cent. This is a very different idea of a recession to the conventional idea of a fall in GDP. (Indeed, 6 per cent growth would be regarded as dangerous overheating in many other economies.) Classifying a period as a growth recession requires estimating the trend and different results are likely to be obtained depending on how the trend is calculated. [6]

[6] Cotis and Coppel (2005) apply a band-pass filter to eliminate components of under 6 quarters and over 32 quarters. The Hodrick-Prescott filter is another popular choice, although the results are then sensitive to the (fairly arbitrary) choice of the smoothing parameter. Various forms of phase averaging can also be used. Bry and Boschan (1971) developed a computer programme which purports to mimic the approach of the NBER's business cycle dating committee. See Pagan (1997) for a discussion.

An alternative definition suggested here is to look at per capita GDP and use falls in this as indicating a more moderate recession. This avoids problems of determining trends and is arguably more consistent with a recession being a period of reduced economic welfare.[7]

2.3 The language of business cycles

Economists use odd language to describe economic cycles. They talk of output 'gaps' but the gaps may be positive or negative. What is a 'negative gap'? Is it some kind of overlap? They also talk of 'potential GDP' but often describe the economy as operating above its potential. What then is meant by 'potential' if it is not the maximum possible?[8]

The reason for this odd language is that there are two broad concepts of the business cycle, termed here 'exogenous' and 'endogenous'. Economists apply the *language* of one when using the *ideas* of the other.

2.3.1 Exogenous business cycles

The *first* idea of a business cycle is that it results from a pathogen. The economy has a fairly steady trend growth path which it follows when in robust health, but some unpleasant event ('shock') will sometimes causes its performance to drop below its potential for a period. A simple example would be a drought. As the 'shock' passes or the economy adjusts to it, output grows again and, in the simplest case, returns to the pre-shock growth path. This model is behind the idea that capacity utilisation or the 'output gap' can be measured by relating actual output to the potential measured from 'linked peaks', as in Chart 2.

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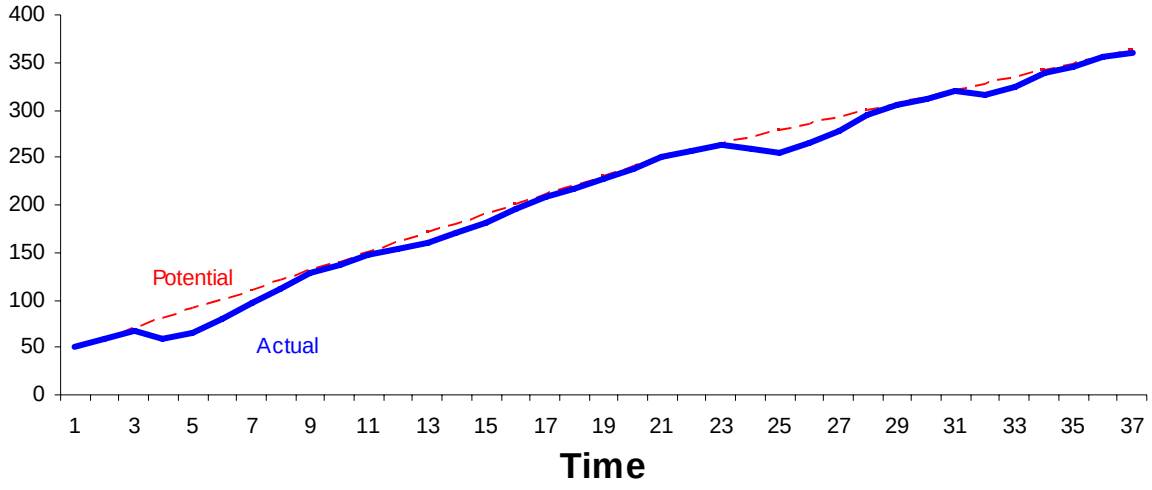
[7] This definition is also more consistent with Treasury's 'wellbeing' framework; Treasury (2004). It examines the impact that the economic cycle is having on the consumption possibilities available to the average individual in the economy, which is an important component of wellbeing

Chart 2: The Shortfall model of business cycles



This characterisation of the cycle is also consistent with the view that the economy can be described by a simple production function; Y* = f(L,K) where Y* is potential output, L the labour force and K capital. At certain periods some of the labour force is not being utilised (ie there is unemployment) and so Y<Y*.

A more sophisticated version of this model allows for, depending on the metaphor, 'hysteresis' or 'rust' or 'wasting'. This is the idea that a prolonged period spent below potential output will gradually lower the potential growth path to which the economy will return. The long-term unemployed lose work skills and unused machinery rusts. Output returns to its former growth *rate*, but never makes it back to the growth path it had been on before the recession.

Under this first concept of a business cycle there is no reason at all why the business 'cycle' should have any regular periodicity. The 'cycle' will just occur when there is a shock.

A recent variation on this idea is the concept of the 'real business cycle'. Its proponents argue that rather than demand fluctuations, it is productivity shocks

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[8] It is a bit like football coaches who exhort their teams to give a '110 per cent effort'.

that drive cycles. They are less clear on what they have in mind as a productivity shock. Most technological innovations are introduced over time. And they might lead to an improvement in the level, or even growth rate, of output but it is not clear why they should induce a *cycle*.

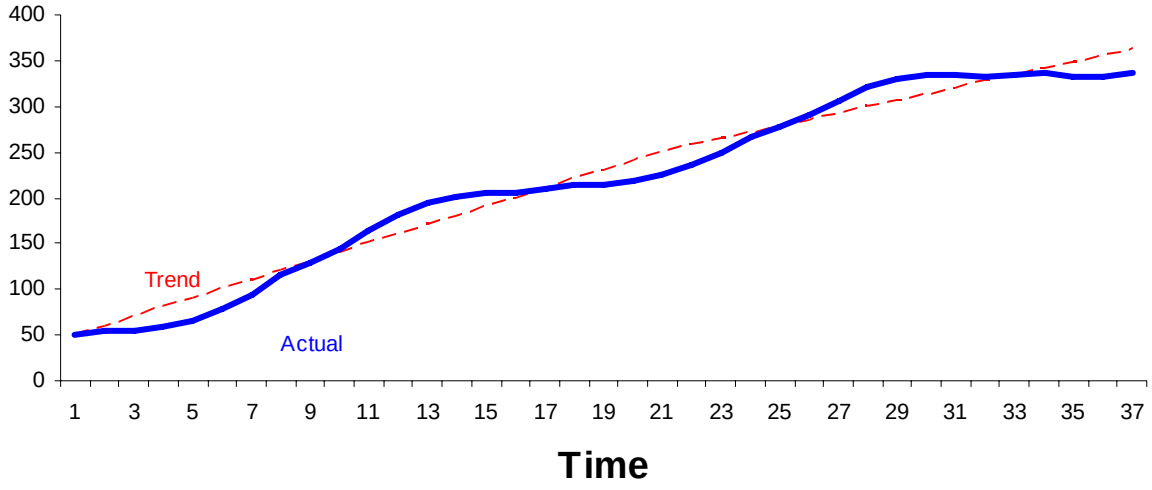
2.3.2 Endogenous business cycles

The *second* idea of the business cycle generates a more regular cycle, although still falling a long way short of a regular 'sine curve'. This 'endogenous business cycle', as opposed to just a reflection of exogenous shocks, has been discussed recently by Zarnowitz (1999) and Filardo (2003). Put simply, it agues that what Keynes termed 'animal spirits' drive investors. Long booms breed overconfidence, in turn leading to excessive borrowing for dubious investment projects. When these projects fail to generate adequate returns, business confidence and equity prices fall. Investment contracts and wealth effects reduce consumption, resulting in a recession. The down phase of the business cycle is the correction of imbalances that develop during the up phase.

This approach harkens back to early 20th century business cycle theorists, and was probably most notably expounded by Keynes (1936), building on a Cambridge tradition (see footnote 1). (The greater the 'endogeneity' of the business cycles, the stronger is the case for devoting more resources to economic analysis and forecasting. Policymakers and their advisers should monitor the buildup of imbalances, so as to be able to take steps to moderate the cycle.)

This concept implies that output cycles around a trend growth rate. At times the economy is below trend (which borrowing the language of the first approach is termed an 'output gap') and at times above (giving rise to the awkward language about positive and negative gaps and above-potential output).

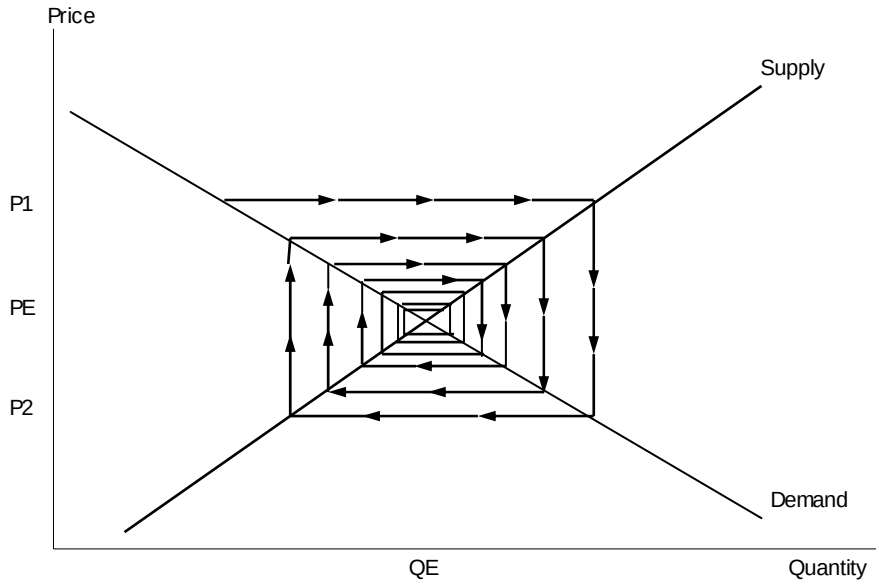
Chart 3: The 'Cycles' model of business cycles



There are variations around the general theme of the endogenous growth cycle. 'Cobweb models' (sometimes referred to as 'hog cycles') were developed in the 1930s (for example Kaldor (1934)) to explain the price fluctuations seen in many agricultural markets. The models apply to markets where there is a lag between the responses of producers to a change in the price.

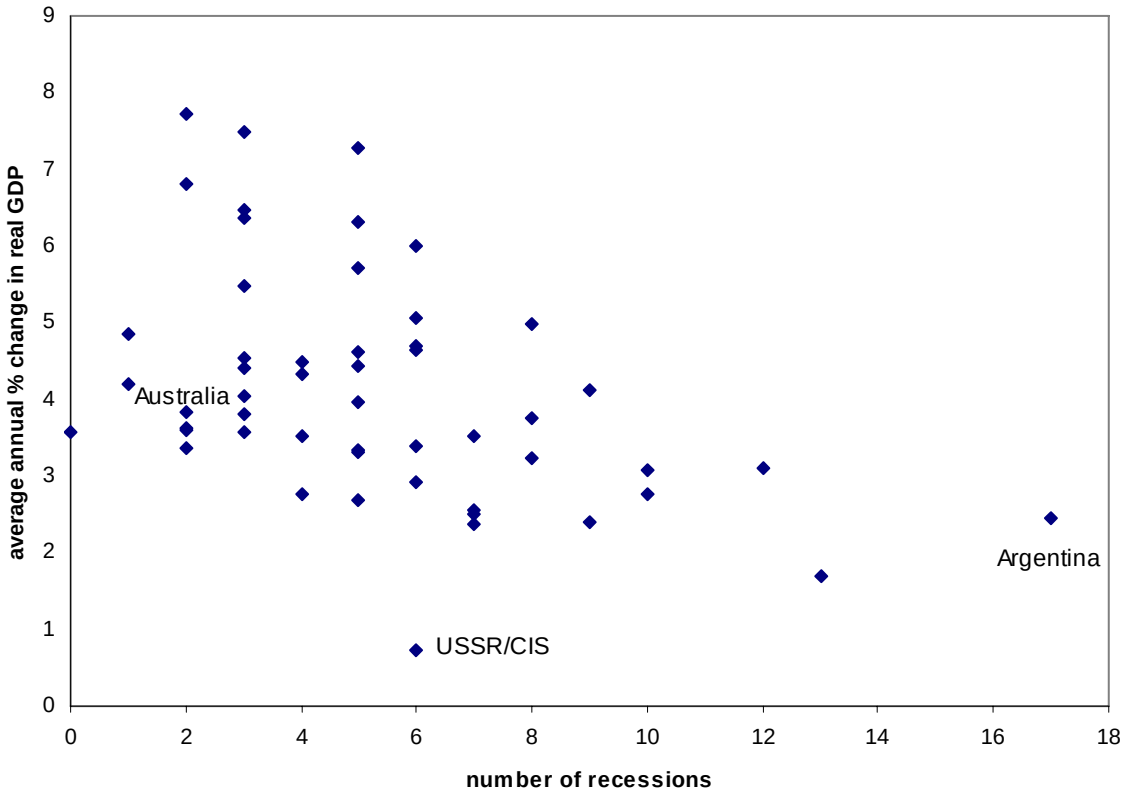
Basically, according to cobweb models, output alternatively over- and under-shoots. If the price is anticipated to be high, producers will increase production above the equilibrium. This increase in supply leads to a lower realised price. The lower price results in a lower anticipated price and supply then drops below the equilibrium, which works to increase the actual price. Depending on the slopes of the demand and supply curves (the elasticities), this process may lead to a gradually dampening cycle in production (as shown in Chart 4), an indefinite cycle or (at least in theory) an explosive cycle. The models get their name because, when stable, the market follows a cobweb-like path to the equilibrium price and quantity, where it will settle until there is another shock.

Chart 4: Cobweb model equilibrium path



Another variant of the endogenous business cycle is Schumpeter's idea of 'creative destruction'. This views a recession as desirable; a way of purging the economy of the weakest entrepreneurs which would otherwise hold back the economy. (As Keating later put it, "de-spiving the economy".) Historical evidence would at best only suggest that an occasional recession has this purgative benefit. Ramey and Ramey (1995) show econometrically that economies with more recessions tend to have lower long-run economic growth. The same point is illustrated by Chart 5. There are no dots in the upper right-hand corner: economies with lots of recessions do not have a good long-run growth record.

Chart 5: Recession and long-term economic growth, 1950-2004



Source: A. Maddison, The World Economy: Historical Statistics, 2003.

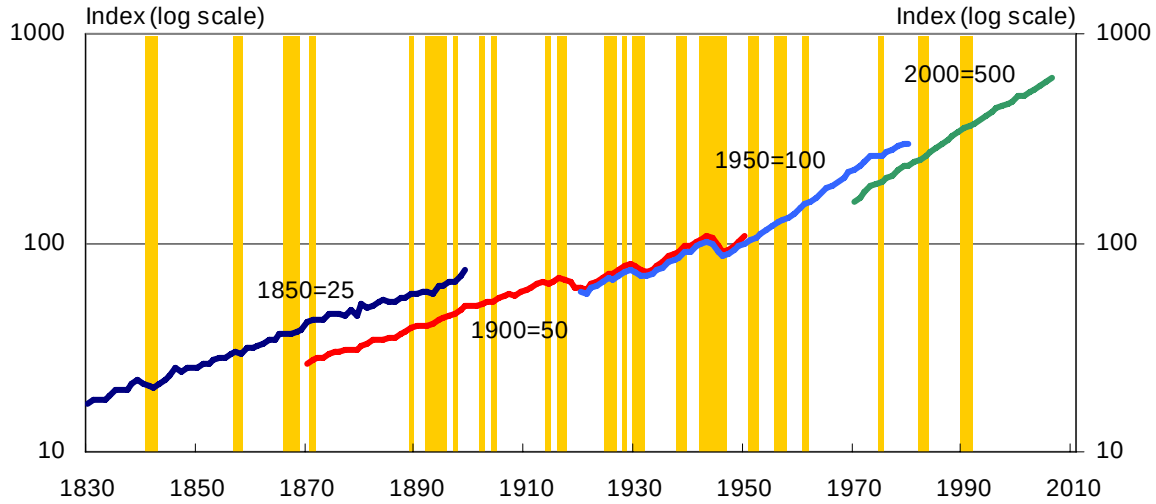
2.3.3 Towards a synthesis

A similar dichotomy between these two ideas can be found in the writings of one of the leading growth theorists. Solow (1997) argues that "real output in most advanced capitalist economies fluctuates around a rising trend. One can argue about whether it is best to think about that trend as passing through successive cyclical averages … or cyclical peaks". But even Solow appears a bit confused by the terminology: if the 'trend' is passing through *peaks*, then output will not fluctuate *around* this trend.

Perhaps the fairest characterisation is that there are elements of endogenous cycles operating in the background of economies that may lead to recessions but that these forces are usually swamped by an exogenous shock. In Australia's history it might be argued that some contractions, such as those during the

World Wars and the 1930s Depression which occurred when the global economy was also weak (Chart 6), and those attributable to droughts, as *exogenous* recessions. Others, such as the 1840s and early 1990s recessions were the endogenous result of a need to correct imbalances such as lax credit practices or high inflation and could be termed *endogenous* recessions. Notably, Australia's worst economic contraction, in the 1890s, combined both domestic (drought) and external (international credit) exogenous shocks with endogenous (land and credit boom) components.

Chart 6: World GDP (export weighted)



Shaded areas represent Australian recessions. See Table 1 for details.

3. DATING AUSTRALIAN BUSINESS CYCLES

3.1 Cycles before World War II

Dating cycles in the period before World War II is problematic. It relies on qualitative accounts and unofficial annual estimates of real GDP compiled many years after the event from often fragmentary sources.[9] A tentative dating of contractions on an annual basis is given in Table 1. It is hoped these can be improved with further research, and the authors would welcome comments on the datings.

Until the late 1820s there was no 'Australian business cycle' as there was little private business.[10] The hunter-gatherer communities spread thinly across the continent and, from 1788, the European convict settlements in Sydney and then Hobart, did face drought-related fluctuations in economic activity.[11] Indeed these almost wiped out the European colony in 1789. But these were not 'business cycles' in the modern sense of the term.[12]

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[9] Noel Butlin (1986, 1994) provides the only estimates of real GDP for years prior to 1860.

[10] Governor Macquarie described commerce as being in its "early dawn" in 1810; cited by S. Butlin (1959, p75).

[11] It is likely that total Australian real GDP was falling for much of the period 1788-1850 if allowance is made for the effects of European diseases in reducing the indigenous population. These tragic events are outside the scope of this article but the interested reader is referred to N. Butlin (1994).

[12] There are a minority of authors who disagree and place a business cycle in the first half of the 1810s. McCarty (1964) identifies a "commercial depression" in 1811-15, exacerbated by a drought and caterpillar plague. Similarly, Steven (1963) refers to the period 1812-15 as "one of almost continuous commercial depression", which she blames partly on the collapse of financial confidence in the United Kingdom in 1810-12, as do Abbott (1969) and Phillips (1967). Noel Butlin was working on a book on business cycles 1810-1850 when he died. In the incomplete Butlin (1994) he refers to accounts of "the commercial crisis of 1810-13" and the "depression of 1826" in sceptical terms, suggesting "they may have only been speed variations on an extremely fast expanding track". In accompanying charts it appears he

By the latter 1820s a capitalist economy had developed in Australia.[13] Arguably the first 'business cycle' was experienced in the late 1820s, when a land boom turned sour; what Fitzpatrick (1939, p333) called "the gay bubble of the colony's first adventure in commercial intemperance". Hartwell (1956) and Steven (1963) attribute it partly to the boom and bust in the British economy around 1825-26, with sentiment and activity in Australia lagging by six months – the time it took a ship to sail from London to Sydney. The Australian Agricultural Company raised £1 million in its float in London in 1824 and then bid up asset prices in Australia. When the British economy slowed, demand for wool weakened. The initial response in Australia was to stockpile wool and await a return to high prices, but when this did not soon eventuate the slump was exacerbated. British capital also dried up and the recession was worsened by drought from 1827 to 1829, a rise in local interest rates and a bank run; S. Butlin (1959) and Morrissey (1967). There was a recovery by around 1830-31 and the 1830s was a prosperous decade, underpinned by rapidly expanding exports of wool; S. Butlin (1959), N. Butlin (1986) and Fitzpatrick (1941).

A sharp recession, often labeled a depression, occurred in the early 1840s. This has been blamed (by eg Coghlan (1918) and Wells (1989)) on speculation and excessive credit growth in the 1830s, which led to banking crisis and widespread

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believes there were very small falls in colonial real GDP in 1811, 1813 and 1814. Manning Clark (1962, p 278) refers to a drought in 1812-13, but not to any commercial recession.

[13] Most farming until the late 1820s involved growing crops on either government-controlled farms or small farms worked by families of emancipists with convict labour (although an important exception was the Australian Agricultural Company's grant of a million acres in 1824). Bigge's report of 1819 encouraged pastoralism and wool production increased, becoming a significant export industry. This required more capital and became the preserve of wealthy immigrants and established merchants. A new British government taking office in 1830 introduced reforms replacing land grants by sales and encouraged free immigrants. There was a programme of 'privatisation' in the 1820s. In 1842 a limited form of democracy was introduced, which was extended in the 1850s. See Coghlan (1918), Fitzpatrick (1939) and Wells (1989) for more details on this period.

bankruptcies when British interest rates rose around 1840 and capital inflows to Australia dried up. This led to regulation of the banking system to try to curb excesses. The recession was exacerbated by a halving in the price paid for Australian wool in London between 1836 and 1844 and a rise in real wages in the 1830s as cheap convict labour was no longer available; Buckley and Wheelwright (1988) and S. Butlin (1959). A drought in NSW from 1838 and the withdrawal of funds from banks by the government to fund immigration programmes also contributed; Fitzpatrick (1941). Unemployment became a sufficiently noticeable problem that the NSW Legislative Council appointed a 'Select Committee on Distressed Labourers' (and another on 'Monetary Confusion') in 1843 and made a special grant to the Benevolent Society, who provided aid to the poor.

The next economic cycle was the gold boom of the early 1850s. This gave rise to labour shortages in other sectors, a surge in real wages (and the spread of the eight-hour day) and a speculative building boom in Melbourne. By the late 1850s, as the gold started to run out in some regions and steam-powered machinery was introduced more widely into (what would still be called) manufacturing, there was an oversupply of labour and wages started to fall back. As Coghlan (1918) remarks, by 1855 there was a "general fear that speculation had been carried too far".

Histories have little reference to any recessions between 1860 and 1890; Henry Lawson's "roaring days". This period is generally referred to as a 'long boom'.[14]

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[14] The phrase is used by writers as diverse as Maddock and McLean (1987), McGhee (1967), Meredith and Dyster (1999), Molony (1987) and Garnaut (2005). Jackson (1977, p14) similarly opines that the economy "seems to have expanded in a very stable fashion between 1860 and 1890" and Fitzpatrick (1941, p 193) refers to the "steady prosperity of the colonies in 1860-90". Ward (1965) refers to the "long-continued expansion of the 1870s and 1880s." Other histories covering the period such as Buckley and Wheelwright (1988), Clark (1978), Kingston (1988) and Shann (1930) also do not refer to any significant recessions.

There were apparently only minor pauses or slowdowns during this period, large due to poor seasons in the rural sector, and it is arguable whether they warrant being termed 'business cycle recessions'. Trying to make this assessment from quantitative estimates is complicated by the contrasting estimates for real GDP from the two main studies by Noel Butlin (1962, 1985) and Bryan Haig (2001). The rival estimates, and other sources, are considered in Annex A, which concludes there were minor recessions around 1867 and 1870-71 followed by a sustained expansion until the late 1880s.

This boom was fuelled by rapid expansion of both domestic finance and international capital inflow, degenerating into an "orgy of speculation"; Coghlan (1918). Railways lines were greatly expanded – from 340 miles in 1860 to over 10,000 miles by 1900 according to Kingston (1988) - largely funded by international borrowing. Large ornate public buildings were constructed. Housing also expanded in numbers, size and quality; Kingston (1988) reports that the average house grew from three rooms in 1861 to five rooms in 1900. The development of building societies helped the middle class buy them. Rural conditions were also good. Wool prices were generally high, although they gradually fell back in the 1880s.

In stark contrast, the 1890s was virtually one long depression. The first half of the 1890s was a worldwide recession, which led to a sharp fall in prices of primary goods and the volume of global trade, arguably the first global business cycle.

After the Barings crisis of 1890 British lenders became more reluctant to hold overseas securities. Commodity prices fell. There was a collapse of the housing bubble around 1890. Building societies and then banks closed their doors – the damage to the financial system being far worse than during the 1930s

depression; Fisher and Kent (1999). The depression was exacerbated by net migration from Australia.

From around 1895 there was a severe drought which continued through Federation. This meant that Australia did not share in the global expansion from 1896 to 1907. By 1903 the sheep flock had halved and it took another three decades to regain pre-drought levels; Macintyre (1986). But wheat farmers did better with the run of good seasons, achieving big gains in productivity with new strains, such as William Farrer's Federation variety, and better management practices.

By the early 1910s the economy was stronger and there was a housing boom. However, the outbreak of World War I disrupted Australia's export markets. Furthermore, a drought in 1911-1916 (which was especially severe in 1914-15) encouraged slaughter of livestock, which took a long time to rebuild. There was another period of dry conditions in 1918-1920, from which only Western Australia was spared; Boehm (1979).

The early 1920s was a period of prosperity for many. However, the Australian economy turned down in the late 1920s, even before the Wall St crash of October 1929; Boehm (1979) and Valentine (1987). Global output fell heavily 1930-1933, and farm prices fell. The global trading system splintered into protectionist blocs.

The recovery from the depression was strong, helped along as rearmament from 1936 increased British demand for wool for uniforms. Boehm (1979) suggests the recovery may have been faltering in 1939 until armament expenditure increased.

3.2 Cycles 1939-1960

The first official annual national accounts for Australia cover the period from 1938-39 but official estimates of real GDP only start from 1948-49. There is a

general consensus that there was a contraction in domestic production due to World War II but only relatively mild recessions during the 1950s.

The advent of World War II soaked up any remaining unemployment from the Great Depression. But as manpower was sent overseas to fight, there were labour shortages affecting domestic production. In addition, some export markets collapsed. The ABS estimates nominal GDP contracted in 1944-45. Waterman (1972) regards there as having been a "slight recession" in 1945-46 due to transition from war production.

Contrary to expectations of a post-war slump, the economy seems to have been very strong in the late 1940s, with shortages more of a problem than excess. The demobilised soldiers seemed to find civilian jobs readily, and the unemployment rate peaked at less than 3 per cent.

The outbreak of the Korean War in June 1950 saw wool prices rise sharply, and as spending followed the rise in incomes, domestic demand became very strong too and wages rose rapidly. The September 1951 Budget was the first time policy was used explicitly to dampen economic activity, and it aimed at a substantial surplus. Import controls were loosened around the same time. The timing of these counter-cyclical moves proved very unfortunate as it reinforced a weakening resulting from a collapse in wool prices in April 1951.[15] Even so, Whitwell (1986) comments "the recession of 1952-53 was neither particularly deep … nor protracted."

[15] Boehm (1979) dates the contraction as running from 1951(J) to 1952(S), Waterman (1972) places it from 1951(J) to 1952(D) and Mallyon (1966) dates it as 1951(S) to 1952(D). The ABS data show the income-based measure of real GDP contracting in 1952-53, although it is an indication of the uncertainty surrounding it that the expenditure-based measure continued to expand. Phillips (1962) also reports a mild recession in late 1952.

In March 1956 a mini-Budget aimed to dampen domestic demand to improve the balance of payments. GNE contracted in 1956-57 and unemployment began to rise. In 1959 economic activity picked up pace and there were large wage rises.

3.3 Cycles since 1960

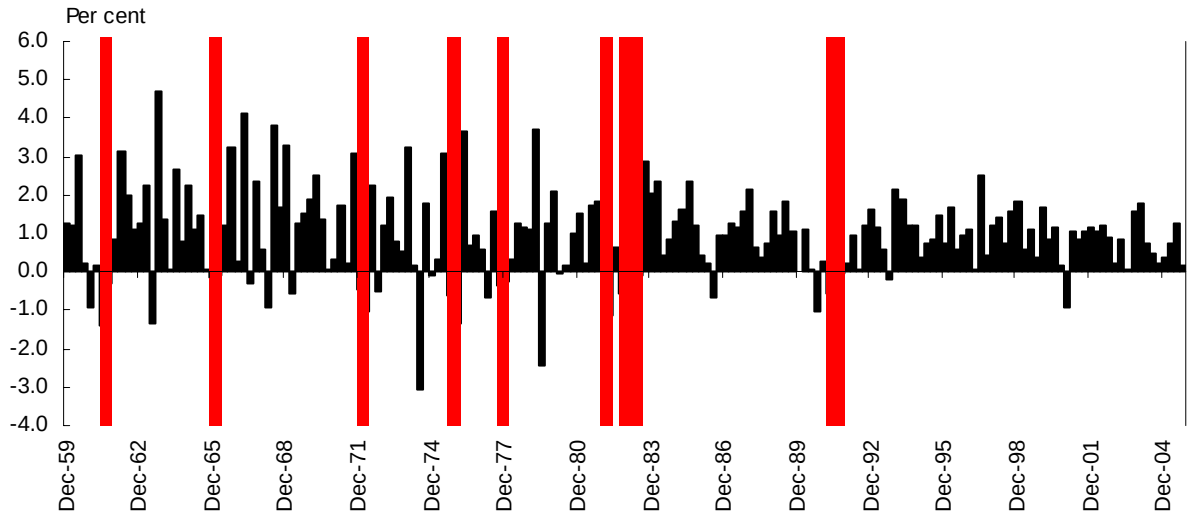
3.3.1 Indentifying classical contractions

From September 1959 there are quarterly national accounts which continue to be revised. Chart 7 shows real GDP growth and two simple measures of recessions. The upper panel highlights 'two consecutive negative quarters' recessions while the lower highlights 'negative through-the-year growth' recessions.

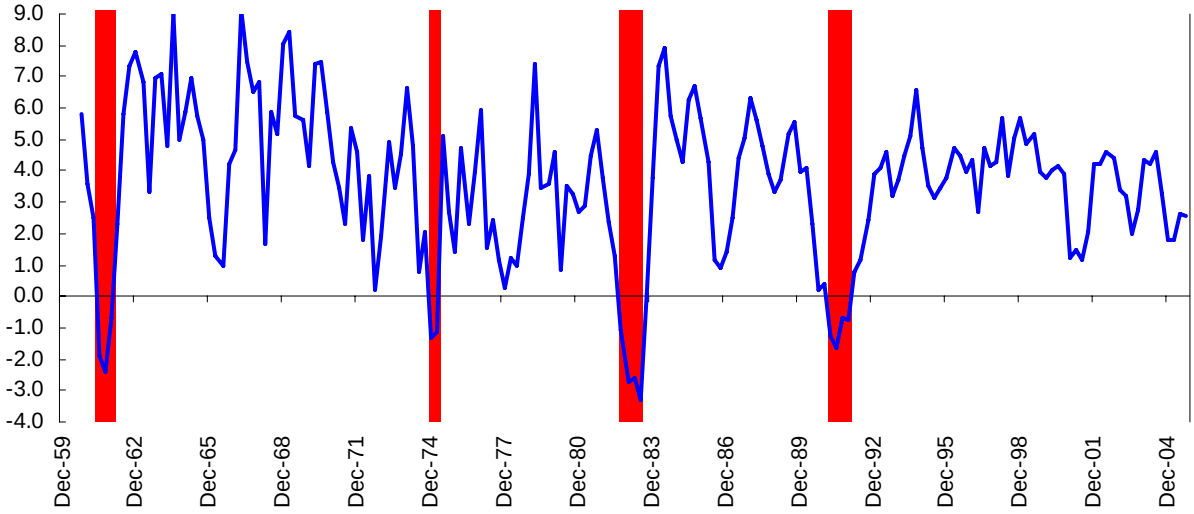
Both rules identify a broadly similar pattern in the business cycles in Australia, although the 'two quarters' rule identifies a number of recessions not seen in the 'negative through-the-year' rule. Two important examples of this occur in the mid 1960s, and in the late 1970s. In both cases there are falls in the quarterly GDP numbers, but through-the-year growth does not drop below zero. Other examples of these sharp falls in through-the-year growth can be seen in the early 1970s and mid 1980s.

Chart 7: Contractions in Gross Domestic Product

(a) Quarterly growth rates



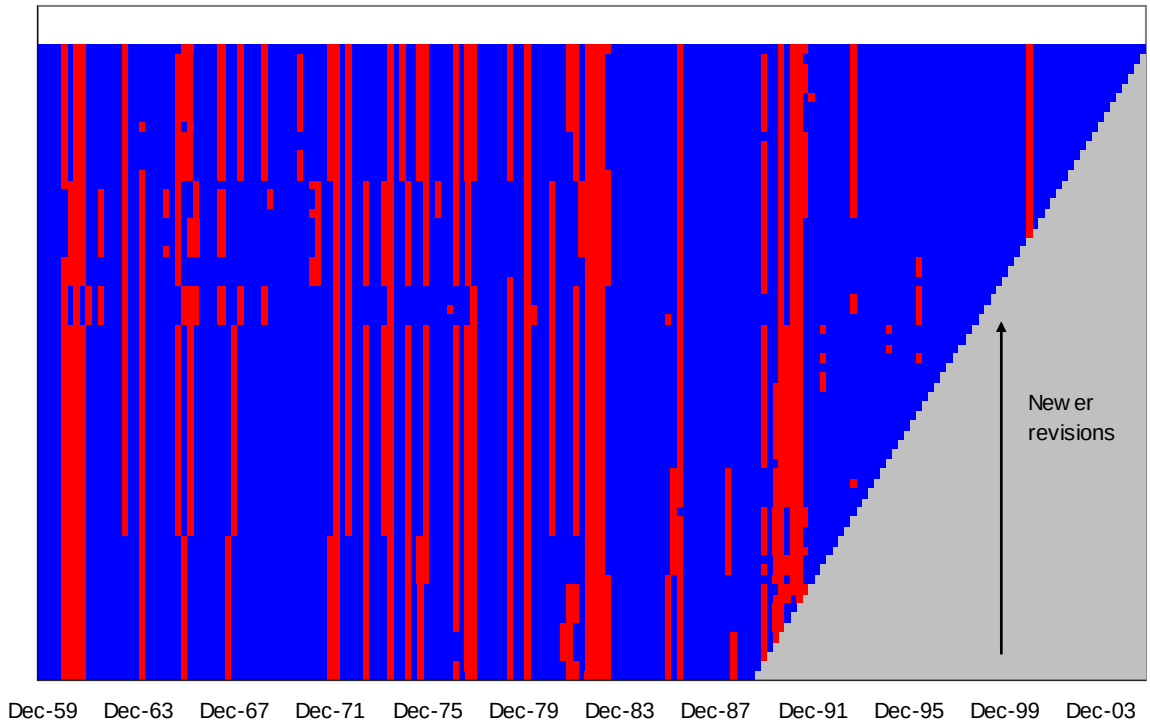
(b) Through-the-year growth rates



Source: ABS National Accounts (Cat. No. 5206.0), September 2005 release.

This analysis of recessions depends significantly on the revisions that the ABS makes to its estimate of GDP. The ABS revision programme has changed the estimates for the timing and size of many of the recessions in Australia. Gillitzer, Kearns and Richards (2005, p305) looked at recessions identified by various vintages of GDP data. They found that the dating (and even existence) of the mid-1970s recession has varied most.

Chart 8: History of negative quarters in different GDP releases

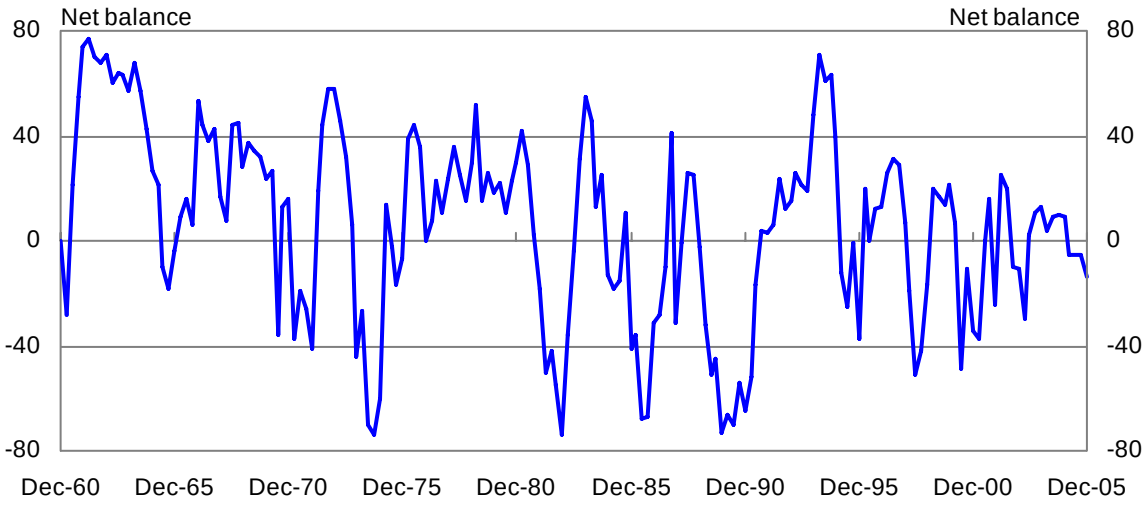


Source: ABS National Accounts (Cat. No. 5206.0), various releases. The top line is the September 2005 quarter release of national accounts, and the red squares show where the quarters of negative growth are in that history. Earlier releases are shown as additional lines going down the page.

Chart 8 shows an example of these revisions, showing the history for the locations of negative quarterly changes in the national accounts history for various releases of the headline GDP series since 1989. While overall the broad pattern has remained constant, the details have change significantly over time.

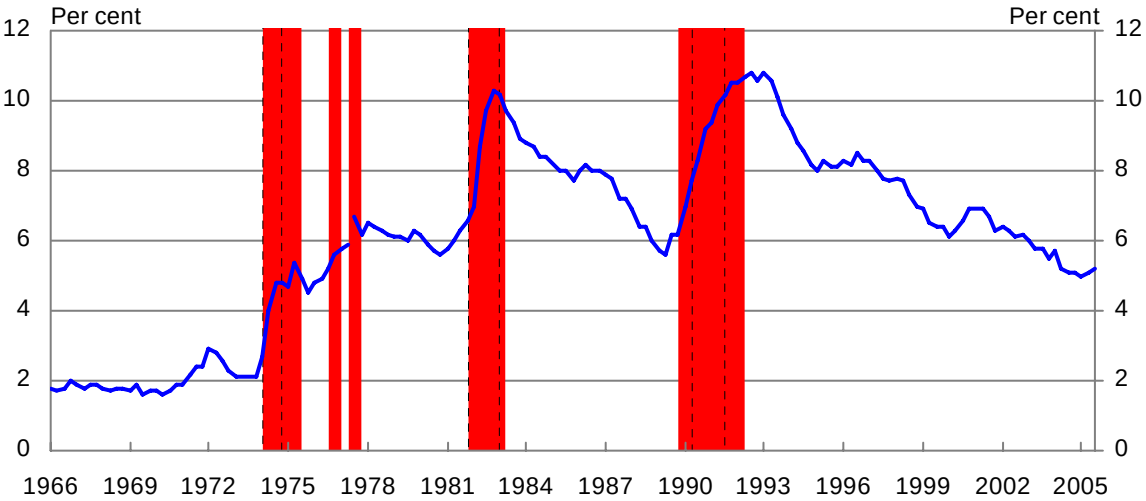
The recessions identified from the charts of real GDP generally correspond to those based on other data. For example, Chart 9 shows the National Australia Bank survey of business confidence. It also shows recessions in the mid-1970s, early 1980s and early 1990s (although the early 1960s recession is especially mild using this data). An interesting point is the decline in volatility seen in real GDP has not been matched by this series.

Chart 9: Business Confidence



Source: National Australia Bank Survey of Business Confidence

Chart 10: Unemployment rate



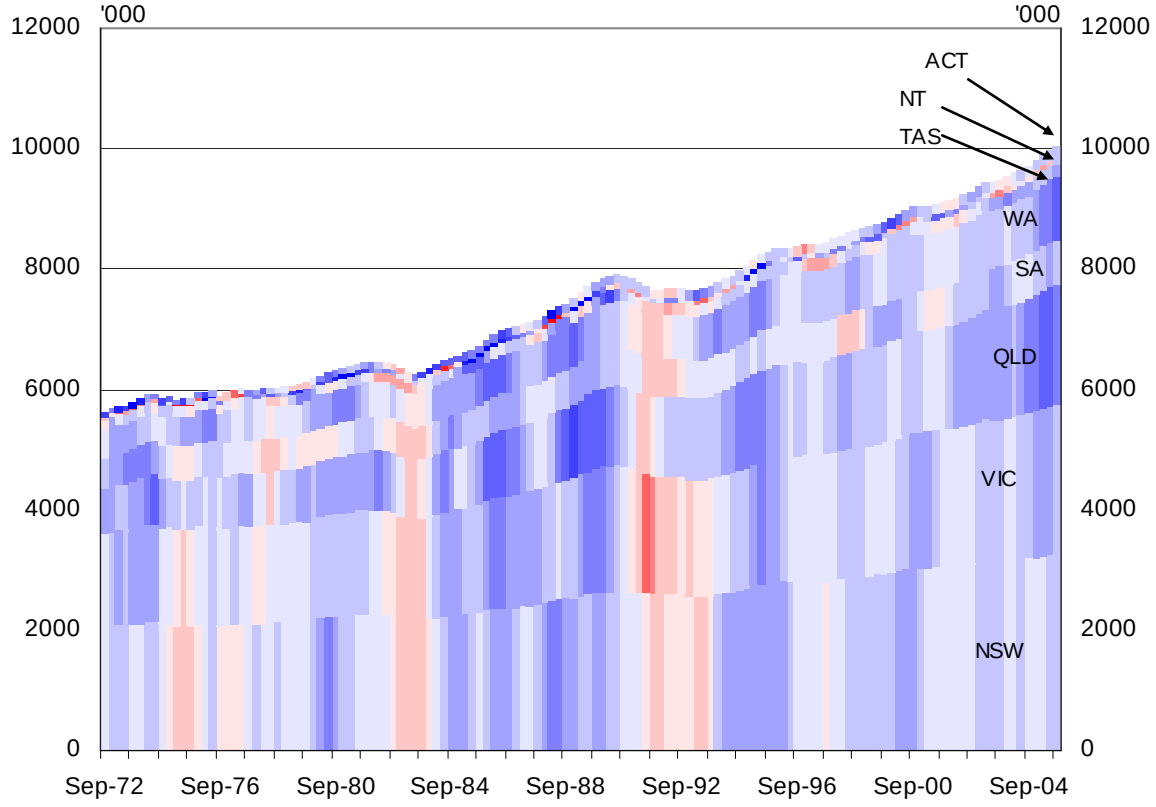
Source: ABS Labour Force Statistics. Red shading shows periods when the through-the-year increase in the unemployment rate is greater than one percentage point. The dotted lines show the downturns measured by the through-the-year GDP rule.

Chart 10 shows the business cycles found through using another possible variable, the unemployment rate. Overall, the cycles found through the 'one percentage point increase in a year' rule are closely comparable with those found through the through-the-year rule for real GDP. The onset of the 1970s and 1983 recessions are almost identical, although the end is somewhat later. The mid-1970s recession looks more severe using employment indicators than

using GDP reflecting the large rise in labour costs at the time. The 1991 recession appears considerably longer when the timing is measured using this unemployment rate rule.

A business cycle refers to a broad-based event, rather than one restricted to a particular industry or region. But many of the recessions and cycles identified for Australia using the level of real GDP are restricted, either geographically, by industry, or even in terms of expenditure.

Chart 11: Employment growth cycles by state or territory

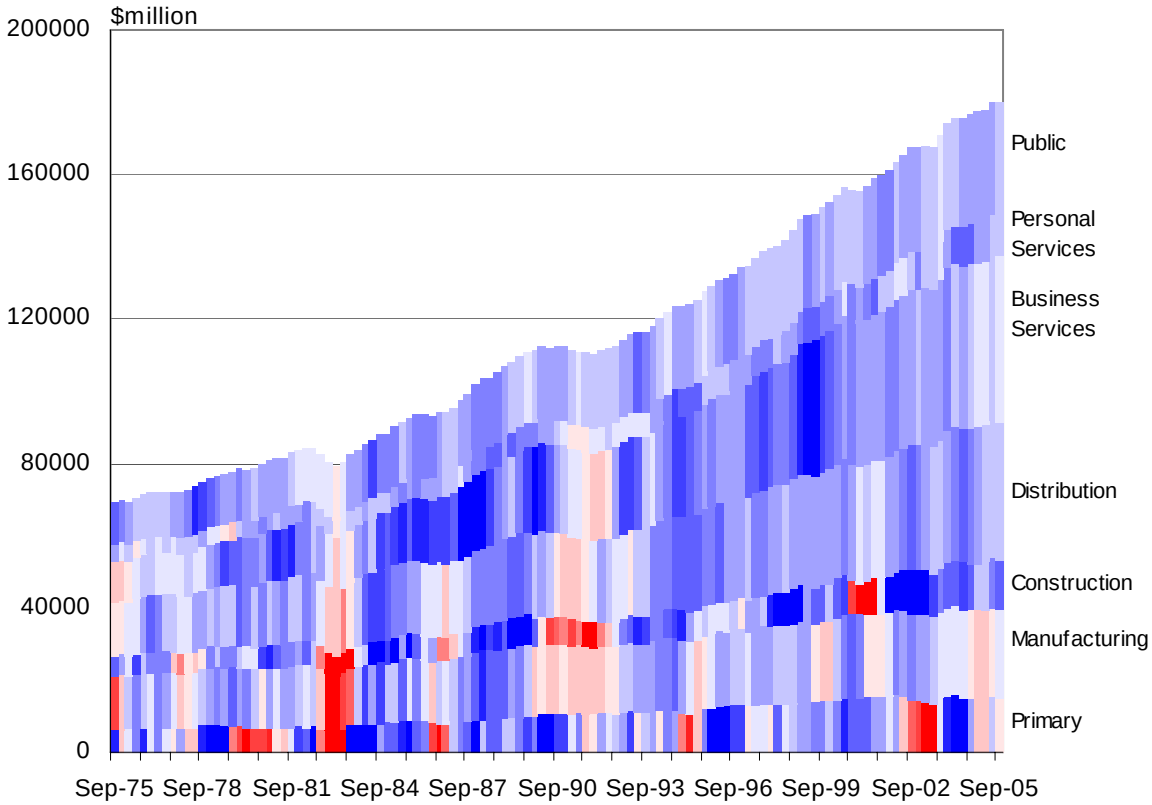


Source: ABS National Accounts (Cat. No. 5206.0), September 2005 release.

In Chart 11, the distribution of employment growth is shown by state. In the chart, employment increases are shown by a blue bar, and decreases by a red bar. The rate of growth is represented by the shading of the bar, with larger changes (positive or negative) represented by a darker shaded bar.

In some cases the cycles identified by the GDP rule show up clearly across most states and territories. The 1983 recession is a good example of this. But in other cases, while the cycle occurs in most states the timing and magnitude differs considerably. The 1991 recession, which was more severe in Victoria due to problems with some financial intermediaries there, is a good example of this. Finally, in some recessions there are states that are almost completely unaffected, Queensland and Western Australia are a good example of this in the mid 1970s recession.

Chart 12: GDP cycles by industry



Source: ABS National Accounts (Cat. No. 5206.0), September 2005 release.

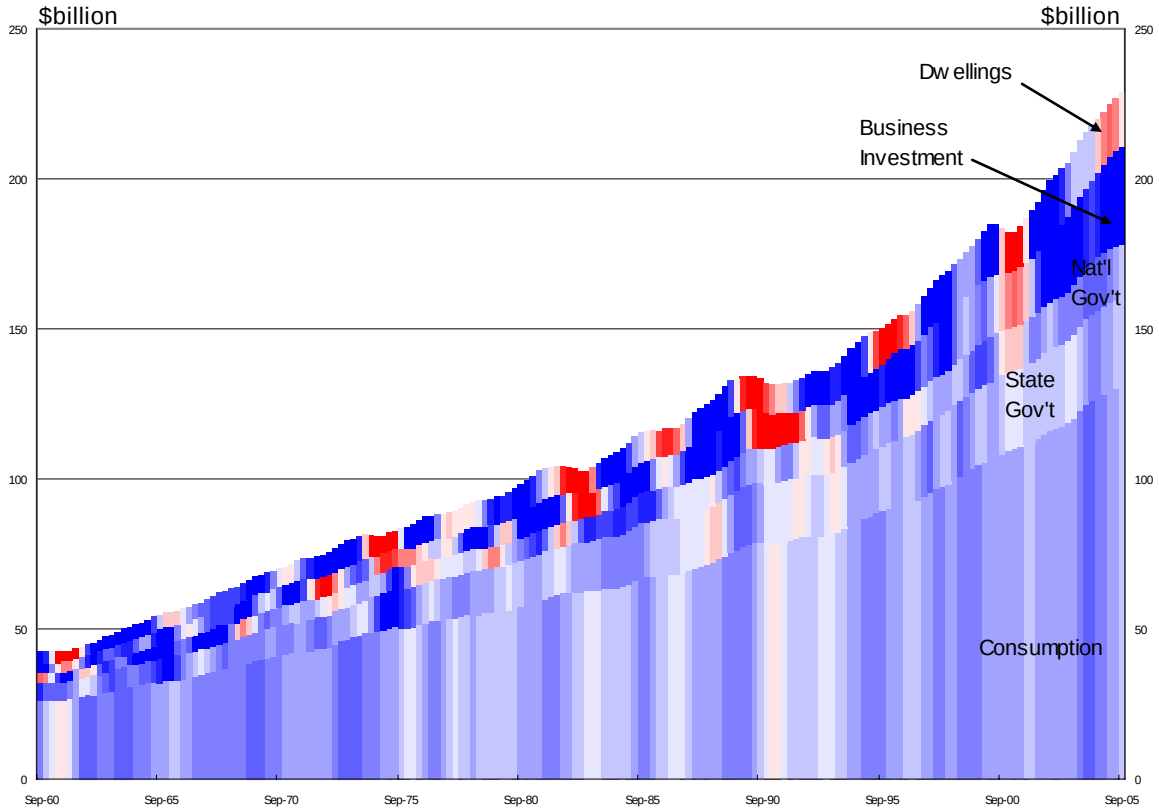
An alternative way of examining the distribution is to examine the industry breakdown. Chart 12 shows the history of industry growth since the mid 1970s. The pattern here is far more diverse than in the state case. Firstly, some industries are highly cyclical (Construction and Primary industries), and these

cycles sometimes coincide with the broader economic cycles, but sometimes do not. Manufacturing and Distribution both have cycles that broadly correspond to the overall economic cycle, but with some areas of strength or weakness that does not correspond to the broader cycle. Finally, the service industries tend to show only weaker growth during economic downturns, rather than contracting. This is probably due to two factors: firstly, these industries include areas (such as the public sector) which are more countercyclical, and secondly, these industries have been enjoying strong trend growth which may tend to mask short term downturns.

Some recessions, such as the 1983 recession, are characterised by sudden falls in a broad range of industries. But the 1991 recession shows a more complex pattern: manufacturing contracts first, well before the usually accepted dates for the start of that recession. But though the contraction in manufacturing is unsually sustained, no additional downturn due to the recession is apparent. The recession proper seems to be first visible in construction, and then appears in distribution industries, with business services having a downturn after most other industries have begun to grow again. This pattern is suggestive of the sequence of events in the economy, and suggests that perhaps the 1991 recession might be better thought of as a series of downturns in individual industries occurring in sequence, which is quite distinct from the sharp, concurrent downturn seen in the 1983 recession.

A final way of analysing the distribution of the downturns in business cycles is to look at the expenditure components of GDP. Chart 13 shows that by far the most volatile components are business and dwelling investment, with consumption and government expenditure fairly stable. Most of the recessions identified earlier can be seen to be mainly related to downturns in these two components, although there are sharp slowdowns in consumption through many of the cycles.

Chart 13: GDP cycles by expenditure



Source: ABS National Accounts (Cat. No. 5206.0), September 2005 release.

3.3.2 Milder downturns

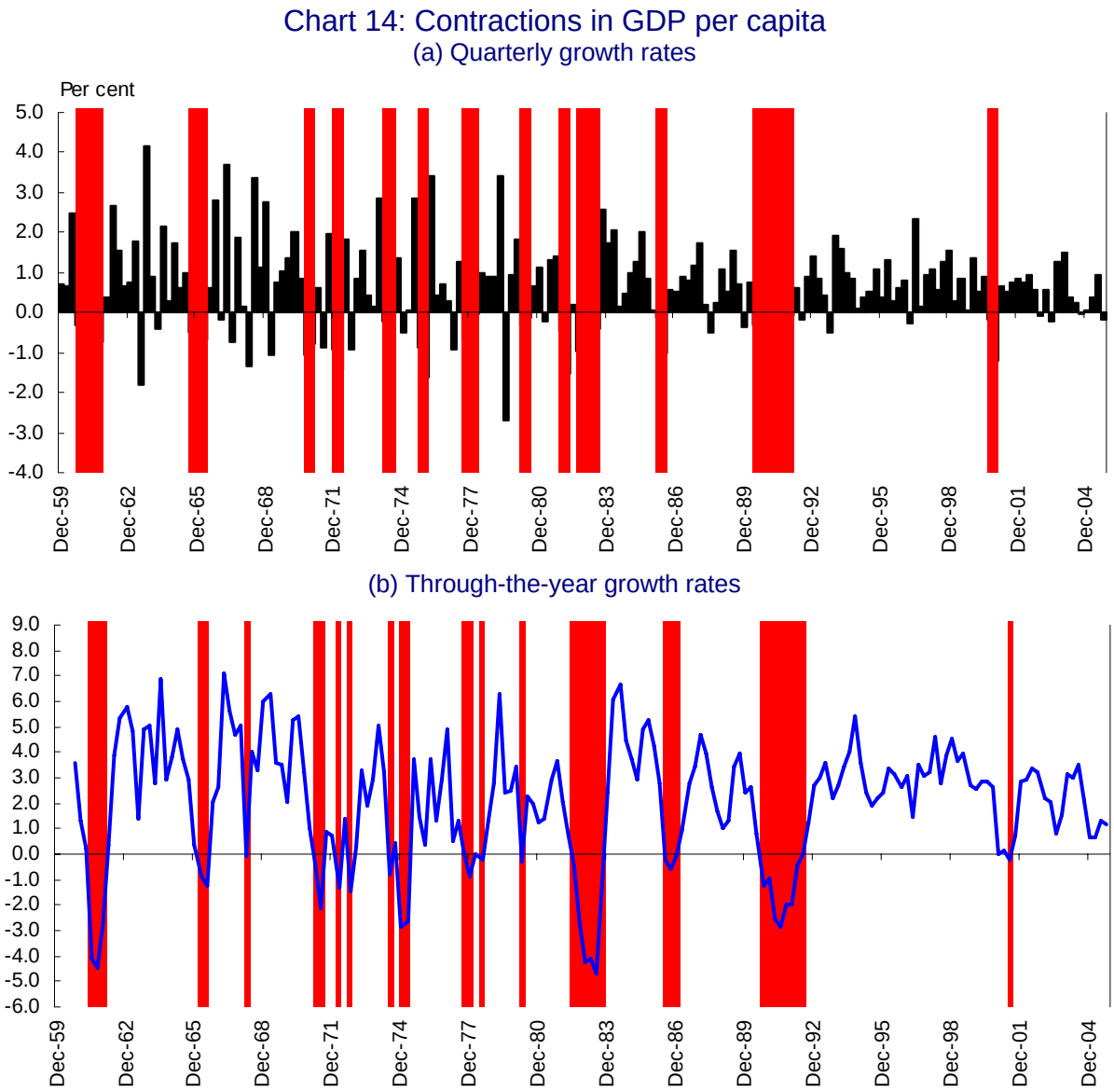
As discussed earlier, defining a downturn as only a reduction in total GDP may be somewhat misleading. While there are several alternatives, here we focus on changes in GDP per capita. This controls for one factor, namely the growth rate of the population in the economy, but does not control for deviations from a trend growth rate.

We use GDP per capita partly as it is more related to welfare than is aggregate GDP. Chart 14 shows the results for GDP per capita using the same two-negative-quarters and negative-through-the-year growth rules used for total GDP.

Using this rule no longer shows the timing of recessions, as a recession refers only to the declines in total GDP. Instead it shows 'welfare downturns', or points

where the average individual would be experiencing lower consumption possibilities.

Chart 14: Contractions in GDP per capita

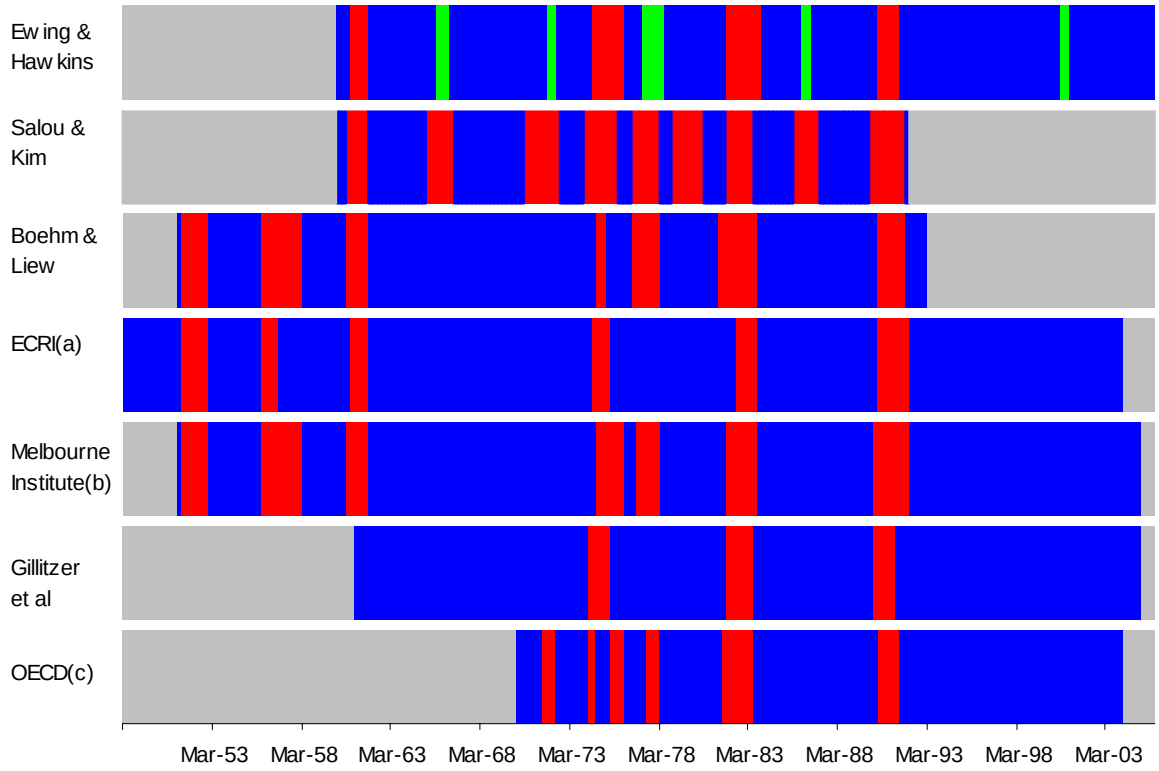


Source: ABS National Accounts (Cat. No. 5206.0), September 2005 release.

The major downturns found using the total GDP figures also show up here. Interestingly, there is less disagreement between the through-the-year and quarterly rules (other than timing). In addition to the recessions previously identified, looking at GDP per capita shows clear downturns in the mid 1960s and mid-late 1980s, as well as downturns in welfare bracketing the mid 1970s recession.

3.3.3 Alternative datings of the cycles

Chart 15: Comparison of Australian economic cycle dates



(a) Economic Cycle Research Institute; www.businesscycle.com
(b) Melbourne Institute of Applied Economic and Social Research; www.melbourneinstitute.com/research/macro/bcchronology.html
(c) Organisation for Economic Cooperation and Development; Cotis and Coppel (2005).

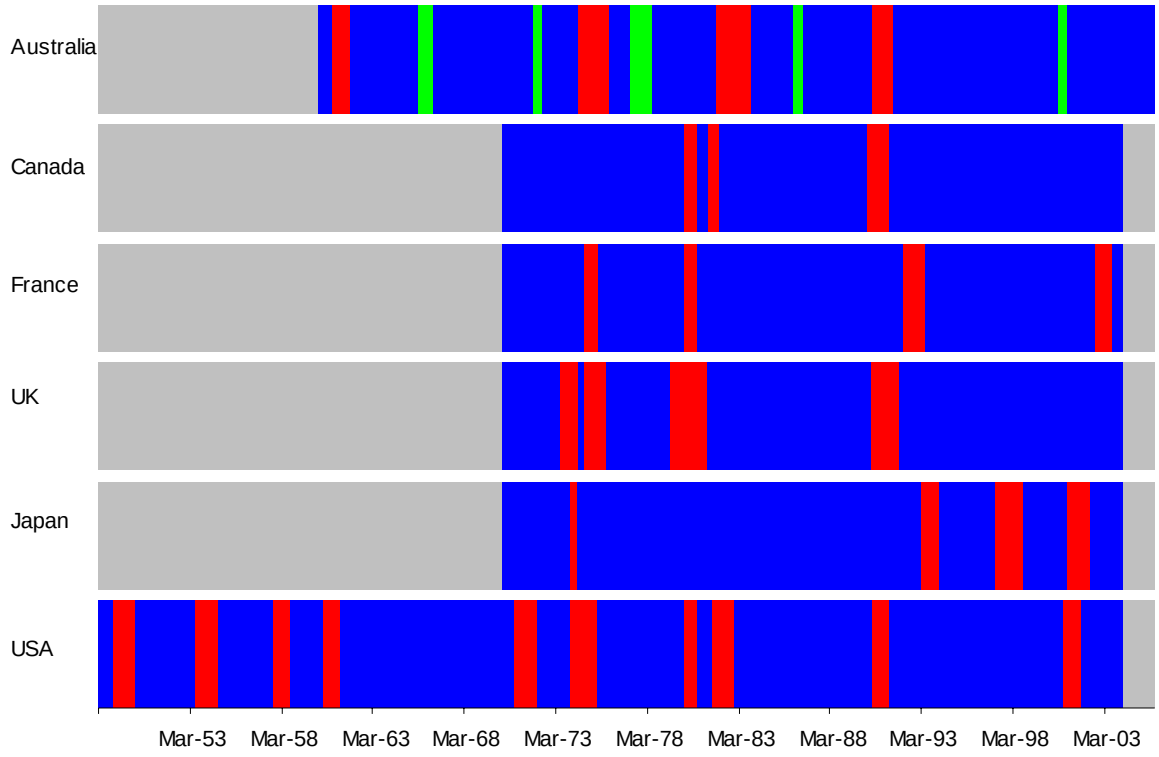
Chart 15 compares the cycle dates found in the above sections with several other sources for Australia. Overall there is broad agreement on the larger recessions, and some dispute over others.

The 1983 and 1991 recessions are clearly agreed on, with some variation in the exact length of the cycle. There is also broad agreement that there was a recession during the early-mid 1970s, but little overall agreement on the timing, or indeed whether this was one recession or as many as three. Looking earlier, there is also broad agreement on mild recessions in 1961, 1957 and 1952.

3.3.4 International comparisons

Australia seems to have had a similar number and timing of recessions to comparable economies. Indeed, this similarity of timing of many of them suggests that some common shock may be involved. This is particularly the case for the 1991 recession and mid 1970s recession, where oil prices represent a common shock (see also chart 6 above).

Chart 16: Australia's economic cycles compared to other countries



Source: Authors calculations, Cotis & Copel (2005)

4. THE LENGTH OF EXPANSIONS

Based on the preceding identification of contractions, Table 1 lists the lengths of the intervening recoveries and expansions. The current expansion appears to be the longest for at least a century.

Table 1: Classic economic cycles in Australia

Recessions			Subsequent recovery/expansion
Peak	Trough	Approximate % change in real GDP	Approximate length (quarters)
1825	1830	n.a.	40
1840	1842	-16	56
1856	1858	-13	28
1865	1868	0	8
1870	1871	-3 to -4	72
1889	1890	-3	4
1891	1895	-19	4
1896	1897	-6	16
1901	1902	-1 to -5	4
1903	1904	-2 to -4	38
1913-14	1914-15	-5 to -18	4
1915-16	1917-18	-2 to -4	28
1924-25	1925-26	0 to -4	4
1926-27	1927-28	-1 to -2	4
1928-29	1931-32	-8 to -19	24
1937-38	1938-39	0 to -4	16
1942-43	1946-47	-14	18
1951:J	1952:S	-1	13
1955:D	1957:D	0	12
1960:D	1961:S	-2	51
1974:J	1975:D	-1	24
1981:D	1983:S	-4	27
1990:J	1991:J	-2	60 as at 2006(J)

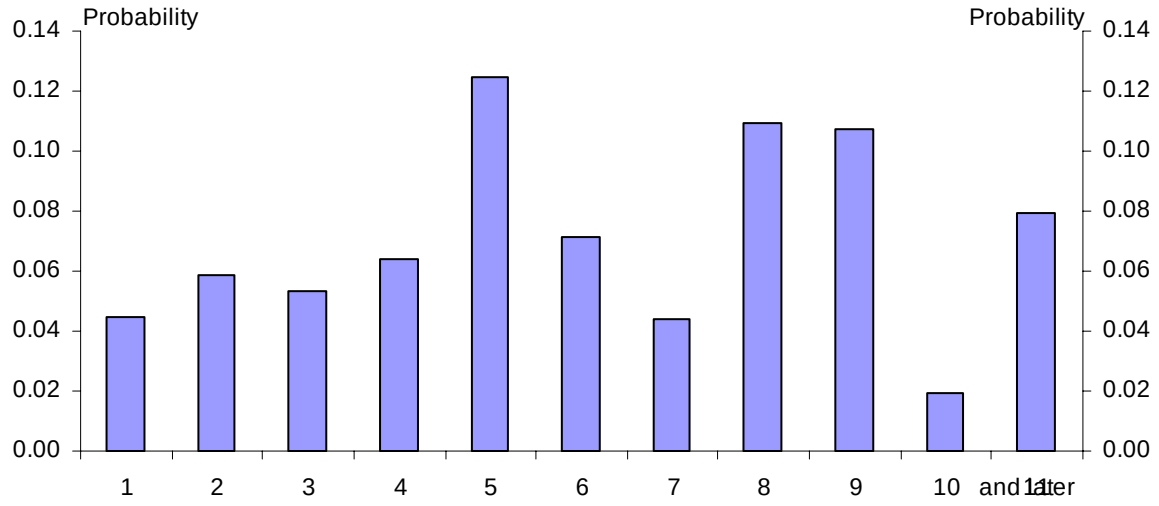
Main sources: N. Butlin (1962, 1986), Haig (2001), Coghlan (1918), Boehm (1979), ABS (1996, 2006) – but see discussion in text and Annex A.

The fact that the current expansion has been going for a long while does not necessarily mean it will soon end. Table 1 shows that Australian expansions have varied in length from just a year to approaching two decades.

Another perspective on this issue can be gained from some calculations using long runs of international data, mostly drawn from Maddison (2003) and the IMF database. Looking at the period 1871-2005 for 22 economies and 1951-2005 for a further 28 economies gives a total of 4,488 observations, of which 708 are *falls* in real GDP. So in a randomly chosen year in a randomly chosen economy, the chance of a fall in GDP the following year was 16 per cent. (Once real GDP has fallen in a year, the chance of another fall the following year is twice as high; 33 per cent.) In this dataset there are 54 instances where an economy had been expanding for 15 consecutive years after a recession; the length of Australia's current expansion. In only 11 per cent of these cases did real GDP fall in the following year. This proportion is actually less than the overall average.

Chart 17 shows more examples of such calculations (using a smaller sample). The height of the bars represent how the probability of a recession next year varies with the age of the expansion. If recessions were to inevitably die of old age, then the bars should become taller as the length of the expansion increases. But there is no sign of this happening.

Chart 17: Probability of recession by years since last recession



Source: Authors calculations

5. CONCLUDING REMARKS

As argued above, expansions end either because of some large shock or because imbalances have built up. In this expansion, there has been no trend increase in underlying inflation. The corporate sector has reduced its gearing. While households have increased their debt, there are no signs that they are struggling to cope with this debt; there has been no significant rise in bankruptcies or defaults. While foreign debt has increased, there has been no reduction in credit ratings, marked depreciation of the currency or increase in risk premium on Australian borrowings that would suggest this has become unsustainable.

This is not to say that there will never be another recession. There could be a major external shock, or imbalances could develop in the future. But good policy can do a lot to reduce the risk of this happening.

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ANNEX A: ALTERNATIVE ESTIMATES OF AUSTRALIAN ECONOMIC GROWTH 1861-1900

As noted in section 3.1 above, there are contrasting estimates for Australian real GDP (table A1 and chart A1) for the period 1860-1939, based on work by Noel Butlin (1962), marginally revised in Matthew Butlin (1977) and Noel Butlin (1985), and Bryan Haig (2001).[16] Unfortunately, both appear to have considerable weaknesses, which makes it hard to settle on a definitive chronology.

Table A1: Alternative estimates of GDP 1861-1939
Annual average percentage change

	1861-1890	1890-1900	1900/01-1938/39
Nominal GDP			
Coghlan (1902)	3.7[1]	1.6[2]	n.a.
Carver (1929)	4.4[3]	0.9[3]	n.a.
N. Butlin (1962)	3.9	-0.8	4.1
N. Butlin (1987)	4.1	-0.9	3.9
Real GDP per capita[4]			
Coghlan (1902)	1.6[5]	0.0[6]	n.a.
Clark & Crawford (1938)	n.a.	n.a.	1.0
Clark (1957)	n.a.	-1.0	1.3
N. Butlin (1962, 1985)	1.1	-1.0	0.7
Haig (2001)	0.5	0.4	1.8
Maddison (2003)	0.9	-1.0	1.1

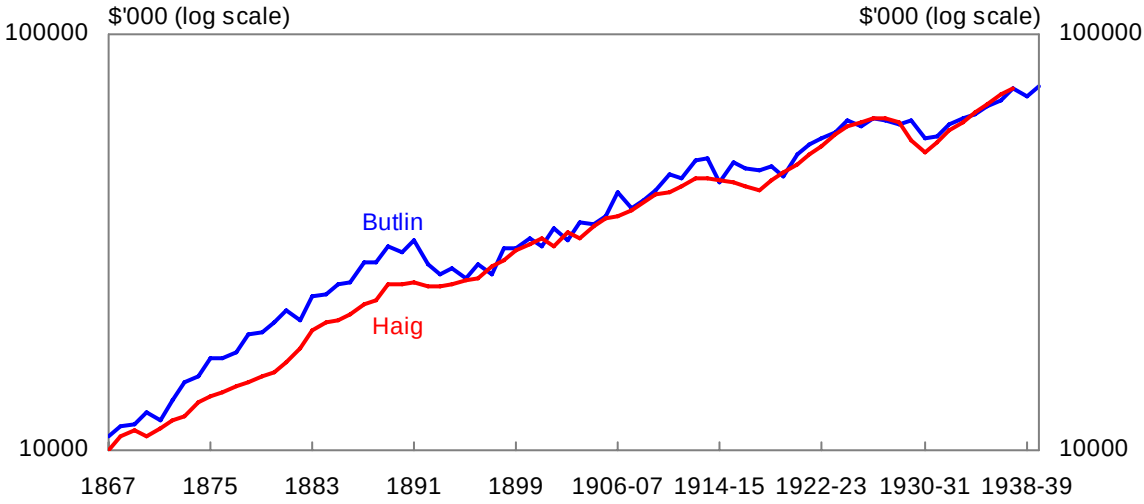
[1] 1871-1891. [2] 1891-1901. [3] Value of primary and manufacturing industry production in NSW 1871-1891 and 1891-1901, as given in *Official Yearbook of New South Wales 1927-28*. [4] Derived using Maddison's (2003) population estimates (except for Coghlan). [5] 1871-1891, includes New Zealand. [6] 1891-1901, includes New Zealand.

Noel Butlin's (1962) numbers are the best-known estimates of Australia's GDP. He had used preliminary versions of the then-unpublished calculations for his history of the Australian economy in the latter part of the 19th century in Butlin

[16] These have largely superceded the pioneering estimates of Tim Coghlan (1902) and Colin Clark and John Crawford (1938).

(1958), in which he says there was a "tendency towards recession" in 1867 and "possibly two or three minor recessions" between 1870 and 1890. He "might identify a mild downturn, usually reported as concentrated in the towns, in 1871". Continuing in this tentative vein, Butlin says "the years 1878-1879 might be treated as an occasion when net national product failed to expand leaving unemployment to accumulate". He also suggests a "minor recession" in 1885-1886.[17]

Chart A1: Alternative estimates of Australian real GDP



Source: Butlin (1962), Haig (2001)

By the time his book was published, his timing of the recessions had altered. In table 269 of Butlin (1962), real GDP contracts marginally in 1862 and 1865, there is a more significant downturn in 1871, another marginal contraction in 1876, and a contraction in 1882; all mostly attributable to declines in pastoral production in those years. Butlin dates the Depression as starting in 1890, when it is construction that drives the decrease in activity.

[17] These datings appear to be the basis for Lee and Fahey's (1986, p 22) claim that "there were general spells of depression and unemployment in the late 1860s, in 1877-79 and again in the mid-1880s".

However, there are reasons to doubt Butlin's tentatively identified recessions in the 1860-1890 period. In Butlin (1962), he spends around 200 pages describing his estimates of nominal GDP, and these are generally quite well regarded.[18] By contrast the price indices and deflated series seem like an afterthought, being discussed in only a dozen pages. He does not have great confidence in them; remarking "any attempt to deflate series of gross domestic product … over long periods must be regarded with the greatest suspicion" and that by the time he reaches the 1930s "the estimates have drifted into realms of unreality". For a number of sectors Butlin uses wages or final product prices as a proxy for a price deflator for value added, for which he was criticised at the time by Lydall (1963) and Colin Clark (1963). Both these approaches may lead to 'false recessions'. If Butlin's procedures led him to overstate inflation (or understate the fall in prices), then he would have overdeflated his nominal aggregates over this period, leading him to understate growth in real GDP and report excessive recessions. Using final prices as a proxy for value added in manufacturing is likely to generate deflators that are excessively volatile, which could also generate apparent short-lived mild recessions.[19]

Lydall's (1963) critique of Butlin's work is that it implies productivity and living standards barely increased over the half-century from 1890 to 1940. However, as McLean and Pincus (1983) have pointed out, other indicators suggest a significant improvement in living standards. A recent example is Whitwell and Nicholas (2001) which described how Australians grew taller over this period.

More recently, Haig (2001) has challenged Butlin's estimates and produced his own estimates for 1861 to 1938-49. These estimate real GDP more directly from

[18] For example, the ABS calls them "the best available estimates" of nominal GDP for 1900-01 to 1938-39 and reprints them in ABS (1996). On the other hand, Haig (1989) cites a number of writers critical of them.

volume indicators, and suggest less volatility than Butlin's estimates (Chart A1). Haig's estimates also imply some mild contractions in real GDP between 1860 and 1890, but they occur in different years to those identified by Butlin. Haig has a marginal contraction in 1867 (all attributable to the rural sector) and a somewhat larger contraction in 1870, followed by continued expansion until 1892. But Haig's estimates appear to understate vastly the 1890s depression, which all other contemporary and later commentators regard as very severe.

Another noted quantitative economic historian is Ernst Boehm (1979). He refers to the period 1861-1891 as a "long upswing … rapid sustained economic growth". Generally keen in his writings to discern any business cycle, he does not identify any classical cycles until the late 1880s.

Another approach is to turn from questionable estimates of real GDP to more accurately measured data on a related phenomena – monetary statistics derived from the balance sheets of the banks.[20] Charts A2 and A3 summarise data on (nominal) bank advances and clearings compiled for the RBA.[21] They show clearly both the severity and length of the 1890s depression. They provide some support for N. Butlin and Haig's dating of a downturn around 1870-71, and confirm that the 1870s and 1880s were mostly periods of expansion. Intriguingly they suggest a possible recession around 1879 not described in other studies.

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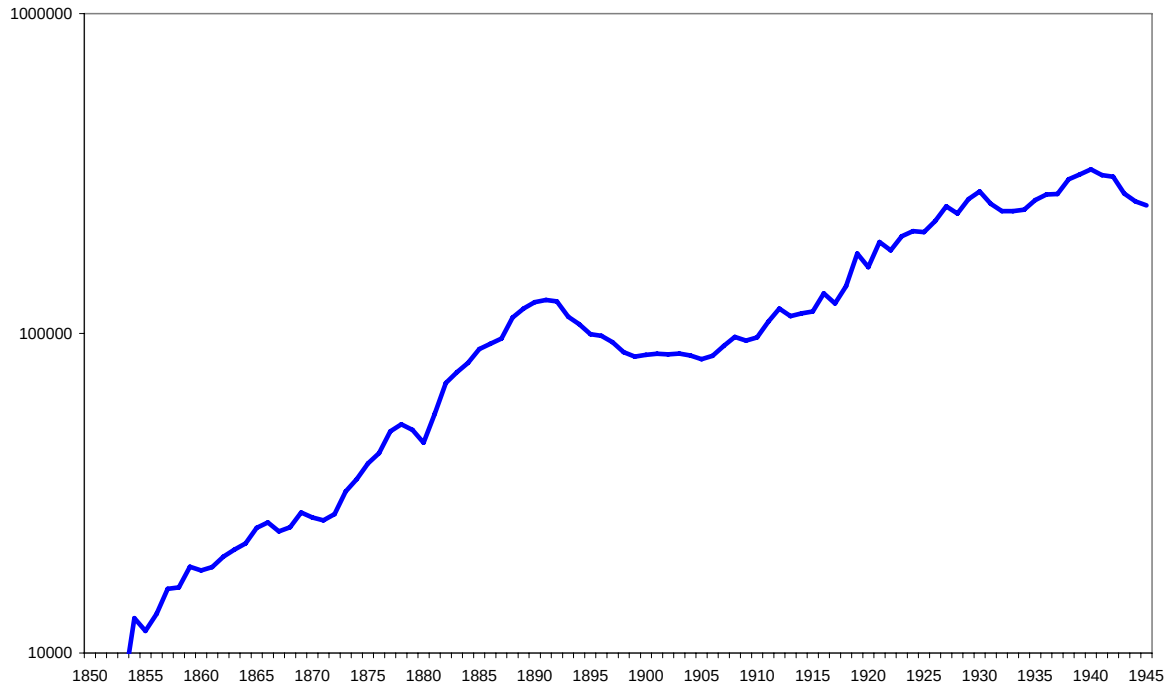
[19] Romer (1999) argues that many historical reconstructions of real GDP overstate the volatility.

[20] S. Butlin, Hall & White (1971, p 94) comment that "in the period before the development of reasonably accurate estimates of national income and expenditure … the main use of bank clearing statistics is to provide an indicator of short-term fluctuations in the level of activity in the economy", but they appear to have been little used for this.

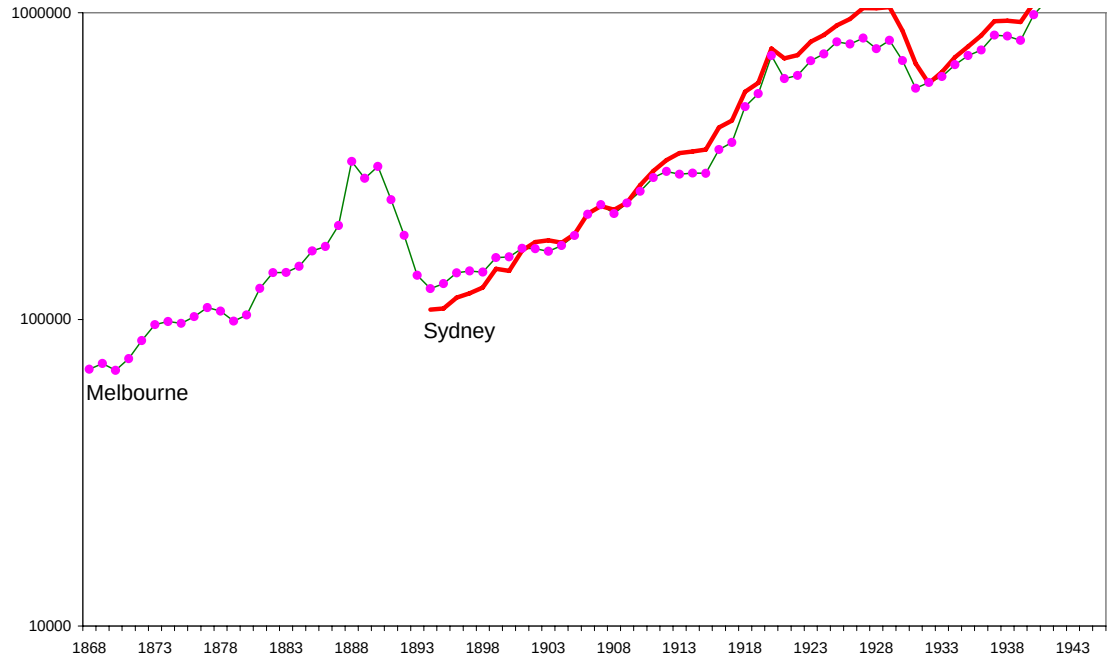
[21] It needs to be borne in mind that the monetary statistics are expressed in nominal terms and prices were generally falling over 1860-1900, so small downturns in advances or clearings may not necessarily indicate recessions.

Chart A2: Trading bank advances
(annual average; £'000)



Source: S. Butlin, Hall & White (1971).

Chart A3: Bank clearings
(annual; £'000)



Source: S. Butlin, Hall & White (1971).

It is useful to turn to authors writing while the events were still within living memory. The pioneering NSW statistician Tim Coghlan (1918, p869) says "the

years 1862 to 1873 were, in one view, a pause between two periods of rapid development". He partly attributes this to the "adverse seasonal conditions which prevailed over the whole continent from 1861 to 1872" (encompassing serious floods in 1867 as well as droughts) but also remarks that the "financial difficulties of the Australian colonies were largely of their own making"; Coghlan (1918, p 872). The easy prosperity of the gold rush had led to a lack of financial prudence, a classic business cycle response. A financial crisis in the UK in 1866 also hurt sentiment. The trough may have been around 1867-68 when there were large numbers of men tramping around the country in search of work.

He notes an improvement in conditions from around March 1872. There was a "spirited policy of public work", expansion of railways and a "rapid expansion of industry and commerce" but more worryingly an "orgy of speculation" in the 1870s and 1880s: Coghlan (1918, p1231). He remarks on both the extravagence of Australian governments and the amazing recklessness of foreign lenders. However, he comments that "manual labour was in steady employment" through the 1880s.

Probably the first Australian article on the business cycle was by Chard (1895). He refers to there having been four "commercial depressions" in the 19th century; 1825, 1842, 1866-70 and 1890-95. Another contemporary writer, Pulsford (1892), describes the vitality of the economy in the 1870s and 1880s, although he places more emphasis on the effects of drought in the mid-1880s on NSW pastoralists.[22]

Warning signs emerged with the early 1890 Argentine crisis and the Barings crisis of November 1890. By early 1893 the financial crisis had entered an acute

phase with many banking failures. Both Boehm (1979) and Coghlan (1918) refer to Victoria entering recession ahead of the other colonies, consistent with the speculation having been most frenzied there.

What then to make of this conflicting evidence? Angus Maddison (2003) is a leading economic growth historian although not an Australian specialist. He gives more credence to Butlin's work for the years prior to 1911 but has adopted Haig's estimates for 1911-1938. Until more analysis is done of the period, the approach adopted here places more weight on Coghlan's analysis on the grounds that no-one then or later was more familiar with the range of economic statistics of the period. It therefore identifies recessions in 1867 and 1871, followed by a long expansion until the late 1880s.

[22] Wilson's (1930) study shows activity dropping below trend in 1886, 1892 and 1922 but his technique will not distinguish between classical and growth recessions.