

# ANNEXURE E

DECEMBER 2000

# How fast can Australia grow?

Mark II

 AUSTRALIAN  
INDUSTRY  
GROUP

A DISCUSSION PAPER PREPARED BY Ai GROUP

**HOW FAST CAN AUSTRALIA GROW?**

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**Summary**

**A Discussion Paper Prepared by**

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## TABLE OF CONTENTS

INTRODUCTION	3
OVERVIEW	4
SEVEN MISSING YEARS EVERY QUARTER CENTURY	6
THREE PERCENT POTENTIAL GROWTH	7
THE PRODUCTIVITY PERPLEX	8
THE AUSTRALIAN PRODUCTIVITY RECORD	9
CAPITAL PRODUCTIVITY, INVESTMENT AND THE FUTURE	10
OUTPUT GAPS AND GROWTH TARGETS	11
WHAT MIGHT BE DONE?	12
APPENDICIES	13
MAJOR REFERENCES	23

## INTRODUCTION

Exactly five years ago Ai Group's predecessor, MTIA, issued a discussion paper canvassing growth potential five years ahead. Its conclusion that 4¼ to 4½ percent growth was achievable for the rest of the decade was much higher than the prevailing wisdom, but proved remarkably accurate. With a new decade underway it is time to repeat the exercise with an outlook for the next 10 years. While the future is inherently unknowable, the portents are not good for sustained continuation of the "4 percent plus" target MTIA pioneered five years ago. The message of the new discussion paper is mixed. Continued strong growth of both productivity and living standards at nearly double the pace of a decade ago is likely to be associated with a slowing of aggregate GDP to around 3 percent. The discussion paper features evidence suggesting the deceleration has started.

The discussion paper of five years ago was dominated by consideration of the scintillating growth then being posted by Asian countries. Now the paper gives extensive coverage to issues arising from the information technology and communications revolution. It provides a concise summary of all the recent international research from the Federal Reserve, the OECD, the IMF and others, as well as a thorough coverage of Australian data.

Ai Group will be guided by the reaction to this paper in formulating its coming growth policy. The conclusions are challenging to every Australian business. However, some lessons are already clear. It is essential that a strong pace of microeconomic reform is maintained. It is also very important that the investment share of the cake is lifted. It is no coincidence that the stellar US performance has been accompanied by sustained strong investment unequalled by any other in the OECD. In productivity, as elsewhere in business, there is no such thing as a free gift. Investment embraces human capital – including skills development and innovation, as well as physical items. In addition, our low level of national saving will continue to frustrate our investment ambitions. A renewed policy focus is urgently required in this area. Finally, our demographics are set to be increasingly perverse. Population policy – in the short term, immigration, should also be an area of strong policy thinking.

I commend study of the matters raised by this important discussion paper for the urgent attention of members.



R N Herbert  
Chief Executive

*Ai Group acknowledges the assistance of INDECS Markets Pty Ltd in preparing this discussion paper*

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## OVERVIEW

- After a strong 4½ percent annual average actual gain since late 1995, GDP growth potential is now slowing. Potential GDP is currently expanding at a 3¼ to 3½ percent pace, but is likely to slow further through the decade ahead to around 3 percent as existing demographic effects exert a stronger bite.
- Speed limits on growth are set by the sum of gains on labour supply and productivity (the two combining to form potential growth) plus opportunities for catch up from previous slack. The first and third elements are clearly slowing, though there is controversy over productivity trends. Most of the report is devoted to this latter question.
- The view formed is that potential GDP growth, currently 3¼ to 3½ percent, will slow to 3 percent, and quite possibly lower, by the second half of this decade. While most opportunities for catch-up have been exhausted, there is an influential view, shared for example by Treasury Secretary, Ted Evans, that the envelope can be pushed still further to get unemployment down to around 5 percent. Setting a speed limit above potential makes for important additions to short-term growth outlooks, but adds little to the decade average. An extra ½ percent growth in each of the next four years adds just 0.2 percentage points to decade-average growth.
- The key controversial question is what is happening to labour productivity growth? Australia experienced the biggest lift of all OECD economies between the 1980s and the 1990s. Did the gains result from the broad microeconomic reform effort or from new technologies, especially information technology and communications (ITC)? Or both?
- Several factors suggest the reform process to have been the heavy hitter. The chief discriminant is the source of Australia's gains. Had ITC usage been the key contributor, US evidence suggests strongly that the gains should not have been reflected in multi-factor productivity (MFP) growth. In fact, depending slightly on the time period studied, better MFP growth has been the entire source of the much-publicised domestic improvement.
- Other strong distinguishing factors include the time pattern of the Australian lift; the fact that it has been larger even than in the US despite only a slim domestic representation of ITC producers; the fading of the pace of gains in recent years seen directly and in the GDP – unemployment connection; and the scintillating capital productivity performance throughout the 1990s.
- Microeconomic reform, by raising, for example, the utilisation of expensive capital equipment at nights and weekends, moves the economy towards its efficient production frontier, lifting MFP in the process. These are essentially step changes, the effects on productivity growth lasting only as long as the reforms are being implemented. Continued intensity of the reform process is necessary to maintain longer-lasting effects on productivity growth.
- By contrast, business cycles to one side, technological change tends to come in more continuous waves. Australia's strong record of ITC adoption (second only to Sweden in the OECD) is of considerable assistance to capturing the beneficial effects of such change.
- Standard growth accounting techniques measure gains from capital deepening via ITC investment. However, neither in Australia nor elsewhere in the non-US OECD have these been especially large. For example, a recent Federal Reserve Board comparative study found little evidence to support significant ITC

adoption effects on productivity growth outside the US. The ANZ Bank quantifies the impact of Australian ITC capital deepening as adding 0.1 percent to annual productivity growth on average between 1991-95 and 1996-99.

- The US is the standout exception to the OECD productivity pattern. In the words of the two leading Fed researchers, "the story largely is information technology". The difference is the major contribution to productivity by ITC *producers* (especially of semiconductors) *and* a major investment effort across the economy that put all other OECD countries in the shade.
- For most of the 1990s the strong US take-up of ITC products was an addition to spending on other capital investment. Elsewhere, to varying degrees adoption of ITC products has been in substitution for other capital expenditures. Australia's *overall* capital deepening record in the 1990s does not surpass that of the 1970s or early 1980s
- It has always been the case that the forms of capital investment change over the decades. Investment chases profitability, so that strong gains everywhere in the ITC share of overall investment demonstrate where business currently finds the leading edge. The question in productivity accounting, however, is whether today's leading edge pushes up MFP gains more than the counterparts in previous decades? There is little evidence in the OECD to back a positive assertion.
- The future is inherently uncertain, but evidence suggests potential growth to have slowed already to the 3¼ to 3½ percent annual range (from over 4 percent in the late 1990s). The effects of this slowdown on actual growth can be forestalled for some years by permitting the economy to run above potential in an attempt to push down unemployment. In the US Dr Greenspan has successfully followed such a policy, a course seen sensible also by the Australian Treasury. Ultimately, however, whatever catch-up reserve remains will be exhausted. It would then be imprudent to place a speed limit above a potential that, other things equal, would not be far away from 3 percent. Concentration on maintaining a strong reform effort and raising overall investment offer the best chances to offset the deceleration foreseen.
- While aggregate GDP growth is seen decelerating, the outlook envisages continued strong labour productivity growth at around 2 percent per year for the economy as a whole. This drives an upward march of living standards at nearly double the pace thought possible just ten years ago. It is unwarranted expectations that this report seeks to deflate rather than the reality of solid progress.

## SEVEN MISSING YEARS EVERY QUARTER CENTURY

Five years ago a discussion paper issued by Ai Group predecessor, MTIA<sup>1</sup>, declared confidently "4¼ to 4½ percent annual average GDP growth [to be] achievable for the rest of the decade". At the time the forecast was much higher than conventional thinking amongst Australia's economists and policymakers. The current national accounts (chart 1.1) show growth to have achieved a compound 4.5 percent annual rate between December 1995 and June 2000, at the high end of the target. The "4 percent plus" growth rate desired has been reached most of the time. This updated discussion paper finds on the basis of existing trends that Australia's cruising speed over the new decade is likely to slow to around 3 percent, sharply lower than the mainstream consensus on the current potential. A significant deceleration of the underlying potential is in the offing, some signs of which are already clearly apparent. The current potential pace is in the 3¼ to 3½ percent range, considerably lower than just a few years back. Further slowing is likely as the decade unfolds.

The difference between the two growth rates has powerful implications for the coming size of Australia's economy and markets. At an annual growth rate of 4½ percent, output doubles inside 16 years, around seven years quicker than the more than 23 years taken to achieve the same result with a 3 percent pace. In effect the growth gap is the equivalent of seven years of total economic stagnation every quarter century. Expressed differently, by the time output doubled under high growth, a lower growth Australian economy would be operating at only 80 percent of the pace. These are likely consequences of allowing present trends to unfold unchanged, as indicated by the analysis in this updated discussion paper.

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<sup>1</sup> *How Fast Can Australia Grow? MTIA, Sydney, December 1995.*

### THREE PERCENT POTENTIAL GROWTH

GDP growth is the identical sum of the separate growth in labour productivity and labour supply. About strong cyclical variations, the latter has been in steady decline throughout the 1990s, and is expected to continue to fall in the decade ahead. Over the past decade, however, the slow decline in supply was swamped by an upsurge in productivity. As a result the growth rate of potential GDP rose strongly through the 1990s to reach a peak late in the decade (section 6). In addition, the severity of the early 1990s recession produced an unusually long-lived period of below-capacity operation (or an "output gap" in economists' jargon), permitting (indeed demanding) a speed limit to be set clearly in excess of potential growth for a long while (section 7). The net result was 4.5 percent annual growth over the past 4½ years.

The outlook for strong aggregate growth is no longer as promising:

- Labour supply growth is expected to continue decreasing, shaving another ¼ percent or more off annual GDP growth rates by the end of the decade.
- Most, if not all the previous excess capacity has been used up, leaving little or no scope for the catch up that was an important contributor to late 1990s growth.
- The critical change is a likelihood that productivity growth has already subsided, albeit to rates still well in excess of those prevailing a decade ago, after a mid-1990s surge. This is by far the most important judgement to be formed for the arithmetic of long-run GDP supply forecasts, and one which is likely to prove the most controversial. The productivity growth expectation is placed at 2 percent a year.

Based on these elements potential GDP is expected to be able to grow around 3 percent a year on average through the decade ahead, rather similar to the low numbers prevailing at the start of the 1990s. However, the composition of the 3 percent is now markedly different. The 3 percent at the start of the 1990s comprised a little less than 2 percent labour supply growth and a little more than 1 percent productivity growth. The two elements are now essentially reversed. Productivity provides 2 percent of the growth, while labour supply retreats to around 1 percent. Though the GDP growth sum is unaltered by the expected switch, living standards (or GDP growth per head) rise considerably faster under present assumptions.

It needs to be stressed at the outset that any look into the future is subject to considerable uncertainty. This is not simply a matter of unexpected developments arising from left or right field. The starting point, especially in regard to productivity dynamics and existing slack, is imprecise. The thrust of this discussion paper can only be about describing central probabilities, themselves surrounded by a range of possibilities. Nevertheless, what is presented is considered the central probability based on the detailed evidence. The rest of this section provides a brief summary of the key judgements made in forming this central view.

## THE PRODUCTIVITY PERPLEX

Taking the decade as a whole, Australia experienced the best lift in productivity growth of all OECD economies (table 4). The 1990s were also the period when the US economy shook off its productivity growth lethargy with an astonishing late-decade surge clearly attributable to “new economy” developments. Since technological dynamism continues unabated in these information technology and communications (ITC) sectors, there have been natural tendencies to associate the Australian improvement with the new economy and to speculate that if no obvious connection has surfaced to date, it soon will. These views are not in accord with what has been happening in the US and elsewhere, meanwhile missing the key developments in Australia. To date any association is more apparent than real and it is doubtful whether one will manifest itself any time soon.

*The surge in US productivity* has been studied in extensive detail by a variety of teams from the research section of the Federal Reserve Board, by clusters of researchers from the OECD and by prominent US academics (section 3). Most of the papers cited have been published this year. Albeit with differences around the edges, there is considerable agreement on what has happened in the US:

- Both labour and multi-factor productivity (MFP) grew strongly within the ITC industries, especially in the production of semiconductors and computers. More than half the gain in MFP growth between 1996 – 99 and 1991 – 95 came in the production of semiconductors and computers alone, ie, neglecting communications and other IT sectors (table 3). This gain represents more than a third of the aggregate labour productivity lift over the same periods.
- Nearly half the gain in annual labour productivity growth over these periods (about ½ percent in absolute terms) is due to the use of ITC equipment and software to increase capital per worker (capital deepening) across the range of the business sector (table 2). This has been achieved by a sustained and prodigious overall investment spending effort unmatched elsewhere in the 1990s.
- There are only scant signs of a lift in MFP growth outside the ITC sectors, and what little exists appears most likely instead to be the temporary cyclical response to strong output growth experienced many times before. There is no persuasive evidence of a spillover of MFP dynamism to these non-ITC sectors (ie, traditional industry and services).

In the words of the Federal Reserve researchers relied upon by Dr Greenspan, “information technology largely is the story [of the US productivity surge]”.

*Little evidence exists of any ITC-related lift in productivity growth, via either production or use, in OECD economies outside the US* (section 4). The “main finding” of very-recently-published research by another Federal Reserve team (table 7) is “that, with only a few exceptions, labour productivity in foreign industrial countries does not appear to have accelerated in the latter half of the 1990s”. One of the exceptions is Australia, which experience will be left for the moment. There is some evidence to suggest that the small group of high-intensity ITC producers (table 5) have either been able to increase productivity growth or (like Ireland, Finland and Korea) maintain it at very high levels. However, the sizes of the claimed effects are not large, being in the order of ¼ to ½ percent addition to annual growth rates.

Use of ITC products is now relatively widespread across OECD countries (Australia scoring second on the list — chart 4.1), but there is no consistent correlation with productivity growth rates. A variety of factors help explain the result, including productivity-sapping cyclical stagnation until recently in many economies. Another, of special relevance to the current debate, is evidence that ITC capital expenditures have often taken the place of other business investment. The net result is much weaker capital deepening in many economies (table 7) than evident from ITC expenditures alone. The new economy is not a free gift. What

distinguishes the US, apart from being the business end of the ITC production revolution, is its spectacular private investment record completely unmatched by other OECD economies in the 1990s. Until such time as similar outstanding investment records are posted elsewhere, there is no reason to expect strong impacts on aggregate productivity.

*Australia is a most unlikely candidate to buck this non-US trend, being close to the weakest ITC producer in the OECD, while displaying a reasonable but not historically unusual capital deepening record* (sections 4 and 5). The explosive gains in productivity have come from semiconductor and computer production (table 3) in which Australia is poorly represented. Meanwhile, despite the good record of adoption of ITC products, Australian capital deepening was marginally weaker in the second half of the 1990s than during most of the previous quarter century (chart 5.7). Until such time as there is a sustained lift in business investment in overall equipment and software categories, the good ITC adoption rate is most likely to have been a substitute for other productivity-enhancing expenditures.

## THE AUSTRALIAN PRODUCTIVITY RECORD

*The real Australian productivity story occurs outside the IT sector* (section 5). Labour productivity growth has lifted because MFP growth rose strongly, topped by two periods of powerful surges. Unusually strong capital deepening is not part of the story. In turn MFP growth quickening appears most likely to have been a result of the removal of previous inefficiencies, especially in the deployment of capital.

Five aspects of Australia's productivity record are particularly telling:

- *Improved MFP gains do not fit an explanation of an overall productivity lift generated by high ITC usage.* Australia is a weak ITC producer but a high user. Had high ITC usage been the key to the local productivity lift, US evidence suggests strongly that the gains should have been reflected in the capital deepening contribution rather than in MFP. In fact, depending slightly on the time periods compared, better MFP growth has been the entire source of the domestic gains.
- *Capital productivity performed much more strongly than usual in the 1990s.* Readings of this performance indicator are usually negative, here and elsewhere, as MFP growth proves insufficient to offset the historical tide of rising capital – output ratios (the flip side of which is a falling output – capital ratio, or capital productivity). ABS data show the historical declining capital productivity trend slowing in the 1980s, before halting in the 1990s (chart 5.6). Capital productivity actually rose above trend for a brief period in the mid-1990s, reaching a peak in 1995-96. Both decades, especially the latter, saw greatly increased attention to efficient use of capital under a range of deregulatory and competitive pressures. Capital efficiency gains show up as better MFP growth in growth accounting.
- *The labour productivity growth lift between the decades occurred primarily in a narrow range of industries sheltered from international trade* (chart 5.3). While most industrial sectors displayed some improvement between the decades, the big lifts came from wholesale and retail trade, construction and, to a lesser extent, the hospitality sector of accommodation, cafes and restaurants. These are all users of information technology, but it would be very surprising if they alone were the major beneficiaries. A range of industrial relations deregulation seems a more persuasive motivating force.

- *Two periods of unusual productivity growth, one early in the 1990s, the other for a few years after mid decade, powered the decade-average rise.* Productivity normally waxes and wanes with the state of the business cycle (chart 5.2). While labour productivity growth was good throughout the decade, the early 1990s rise was counter-cyclical and the second rise almost consumed firm GDP growth at the time (ie, providing little scope for increased hours of employment). Relative to the cycle both periods stand out as extremely unusual. Both the capital productivity and MFP growth records reflect these unusual periods. The story again most likely appears to be the result of economising on capital, with a shake out from the shock of the early 1990s recession also contributing.
- *The timing and the pattern of the productivity lift do not fit a story of ITC innovation being the major motivating force.* The narrow industrial concentration of the very strong gains has already been noted. This alone raises suspicion that IT innovation was not the main cause. Other aspects of the data work strongly against IT explanations. One is the timing of the two especially strong aggregate surges, the first clearly coming too early for the IT revolution. The other appeared just as US gains started to occur. It is unlikely that Australia would have been as quick off the mark, especially since much US progress came in production activities slimly represented here. Secondly, Australian MFP did not accelerate through the late 1990s (chart 5.8) in the American manner as IT activity took hold. While still good, the latest data show gains to have retreated rather than increased. Unemployment data (chart 6.5) also suggest that the productivity pace has retreated over the last two years

As another form of capital deepening ITC expenditures may well have been a factor sustaining Australian productivity growth. But the form of capital has always changed through the ages with new ideas and techniques. This is a constant throughout history, so that "new economy" expenditures may simply have taken the place of other forms of capital expenditures made in earlier times. Even in the US there is evidence of this switch (chart 3.5), and it must have been occurring in Europe also to accommodate strong ITC spending within uninspiring capital accumulation totals. Australia's recent capital deepening record is not strong by historical standards. For example, the record of the 1970s and early 1980s is better. It is therefore as difficult to attribute the 1990s productivity lift to the investment record as it is to the new economy.

*The evidence fits better a story of the domestic productivity spark coming from using existing and reconstructed capital more efficiently.* It fits as to timing and in the remarkable capital productivity data. Helped by 1980s developments, the 1990s provided a high water mark for "microeconomic reform". That is the obvious explanation.

## CAPITAL PRODUCTIVITY, INVESTMENT AND THE FUTURE

Gains from moving nearer the efficiency frontiers of production are essentially one-off. While continuous improvement and "best practice" benchmarking techniques help maintain a path of efficient production, the same shift to the frontier cannot be made twice. Every year new inefficiencies have to be reformed out of existence to turn back the negative effects on capital productivity of the relentless tide of rising capital intensity. Genuine technical progress that pushes out the frontiers helps also, but this has usually not been enough by itself to stop capital productivity falling.

As noted, the 1990s were powerful years for microeconomic reform. With the usual S-type process of diffusion, not all change came at once, thus sustaining years of capital- and labour- productivity-boosting reform. But while microeconomic reform continues, it is questionable whether it maintains the same intensity into the new decade. This is partly a matter of opportunity, the easiest changes being made first, and partly a matter of reform fatigue. With no objective measure of reform intensity, the scale must be judged by indirect means. The signs are of some slackening of the pace. Capital productivity has receded, albeit marginally, every year since 1995-96 (chart 5.6), and both MFP and labour productivity growth seem also to have become a little less vibrant (charts 5.8 and 5.2). These data are

issued by the ABS as "experimental", so that they contain more than the usual potential for revision. But the numbers to date are consistent with the rather more rapid fall in unemployment during 1999-2000 than would have been expected had productivity growth remained at peak levels. There is further conformity in anecdotal evidence of some slackening of the intensity of new reforms.

Not all the signs point in this direction. Thus recent capacity utilisation readings from the National Australia Bank survey suggest continuing strong productivity growth (chart 6.8). Moreover there are persistent hopes that the strong take-up of ITC capital throughout the economy will help replace any lost productivity dynamism due to the maturing of the reform process. It is unwise to follow blindly the somewhat dismissive international evidence canvassed earlier, both because history can be revised and because payoffs might take time to occur.

Nevertheless, guidance might be sought in the scale of investment activity. At first glance the high private investment share of GDP (defined as machinery, equipment and intangible fixed asset expenditures) is encouraging (chart 1.2). Capital appears to be being put in place at a very high rate.<sup>2</sup> But appearances might be deceptive. The private sector is much larger than in earlier times due to 1990s privatisations. The combined public corporation and private share looks far less healthy by historical standards.<sup>3</sup> Secondly, with ITC equipment and software having shorter lives than the average item of capital stock, more gross investment will be needed now than hitherto to achieve capital deepening. Detailed dissections of the capital-labour ratio (chart 5.7) suggest there is some force to these concerns. High private investment shares in recent years have not coincided with strong capital deepening. Indeed the record is a little on the weak side of most experience up to the mid 1980s.

Ultimately, however, even these considerations will not sway the optimists. There is a popular view that ITC capital is qualitatively different to other forms of capital, so that a straight switch of dollars towards the former will raise productivity. It is as if ITC activity contains a magic elixir available to no other form of capital that raises efficiency spectacularly when poured over production processes. There is evidence of phenomenal productivity growth in the direct production of some ITC items. But the magic potion view is not in evidence amongst users of ITC products and software. While Australia has a high ITC adoption rate, it is far from alone (section 4). Nowhere are there signs of payoffs from ITC usage superior to other capital. Indeed for most countries it has been business as usual.<sup>4</sup>

Based on these views of a maturing of the reform process, the potency of ITC expenditures and a less-than-spectacular overall investment record, the future course of productivity seems better represented by recent trends than by a longer past record studded with some unusual success stories. For a variety of reasons (section 2) labour supply growth is continuing on its long-term declining path, with annual gains around 1 percent expected on average over the decade. Together these two judgements imply an expectation for potential GDP to grow around 3 percent a year this decade. The slowing from late 1990s peaks is already underway (to around 3.4 percent currently), with more to follow as the decade unfolds.

## OUTPUT GAPS AND GROWTH TARGETS

*The concept of macroeconomic capacity is fuzzy*, intimately linked to the extent of pressure on resources that causes inflation to start rising. Unlike conditions prevailing at the time of the previous discussion paper, the range of estimates of the present position (section 7) suggest little slack (or output gap) to be available to support additional "catch up growth". However, recently these estimates appear to have provided less than robust foundations for policy reliance. There is the well-known example of the US natural rate of unemployment, originally thought to be 6 percent, then 5 percent, but both were found wanting as that nation's rate closed on 4 percent without a strong acceleration of prices. Although especially favourable circumstances might have assisted the US experience, the view that the natural

<sup>2</sup> It is nevertheless considerably smaller than the corresponding US share (8.5 percent of GDP versus 10.6 percent).

<sup>3</sup> The public corporations data do not separate out non-residential investment, so that there is some imprecision in the recorded trends.

<sup>4</sup> Direct identification of ITC usage benefits to labour productivity is commonplace in US research studies (for example, table 2), but the method constrains unit gains to be identical to other forms of capital.

rate, below which inflation rises, is a variable rather than a constant has become more generally accepted.

This episode counsels not to take output gap estimates too religiously rather than to ignore them. It is open to policymakers to explore the limits to growth, as long as they are aware that they are proceeding into uncharted waters with attendant risks of running aground. That essentially has been the approach of Federal Reserve chair, Dr Alan Greenspan. Should the risks be worth taking, the sensible course appears to be to combine vigilance with a policy of hastening slowly. A policy reversal can then occur before significant damage is sustained.

In practical terms, in the early years of this decade that means policymakers could tolerate an annual growth rate perhaps a quarter to a half percentage point above potential. But the longer the experiment is successful, the more risk of failure will arise from its continuation. It would provide only short-term relief from the binds of the potential growth shackles, though that might be enough to bring down the unemployment rate below the troughs experienced over the past two decades. Such adventurous policy, however, would have little effect on the arithmetic of overall market growth over the long haul.<sup>5</sup>

### WHAT MIGHT BE DONE?

The envisaged step-down in growth from the 4½ percent pace of the late 1990s to the 3 percent in prospect for this decade is sharp. Many members displeased by the prospect will be seeking alternatives to maintain growth. In general these alternatives fall into three non-mutually-exclusive categories:

- *Lifting the investment share of GDP.* Though confused by the 1990s spate of privatisations, current business investment appears ordinary by past standards and well below the shares posted by the United States on a sustained basis for years past. But the Australian record does compare well with other OECD economies. The investment focus embraces human capital (including skills development, training and innovative abilities) as well as physical items. Growth in investment will be frustrated by current account problems unless national saving improves. Ai Group has stressed the importance of good policy in this area.
- *Relentless pursuit of effective microeconomic reform.* A considerable part of the past decade's productivity acceleration represented fruit from the microeconomic reform process. That has boosted productivity levels, not necessarily ongoing growth. The reform agenda needs to be broadened to eliminate further inefficiencies and to prevent new ones being created.
- *Increasing immigration.* With natural sources of labour supply growth in decline for a variety of reasons (section 2), a renewed immigration drive is the only major option for scale effects on growth from this side over the coming decade. However, on a longer time scale policy needs to consider broader population options.

In different ways the pursuit of each of these is hostage to the political process. Nevertheless, they seem the only viable alternatives to the growth future outlined here.

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<sup>5</sup> For example, an annual GDP outcome of ½ percent above potential sustained for four years would make clear inroads into the unemployment rate, but would add just 0.2 percent to the decade-average GDP growth rate.

## APPENDICES

Chart 1.1  
**AUSTRALIA'S GDP GROWTH RECORD**  
*Annual % change, trend data*

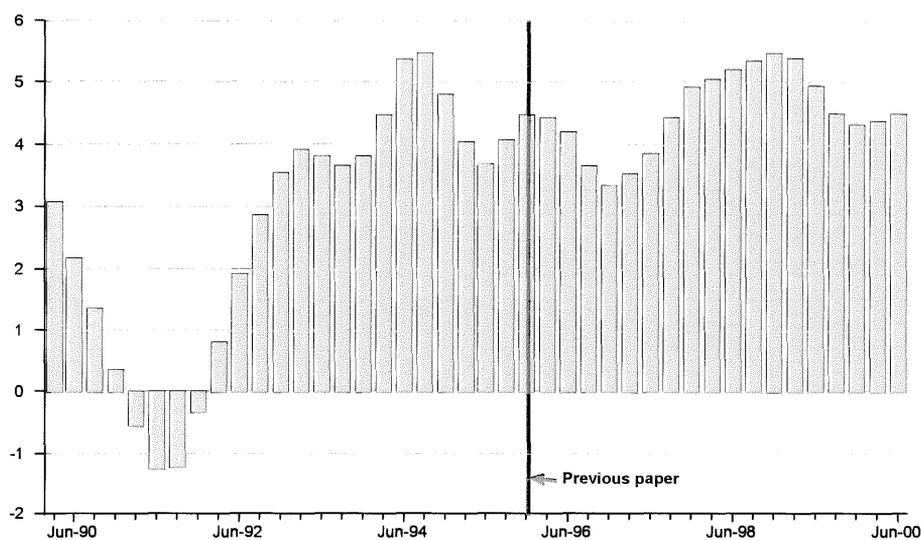


Table 4

### OECD ESTIMATES OF MULTI-FACTOR PRODUCTIVITY GROWTH

*Average annual growth rates*

	1980 – 1990	1990 - 1998	1995 – 1998
US	0.8	1.0	1.0
Japan	2.0	1.6	1.6
Germany	1.6	1.4	1.5
France	2.1	1.1	1.1
Italy	1.5	1.2	1.0
UK	..	1.3	1.4
Canada	0.4	0.8	0.8
Australia	0.9	2.1	..
Belgium	1.4	1.0	..
Denmark	1.0	1.8	..
Finland	2.4	3.2	..
Greece	0.6	0.3	..
Ireland	3.9	3.9	..
Netherlands	2.2	1.7	..
NZ	0.7	1.1	..
Norway	1.1	2.1	..
Portugal	1.9	2.2	..
Spain	2.2	0.6	..
Sweden	0.8	1.3	..
Switzerland	..	0.2	..

*Source: OECD Economic Outlook, June 2000, tables V4 and V6. For breadth of country coverage, MFP data are presented without correction for changing compositions of labour and capital.*

Table 3  
**SECTORAL CONTRIBUTIONS TO GROWTH IN NON-FARM BUSINESS MFP**

	1974 - 90	1991 - 95	1996 - 99
1 Growth rate of non-farm business MFP*	.33	.48	1.16
<i>Contribution from each sector**</i>			
2 Computer sector	.12	.16	.26
3 Semiconductor sector	.08	.12	.39
4 Other non-farm business	.13	.20	.50
5 MEMO: computer sector plus computer-related semiconductor sector	.17	.23	.49
<i>Growth of MFP*</i>			
6 Computer sector	11.2	11.3	16.6
7 Semiconductor sector	30.7	22.3	45.0
8 Other non-farm business	.13	.20	.51

\* Percent per year. \*\* Percentage points per year.  
Source: Oliner & Sichel [2000]

Table 2

	1974 - 90	1991 - 95	1996 - 99
1 Growth rate of labour productivity*	1.37	1.53	2.57
<i>Contributions from**</i>			
2 Capital deepening	.81	.62	1.10
3 Information technology capital	.44	.51	.96
4 Hardware	.25	.23	.59
5 Software	.09	.23	.27
6 Communication equipment	.09	.05	.10
7 Other capital	.37	.11	.14
8 Labour quality	.22	.44	.31
9 Multi-factor productivity	.33	.48	1.16

\* Average annual log differences for years shown multiplied by 100. \*\* Percentage points per year.  
Source: Oliner & Sichel [2000]

Table 5  
OECD COUNTRIES BY ITC INTENSITY OF PRODUCTION

High ITC intensity countries	Medium ITC intensity countries	Low ITC intensity countries
Finland	Austria	Australia
Hungary	Canada	Belgium
Ireland	Denmark	Czech Republic
Korea	France	Germany
Sweden	Greece	New Zealand
UK	Iceland	Poland
US	Italy	Portugal
	Japan	Spain
	Mexico	Turkey
	Netherlands	
	Norway	
	Switzerland	

Source: Measuring the ICT Sector, OECD, 2000

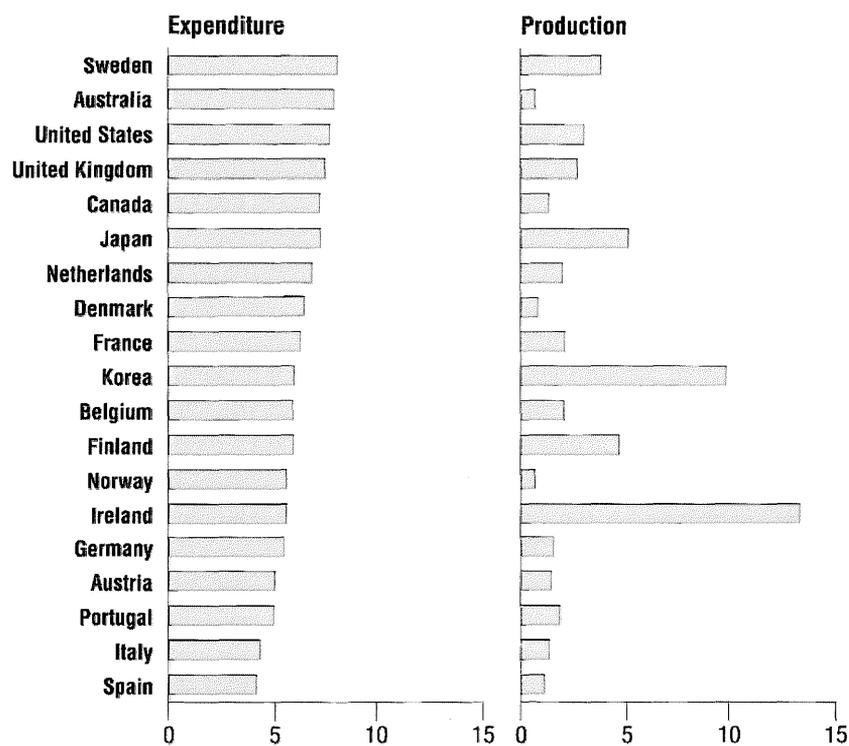
Table 7  
PRODUCTIVITY GROWTH IN SELECTED OECD ECONOMIES  
Annual average % growth for selected periods

Country	81-89	90-98	90-95	96-98	96-99	Country	81-89	90-98	90-95	96-98	96-99
<b>United States</b>						<b>Belgium</b>					
National data						Labour productivity	2.32	1.90	2.18	1.35	1.05
Labour productivity	1.59	1.78	1.47	2.42	2.57	Capital deepening	.82	1.06	1.28	.63	.60
Capital deepening	.73	.77	.68	.96	1.11	MFP	1.51	.83	.87	.73	.46
MFP	.86	1.01	.79	1.46	1.47						
of which labour quality	.34	.39	.42	.32	.31	<b>Denmark</b>					
						Labour productivity	2.53	2.67	3.69	.62	.86
<b>OECD data</b>						Capital deepening	..	.94	1.27	.27	.56
Labour productivity	1.31	1.43	1.02	2.26	2.30	MFP	..	1.70	2.37	.37	.31
Capital deepening	.25	.24	.16	.40	.54						
MFP	1.09	1.20	.85	1.91	1.80	<b>Finland</b>					
						Labour productivity	3.85	3.82	3.91	3.66	3.10
<b>Canada</b>						Capital deepening	..	..	..	-.54	-.53
Labour productivity	1.42	1.26	1.34	1.10	.92	MFP	..	..	..	4.28	3.70
Capital deepening	1.31	.96	1.08	.73	.67						
MFP	.14	.31	.26	.39	.27	<b>Ireland</b>					
						Labour productivity	5.14	4.01	4.10	3.81	3.96
<b>France</b>						Capital deepening	..	-.14	.15	-.71	-.39
Labour productivity	3.41	2.12	2.26	1.86	1.61	MFP	..	4.22	4.01	4.62	4.47
Capital deepening	1.10	1.09	1.35	.57	.50						
MFP	2.26	1.03	.89	1.31	1.12	<b>Netherlands</b>					
						Labour productivity	3.40	2.07	2.98	.23	.35
<b>Germany</b>						Capital deepening	..	.49	.90	-.33	-.21
Labour productivity	..	2.13	2.26	1.96	2.14	MFP	..	1.51	1.99	.54	.55
Capital deepening	..	1.09	1.22	.91	1.06						
MFP	..	1.03	1.02	1.04	1.07	<b>Norway</b>					
						Labour productivity	1.44	2.72	3.18	1.80	1.39
<b>Italy</b>						Capital deepening	.92	.48	.66	.12	.29
Labour productivity	2.33	2.09	2.72	.81	.67	MFP	.50	2.23	2.48	1.73	1.13
Capital deepening	.87	1.18	1.36	.82	.82						
MFP	1.45	.88	1.32	-.01	-.14	<b>Spain</b>					
						Labour productivity	3.89	1.96	2.58	.70	.34
<b>Japan</b>						Capital deepening	..	1.48	2.01	.40	.26
Labour productivity	3.12	2.48	2.89	1.64	2.07	MFP	..	.45	.52	.31	.08
Capital deepening	1.15	1.44	1.56	1.21	1.23						
MFP	2.00	1.03	1.31	.46	.85	<b>Sweden</b>					
						Labour productivity	1.52	2.06	2.11	1.96	1.73
<b>United Kingdom</b>						Capital deepening	.61	.81	.89	.65	..
Labour productivity	3.37	1.72	1.78	1.60	1.47	MFP	.92	1.23	1.19	1.32	..
Capital deepening	.42	.53	.57	.44	.54						
MFP	2.90	1.20	1.21	1.18	.95	<b>Switzerland</b>					
						Labour productivity	..	1.31	.66	2.38	1.90
<b>Australia</b>						Capital deepening	..	1.18	1.21	1.13	1.03
Labour productivity	1.45	2.37	1.79	3.52	3.12	MFP	..	.10	-.57	1.20	.84
Capital deepening	.45	.82	.64	1.16	1.06						
MFP	1.01	1.57	1.15	2.41	2.11						

Note: The sum of capital deepening and MFP growth does not always add up to labour productivity growth due to rounding conventions.

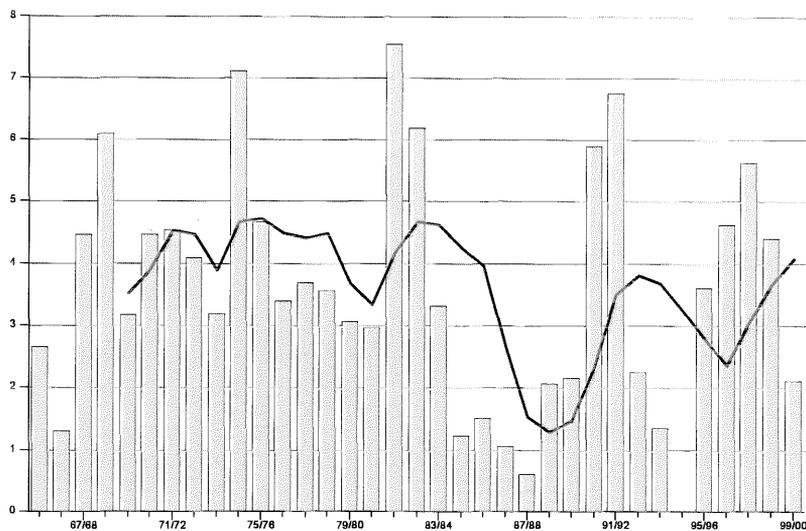
Source: Christopher Gust & Jaime Marquez [2000].

Chart 4.1  
**EXPENDITURE AND PRODUCTION OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**  
*Percent of GDP, 1997*



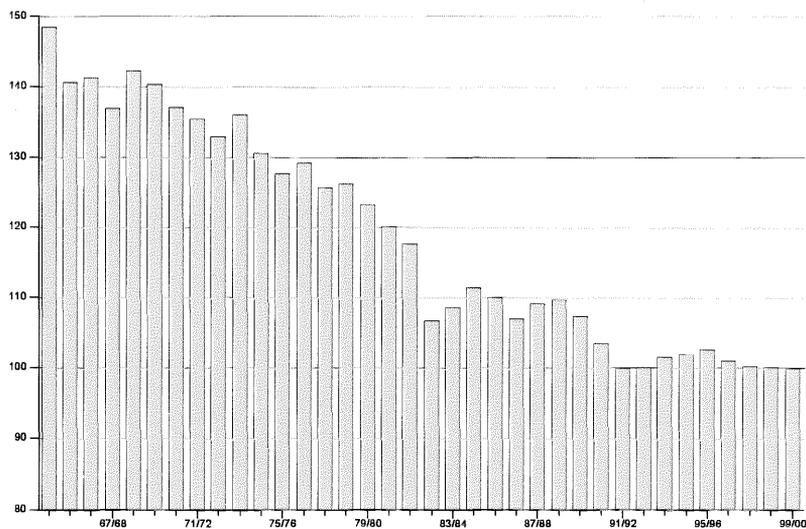
Sources: OECD Analytical Data Bank, and *OECD Information Technology Outlook 2000*.  
 Extracted from *IMF World Economic Outlook*, September 2000, figure 2.2

Chart 5.7  
**CAPITAL – LABOUR RATIO: MARKET SECTOR**  
*Annual % change*



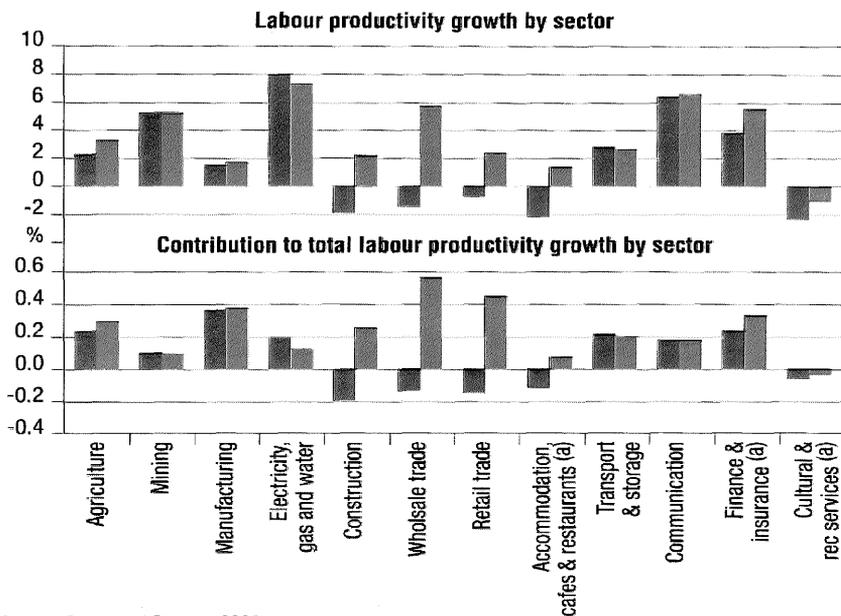
Source: ABS, Australian System of National Accounts, 1999-2000

Chart 5.6  
**CAPITAL PRODUCTIVITY IN THE MARKET SECTOR**  
*1997 – 98 = 100, chain volume measures*



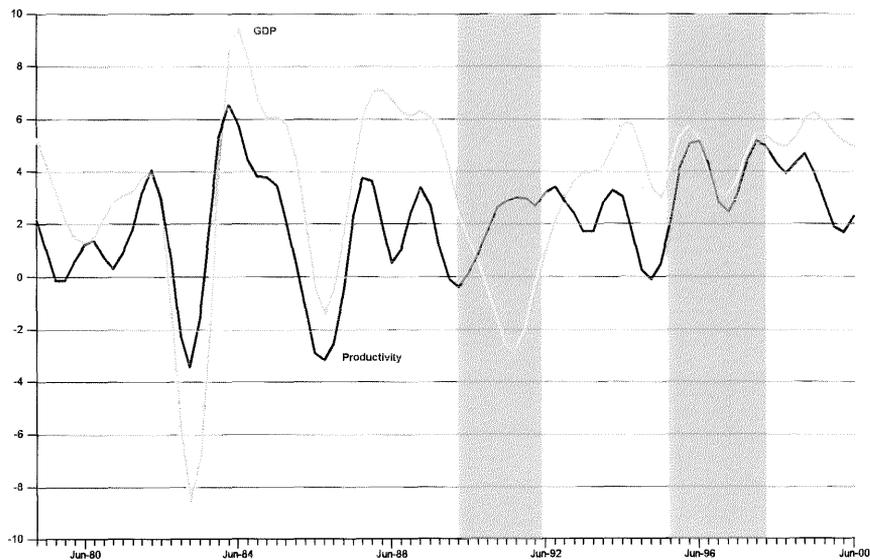
Source: ABS, Australian System of National Accounts, 1999 - 2000.

Chart 5.3  
**LABOUR PRODUCTIVITY GROWTH IN THE 1980s' AND 1990s' EXPANSIONS**  
*Annual trend growth rates*



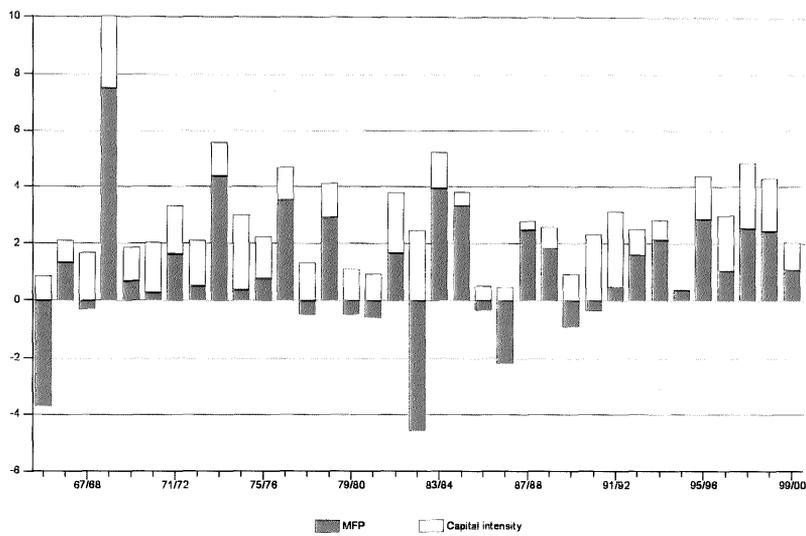
Source: Gruen and Stevens 2000.

Chart 5.2  
**MARKET SECTOR GDP AND LABOUR PRODUCTIVITY**  
*Annual % change*



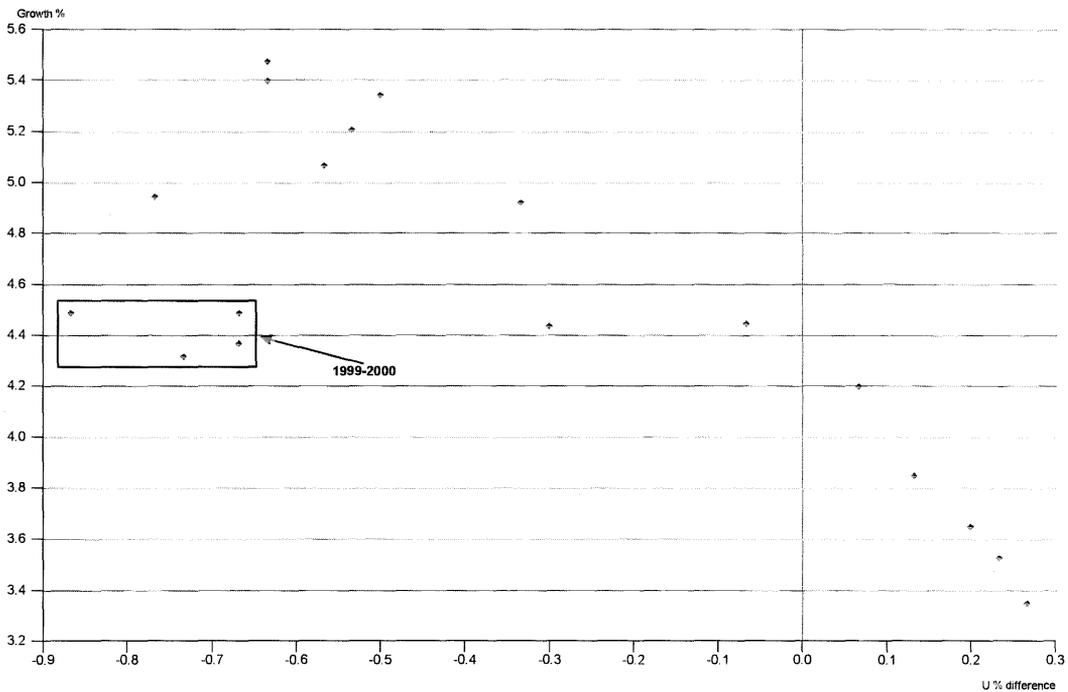
Source: ABS National Accounts

Chart 5.8  
**MFP AND LABOUR PRODUCTIVITY: MARKET SECTOR**  
*Annual % change*



Source: ABS, Australian System of National Accounts, 1999-2000.

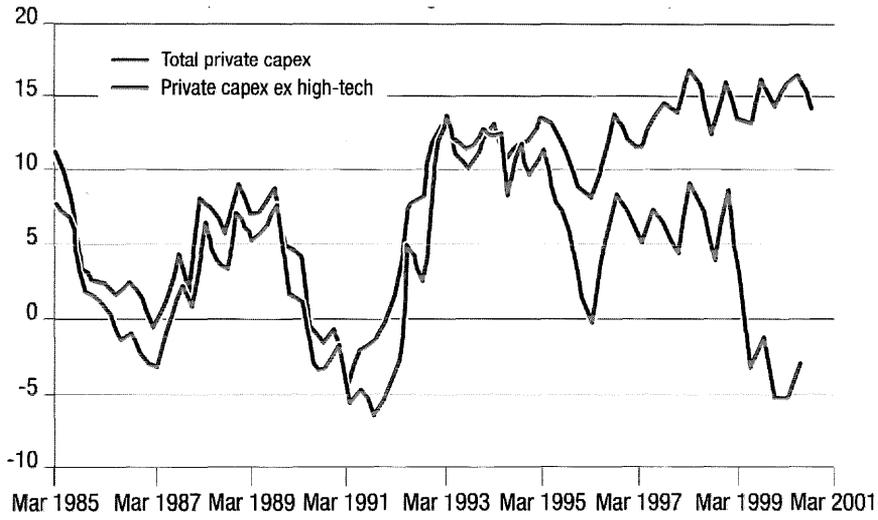
Chart 6.5  
**THE OKUN SCATTER AFTER 1996**



Sources: as chart 6.3

Chart 3.5

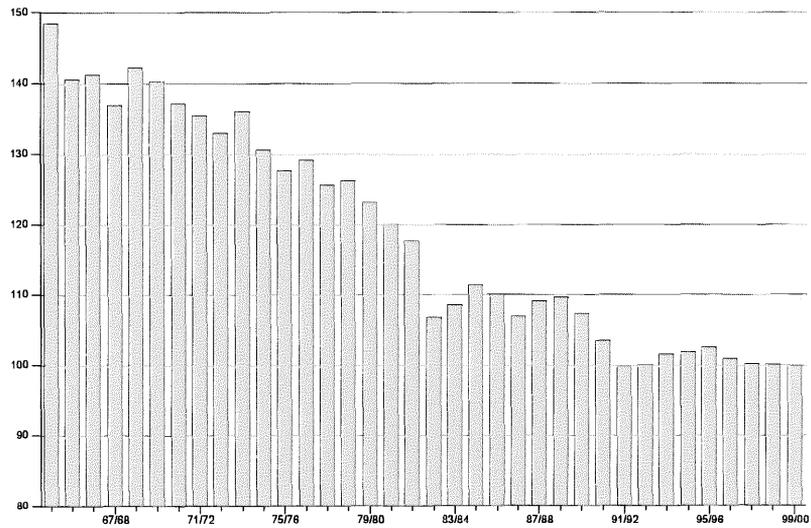
**CAPITAL NON-RESIDENTIAL INVESTMENT**  
*(Total versus total less high-tech & communications)*



Source: Deutsche Bank

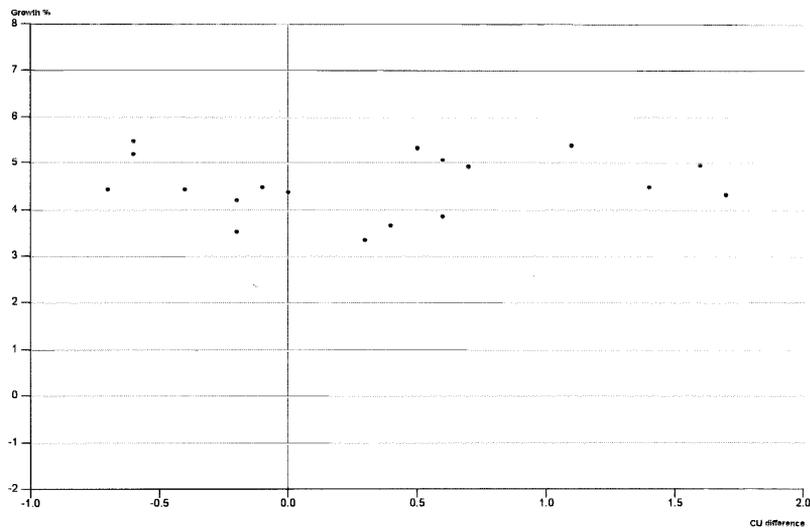
Chart 5.6

**CAPITAL PRODUCTIVITY IN THE MARKET SECTOR**  
*1997 - 98 = 100, chain volume measures*



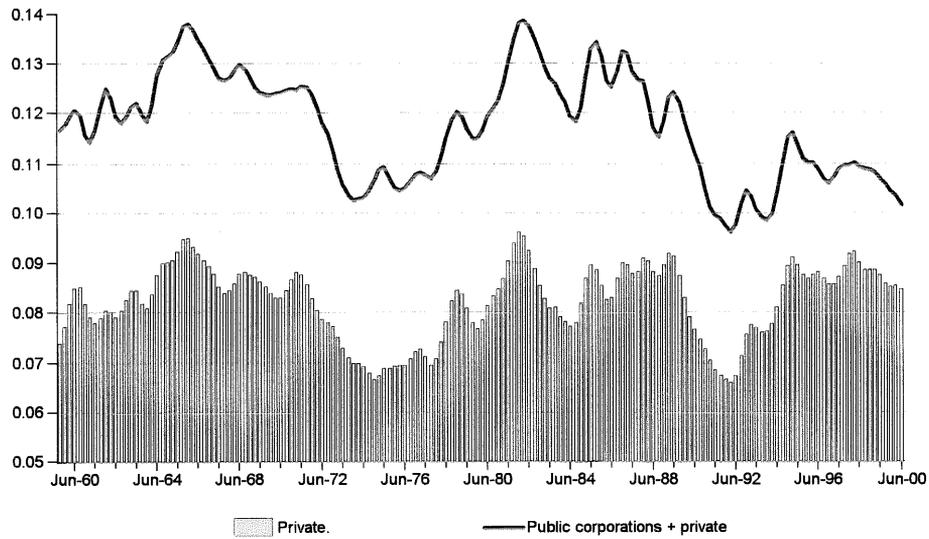
Source: ABS, Australian System of National Accounts, 1999 - 2000.

Chart 6.8  
**THE CAPACITY UTILISATION SCATTER IN THE SECOND HALF OF THE 1990s**



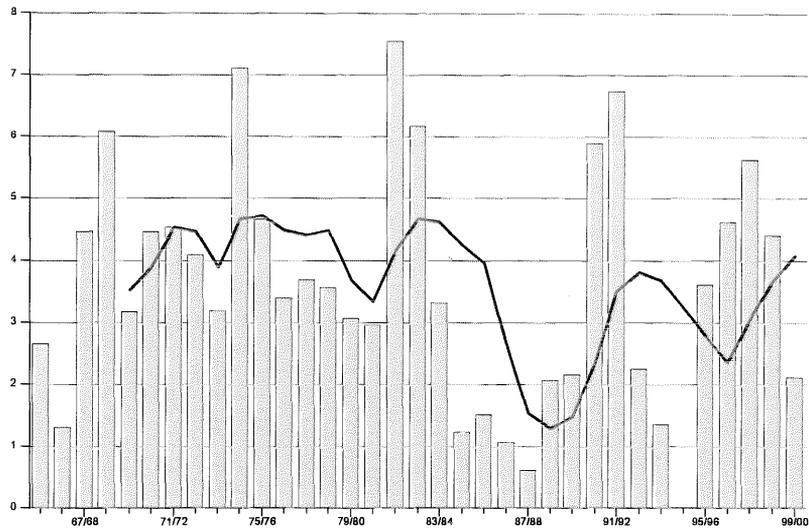
Sources; as chart 6.6.

Chart 1.2  
**GROSS INVESTMENT SHARES OF GDP**  
*Current prices, trend data*



Source: ABS, Quarterly National Accounts

Chart 5.7  
**CAPITAL – LABOUR RATIO: MARKET SECTOR**  
*Annual % change*



Source: ABS, Australian System of National Accounts, 1999-2000

*The charts and tables in this summary document are taken from the full report entitled "How Fast Can Australia Grow? Mark II". The full report is available for purchase at a cost of \$100 (GST inclusive) per copy. To order copies please call Ai Group Publication's Department on (02) 9466 5507.*

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