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The Lost Golden Age of Productivity Growth? 1

Economic policy debate in Australia is dominated by the belief that the nation's economy experienced a surge in productivity in the mid-1990s. The surge is attributed to programs of microeconomic reform that began in earnest with the floating of the dollar in 1983². It was particularly welcomed by advocates of microeconomic reform, given that the decade following the float was characterized by relatively weak productivity growth, and macroeconomic performance that began well, but ended in the deep recession of 1989-91, and the prolonged period of high unemployment that followed.

Discussions at the RBA Conference held in 2000 on the Australian economy in the 1990s reflected almost-universal belief in the productivity surge and the future benefits that continued strong productivity growth might be expected to yield. A few participants, notably including Charles Bean, argued that the productivity growth of the 1990s was derived from once-off improvements and that the rate of growth might be expected to return to its long-term value, though at a higher level.

At the time, I was alone in arguing that the surge in measured productivity was largely illusory, reflecting an increase in work intensity (Quiggin 2000), and predicting (Quiggin 2004, first version 2002)

Much of the apparent productivity growth of the 1990s is likely to dissipate as workers find ways of winding back the

¹ Panel presentation for RBA Conference on the Australian economy in the 2000s. This paper may be regarded as a sceptical counterpoint to the mainstream interpretation presented by Eslake (2011) at the same conference. However, it was prepared separately and not as a response to Eslake. I thank Daniel Quiggin and participants at the conference for helpful comments and criticism.

² The Whitlam government's tariff reforms, and its replacement of the old Tariff Board with the Industries Assistance Commission, now the Productivity Commission, are generally seen as a 'false state', largely reversed by subsequent protectionist measures.

increase in the hours and intensity of work extracted through the unilateral repudiation of implicit labour contracts in this period.'

This prediction has been borne out. Having risen at around 2 per cent per year between 1995 and 1999, the ABS estimate of multifactor of productivity has shown no net increase over the period since then. Over the period 2003-04 to 2007-08) there was an overall decline 0.2 per cent per year. As a result, the average annual rate of measured MFP growth since the beginning of the supposed productivity surge in 1993-94 has been 0.8 per cent, marginally below the rate for the entire period since 1964-65.

More generally, with an arbitrary choice of starting date (no later than 1993-94) and ending with the most recent data, for 2009-10, Australia's long-run rate of MFP growth has been within the range 0.8 per cent to 1.0 per cent. Estimated MFP growth for the earliest period in the data, covering the end of the postwar boom was slightly higher, but within the range of measurement error. Statistical analysis mostly fails to reject the null hypothesis of a constant rate of productivity growth over the period since 1964-65 (Hancock 2005, McKenzie 2005, Quiggin 2006, but see also Parham 2005a).

Despite the accuracy of the predictions it generated, the view that measured changes in MFP growth rates are driven by changes in work intensity commanded no more support at the 2011 Reserve Bank Conference than it did in 2000. The same is true of the broader policy discussion.

The idea that the productivity miracle of the 1990s might instead have been a mirage is almost never raised. Instead, two contradictory accounts have emerged. These accounts share an unquestioning acceptance of the measured productivity surge of the 1990s, but differ in their account of the 2000s.

The dominant view among economists is one of a 'lost golden age'. The low measured productivity growth of the 2000s is taken as reflecting a real

deterioration in performance, which is attributed to a slowdown or reversal of the process of microeconomic reform. In this analysis, the favorable terms of trade associated with high world prices for mineral and strong demand from China are seen as having allowed Australians to avoid the harsh realities of the need for continued productivity growth.

An alternative view is that while the 1990s productivity surge was real, the reversal in measured productivity growth in the 2000s is attributable, at least in large part, to special factors and measurement problems. This view was maintained vigorously by the Productivity Commission during the early 2000s and continues to be reflected to some extent in its discussion.

The 'conventional wisdom' implicit in most discussions of the Australian economy is a somewhat incoherent mixture of these two ideas. On the one hand, in discussions of microeconomic issues, the 'lost golden age' view is dominant, and is reflected in calls for a new round of microeconomic reform. On the other hand, in discussions of Australia's strong macroeconomic performance during the GFC, a considerable share of credit is commonly given to the flexibility derived from microeconomic reform.

Productivity: a problematic concept

At a conceptual level, productivity seems like a simple generalisation of straightforward concepts such as crop yield (the output of a given crop per unit of land) or the number of units of a given good a worker can produce in an hour. In national accounting, the homogeneous output of these examples is replaced by an output index such as Gross Domestic Product. Although index numbers raise a variety of complex issues, GDP indexes are so familiar that they are normally treated, even by economists who should know better, as if they are objective numbers like outputs of wheat or widgets, rather than, as they are in reality, the outputs of economic models. Multifactor productivity measures similarly replace

homogeneous input measures such as hours worked with indexes aggregating two or more input factors.

Although index number problems are important, these problems are not central to the difficulties with productivity measures derived from national accounts. The main problems are that these measures omit important inputs, most importantly those of natural resources, and fail to take account of the intensity with which capital and labor are used. To understand this problem, it is useful to consider the ways in which sustainable improvements in living standards can be generated.

The most important, by far, is technological progress, that is, the introduction and adoption of technological innovations such as new products and improved production technologies. Krugman's (1997, p11) much-cited statement that

Productivity isn't everything, but in the long run it is *almost* everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker.

would be equally valid if the word 'productivity' were replaced by 'technological progress'.

For a small country like Australia, the rate of technological innovation is essentially exogenous. National policies can affect the rate of adoption of new technologies. In particular, new technologies are usually more skill-intensive and knowledge-intensive than old technologies, so rapid adoption of new technologies is feasible only with a skilled and educated workforce. Hence, investment in human capital can yield high returns.

The second potential source of improvement in living standards is more efficient use of endowments of capital and labour. This may be achieved either as a result of good macroeconomic outcomes (full/optimal employment of labour and capital)

or through good microeconomic outcomes (output closer to the technological frontier for individual enterprises and industries).

Productivity measures, at least conceptually, exclude benefits arising from good macroeconomic outcomes, but include the benefits of good microeconomic outcomes. In practice, however, the two are intertwined. Capital utilisation generally declines during recessions, while capital may be operated to yield unsustainably high service flows during booms. However, standard productivity measures are based on the assumption that capital services are proportional to the capital stock. As the OECD (2001, p 73) observes, attempts to include proxies for capital utilisation have proved problematic.

Measurement of labour input is even more problematic. On the one hand, labour hoarding during recessions tends to reduce productivity, producing a procyclical pattern of labour productivity. On the other hand, increased employment during expansions results in the recruitment of more marginal workers, producing anticyclical productivity. Historically, the first of these tendencies has predominated, producing procyclical productivity. But as labour hoarding has declined, notably in the US, productivity has more anticyclical.

The use of a measure designed to include the benefits of good microeconomic outcomes and exclude the benefits of good macroeconomics is consistent with the thinking that has dominated Australian policy discussions since the 1980s, but it is deeply misleading. The primary reason for Australia's relatively strong growth in income per person since the early 1990s is the fact that, through a combination of good luck and good policy decisions, we have not undergone a recession.

The issue is further clouded by the fact that the Australian Bureau of Statistics reports MFP estimates in 'productivity cycles', typically lasting about five years. The productivity cycle is a data-driven concept, with no explicit theoretical basis. In particular, productivity cycles do not necessarily correspond to the business

cycles and productivity cycles in different industries are largely uncorrelated. Nevertheless, Quiggin (2000) observed that, for the Australian economy as a whole, the MFP cycles reported by ABS largely reflected the phases of the business cycle. A typical business cycle contained two productivity cycles, with productivity growth being stronger in the cycle corresponding to the expansion phase and weaker in the cycle corresponding to the contraction phase (Dolman, Lu and Rahman 2006).

The productivity cycle plays a crucial role in the myth of the 1990s productivity surge, since it allows the five years of strong productivity growth from 1993-94 to 1998-99 to to be treated as a distinct period, while the weaker years at the beginning of the decade are discarded, and the evidence of a slowdown towards the end of the 1990s is disregarded. The result is a widespread, but false, impression that the 1990s as whole were a period of exceptionally strong measured MFP growth. In reality, the average rate of MFP growth for two ABS productivity cycles from 1988-89 to 1998-99 was 1.6 per cent, above average but not exceptional.

In summary, productivity is not a particularly useful measure of economic performance. Even when correctly measured, productivity estimates combine the effects of long-term technological growth with a subset of the factors that determine variations in short-term performance.

In practice, accurate measurement is impossible. In the case of Australia's supposed productivity surge, the crucial problem is the failure to take account of changes in work intensity.

Work intensity and productivity

Labour productivity is typically measured in terms of output per hour worked. It is easy to see, however, that this measure is problematic. For example, enterprise agreements, and individual contracts adopted in place of awards,

commonly eliminated breaks such as tea breaks. On the other hand, employees have always taken unauthorised breaks of various kinds. A notable example that has emerged in the last 10 to 15 years is the use of office computers to visit Internet sites unrelated to work. Of much longer standing is the practice of making private phone calls during paid time at work. Conversely, employers may demand unpaid overtime, or contact their employees with work requests outside paid hours.

Although these practices are regularly the subject of dispute, the normal situation is one of equilibrium, where some deviation from official hours is part of the wage bargain accepted more or less willingly by both parties. The hours of work reported to statistical agencies will reflect some, but not all of the deviations from award-determined or contractually agreed hours.

How should these features of the labour market be reflected in productivity measures? At least conceptually, it seems clear that the appropriate measure is actual hours worked, rather than paid hours.

Now consider the case where the number of hours worked remains unchanged, but the pace of work varies. In some industries, such changes can be observed directly, and are the subject of explicit wage bargaining. The archetypal case is that of production line work, where employers typically seek to increase the rate at which the line moves, while workers and unions slow it down.

The development of the word processor in the 1980s provides another example. Since the number of keystrokes could be measured directly, employers demanded higher rates, thereby precipitating an epidemic of repetitive strain injury (a problem that had previously existed but was typically diagnosed as an individual pathology rather than an occupational hazard).

There is, in principle, no difference between an increase in the number of hours worked and an increase in the pace of work. In both cases, standard economic logic implies that an equilibrium wage bargain will typically involve a

commitment of hours and effort greater than the level that would be chosen by workers in the absence of a monetary incentive.

In particular instances, depending on labour market institutions, legal restrictions and so on, the bargained outcome may involve more or less hours and effort than would characterise a Pareto-optimal bargain. However, the general assumption is that, at the margin, increased hours and increased effort are equally costly to workers, when normalised by the payment required to elicit them.

It follows that, to the extent that increases in output are derived either from unmeasured increases in hours of work, or from increased intensity of work, there is no corresponding increase in productivity. If it happens that the hours or intensity of work were previously sub-optimal (or above the optimal level), there will be a net welfare gain (or loss), but this will be of second-order magnitude relative to the change in output.

Australian economic policy makers have shown considerable confusion on this point. Some have explicitly asserted that working harder is a genuine source of productivity gains. For example, the Productivity Commission (1996, p. 24) asserted that productivity gains could be achieved not only through resource reallocations but through people 'working harder and working smarter'. Fourteen years later, the Chairman of the Productivity Commission repeated an almost identical formulation (Banks 2010, p20)

Whether productivity growth comes from working harder or working 'smarter', people in workplaces are central to it.

The appearance of scare quotes around 'smarter' is revealing. Whereas in the 1990s this phrase was used in all seriousness, 'working smarter' is now understood as a piece of management jargon, typically decoded as 'we're giving

you more work to do with less resources, and it's up to you to figure out how to do it'.

More commonly, the association of reform with harder and less pleasant work is implicit. Standard discussions of microeconomic reform and workplace reform are full of references to "cutting out fat", the "chill winds of competition" and so forth. It is not hard for workers to discern where the fat is to be cut, or to observe that CEOs are usually equipped with well-padded windbreakers, even in cases where their mismanagement leads to an early (but generously compensated) departure.

By contrast, in debates over the validity of MFP statistics, most mainstream economists, and particularly those associated with the Productivity Commission have denied that changes in work intensity are an important source of changes in measured productivity.

The mid-1990s saw an upsurge in public concern about the pace of work, work-life balance, stress and similar issues, which persisted into the early 2000s, leading to John Howard's description of the topic as a 'barbecue-stopper'. From about 2000 onwards, with a strengthening labor market, resistance to work intensification, and to employer demands for longer hours of work became increasingly successful.

The intensity of work is difficult to measure. There is, nevertheless sufficient evidence to support the general perception of an increase in work intensity in the 1990s was based in reality.

First, as discussed above increases in work hours and in work intensity are substitutes both as inputs to production and as sources of disutility for workers. It follows that, when the equilibrium wage bargain involves an increase (or decrease) in hours it will also involve an increase (decrease) in work intensity. The data on working hours is unequivocal and exactly consistent with the idea that fluctuations in MFP growth may be explained largely in terms of work

intensity. As the Australian Bureau of Statistics (2010) notes the proportion of full-time workers working more than 50 hours per week increased from 13% in 1978 to 19% in late 1999 and early 2000, before falling to around 15% in 2010. This point is illustrated in Figure 1

Figure 1 near here

Wooden (2003) offers a different interpretation of the data for the 1990s, focusing on the relative stability, between 1994 and 2000, of the proportion working more than 50 hours a week.

There is some direct evidence on work intensity. The Australian Workplace Industrial Relations Survey undertaken in 1995 (Morehead et al., 1997) found that a majority of employees reported increases in stress, work effort and pace of work over the previous year, while less than 10 per cent reported reductions in any of these variables. This is consistent with evidence from the United Kingdom and some, though not all, other European countries (Green and McIntosh, 2001). Moreover, Green and Macintosh observe that the increases in work intensity are associated with higher productivity (as would be expected) and are positively correlated with exposure to competition and with reductions in union density.

Defences of the productivity surge

Asymmetric measurement error

In the 1990s, the Productivity Commission was the most prominent proponent of the claim that the strong growth in MFP reported by ABS reflected the emergence of a 'new economy' as a result of microeconomic reform (Parham 1999). Unsurprisingly, the Commission rejected claims that the apparent surge in MFP growth was due, in part or in whole, to measurement error or cyclical factors.

By contrast, as low rates of MFP growth emerged in the 2000s, the Commission became much more sympathetic to the idea that measurement error might be a problem. The poor productivity growth of the early 2000s was blamed on, among other factors, the Sydney Olympics, capital expenditure associated with the Y2K fiasco, transitional effects of the introduction of the GST and the drought which began in 2002 (Parham 2005b). The drought persisted well into the decade, but the other factors mentioned by Parham (2005b) should have been transitory.

As measured MFP performance deteriorated even further, attention has shifted to the mining sector. It seems clear that measurement problems associated with mining are significant. Investments in new or expanded mines count immediately as part of the capital stock, but contribute to output only with a delay of some years. Moreover, current high prices have led to the exploitation of resources that would otherwise be uneconomic.

Since the quality of the resource is not measured as an input, this produces an illusory decline in productivity. Richardson and Denniss (2011) estimates that the measured growth rate of labour productivity over the 2000s has been reduced by one percentage point as a result of distortions in the mining sector. This is a significant effect, but not sufficient to explain the decline in measured MFP growth rates.

The view that the disappointing performance of measured MFP is primarily due to measurement error has lost favour over time, as disappointment has persisted. However, it frequently re-emerges in discussions of Australia's strong macroeconomic performance during the Global Financial Crisis.

The idea that market-oriented microeconomic policies provide significant flexibility in response to macroeconomic shocks has been influential in Australia since the beginnings of microeconomic reform in the 1980s. This idea contributed substantially to the policy misjudgements that produced the 1989–91 recession, when it was supposed that the economy was flexible enough to handle a 'short,

sharp shock to interest rates' and then to bounce back rapidly from 'the recession we had to have'.

Counterexamples to this idea abound, but the most striking is that of New Zealand, which has followed broadly similar microeconomic policies since the 1980s (though with more radical microeconomic reform until the mid-1990s, and a sharper reaction against some aspects of those policies subsequently), while adopting much more restrictionist macroeconomic policies. From an initial position of approximate income parity with Australia in the early 1980s, New Zealand fell sharply behind, experiencing an even deeper recession from 1987-91, and two subsequent recessions, interspersed with periods of mostly sluggish growth. Income per person in New Zealand fell to around two-thirds by 2000 of the Australian level, and has remained there. While it is unwise to attribute such a huge gap to any single factor (Hazledine and Quiggin 2006), poor macroeconomic performance is an important part of the story.

The lost 'golden age'

The dominant interpretation of the MFP statistics today is that of a 'lost golden age'. The surge in measured MFP growth is attributed to the microeconomic reform process begun in the 1980s, and the slowdown to 'reform fatigue' in the 2000s.

The major difficulty for this story is one of timing. It is difficult to see how a series of reforms undertaken over 20 years or more can have produced substantial productivity benefits confined to a single period of five years. It is even harder to see how the benefits of those reforms can have dissipated so rapidly, beginning when the reform process was still under way.

The beginning of the process of microeconomic reform is usually dated to the float of the Australian dollar in 1983. There is less agreement on the end of the

process. Quiggin (2004, first version 2002) was, as far as I can determine the first to give an explicit end date, saying

The era of microeconomic reform in Australia began with a big bang – the floating of the dollar in 1983. It ended with another big bang – the package of tax reforms centred on the Goods and Services Tax (GST) which came into force in July 1999.

There have been retrospective attempts to backdate the end of microeconomic reform, sometimes as far as the election of the Howard government in 1996, but such attempts do not stand up to scrutiny. It is true that the Howard government took a less consistent approach to reform than its Labor predecessors. Nevertheless, it introduced a number of major reforms in its first few years in office.

Many of the reforms implemented under Howard were measures that had long been demanded by advocates of radical reform but resisted by the Labor government because of political sensitivities. These included the Workplace Relations Act 1996 (*Cwlth*), the partial privatisation of Telstra in 1998 and 1999, waterfront reform in 1998, and, most notably, the Goods and Services Tax, introduced in 1999.

Moreover, many reforms introduced by the Hawke–Keating government did not begin to take effect until after the MFP surge. The most notably of these is National Competition Policy. Most states did not even complete their legislative reviews or set up their general regulatory bodies until the late 1990s, and the National Competition Policy process, with associated payments to the states, was not completed until 2005, when it was succeeded by the National Reform Agenda.

The timing issue becomes more acute when we consider that the measured productivity surge did not begin until a decade after the float of the dollar. In fact, the years in which 'even the parrot in the pet shop' was talking about

microeconomic reform were characterised by the lowest productivity growth of the entire period for which data is available. So, the golden age story requires a long-delayed impact for the reforms of the early 1980s, combined with instant (indeed, in some cases, retrospective) impacts for those of the late 1990s.

Even if the 'lost golden age story is accepted, the whole rationale of microeconomic reform is called into question. Far from generating sustained growth, the "lost golden age' story suggests that the decade or more of microeconomic reform that began with the floating of the dollar in 1983, produced only five years of above average productivity growth before requiring a renewed burst of reform merely to sustain past gains.

Conclusions

The correlation between demand for higher productivity and increases in work intensity is so evident to most Australians as to be taken for granted. This may be illustrated by the response to a recent speech by the Secretary of the Treasury (Parkinson 2011) calling for a renewed emphasis on productivity. Although the speech said nothing about work intensity, two separate news organisations ran it under the headline 'Australians must work harder'.

Moreover, the implicit assumption made by the subeditors in question proved correct. Within a few weeks of the delivery of this speech, proposals were aired for a revival of the WorkChoices package of labour market reforms. Suggestions that a renewed approach to reform might focus on expanding access to education, or improving the regulation of the financial sector have received little attention

What is striking in the context is the failure of (most) Australian economists and economic commentators to accept the evidence on this point. Unlike virtually everyone else in Australia, economists have resolutely denied that the higher measured labour productivity growth evident in the mid-1990s, and the reversal of those measured gains in the 2000s is largely due to changes work intensity.

A belief that large increases in annual productivity growth rates can and should be achieved through microeconomic reform is not supported by the data and can lead to bad public policy decisions. Most notably, this belief, when combined with a period of declining measured productivity growth, can lend support to the idea that 'Australians must work harder'. On the contrary, the evidence from the labour market is that the work intensification of the 1990s was undesired and unsustainable. Genuine improvements in productivity should permit reductions in working hours and work effort, rather than demanding more and harder work.

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