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Australia's Industry Sector Productivity Performance

Research Memorandum

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Abbreviations

ABS	Australian Bureau of Statistics
MFP	Multifactor productivity
OECD	Organisation for Economic Co-operation and Development
PC	Productivity Commission
ICTs	Information and communications technologies

OVERVIEW

Overview

Background

Australia's productivity surged to a record high in the 1993-94 to 1998-99 period. Multifactor productivity (MFP) grew by 1.8 per cent a year and labour productivity increased by 3.2 per cent a year (ABS Cat. no. 5206.0).

The industry dimension of this surge has been important. A new set of service industries, such as wholesale and retail trade, rather than the traditional contributors, like manufacturing (see Johnston et al. 2000 and PC 2003), contributed to the 1990s surge. According to a Productivity Commission study of manufacturing (PC 2003), manufacturing productivity growth rates were high compared with other industries over the long term, but missed out on the MFP surge that the market sector as a whole enjoyed in the mid-1990s.

Whilst there are several components to the explanation for the surge (Parham 2003), information and communications technologies (ICTs) have played some part, but through the use of ICT equipment, rather than the manufacture of ICTs (see, for example, Parham et al. 2001 and Gretton et al. 2002). Here, there is also an industry dimension, with links between ICT use and productivity growth most apparent in Finance and insurance and Wholesale trade.

Scope and methodology

The aim of this paper is to examine longer term trends in productivity measures for 12 industries and to determine proximate contribution to those productivity trends.

The paper also examines the contributions of specific industries and broader sectors to aggregate labour productivity and MFP. It provides a descriptive (growth accounting) analysis of the productivity performance of the industries, rather than undertaking a more detailed analysis of the reasons for the trends. It also identifies and describes the basic features and contributions to aggregate productivity growth of the high and low productivity growth industries and the industries that have emerged as new growth industries. It is not the purpose of this paper to explain the

sources behind Australia's productivity revival (for such explanations see Parham 2003).

There are 12 industries that make up the market sector, as defined by the ABS (for further details see ABS Cat. no. 5206.0). The period examined is 1974-75 to 2001-02. In terms of contributions to aggregate productivity, the paper concentrates on the aggregate or ABS defined market sector productivity cycles. For the 1990s, the cycle covers the years 1993-94 to 1998-99. However, the cycle beyond this period is incomplete and estimates for the period 1998-99 to 2001-02 should be treated with caution as they may be subject to revision by the ABS. As further years estimates become available, at the aggregate and industry levels, these estimates will be updated on the Commission's website.

The ABS publishes estimates of labour productivity, capital productivity and MFP for the market sector of the Australian economy (ABS Cat no. 5206.0). However, while the ABS also publishes estimates of labour productivity for the 12 industries that make up the market sector, it has not published MFP for these 12 industries. It is the intention of the ABS to publish industry MFP estimates in the near future. The productivity estimates presented in this study have been constructed using industry data on output, hours worked and capital input provided by the ABS by special request.

This paper employs the same commonly used 'value-added' methodology that has been used in previous Commission estimates of industry productivity, (see for example, PC 1999). This is also the methodology used by the ABS in calculating market sector productivity. Using this methodology, labour productivity is defined as the ratio of output to hours worked — where output is gross value added and is measured as a chain volume index. Labour productivity is influenced by capital deepening (increases in the capital-labour ratio) and MFP growth (improvements in efficiency, broadly defined). MFP is defined as the ratio of output to combined inputs of labour and capital — where output is gross value added, labour is hours worked and capital is capital services. Capital productivity, is defined as the ratio of output to capital services.

It should be noted that output can be measured in different ways — using value added, as in this paper, or using gross output. This can lead to different estimates of productivity growth. However, it is beyond the scope of this paper to provide a detailed explanation of how different output measures affect the estimates of productivity growth. This issue is covered in a companion paper (Cobbold 2003).

Basic features of productivity growth in Australia

Tables 1 and 2 show the change in labour productivity, MFP, and capital deepening for the 12 industries that make up the market sector over a number of key market sector productivity cycles. The tables also place these industries into a number of broad categories. From these tables a number of basic trends can be identified.

Labour productivity

The labour productivity performance of individual industries has been generally positive over the 1974-75 to 2001-02 period (table 1). There have been a few exceptions, such as Cultural and recreational services. There is a tendency for changes in labour productivity to mirror changes in MFP.

Table 1 **Labour productivity growth by industry, 1974-75 to 2001-02[a]**
Per cent per year

	1974-75 to 1988-89	*1988-89 to 1993-94*	*1993-94 to 1998-99*	*1998-99 to 2001-02*
Primary				
Agriculture, forestry & fishing	2.1	4.8	3.7	2.2
Mining	1.9	5.3	5.2	7.1
Manufacturing	2.9	4.1	2.4	5.1
Services				
Infrastructure industries				
Electricity, gas & water	4.2	7.3	7.2	-1.7
Construction	2.0	0.4	2.4	-2.9
Transport & storage	3.1	1.9	2.3	4.4
Communication services	6.7	9.6	7.4	1.7
Other service industries				
Wholesale trade	1.1	-1.4	6.8	3.3
Retail trade	0.9	1.6	2.3	1.1
Accommodation, cafes & restaurants	-0.6	-1.6	1.8	0.6
Finance & insurance	0.7	3.5	4.4	1.8
Cultural & recreational services	-1.1	-0.4	-0.7	0.9
Market sector	1.9	2.0	3.2	1.8

a 1988-89, 1993-94 and 1998-99 are productivity peaks as identified by the ABS for the market sector. The period 1998-99 to 2001-02 is an incomplete cycle and is likely to be subject to revision.

Tables 1 and 2 show that industries that have recorded high labour productivity growth rates also have a tendency to display high MFP growth rates. However, there are divergences. For example, in some periods, Mining and Electricity, gas and water, have recorded significantly higher rates of labour productivity growth than MFP growth, while in other periods the difference is far less significant. This difference is due to the divergence between growth in MFP and capital deepening.

Table 2 **MFP growth and capital deepening by industry, 1974-75 to 2001-02[a]**

Per cent per year

	1974-75 to 1988-89		*1988-89 to 1993-94*		*1993-94 to 1998-99*		*1998-99 to 2001-02*	
	MFP	Capital deepening	MFP	Capital deepening	MFP	Capital deepening	MFP	Capital deepening
Primary								
Agriculture, forestry & fishing	1.7	0.4	4.3	0.5	4.3	-0.5	3.1	-0.9
Mining	0.0	2.0	2.3	2.9	0.1	5.1	3.0	4.1
Manufacturing	2.0	1.0	2.0	2.2	0.5	1.9	2.8	2.2
Services								
Infrastructure industries								
Electricity, gas & water	2.8	1.3	4.0	3.2	1.8	5.5	-2.0	0.3
Construction	1.1	1.0	-0.5	0.9	2.2	0.1	-2.7	-0.1
Transport & storage	1.9	1.2	0.8	1.1	1.8	0.5	3.3	1.1
Communication services	4.8	1.8	6.1	3.3	5.1	2.1	-2.2	4.0
Other service industries								
Wholesale trade	0.2	1.0	-2.2	0.8	5.8	0.9	2.1	1.2
Retail trade	0.3	0.7	0.7	0.9	1.4	0.9	0.5	0.6
Accommodation, cafes & restaurants	-1.2	0.7	-1.9	0.3	0.8	0.9	-0.1	0.7
Finance & insurance	-1.2	1.9	0.0	3.6	1.7	2.8	-1.1	3.0
Cultural & recreational services	-2.0	0.9	-2.4	2.1	-4.1	3.8	-2.1	3.0
Market sector	**0.9**	**1.0**	**0.7**	**1.4**	**1.8**	**1.3**	**0.5**	**1.3**

a 1988-89, 1993-94 and 1998-99 are productivity peaks as identified by the ABS for the market sector. The period 1998-99 to 2001-02 is an incomplete cycle and is likely to be subject to revision.

MFP

The MFP growth performance of individual industries has been mixed. Some industries have displayed fairly steady rates of growth over time, while other industries have recorded a fluctuating growth rate (table 2).

In terms of contributions to aggregate performance, there has been a generally strong and steady contribution from Manufacturing. In comparison, there was a strong but volatile contribution from Agriculture. Mining was also a strong contributor, but with a tendency towards big swings.

Many of the services industries tended to be early poor performers. There were some exceptions, such as Electricity, gas and water and Communications services. Over time, other industries, notably Wholesale trade, Retail trade and Transport and storage have emerged as major contributors. At one stage, the improved performance by some of these industries saw the services sector significantly outperform the traditional contributors, such as Manufacturing.

More recently, these traditionally strong contributors have regained their importance as major contributors because some of the services industries have experienced declining performance.

Capital deepening

Capital deepening is equal in magnitude to the difference between the rates of labour productivity and MFP growth. Table 2 shows that, at the aggregate level, capital deepening has been fairly steady at a round 1.4 percentage points since the late 1980s. In contrast, some industries experienced considerable fluctuations in capital deepening over the period, such as Electricity, gas and water and Communication services. However, only two industries, Agriculture, forestry & fishing and Construction, recorded a decline in capital deepening.

Contributions to market sector productivity growth

A more detailed examination of industry performance provides further insights into aggregate performance. The contribution of an industry to market sector productivity growth depends on the industry's growth performance and its share of market sector output.

Labour productivity

Labour productivity growth was high (above the market sector) in Agriculture, forestry and fishing, Mining, Manufacturing, Electricity, gas and water, Transport and storage and Communication services over the period 1974-75 to 2001-02. During the high labour productivity growth period of 1993-94 to 1998-99, Agriculture, forestry and fishing, Mining, Electricity, gas and water, Wholesale trade, Communication services and Finance and insurance all recorded a higher rate of labour productivity growth than that of the market sector.

The contribution of the primary sector to market sector labour productivity growth has increased since the 1981-82 to 1988-89 period and has tended to be above its average contribution to market sector growth over the entire 1974-75 to 2001-02 period (table 3).

The contribution of Manufacturing fluctuated over the whole period. However, its contribution to aggregate labour productivity growth for 1974-75 to 2001-02 was over twice that of the primary sector. The service sector contribution increased between 1981-82 and 1998-99, after which it fell just as dramatically.

Table 3 **Industry sector contributions, 1974-75 to 2001-02[a]**

Percentage points

	1981-82 to 1988-89	*1988-89 to 1993-94*	*1993-94 to 1998-99*	*1998-99 to 2001-02*	***1974-75 to 2001-02***
Industry sector contributions to average market sector labour productivity growth					
Primary	0.4	0.7	0.7	0.7	**0.4**
Manufacturing	0.7	1.0	0.5	1.0	**0.9**
Services	0.6	1.1	2.4	0.7	**1.1**
Industry sector contributions to average market sector MFP growth					
Primary	0.2	0.4	0.3	0.4	**0.2**
Manufacturing	0.5	0.5	0.1	0.6	**0.5**
Services	0.0	0.1	1.4	-0.2	**0.4**

a 1988-89, 1993-94 and 1998-99 are productivity peaks as identified by the ABS for the market sector. The period 1998-99 to 2001-02 is an incomplete cycle and is likely to be subject to revision.

The services sector contributed the largest part of aggregate labour productivity growth between 1974-75 and 2001-02. It also provided by far the largest contribution to market sector labour productivity growth in the high growth period of 1993-94 to 2001-02 but, on these estimates, the contribution has fallen during 1998-99 to 2001-02.

Except for the period 1993-94 to 1998-99, Infrastructure services (as listed in table 1) contributed the largest part of service sector labour productivity growth since 1981-82. Other services contributed the largest part of the high labour productivity growth in the services sector between 1993-94 and 1998-99.

Mining and Manufacturing have consistently contributed a large part of aggregate labour productivity growth since 1981-82.

Multifactor productivity

Average annual MFP growth was high over the period from 1974-75 to 2001-02 in Agriculture, forestry and fishing, Manufacturing, Electricity, gas and water, Transport and storage and Communication services. In the period of high market sector MFP growth in the mid-1990s, Agriculture, forestry and fishing, Wholesale trade and Communication services achieved MFP growth well above that of the market sector.

The contribution to market sector MFP growth by the primary sector since 1981 was at or above the average for 1974-75 to 2001-02. Manufacturing made the highest contribution of all the broad sectors to market sector MFP growth between 1974-75 and 2001-02. The contribution of the service sector has been generally low or negative since 1981-82, except for a very high contribution between 1993-94 and 1998-99.

The large increase in the contribution of the services sector to market sector MFP growth between 1993-94 and 1998-99 was mainly due to the improved contributions from Other services (the non-infrastructure industries).

Manufacturing provided the largest contribution of all the individual industries to market sector MFP growth for the period 1974-75 to 2001-02. During the 1980s, early 1990s and between 1998-99 and 2001-02, its contribution was more than double that of any other industry. Agriculture, forestry and fishing and Mining also provided significant contributions to aggregate MFP growth for much of the period since 1981-82. Wholesale trade made the highest contribution to aggregate MFP growth between 1993-94 and 1998-99.

Capital deepening

The extent of capital deepening has varied considerably between industries since 1974-75 but was high in Mining, Electricity, gas and water, Communication services and Finance and industries and very low in Agriculture, forestry and fishing.

Capital deepening was high in the mid to late 1990s in Mining, Manufacturing, Electricity, gas and water, Communication services, Finance and insurance and Cultural and recreational services, but very low in Construction and Transport and storage and declining in Agriculture, forestry and fishing.

Trends in industry productivity growth

The primary, manufacturing and infrastructure sectors (as defined in table 1) generally had above average MFP and labour productivity growth between 1974-75 and 2001-02. Other services had long periods of stagnating or declining MFP, but several achieved relatively high MFP growth during the 1990s.

During the high growth period of the mid-1990s, Agriculture, forestry and fishing, Construction, Wholesale trade and Communication services achieved high MFP growth relative to the market sector and historical own industry trends. During the lower growth period around the turn of the century, Agriculture, forestry and fishing, Mining, Manufacturing, Wholesale trade and Transport and storage achieved high MFP growth.

Contributions to output growth

A number of industries in the 1990s shared a common pattern of the contributions made by total inputs and MFP to output growth.

During the 1990s there was a substantial increase in output growth in Agriculture, forestry and fishing, Wholesale trade, Accommodation, cafes and restaurants, Transport and storage, and Finance and insurance. However, these industries also experienced a lower rate of total input growth than in the previous period. This indicated that the contribution of total inputs to output growth had declined. These industries experienced lower growth in both capital and labour inputs.

Some high output growth industries, such as Construction and Communication services, recorded an increase in total input growth, while for Retail trade total input growth remained at similar levels to the previous period.

For many industries in the 1990s, increased output growth was achieved with improved MFP growth. Communication services was one exception, where capital and labour input growth accounted for the increase in output growth.

Contributions to labour productivity growth

During the 1990s, labour productivity growth was high in Agriculture, forestry and fishing, Mining, Manufacturing, Electricity, gas and water, Wholesale trade, Transport and storage, Communication services and Finance and insurance.

MFP growth contributed the main part of total labour productivity growth in Agriculture, forestry and fishing, Wholesale trade, Transport and storage and Communication services in the 1990s. Capital deepening contributed the largest part of labour productivity growth in Mining, Manufacturing, Electricity, gas and water and Finance and insurance.

The increase in labour productivity growth in the 1990s in Agriculture, forestry and fishing, Wholesale trade, Retail trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance was largely accounted for by MFP growth. Capital deepening contributed the largest part of the increase in labour productivity growth in Manufacturing and Cultural and recreational services.

Features of high, low and new productivity growth industries

Contributions to output growth

In all periods since 1974-75, MFP growth provided the main contribution to output growth in the high MFP growth industries, while total input growth contributed the largest proportion of output growth in all periods in the low MFP growth industries. Total input growth also contributed the larger proportion of output growth in the new MFP growth industries in the mid to late 1990s.

The increase in output growth in both the high and low MFP growth industries in the mid to late 1990s was primarily attributable to an increase in total input growth. However, it was increased MFP growth that contributed much of the increase in output growth in the new MFP growth industries.

Capital input growth provided the main contribution to total input growth in the high and low MFP growth industries in all periods. However, labour input growth

generally contributed a greater proportion of total input growth in the low MFP growth industries than in the high growth industries. Capital and labour input growth contributed similar shares of total input growth in the new growth industries in the mid to late 1990s.

The increase in total input growth in the low MFP growth industries in the 1990s arose from both higher capital and higher labour contributions compared with the previous period. In the high MFP growth industries and the new MFP growth industries the increase was largely contributed by labour inputs.

Contributions to labour productivity growth

The pattern of contributions to labour productivity growth differed between the high and low labour productivity growth industries.

- MFP growth provided the main contribution to labour productivity growth in the high growth industries in each period, but capital deepening increased its proportionate contribution during the mid to late 1990s.
- Capital deepening provided the largest contribution to labour productivity growth in the low growth industries in each period.

MFP growth accounted for a slightly larger share of labour productivity growth in the new growth industries of the mid to late 1990s.

The increase in labour productivity growth in the 1990s in the high growth industries was largely contributed by increased capital deepening, with a smaller increase contributed by MFP growth. In contrast, the increase in growth in the mid to late 1990s in the low growth industries and the new growth industries was entirely, or almost entirely, the result of increased MFP growth.

1 Introduction

The measurement of industry and sectoral productivity growth is crucial to a full understanding of movements in aggregate productivity. It is at these levels that the technological change, economies of scale and other sources of productivity growth occur. Aggregate productivity reflects changes in the constituent sectors. It will increase if productivity in each sector also rises or if the relative size of the high productivity sectors increases.

Productivity growth in this paper is measured as multifactor productivity (MFP) and labour productivity growth. MFP growth is the increase in the real value of output relative to the increase of labour and capital. Labour productivity growth is the increase in output relative to the increase in labour. It is usually measured as output per hour worked and is influenced by the amount of capital available per unit of labour and the overall efficiency in factor use as measured by MFP. Consequently, labour productivity growth exceeds MFP growth when the capital-labour ratio is increasing.

The Australian Bureau of Statistics (ABS) publishes MFP estimates and related measures for the market sector as a whole (ABS Cat. no. 5204.0). The ABS also publishes estimates of industry labour productivity, but not of MFP. Industry estimates of MFP have been constructed and published by the Productivity Commission (1999), Johnston et al. (2000), Parham et al. (2000) and on the Commission's website. These estimates, as well as those in this study, are based on industry data on output, hours worked and capital input provided by the ABS by special request. The ABS hours worked data have been supplemented by data taken from Gretton and Fisher (1997).

Estimates are provided for labour productivity growth and MFP (labour and capital) growth for 12 industries: Agriculture, forestry and fishing; Mining; Manufacturing; Electricity, gas and water; Construction; Wholesale trade; Retail trade; Accommodation, cafes and restaurants; Transport and storage; Communication services; Finance and insurance; and Cultural and recreational services. The period covered is 1974-75 to 2001-02. However, estimates for the 1998-99 to 2001-02 should be treated with caution as they refer to an incomplete productivity cycle and are subject to revision of ABS data. Further years' estimates are available at the aggregate level and industry estimates are updated on the Commission's website.

Industry output data were supplied by the ABS as chain volume indexes of gross value added. The capital input used in estimating MFP is the capital services index measured by the ABS. Labour input for both productivity measures is an index of hours worked.

Different measures of output may be used as the basis for productivity measurement. Sector and industry productivity measures can be broadly distinguished between those that relate a measure of gross output to one or several inputs and those that use a value-added measure of output. For example, multifactor measures can take the form of capital-labour MFP based on a value-added concept of output or a capital-labour-intermediate inputs MFP based on a gross output concept (see OECD 2001, p. 10). In the former measure, a value-added output measure is related to capital and labour as inputs. In the latter, gross output is related to capital, labour and intermediate inputs.

In practice, labour productivity based on value-added output is the most commonly used measure of sectoral and industry productivity. The labour productivity and MFP estimates provided in this study are based on value added.

Theoretically, gross output is the generally preferred measure of industry/sector output because intermediate inputs are treated as a source of output growth, just as are capital and labour. Increased efficiency in intermediate input usage can contribute to productivity growth as well as improvements in labour and capital input usage. Failure to take account of changes in intermediate input usage, such as increased outsourcing, may lead to spurious productivity growth estimates. A gross output-based measure of MFP growth will differ from a value-added based measure to the extent that the ratio of value added (or intermediate input usage) to gross output changes. The two methods are examined further in a separate paper (Cobbold 2003).

However, data requirements have meant that sectoral estimates of gross output-based MFP are unavailable at present. The ABS intends to provide such estimates in the near future.

The value-added approach is commonly used, for example by the OECD. It provides a simple measure and ignores the difficulties of dealing with inter-industry and intra-industry flows of goods and services. It is also easier to use for international comparisons of productivity at the sector/industry level.

Value-added based MFP estimates should perhaps be interpreted as relating more to an industry's generation of income rather than output. Conceptually, an industry's output is readily viewed as the finished good (eg bread, motor vehicles), rather than the value added.

This paper provides a descriptive (growth accounting) analysis of the productivity performance of industries, rather than undertaking a more detailed analysis of the reasons for the trends. Chapter 2 reviews trends in sectoral MFP and labour productivity growth and the relative contributions to market sector growth according to cycles in market sector productivity. Chapter 3 looks at the productivity performance of each industry in more detail. Contributions to output growth and labour productivity growth are analysed for selected periods defined by changes in trend growth for each industry instead of by market sector growth cycles. Chapter 4 examines the characteristics of high and low productivity growth industries according to the market sector productivity growth cycles. A comparative analysis is carried out for several different classifications of industry sectors.

2 Trends in sectoral productivity growth

This chapter provides an overview of trends in sectoral MFP and labour productivity growth and the relative contributions to market sector growth. The sub-periods coincide with cycles in market sector productivity as defined by the ABS.[1] The start and end points of each cycle correspond to a peak in aggregate productivity. These cycles do not necessarily match the productivity cycles of the individual industry sectors and may give a misleading impression of their underlying rates of growth. However, the use of trend estimates reduces the effects of poor cycle matching and allows inter-industry comparisons of underlying productivity growth. Trend estimates are provided in appendix A.

2.1 Labour productivity growth

Table 2.1 shows that market sector labour productivity growth was 2.1 per cent a year between 1974-75 and 2001-02.

Actual labour productivity growth performance varied considerably between sectors (table 2.1). Average annual growth was high (above the market sector average) in six sectors over the whole period from 1974-75. These were Agriculture, forestry and fishing (2.9 per cent), Mining (3.7 per cent), Manufacturing (3.3 per cent), Electricity, gas and water (4.6 per cent), Transport and storage (2.9 per cent) and Communication services (6.8 per cent). Labour productivity growth was negative in Accommodation, cafes and restaurants and Cultural and recreational services for the whole period. It was below average in Construction, Wholesale trade, Retail trade and Finance and insurance.

In the high labour productivity growth period of 1993-94 to 1998-99, growth was above the market sector average in Agriculture, forestry and fishing, Mining, Electricity, gas and water, Wholesale trade, Communication services and Finance and insurance. Compared with the previous period, labour productivity growth increased in Construction, Wholesale trade, Retail trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance.

[1] The period 1998-99 to 2001-02 is an incomplete cycle and is likely to be subject to revision.

Table 2.1 **Labour productivity growth by industry, 1974-75 to 2001-02[a]**

Per cent per year

	1974-75 to 1981-82	*1981-82 to 1984-85*	*1984-85 to 1988-89*	*1988-89 to 1993-94*	*1993-94 to 1998-99*	*1998-99 to 2001-02*	*1974-75 to 2001-02*
Agriculture, forestry & fishing	3.3	4.2	-1.5	4.8	3.7	2.2	2.9
Mining	-2.5	11.6	2.7	5.3	5.2	7.1	3.7
Manufacturing	3.2	3.6	1.8	4.1	2.4	5.1	3.3
Electricity, gas & water	3.0	2.0	8.1	7.3	7.2	-1.7	4.6
Construction	3.7	0.5	0.3	0.4	2.4	-2.9	1.2
Wholesale trade	2.0	-2.3	2.2	-1.4	6.8	3.3	1.9
Retail trade	1.7	3.4	-2.3	1.6	2.3	1.1	1.3
Accommodation, cafes & restaurants	-0.1	-2.4	-0.1	-1.6	1.8	0.6	-0.2
Transport & storage	4.2	2.5	1.8	1.9	2.3	4.4	2.9
Communication services	7.7	4.8	6.4	9.6	7.4	1.7	6.8
Finance & insurance	-0.4	0.0	3.2	3.5	4.4	1.8	2.0
Cultural & recreational services	0.6	-2.4	-3.0	-0.4	-0.7	0.9	-0.7
Market sector	**2.4**	**2.2**	**0.8**	**2.0**	**3.2**	**1.8**	**2.1**

a ABS productivity growth cycles are used. Compound annual percentage change between MFP growth cycle peaks. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

In the most recent period, labour productivity growth was above the market sector average in Agriculture, forestry and fishing, Mining, Manufacturing, Wholesale trade and Transport and storage. Productivity growth in Manufacturing and Transport and storage was significantly higher in this period than for any other period since 1974-75. Similarly, labour productivity growth in Mining was much higher than in any earlier period, except for the mining boom between 1981-82 and 1984-85.

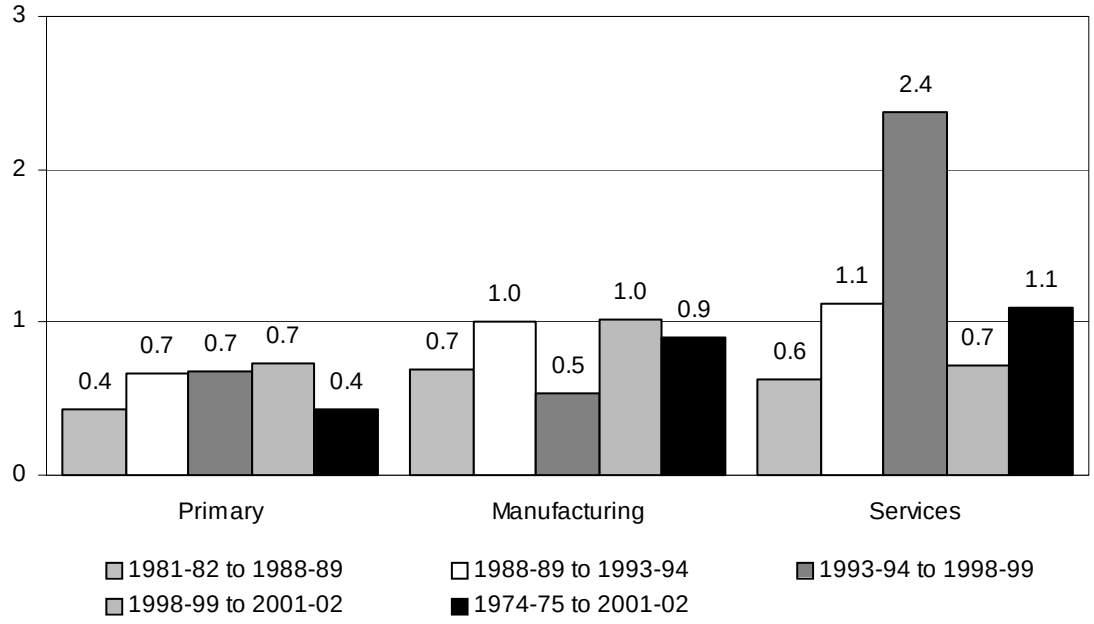
Compared with the previous period, productivity growth was lower between 1998-99 and 2001-02 in all industries except Mining, Manufacturing, Transport and storage and Cultural and recreational services. Productivity declined in Electricity, gas and water and Construction for the first time since 1974-75 and productivity growth in Communication services was the lowest since 1974-75. Estimates for the period 1998-99 to 2001-02 should be treated with caution as they refer to an incomplete productivity cycle and are subject to revision of ABS data.

Sectoral contributions to changes in market sector productivity growth rates need to take account of changes in the relative size of the various sectors. Figure 2.1 provides estimates of the contribution of broad industry groups to market sector labour productivity growth for selected sub-periods taking into account the relative size of sectors.

The contribution of the primary sector to market sector productivity growth has gradually increased since 1981-82. Since then, its contribution has been similar to, or above, its average contribution to market sector growth for 1974-75 to 2001-02. The contribution of the manufacturing sector has fluctuated considerably over the whole period and its average contribution for 1974-75 to 2001-02 was over twice that of the primary sector. The services sector contribution increased dramatically in each period until 1998-99 to 2001-02 when it fell just as dramatically and was significantly below its average contribution for the whole period. The services sector contributed the largest part of aggregate labour productivity growth between 1974-75 and 2001-02. It also provided by far the largest contribution to market sector labour productivity growth in the high growth period of 1993-94 to 2001-02 but there was a sharp decline in its contribution during 1998-99 to 2001-02.

Figure 2.1 **Industry sector contributions to average annual market sector labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a The sum of contributions may not add to the market sector productivity growth rate because of the use of base-period weights.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

The services sector contribution to market sector labour productivity growth for 1993-94 to 1998-99 was 2.4 percentage points, or about 66 per cent of market sector growth. This contribution can be disaggregated into the Infrastructure and Other services sectors, with the former comprising Electricity, gas and water, Construction, Transport and storage and Communication services. Other services contributed the largest part of the total services sector contribution, at 1.8 percentage points. In the earlier periods, the Infrastructure services sector had contributed the largest part of the total services sector contribution to market sector productivity growth. For example, between 1988-89 and 1993-94, Infrastructure services contributed about 0.7 of a percentage point of the total services sector contribution of 1.1 percentage points.

The contribution of Other services to market sector growth between 1998-99 and 2001-02 was much lower than in the previous period and was lower than that of the Infrastructure services sector. Other services contributed 0.3 of a percentage point compared with 0.4 of a percentage point by the Infrastructure services sector.

Mining and Manufacturing have consistently contributed a large part of market sector labour productivity growth since 1981-82 (figure 2.2). During the 1980s and early 1990s, the major contributors to market sector labour productivity growth were Mining, Manufacturing and Electricity, gas and water with Finance and insurance providing a large contribution in the early 1990s. The major contributors during the high labour productivity growth period between 1993-94 and 1997-98 were Mining, Manufacturing, Electricity, gas and water, Wholesale trade and Finance and insurance. In the most recent period, Mining, Manufacturing and Transport and storage provided the main contributions to growth.

Figure 2.2 **Industry contributions to average annual market sector labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points

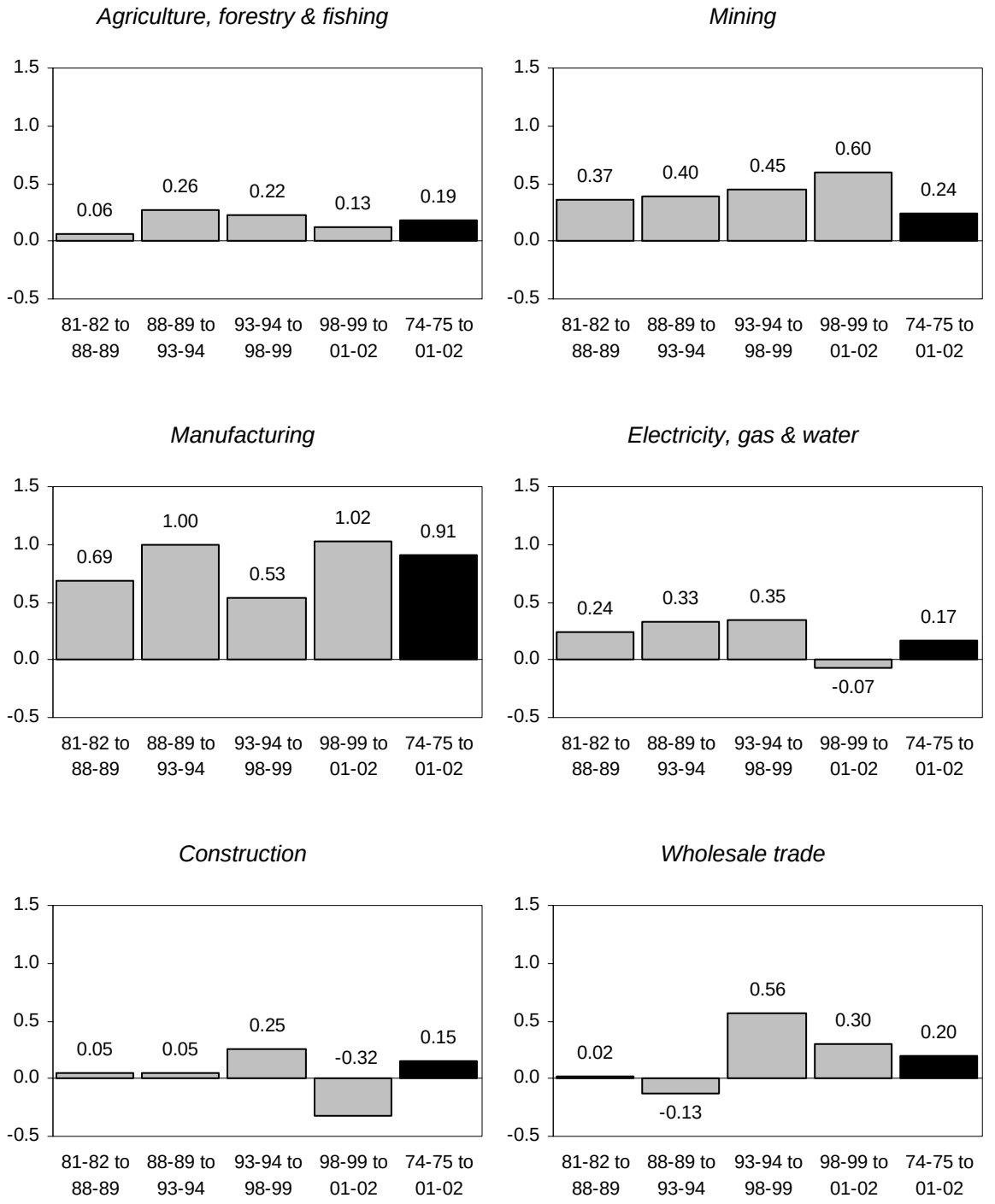


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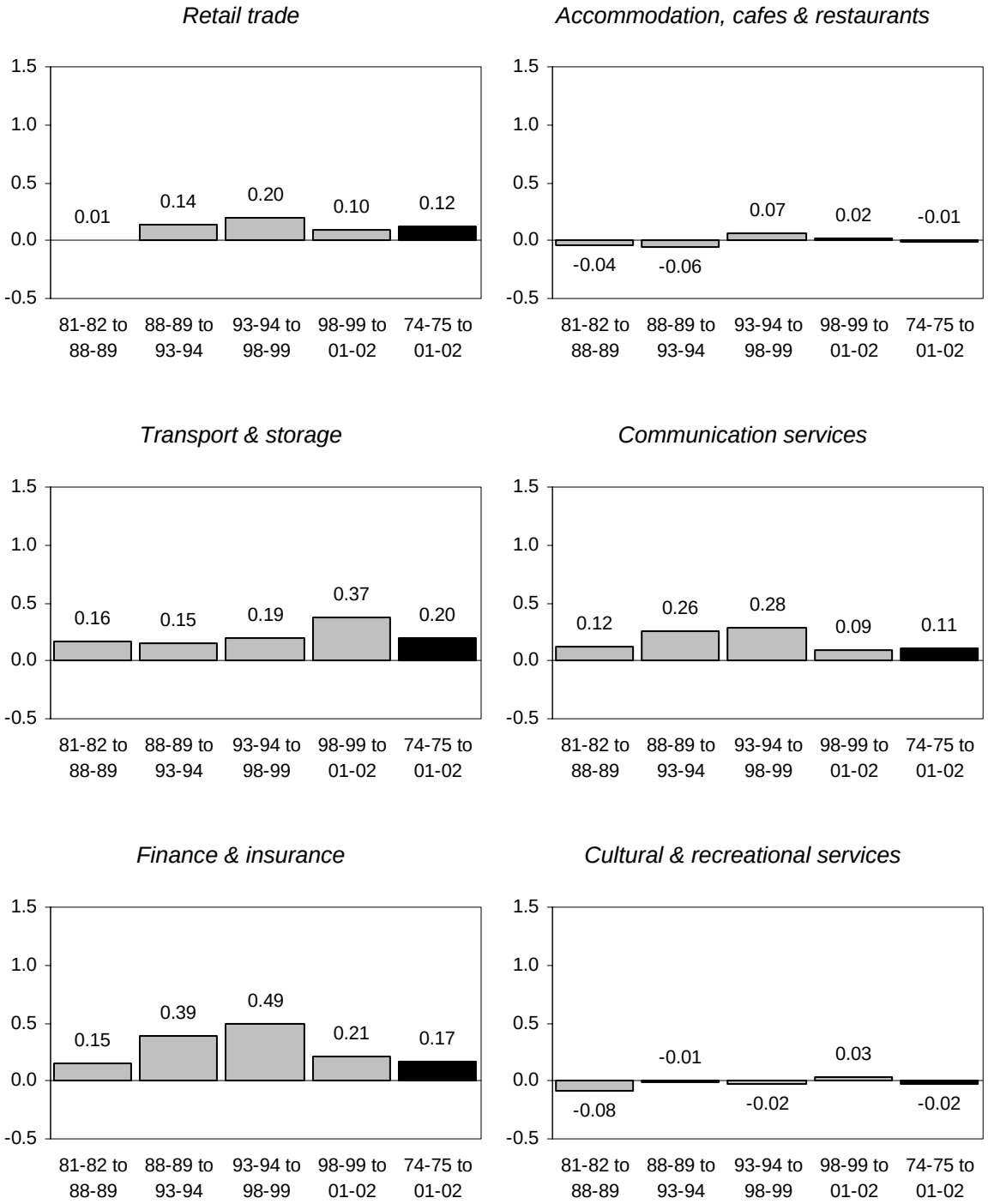
Figure 2.2 **(continued)**



a The sum of contributions may not add to the market sector productivity growth rate because of the use of base-period weights.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

2.2 Multifactor productivity growth

Table 2.2 shows that market sector MFP grew by an average annual rate of 1.0 per cent a year over the period 1974-75 to 2001-02. MFP growth was below the long-term rate for an extended period between 1981-82 and 1993-94. A major improvement occurred between 1993-94 and 1998-99 when market sector MFP growth was 1.8 per cent a year, the highest rate of growth for the whole period. In the most recent period, annual MFP growth was again below the long-term average rate.

Table 2.2 **Multifactor productivity growth by industry, 1974-75 to 2001-02[a]**
Per cent per year

	1974-75 to 1981-82	*1981-82 to 1984-85*	*1984-85 to 1988-89*	*1988-89 to 1993-94*	*1993-94 to 1998-99*	*1998-99 to 2001-02*	*1974-75 to 2001-02*
Agriculture, forestry & fishing	3.2	2.8	-1.6	4.3	4.3	3.1	2.8
Mining	-3.8	5.8	2.4	2.3	0.1	3.0	0.7
Manufacturing	2.3	2.0	1.5	2.0	0.5	2.8	1.8
Electricity, gas & water	2.2	1.2	5.1	4.0	1.8	-2.0	2.3
Construction	2.6	-0.7	-0.3	-0.5	2.2	-2.7	0.6
Wholesale trade	0.5	-2.5	1.8	-2.2	5.8	2.1	1.0
Retail trade	0.9	2.6	-2.6	0.7	1.4	0.5	0.6
Accommodation, cafes & restaurants	-0.5	-2.9	-1.4	-1.9	0.8	-0.1	-0.9
Transport & storage	2.8	1.4	0.8	0.8	1.8	3.3	1.8
Communication services	6.1	3.2	3.6	6.1	5.1	-2.2	4.3
Finance & insurance	-2.8	-1.1	1.5	0.0	1.7	-1.1	-0.5
Cultural & recreational services	-0.5	-1.9	-4.6	-2.4	-4.1	-2.1	-2.5
Market sector	**1.1**	**0.8**	**0.4**	**0.7**	**1.8**	**0.5**	**1.0**

a ABS productivity growth cycles are used. Compound annual percentage change between MFP growth cycle peaks. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

The pattern of market sector MFP growth was similar to that of labour productivity growth between 1974-75 and 1988-89, but markedly different thereafter. As in the case of labour productivity growth, MFP growth between 1974-75 and 1984-85 was similar to its long-term average growth rate. Between 1984-85 and 1988-89, both MFP and labour productivity growth were significantly below their respective long-term average rates. Between 1988-89 and 1993-94, labour productivity growth recovered to its long-term average rate, while MFP growth was about 70 per cent of its long-term rate. However, the increase in MFP growth in the mid-1990s was

much higher than in the case of labour productivity growth. MFP growth was about 160 per cent of that of the previous period, while labour productivity growth increased by about 60 per cent. In the most recent period, there was a much larger reduction in the MFP growth rate than for labour productivity growth.

Actual MFP growth performance has varied considerably between industries. Average annual growth was high (above the market sector average) in five industries over the period from 1974-75 to 2001-02. These were Agriculture, forestry and fishing (2.8 per cent a year), Manufacturing (1.8 per cent), Electricity, gas and water (2.3 per cent), Transport and storage (1.8 per cent) and Communication services (4.3 per cent).

Growth was low or negative in the other industries, except Wholesale trade which was equal to the long-term market sector rate. It was negative in Accommodation, cafes and restaurants, Finance and insurance and Cultural and recreational services over the whole period. It was also significantly below average in Construction and Retail trade.

In the period of high MFP growth in the market sector in the mid-1990s, Agriculture, forestry and fishing, Wholesale trade and Communication services achieved MFP growth well above that of the market sector. Compared with the previous period, increases in MFP growth occurred in Construction, Wholesale trade, Retail trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance.

In the latest low growth period, MFP growth for Agriculture, forestry and fishing, Mining, Manufacturing, Wholesale trade and Transport and storage was well above the market sector rate. In the case of Mining, Manufacturing and Transport and storage it was the highest of any period since 1974-75, except for Mining between 1981-82 and 1984-85. Productivity declined in Electricity, gas and water, Construction, Accommodation, cafes and restaurants, Communication services, Finance and insurance and Cultural and recreational services and the rate of growth in Wholesale trade and Retail trade was much lower than in the previous period.

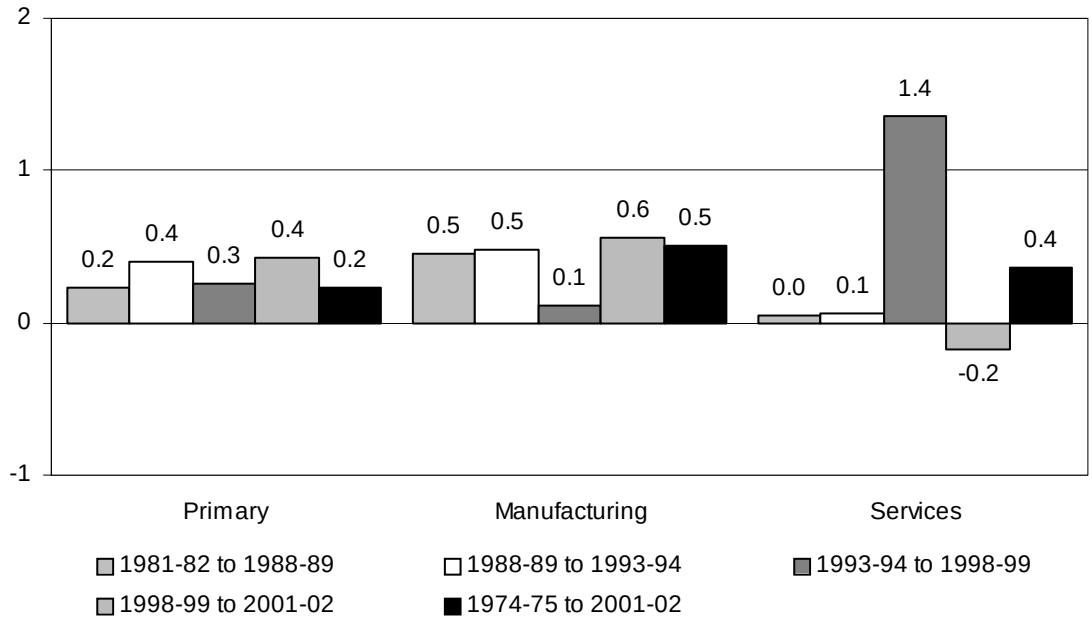
Industry contributions to market sector MFP growth need to take account of changes in the relative size of the various industries and this is done in the estimates shown in figure 2.3 for selected periods.

Figure 2.3 shows that the contributions to market sector MFP growth, by the broad industry sector groups, have fluctuated since 1981-82, especially for the services sector. The contribution of the primary sector was at or above the average for 1974-75 to 2001-02 since the early 1980s. The manufacturing sector made the highest contribution of all the broad sectors since 1974-75, except in the period of

high market sector growth between 1993-94 and 1998-99. The contribution of the services sector has been generally low or negative since 1981-82, except for a very high contribution (1.4 percentage points) between 1993-94 and 1998-99. The services sector provided by far the largest contribution to market sector MFP growth in the high growth period of 1993-94 to 2001-02, but a negative contribution for 1998-99 to 2001-02. The turnaround in market sector MFP growth in 1998-99 to 2001-02 can be largely explained by this negative contribution of the services sector.

Figure 2.3 **Industry sector contributions to average annual market sector multifactor productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a The sum of contributions may not add to the market sector productivity growth rate because of the use of base-period weights.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

This increase in the proportion of market sector productivity growth contributed by the services sector between 1993-94 and 1998-99 was largely due to the improved contributions from the non-infrastructure, or Other services, industries. Between 1981-82 and 1993-94, Infrastructure services accounted for almost all MFP growth in the services sector, because the contribution of the Other services industries was generally negative. Between 1993-94 and 1998-99, Other services contributed 1.1 percentage points to market sector MFP growth, or nearly 80 per cent of the services sector contribution. However, positive contributions to market sector growth in the most recent period were made only by Wholesale trade, Retail trade and Transport and storage.

Manufacturing provided the largest contribution to market sector MFP growth for the period 1974-75 to 2001-02 (figure 2.4). During the 1980s, early 1990s and between 1998-99 and 2001-02, its contribution was more than double that of any other industry. Agriculture, forestry and fishing and Mining provided significant contributions to aggregate MFP growth for much of the period since 1981-82. Wholesale trade made the highest contribution to aggregate MFP growth between 1993-94 and 1998-99, but significant contributions were also made by Agriculture, forestry and fishing, Construction, Communication services and Finance and insurance. During the most recent period, the Mining, Manufacturing, Wholesale trade and Transport and storage provided the main contributions to aggregate MFP growth.

2.3 Capital deepening

Capital deepening is determined by the capital share in total factor income and growth in the capital-labour ratio. It is equal in magnitude to the difference between the rates of labour productivity and MFP growth.

Tables 2.1 and 2.2 show that labour productivity growth was higher than MFP growth in all periods, indicating capital deepening in each period. A comparison of productivity growth rates shows that capital deepening was increasing at over 1 per cent a year for the period 1974-75 to 2001-02. It was above the long-term average for each period between 1974-75 and 2001-02, except between 1984-85 and 1988-89 when it was quite low.

Capital deepening contributed 50 per cent or more of aggregate labour productivity growth in each period, except the high growth period between 1993-94 and 1998-99 when MFP growth accounted for 56 per cent of market sector labour productivity growth.

Tables 2.1 and 2.2 also show that labour productivity growth was higher than MFP growth in all industries between 1974-75 and 2001-02. However, the extent of capital deepening varied considerably between industries. It was very high in Mining, Electricity, gas and water, Communication services and Finance and insurance and very low in Agriculture, forestry and fishing.

In the high growth period of the mid-1990s, capital deepening was significantly above the market sector rate in the Mining, Electricity, gas and water, Communication services, Finance and insurance and Cultural and recreational services industries. It was well below the market sector average in Construction and Transport and storage and declined in Agriculture, forestry and fishing.

Figure 2.4 **Industry contributions to average annual market sector multifactor productivity growth, 1974-75 to 2001-02[a]**

Percentage points

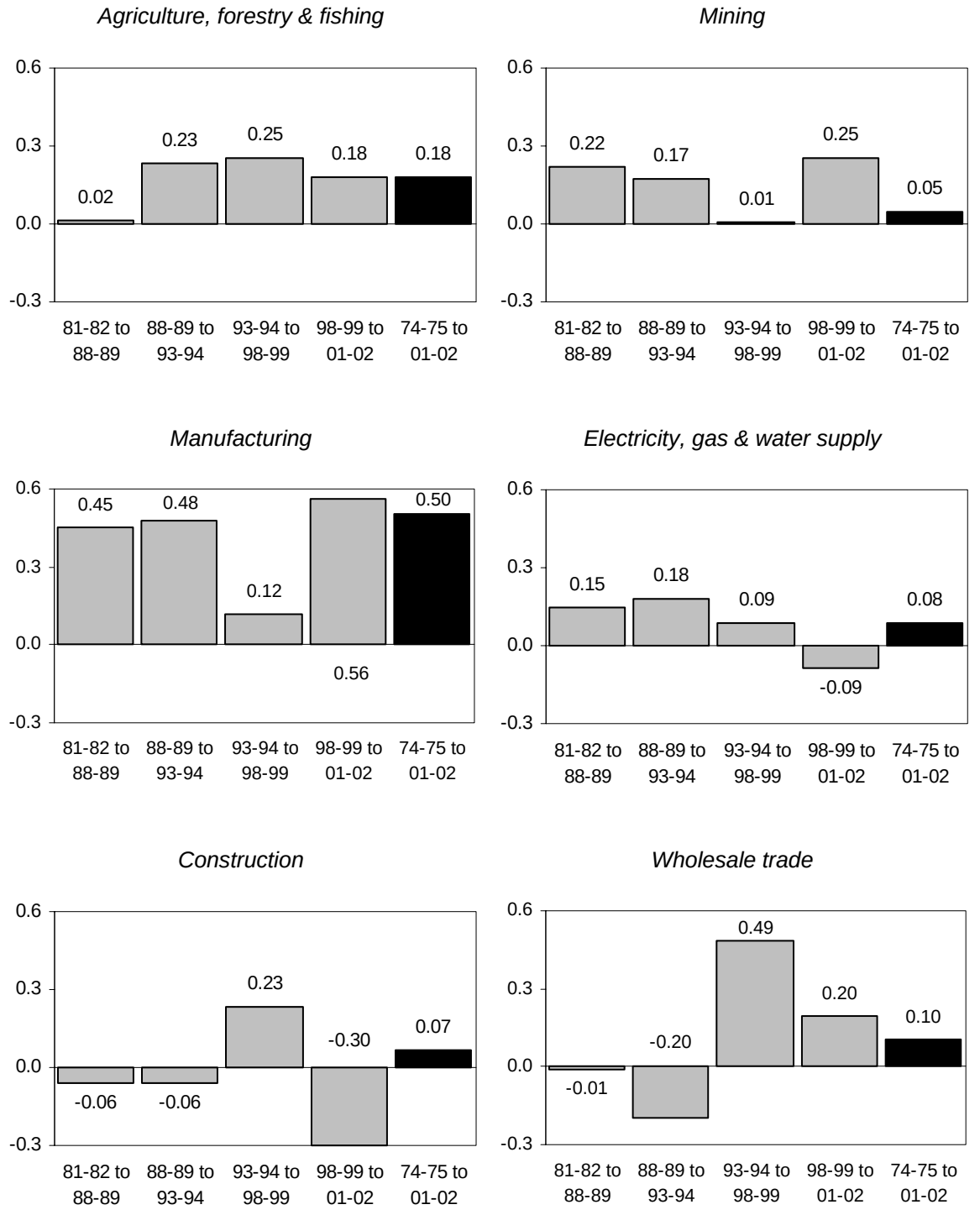


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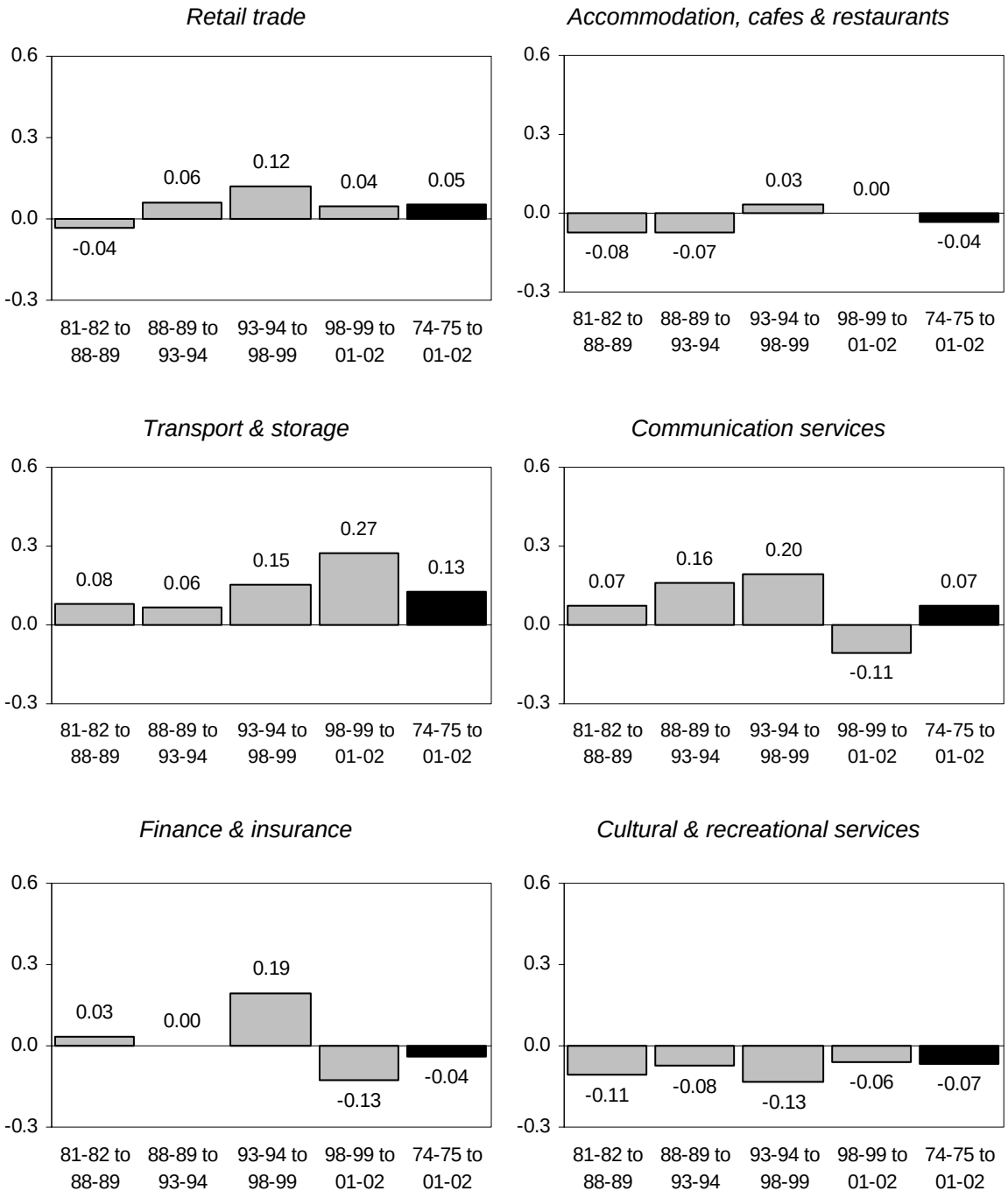
Figure 2.4 **(continued)**



a The sum of contributions may not add to the market sector productivity growth rate because of the use of base-period weights.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

In the most recent period, capital deepening continued above the market rate in Mining, Manufacturing, Communication services, Finance and insurance and Culture and recreational services. It declined again in Agriculture, forestry and fishing and was very low in Electricity, gas and water and Construction.

2.4 Summary

Labour productivity

Labour productivity growth was high (above the market sector average) in Agriculture, forestry and fishing, Mining, Manufacturing, Electricity, gas and water, Transport and storage and Communication services over the period 1974-75 to 2001-02. Agriculture, forestry and fishing, Mining, Electricity, gas and water, Wholesale trade, Communication services and Finance and insurance had high labour productivity growth during the high growth period of 1993-94 to 1998-99.

The contribution of the primary sector to market sector productivity growth has increased since 1981-82 and was generally above its average contribution to market sector growth for 1974-75 to 2001-02. The contribution of the manufacturing sector fluctuated considerably over the whole period, but its average contribution to aggregate productivity growth for 1974-75 to 2001-02 was over twice that of the primary sector.

The services sector contribution increased between 1981-82 and 1998-99, after which it fell just as dramatically. The services sector contributed the largest part of aggregate labour productivity growth between 1974-75 and 2001-02. It also provided by far the largest contribution to market sector labour productivity growth in the high growth period of 1993-94 to 2001-02, but the lowest contribution during 1998-99 to 2001-02.

Except for the period 1993-94 to 1998-99, Infrastructure services contributed the largest part of service sector labour productivity growth since 1981-82. Other services contributed the largest part of the high service sector labour productivity growth between 1993-94 and 1998-99.

Mining and Manufacturing have consistently contributed a large part of aggregate labour productivity growth since 1981-82.

Multifactor productivity

Average annual MFP growth was high over the period from 1974-75 to 2001-02 in Agriculture, forestry and fishing, Manufacturing, Electricity, gas and water, Transport and storage and Communication services. In the period of high market sector MFP growth in the mid-1990s, Agriculture, forestry and fishing, Wholesale trade and Communication services achieved MFP growth well above that of the market sector.

The contribution to market sector MFP growth by the primary sector since 1981 was at or above the average for 1974-75 to 2001-02. The manufacturing sector made the highest contribution of all the broad sectors to market sector MFP growth since 1974-75. The contribution of the service sector has been generally low or negative since 1981-82, except for a very high contribution between 1993-94 and 1998-99.

The largest increase in the service sector contribution to market sector MFP growth between 1993-94 and 1998-99 was mainly due to the improved contributions from the Other services, or non-infrastructure, industries.

Manufacturing provided the largest contribution of all the individual industries to market sector MFP growth for the period 1974-75 to 2001-02. During the 1980s, early 1990s and between 1998-99 and 2001-02, its contribution was more than double that of any other industry sector. Agriculture, forestry and fishing and Mining provided significant contributions to aggregate MFP growth for much of the period since 1981-82. Wholesale trade made the highest contribution to aggregate MFP growth between 1993-94 and 1998-99.

Capital deepening

The extent of capital deepening varied considerably between industries since 1974-75, but was high in Mining, Electricity, gas and water, Communication services and Finance and insurance and very low in Agriculture, forestry and fishing.

Capital deepening was high in the mid to late 1990s in the Mining, Electricity, gas and water, Communication services, Finance and insurance and Cultural and recreational services industries but very low in Construction and Transport and storage and declining in Agriculture, forestry and fishing.

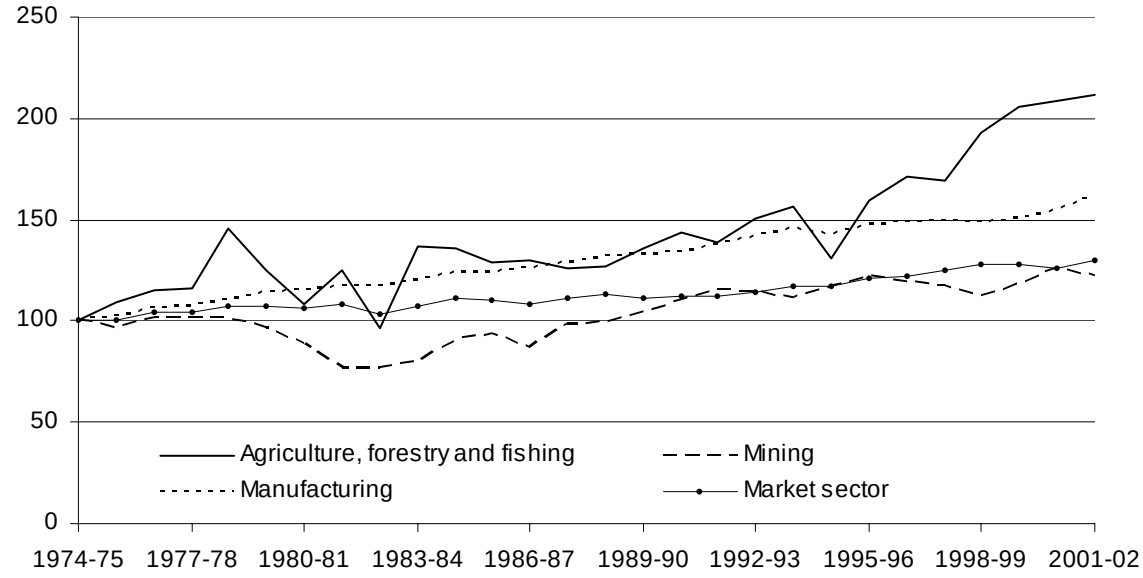
3 Productivity growth by industry

This chapter considers in more detail trends in productivity growth in the 12 industries comprising the market sector of the Australian economy and analyses the contributions to output growth and labour productivity growth. Additional details are provided in appendix A. In contrast to the previous chapter, the growth estimates for individual industries are calculated according to particular periods defined by deflection points in trend growth for each industry. The purpose is to define periods of interest to contrast and compare. As a result, the periods for which growth rates are estimated do not necessarily coincide with productivity growth cycles of the industries.

3.1 Primary and manufacturing industries

Agriculture, forestry and fishing and Manufacturing achieved relatively high MFP growth between 1974-75 and 2001-02, while MFP growth in Mining was below the average for the market sector for much of the period (figure 3.1).

Figure 3.1 **Multifactor productivity, primary and manufacturing industries and market sector, 1974-75 to 2001-02**
Index 1974-75 = 100



Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Agriculture, forestry and fishing

MFP in Agriculture, forestry and fishing is highly volatile, as demonstrated by figure 3.1, and peak-to-peak cycles are not very meaningful. Trend estimates of MFP in Agriculture, forestry and fishing (figure A.1) show two distinct periods of productivity performance:

- steadily increasing MFP from the mid-1970s to the end of the 1980s; and
- higher MFP growth in the 1990s.

Actual growth in MFP in the two periods was 1.7 and 4.0 per cent a year, respectively (table A.1). Large fluctuations in MFP occurred in the late 1970s, early 1980s and mid-1990s.

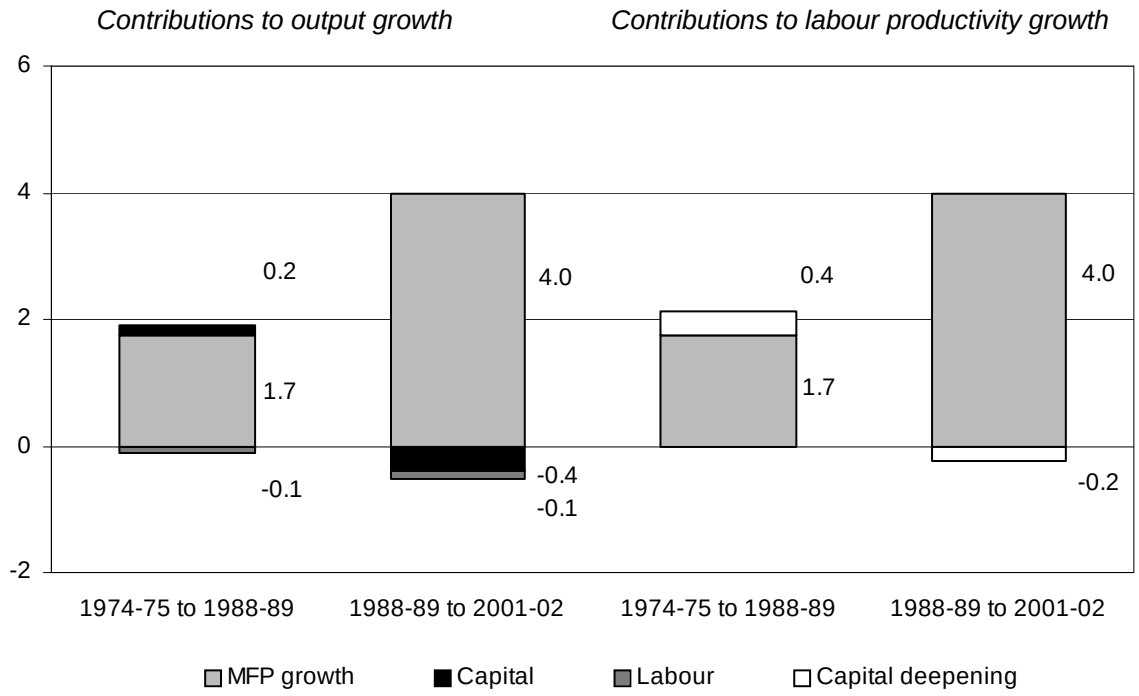
Table A.1 shows that output growth was also higher in the second period at 3.5 per cent a year compared with 1.8 per cent a year. Total input growth was negligible in the first period and declined slightly in the second. Capital input growth was slightly positive in the first period and slightly negative in the second, while labour input declined slightly in both periods.

MFP growth contributed the largest part of output growth in both periods, particularly in the 1990s when the increase in output growth was entirely due to improved MFP (figure 3.2).

Labour productivity growth for the two periods was 2.1 and 3.8 per cent a year, respectively (table A.1). MFP performance was the main influence on labour productivity growth throughout the period, accounting for 80 and 105 per cent of labour productivity growth in the two periods (figure 3.2). The increase in labour productivity growth in the 1990s was entirely due to increased MFP growth as capital deepening was lower than in the earlier period.

Figure 3.2 **Agriculture, forestry and fishing, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Mining

The Mining industry experienced three distinct periods of MFP performance since 1974-75 (figure A.4):

- declining MFP to 1982-83;
- high growth from 1982-83 until 1992-93; and
- low growth between 1992-93 and 2001-02.

Actual growth in MFP in the three periods was -3.2, 4.0 and 0.8 per cent a year, respectively (table A.2). Large fluctuations about the trend occurred in several years over the whole period. Figure 3.1 shows that there has been a strong recovery in MFP in recent years following a decline.

Table A.2 shows that output growth was very high in the 1980s (7.1 per cent a year) but lower, though still strong, in the 1990s (3.8 per cent a year). Total input growth was strong over the whole period, although slightly lower in the middle period,

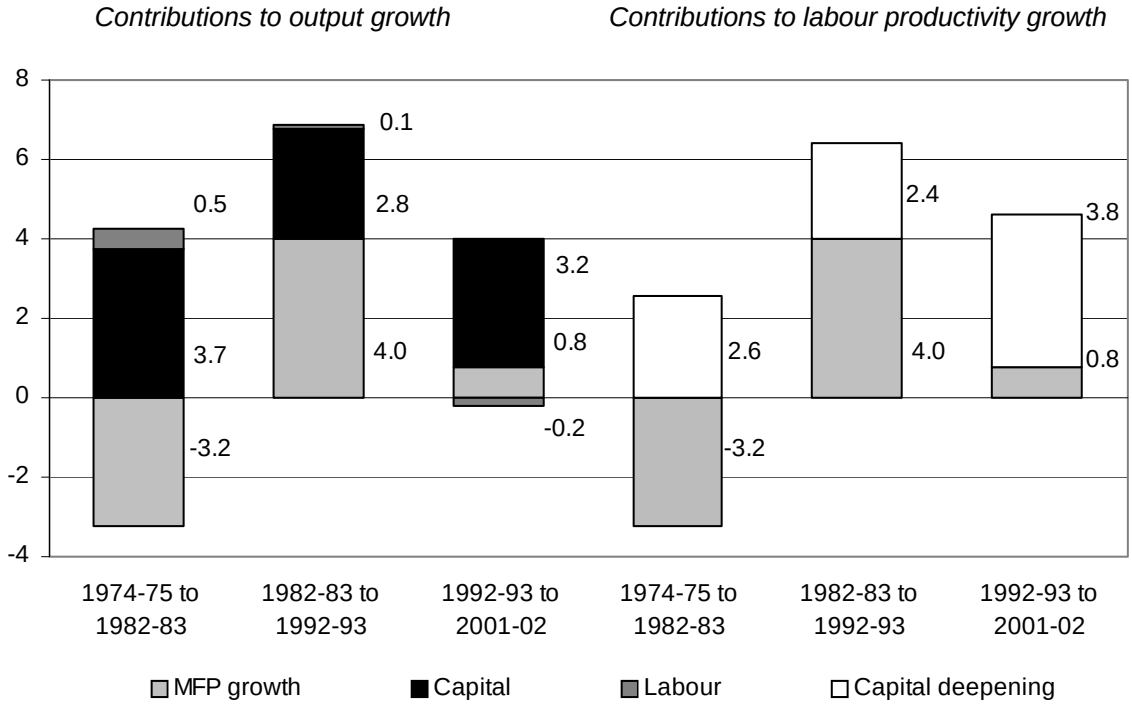
increasing at 4.2, 3.0 and 3.0 per cent a year, respectively, for each period. Capital input growth was high over the whole period, while labour input growth was very low during the 1980s and slightly negative in the 1990s.

Total input growth provided the main contribution to output growth between 1974-75 and 1982-83 and between 1992-93 and 2001-02. MFP growth accounted for 56 per cent of output growth between 1982-83 and 1992-93 and 21 per cent between 1992-93 and 2001-02 (figure 3.3). Input growth in each period was almost entirely due to capital input growth.

Labour productivity declined also in the first period, but was high in the following two periods, the actual rates being -0.8, 6.6 and 4.6 per cent a year, respectively (table A.2). MFP growth contributed 61 per cent of labour productivity growth between 1982-83 and 1992-93, while capital deepening provided the main contribution between 1992-93 and 2001-02, contributing 83 per cent of labour productivity growth (figure 3.3).

Figure 3.3 **Mining, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Manufacturing

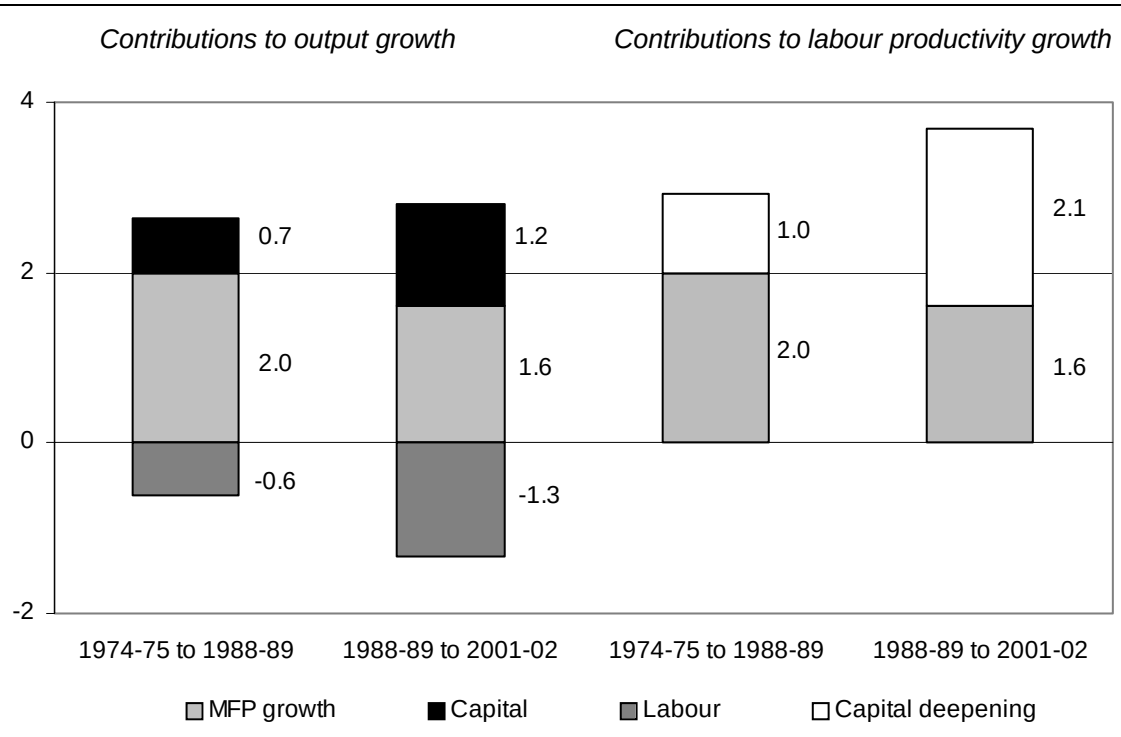
Figure 3.1 shows a pattern of fairly steady growth in Manufacturing MFP between 1974-75 and 2001-02. Actual MFP growth was slightly higher between 1974-75 and 1988-89 at 2.0 per cent a year compared with 1.6 per cent a year between 1988-89 and 2001-02 (table A.3). After a period of stagnation in the 1990s, MFP growth has accelerated in recent years.

Output growth was low throughout the period, while total input growth was negligible. Labour input declined over the whole period, with significant reductions in the 1990s. Capital input growth was modest in the first period and strong in the second.

MFP growth contributed all the output growth over the whole period as there was no growth in total inputs (figure 3.4). Labour productivity growth was fairly steady in both periods at 2.9 and 3.7 per cent a year, respectively (table A.3). MFP growth was the main influence on labour productivity performance in the first period and capital deepening in the second (figure 3.4).

Figure 3.4 **Manufacturing, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

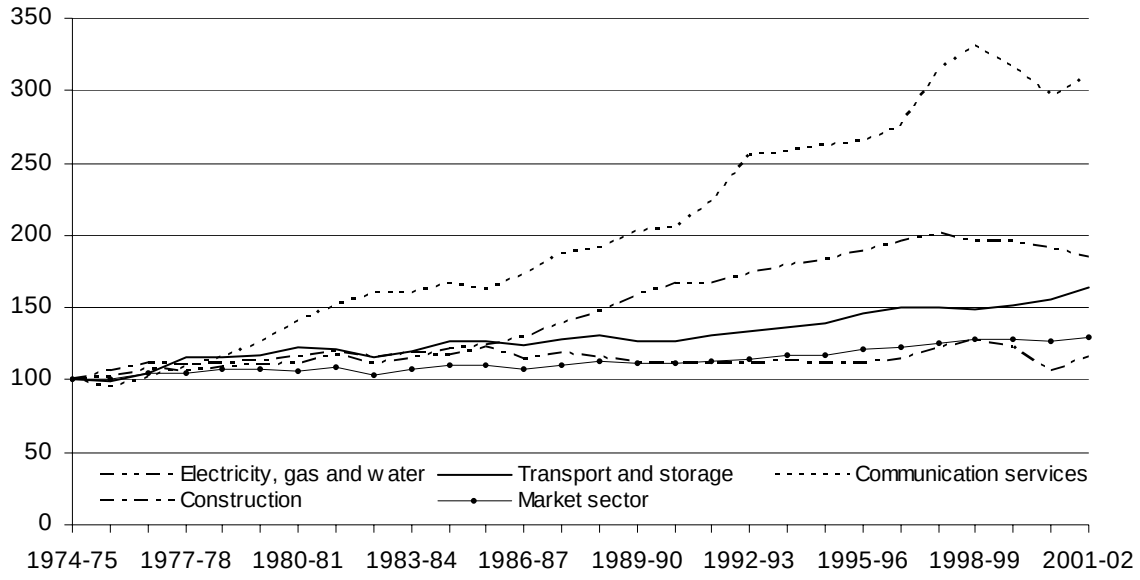
Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

3.2 Economic infrastructure industries

Except for Construction, the Infrastructure industries achieved relatively high MFP growth between 1974-75 and 2001-02 (figure 3.5). Communication services in particular had very high growth throughout the period.

Figure 3.5 **Multifactor productivity, infrastructure industries, 1974-75 to 2001-02**

Index 1974-75 = 100



Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Electricity, gas and water

Trend estimates of MFP (figure A.10) in the Electricity, gas and water industry suggest three distinct phases of growth:

- modest growth between 1974-75 and 1982-83;
- high growth between 1982-83 and 1992-93; and
- low growth between 1992-93 and 2001-02.

Actual growth rates for these periods were 1.5, 4.4 and 0.7 per cent a year, respectively (table A.4). However, figure 3.5 shows that MFP has been declining since 1997-98, in stark contrast with the strong growth recorded up until then.

Output growth was strong in the 1970s and 1980s but was much lower in the 1990s. The actual rates were 4.6, 3.6 and 1.7 per cent a year, respectively. Total input

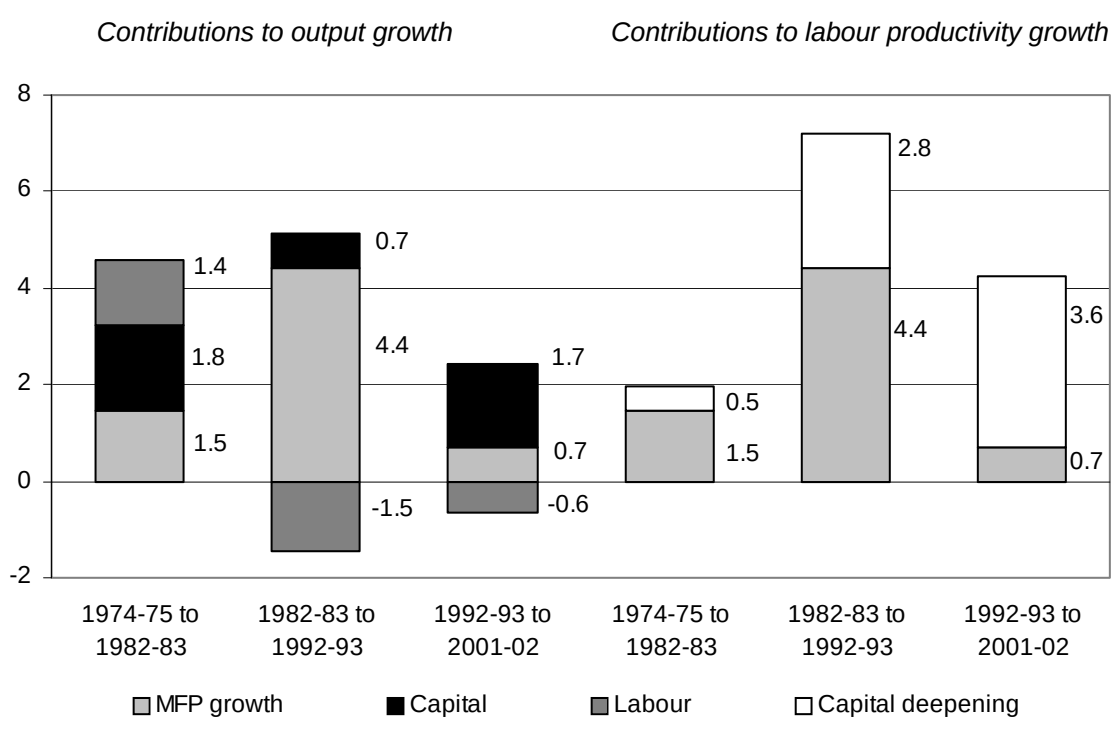
growth was strong in the first period (3.1 per cent a year) but declined or was very low in the following two periods (-0.8 and 1.0 per cent a year). Labour input declined at a high rate in both the 1980s and 1990s.

Total input growth contributed 67 per cent of output growth in the first period and 59 per cent of output growth in the last period (figure 3.6). MFP growth contributed all the output growth in the 1980s. The lower output growth in the 1990s was associated with lower MFP growth as total input growth was higher in this period than in the previous one. The increased contribution from total input growth in this period came entirely from capital input growth as labour input continued to decline.

Labour productivity growth was modest between 1974-75 and 1982-83, but was very high thereafter. The actual rates were 2.0, 7.3 and 4.1 per cent a year in the respective periods (table A.4). In the first two periods, MFP growth contributed 75 and 60 per cent, respectively, of labour productivity growth, while capital deepening was the main influence in the third period, contributing 88 per cent of growth (figure 3.6).

Figure 3.6 **Electricity, gas and water, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Construction

The trend estimates of MFP (figure A.13) indicate three distinct phases in MFP growth in the Construction sector since 1974-75. These are:

- modest MFP growth between 1974-75 and 1982-83;
- a slight decline in MFP between 1982-83 and 1992-93; and
- very low MFP growth between 1992-93 and 2001-02.

The actual growth rates for the three periods were 1.9, -0.4 and 0.5 per cent a year (table A.5). Actual MFP fluctuated widely in the last period, with a large increase between 1994-95 and 1998-99 followed by a very large decline and then a partial recovery.

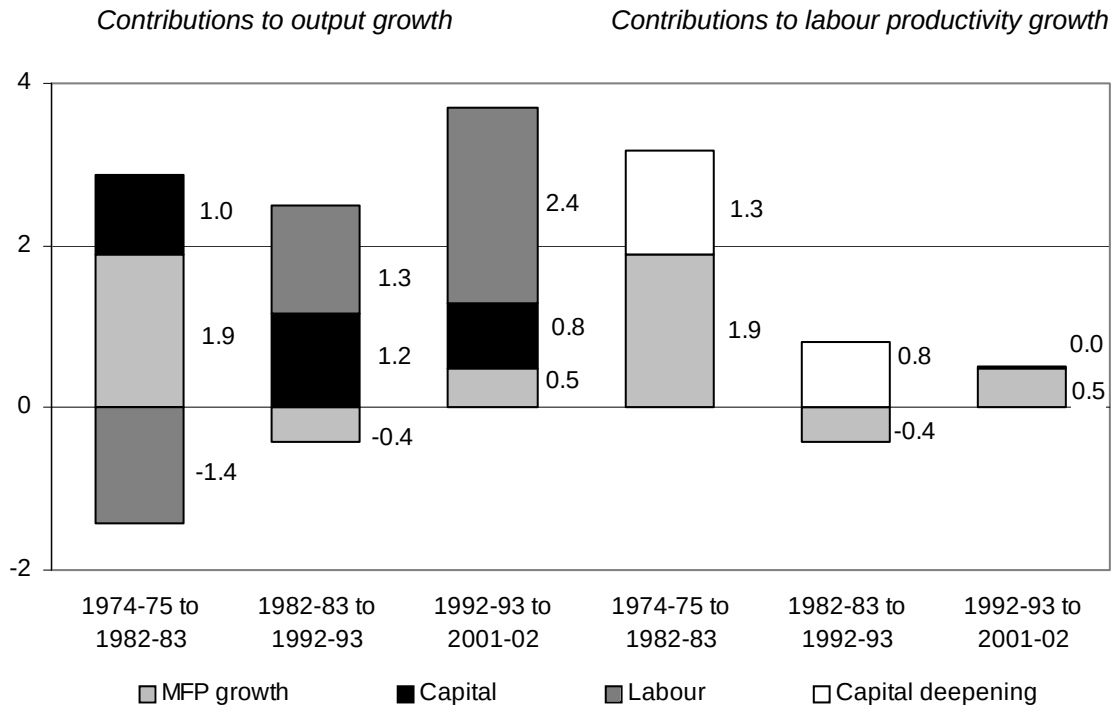
Output growth has progressively increased over the three periods and was quite strong between 1992-93 and 2001-02. Total input growth declined in the first period but was strong in following periods at 2.5 and 3.2 per cent a year, respectively. Capital input growth was very high in the first two periods and lower in the last period. Labour input growth was high in the 1990s.

MFP growth contributed all of output growth in Construction between 1974-75 and 1982-83 (figure 3.7). Total input growth contributed all of output growth between 1982-83 and 1992-93 and 86 per cent of growth in the 1990s. The increase in input growth in the 1990s was accounted for by labour input growth.

Labour productivity growth was strong between 1974-75 and 1982-83 but was low in the following periods. The actual rates were 3.2, 0.4 and 0.5 per cent a year in the respective periods (table A.5). MFP growth contributed the largest proportion of labour productivity growth between 1974-75 and 1982-83 and all of the growth between 1992-93 and 2001-02 (figure 3.7). Capital deepening contributed all of the labour productivity growth in the middle period.

Figure 3.7 **Construction, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Transport and storage

The trend estimates of MFP (figure A.25) suggest three periods of productivity performance in Transport and storage:

- strong MFP growth between 1974-75 and 1981-82;
- low MFP growth between 1981-82 and 1990-91; and
- strong MFP growth between 1990-91 and 2001-02.

Actual MFP growth rates were 2.8, 0.5 and 2.4 per cent a year, respectively (table A.9).

Output growth was generally high between 1974-75 and 2001-02 at 4.6, 3.3 and 4.2 per cent, respectively, for the three periods (table A.9). Total input growth was strong, particularly during the 1980s when it increased at 2.8 per cent a year. Labour input growth was generally modest in all periods, while capital input growth was high in the 1970s and 1980s but lower in the 1990s.

Figure 3.8 shows that MFP growth provided the largest contribution to output growth between 1974-75 and 1981-82 (61 per cent). Total input growth contributed the largest part of output growth in the following period (85 per cent), while MFP growth contributed the slightly larger share in 1990s (57 per cent). Capital input growth contributed the main part of total input growth in each period.

Labour productivity growth was 4.2, 1.5 and 3.2 per cent a year for the respective periods (table A.9). MFP growth was the main influence on labour productivity performance in the first and third periods and capital deepening the main influence in the middle period (figure 3.8).

Figure 3.8 **Transport and storage, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**
Percentage points

a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Communication services

Figure 3.5 shows that MFP in Communication services was very high throughout the period since 1974-75. Growth was higher during the 1970s and 1980s (4.9 per cent a year) than in the 1990s (3.3 per cent a year).

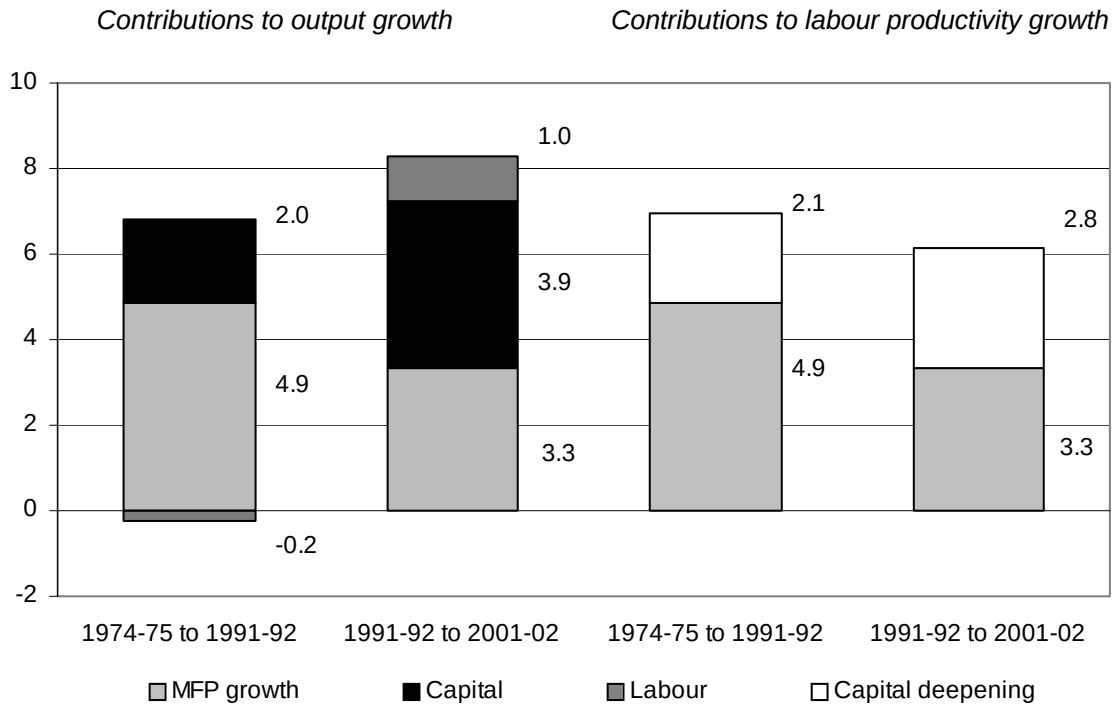
Output growth was very high at 6.7 per cent a year between 1974-75 and 1991-92 and 8.5 per cent a year between 1991-92 and 2001-02 (table A.10). Total input growth was very high in the 1990s (5.0 per cent a year) as a result of very high capital and labour input growth.

MFP growth contributed nearly 75 per cent of output growth in the first period and about 40 per cent in the last period (figure 3.9). Capital input growth contributed about 80 per cent of total input growth during the 1990s. The increase in output growth in the 1990s was due to the large increase in total input growth as MFP growth was lower in this period than in the previous one.

Labour productivity growth was high throughout the whole period at 7.1 and 6.2 per cent a year for the respective sub-periods (table A.10). MFP growth accounted for the major part of labour productivity growth in both periods (figure 3.9).

Figure 3.9 **Communication services, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



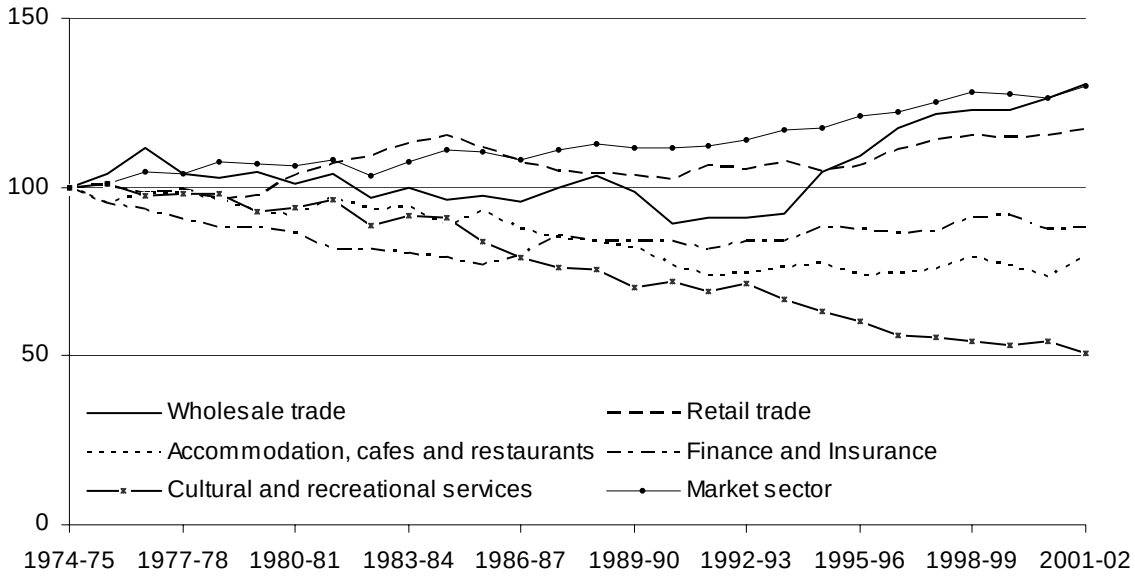
a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

3.3 Other services industries

Figure 3.10 shows that the Other services industries experienced long periods of stagnation and/or decline in MFP between 1974-75 and 2001-02. However, strong MFP growth occurred in Wholesale trade in the last half of the 1990s.

Figure 3.10 **Multifactor productivity, Other services industries and market sector, 1974-75 to 2001-02**
Index 1974-75 = 100



Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Wholesale trade

The trend estimates of MFP (figure A.16) show that Wholesale trade had two distinct periods of productivity performance since 1974-75:

- declining MFP to the end of the 1980s; and
- strongly increasing MFP in the 1990s.

Actual growth in MFP in the two periods was -0.1 and 2.4 per cent a year, respectively (table A.6). However, there were three distinct phases in actual MFP growth in the 1990s. Growth was low between 1989-90 and 1993-94 but exceeded the trend rate between 1993-94 and 1997-98. Since then, growth has been lower than or at the trend rate.

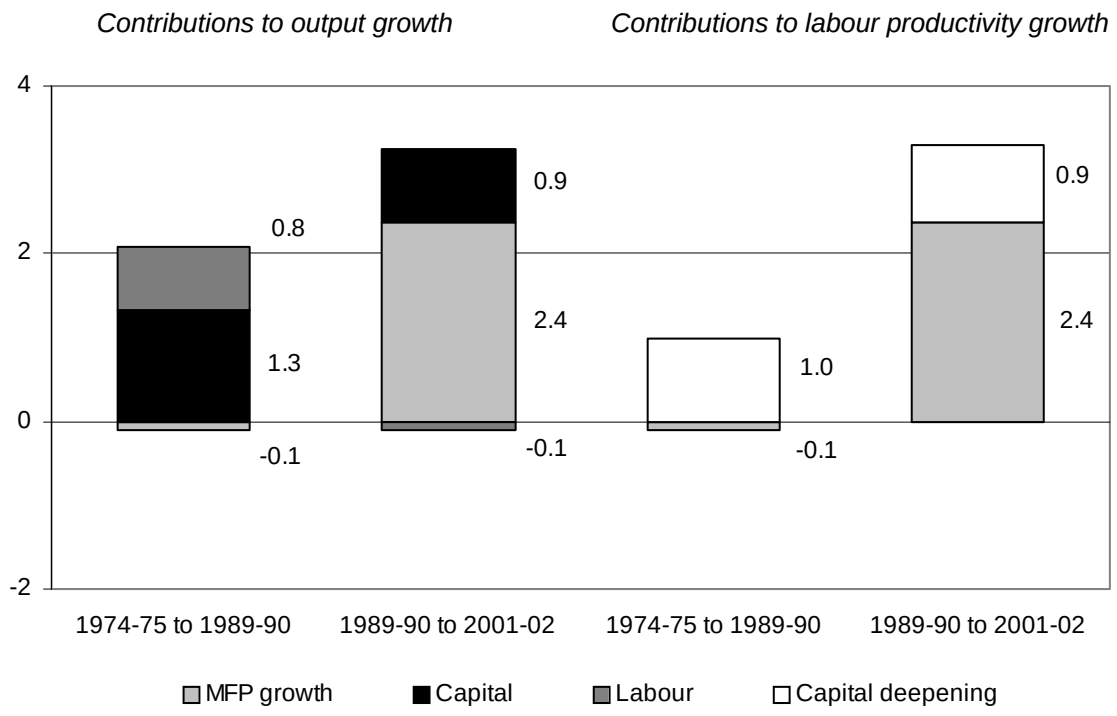
Output growth was 1.9 and 3.1 per cent a year, respectively, for the two periods and total input growth was 2.0 and 0.7 per cent a year (table A.6). Capital growth was strong in both periods, but lower in the second one, while labour input growth was modest in the first and negative in the second.

Figure 3.11 shows that total input growth contributed all the output growth in the first period as MFP declined. In the second period, high output growth was largely contributed by MFP growth (77 per cent). The increase in output growth in the 1990s was due to the increase in MFP growth.

Table A.6 shows that labour productivity growth was low in the first period (0.8 per cent a year) and high in the second (3.3 per cent a year). The increased growth in the 1990s was due to the improved MFP performance in this period (figure 3.11).

Figure 3.11 **Wholesale trade, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Retail trade

Figure 3.10 shows significant fluctuations in MFP in the retail industry since 1974-75, with positive growth in the first half of the 1980s and the late 1990s.

The trend growth estimates (figure A.19) suggest three distinct phases of MFP growth:

- slowly increasing productivity growth between 1974-75 and 1984-85;
- slowly declining growth between 1984-85 and 1991-92; and
- a return to positive growth since 1991-92.

The strongest MFP growth occurred in the first period. Actual growth rates for the periods were 1.4, -1.2 and 1.0 per cent a year, respectively (table A.7). The recovery of MFP growth in the last period largely occurred between 1994-95 and 1998-99.

Output growth was significantly higher in the 1990s (3.8 per cent a year) than in the earlier periods (2.8 and 1.5 per cent a year, respectively). Total input growth was high in the late 1980s and 1990s (2.7 and 2.8 per cent a year, respectively). Capital input growth was high in each period and labour input growth was strong from 1984-85 to 2001-02.

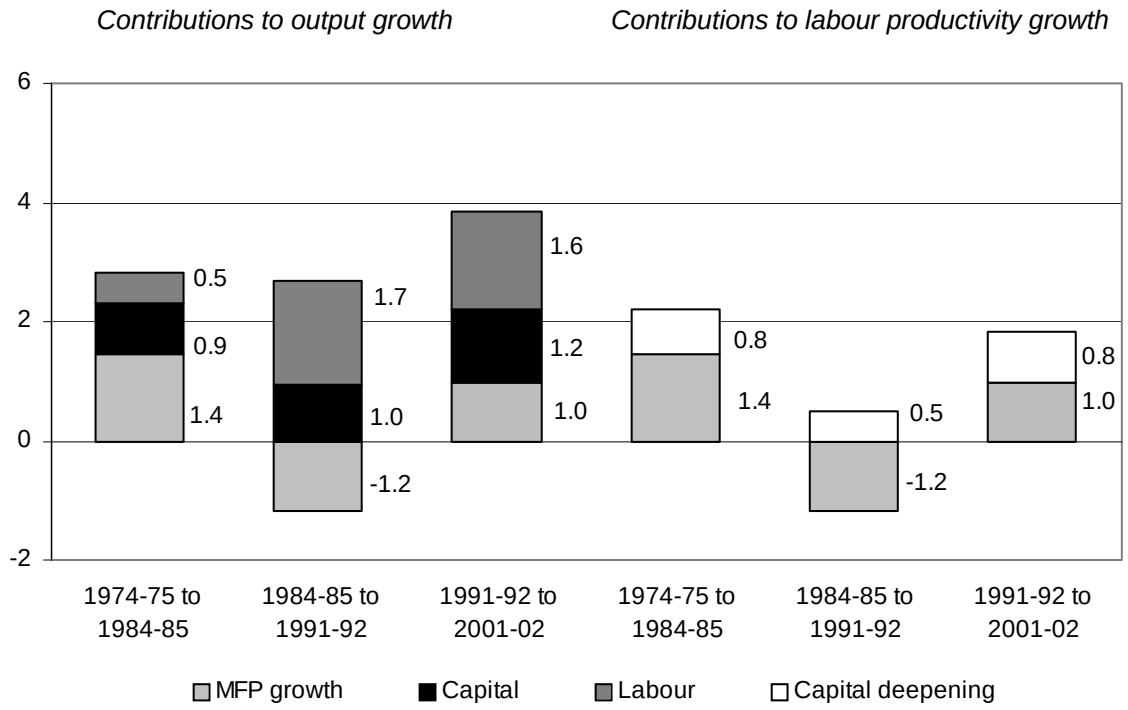
Between 1974-75 and 1984-85, total input growth and MFP growth contributed equal shares of output growth (figure 3.12). Since then, total input growth contributed the majority of output growth. MFP growth was a negative contribution between 1984-85 and 1991-92 and between 1991-92 and 2001-02 it contributed about 25 per cent of output growth. However, the largest increase in output growth in the 1990s period was due to the large turnaround in MFP growth from -1.2 per cent a year in the previous period to 1.0 per cent a year in the 1990s. Total input growth was virtually unchanged over the late 1980s and 1990s.

Labour input accounted for nearly 65 per cent of the high total input growth between 1984-85 and 1991-92 but between 1991-92 and 2001-02 labour input growth contributed only 57 per cent of total input growth.

The labour productivity growth rates for the three periods were 2.2, -0.7 and 1.8 per cent a year (table A.7). Changes in MFP growth almost wholly accounted for changes in labour productivity growth over the periods (figure 3.12). In the 1990s, capital deepening and MFP growth contributed almost equally to labour productivity growth.

Figure 3.12 **Retail trade, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Accommodation, cafes and restaurants

Figure 3.10 shows that MFP in the Accommodation, cafes and restaurants industry declined for almost the whole period since 1974-75. The trend estimates provided in appendix A (figure A.22) suggest three phases in MFP growth:

- slow decline between 1974-75 and 1982-83;
- stronger decline between 1982-83 and 1993-94; and
- slow decline between 1993-94 and 2001-02.

The actual average annual growth rates for the periods were -0.9, -1.8 and 0.5 per cent, respectively (table A.8).

Output growth showed significant improvement over the period, increasing from 1.4 per cent a year between 1974-75 and 1982-83 to 2.9 per cent a year between 1982-83 and 1993-94 and to 4.6 per cent a year between 1993-94 and 2001-02 (table A.8). Total input growth was 2.3, 4.9 and 4.1 per cent a year, respectively, for

the three periods. Both capital and labour input growth were high in the 1980s and 1990s.

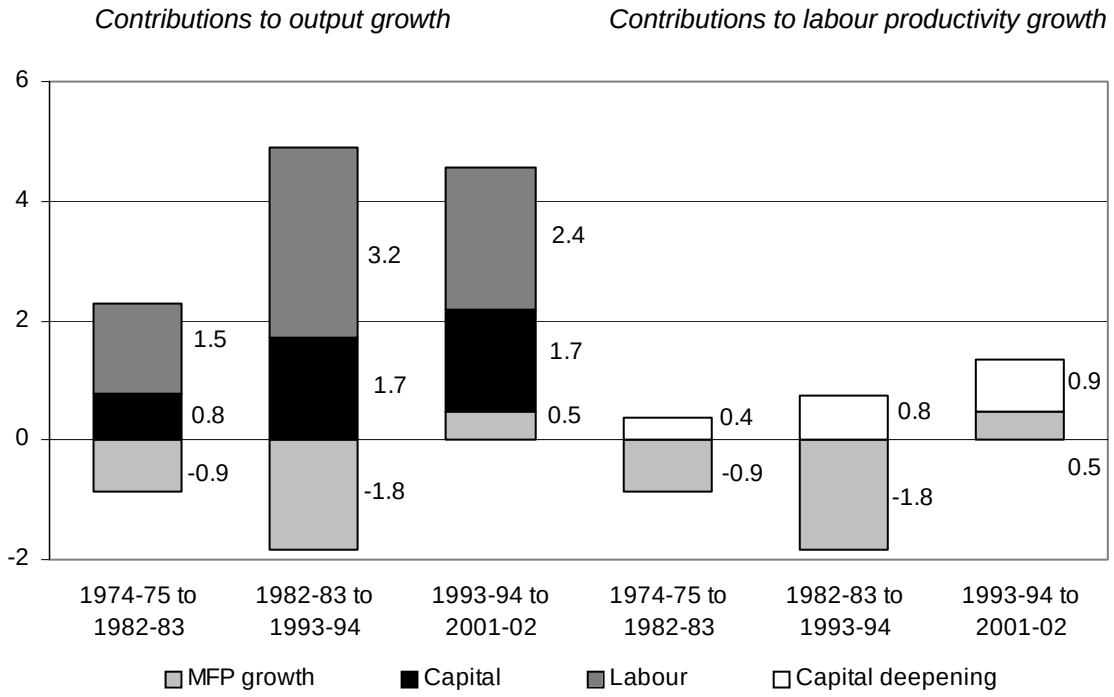
With declining or low MFP growth across the whole period since 1974-75, total input growth was the source of output growth in the sector (figure 3.13). In each period, labour input growth accounted for approximately two-thirds of total input growth.

However, the increase in output growth in the 1990s period was due to the large turnaround in MFP growth from the previous period. Total input growth was lower in the 1990s than the late 1980s.

Labour productivity declined between 1974-75 and 1993-94 but increased between 1993-94 and 2001-02 at 1.3 per cent a year (table A.8). The increase in growth in the 1990s was almost entirely due to the increase in MFP growth (figure 3.13).

Figure 3.13 **Accommodation, cafes and restaurants, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Finance and insurance

The trend estimates of MFP (figure A.31) show two distinct periods of productivity performance in the Finance and insurance industry:

- declining MFP from the mid-1970s to the mid-1980s; and
- increasing MFP from the mid-1980s to the end of the 1990s.

Actual MFP closely followed the trend estimates. Table A.11 shows that the actual MFP growth rates were -2.4 per cent a year in the first period and 0.9 per cent a year in the second.

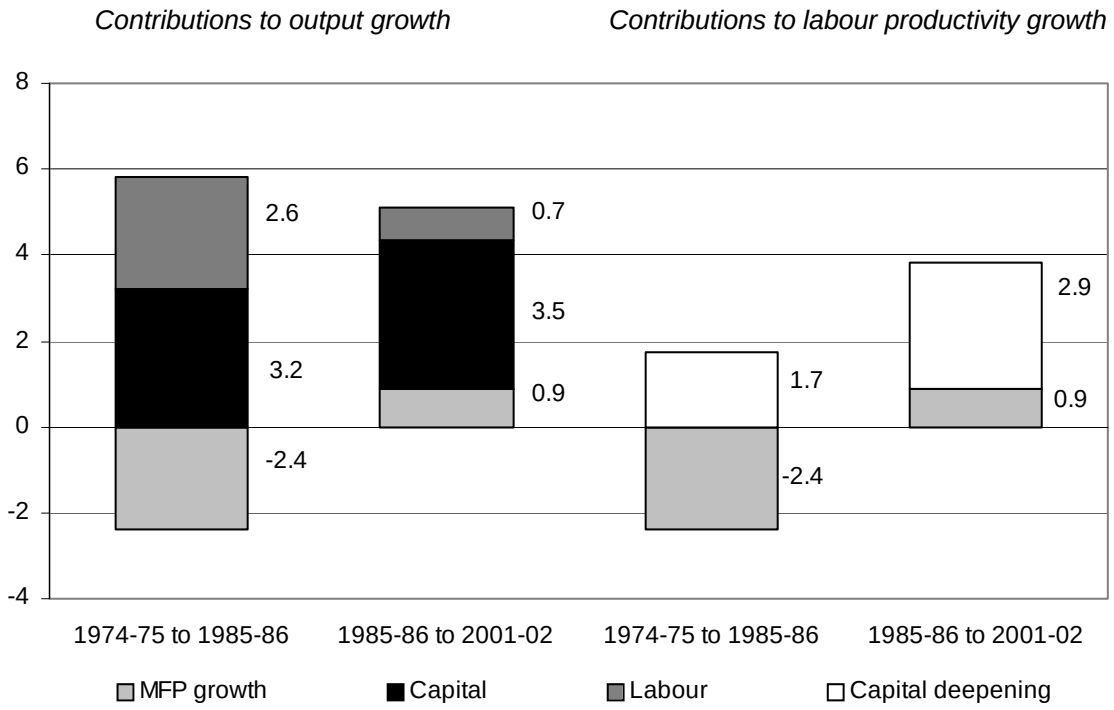
Output growth was much higher in the second period than the first (5.1 compared with 3.4 per cent a year), while total input growth was lower (4.1 compared with 6.0 per cent a year) (table A.11). Capital input growth was very high in both periods, while labour input growth was high in the first but low in the second.

Between 1974-75 and 1985-86, output growth was contributed entirely by very high total input growth as MFP declined (figure 3.14). Capital input growth accounted for the slightly larger share of total input growth. Output growth was very high in the following period to 2001-02 and 80 per cent of this growth was accounted for by total input growth. Capital input growth contributed nearly 85 per cent of the total input growth in this period. However, the increase in output growth compared with the earlier period was due to the turnaround in MFP performance as total input growth was lower than in the first period.

Labour productivity declined between 1974-75 and 1985-86 but increased at 3.8 per cent a year between 1985-86 and 2001-02 (table A.11). Declining MFP was the main factor behind the decline in labour productivity in the first period (figure 3.14). Capital deepening contributed the major proportion of labour productivity growth in the second period. However, the increase in labour productivity growth in this period compared with the previous period was largely due to the turnaround in MFP growth from strongly negative to strongly positive.

Figure 3.14 **Finance and insurance, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Cultural and recreational services

Figure 3.10 shows a steady decline in MFP in Cultural and recreational services since 1974-75. It is difficult to distinguish distinct periods of productivity performance, but there appear to be two phases in the trend decline shown in appendix A (figure A.34):

- steady decline between 1974-75 and 1995-96; and
- faster decline between 1995-96 and 2001-02.

Actual MFP growth rates for the two periods were -2.4 and -2.7 per cent a year, respectively (table A.12).

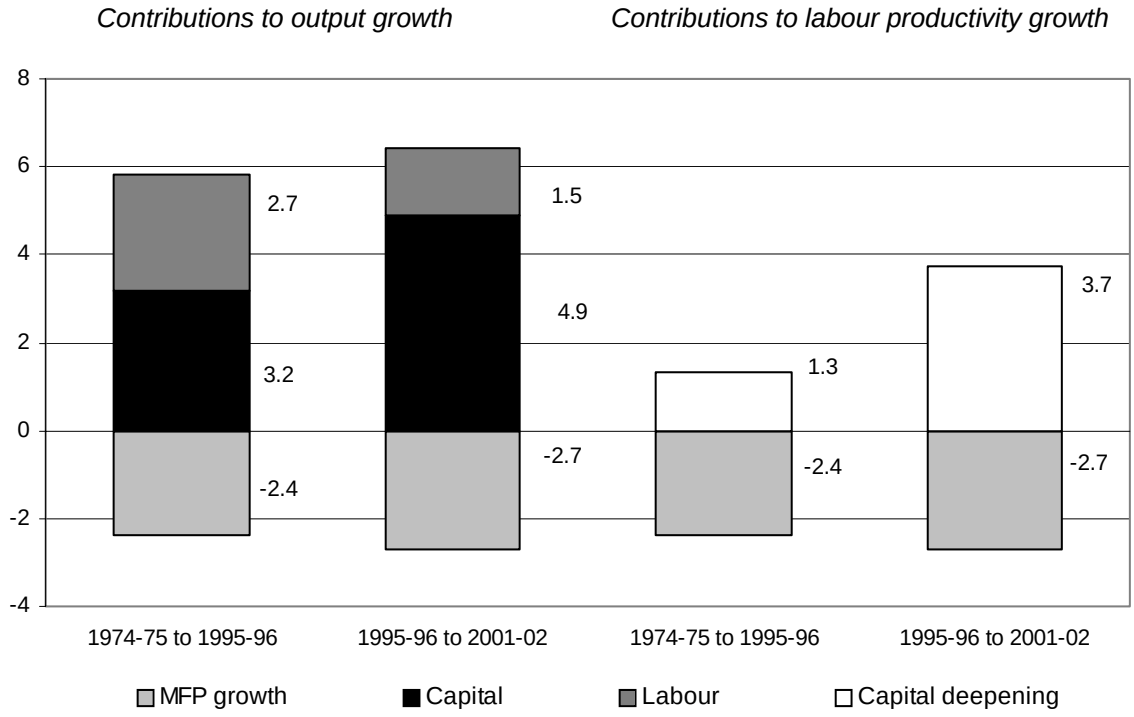
Output growth was similar in both periods and total input growth was much higher than output growth in both periods. Capital input growth was very high in both periods and labour input growth was high also.

Figure 3.15 shows that output growth in both periods was entirely due to total input growth. Capital input growth contributed 55 per cent of total input growth between 1974-75 and 1995-96 and nearly 80 per cent of total input growth in the late 1990s.

Labour productivity growth was -1.1 and 0.8 per cent a year, respectively, for the two periods. The increased growth rate in the late 1990s was due to capital deepening (figure 3.15).

Figure 3.15 **Cultural and recreational services, contributions to average annual output growth and labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a May not add due to rounding.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

3.4 Summary

The primary, manufacturing and economic infrastructure industries generally had above average MFP and labour productivity growth between 1974-75 and 2001-02. The Other services industries had long periods of stagnating or declining MFP but several achieved relatively high MFP growth during the 1990s.

During the high growth period of the mid-1990s, Agriculture, forestry and fishing, Construction, Wholesale trade and Communication services achieved high MFP growth relative to the market sector average and own industry trends. During the lower growth period around the turn of the century, Agriculture, forestry and fishing, Mining, Manufacturing, Wholesale trade and Transport and storage achieved high MFP growth.

Contribution to output growth

Output growth increased substantially during the 1990s in Agriculture, forestry and fishing, Construction, Wholesale trade, Retail trade, Accommodation, cafes and restaurants, Transport and storage, Communication services and Finance and insurance.

Of the high output growth industries of the 1990s, total input growth was lower than in the previous period in Agriculture, forestry and fishing, Wholesale trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance. Total input growth increased in Construction and Communication services and was maintained at previous levels in Retail trade.

Capital input growth was lower in Agriculture, forestry and fishing, Construction, Wholesale trade, Accommodation cafes and restaurants, Transport and storage and Finance and insurance, but increased in Retail trade and Communication services.

Labour input declined in Agriculture, forestry and fishing and Wholesale trade, while growth was lower in Retail trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance. Labour input growth increased in Construction and Communication services.

MFP growth accounted for the largest part of the output growth in Agriculture, forestry and fishing, Wholesale trade and Transport and storage. Total input growth contributed the largest part of output growth in Construction, Retail trade, Accommodation, cafes and restaurants, Communication services, Finance and insurance and Cultural and recreational services. However, the increase in output growth achieved in the 1990s was primarily the result of improved MFP growth, except for Communication services where capital and labour input growth accounted for the increase in output growth.

Contribution to labour productivity growth

During the 1990s, labour productivity growth was high in Agriculture, forestry and fishing, Mining, Manufacturing, Electricity, gas and water, Wholesale trade, Transport and storage, Communication services and Finance and insurance.

MFP growth contributed the main part of total labour productivity growth in Agriculture, forestry and fishing, Wholesale trade, Transport and storage and Communication services in the 1990s. Capital deepening contributed the largest part of labour productivity growth in Mining, Manufacturing, Electricity, gas and water and Finance and insurance.

The increase in labour productivity growth in the 1990s in Agriculture, forestry and fishing, Wholesale trade, Retail trade, Accommodation, cafes and restaurants, Transport and storage and Finance and insurance was largely accounted for by MFP growth. Capital deepening contributed the largest part of the increase in labour productivity growth in Manufacturing and Cultural and recreational services.

4 Features of high and low MFP growth industries

This chapter examines trends in industry productivity growth with a view to assessing whether there were common factors that contributed to high or low industry MFP performance in different periods. The analysis covers several different classifications of industry sectors.

In section 4.1, industries are grouped according to high and low productivity growth for selected market sector cycles. Under this classification, industries defined as high or low growth in one period are not necessarily classified to the same group in another period. The summary data for different periods is provided in table 4.1.

Section 4.2 examines the experience of the industries that achieved high MFP growth *before* the 1990s. The analysis compares the experience of this fixed group of industries in the 1990s with their experience before this period.

Section 4.3 examines the experience of the industries that achieved high MFP growth *during* the 1990s and compares it with the earlier periods. This section also considers separately those industries that accounted for the increase in market sector productivity growth between 1993-94 and 1998-99.

Market sector output, input and productivity growth performance are used as the benchmarks for sectoral comparisons. High and low growth industries are defined according to whether their growth rates are higher or lower than the market sector. The periods are defined by the market sector growth cycles in order to facilitate inter-sectoral comparisons. The industries in each group are listed in appendix B.

4.1 High MFP growth industries

Output growth and input usage

Average annual output growth for this group of industries was strong and well above the market sector in all periods (table 4.1). Output growth in the early 1990s was 3 per cent higher than between 1974-75 and 1988-89 but 83 per cent higher between 1993-94 and 1998-99 when it increased at 6.6 per cent a year. However,

output growth increased in these industries between 1988-89 and 1993-94 against the market sector trend when market sector output growth was 36 per cent lower than in the previous period.

In contrast to output growth trends, total input growth for these industries was below the market sector in each period.

Contributions to output growth

MFP growth provided the main contribution to output growth in the high MFP growth industries in each period since 1974-75. However, figure 4.1 shows some variation in the pattern of contributions to output growth over the four periods. The MFP growth contribution increased from 67 to 86 per cent from the first to the second period as a result of higher MFP growth and lower total input growth.

In the mid to late 1990s, the MFP contribution to output growth declined to 67 per cent. The large increase in output growth in this period was the result of a large increase in total input growth. This period saw a combination of high total input growth and MFP growth in the high growth industries that was not present in the previous twenty years.

Capital input growth accounted for the major part of total input growth in each period. It contributed 92 per cent between 1974-75 and 1988-89, well over 100 per cent between 1988-89 and 1993-94 because of reductions in labour input and 59 per cent between 1993-94 and 1998-99.

The increased contribution by total input growth to output growth during the mid to late 1990s was the result of higher contributions by both capital and labour inputs. Capital input growth contributed most of the increase in total input growth.

Table 4.1 shows that the capital contribution to total input growth in the high MFP growth industries was lower than for the market sector in almost every period. It was well below average between 1993-94 and 2001-02, but the disparity was slightly lower between 1974-75 and 1993-94.

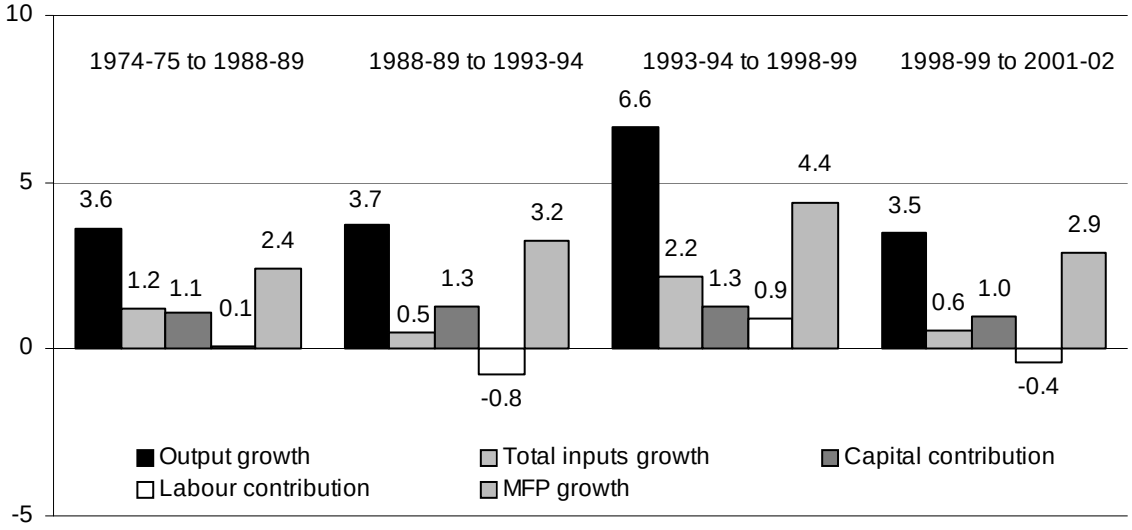
Table 4.1 **High and low MFP growth industries, 1974-75 to 2001-02[a]**

		Inputs			
	Output growth	*Total inputs growth*	*Capital contribution*	*Labour contribution*	*MFP growth*
	% per year	% per year	% points	% points	% per year
1974-75 to 1988-89					
Average for high growth industries	3.6	1.2	1.1	0.1	2.4
Market sector	**2.8**	**1.9**	**1.4**	**0.5**	**0.9**
Average for low growth industries	3.3	4.0	2.2	1.8	-0.7
1988-89 to 1993-94					
Average for high growth industries	3.7	0.5	1.3	-0.8	3.2
Market sector	**1.8**	**1.1**	**1.3**	**-0.1**	**0.7**
Average for low growth industries	1.0	2.5	1.8	0.7	-1.4
1993-94 to 1998-99					
Average for high growth industries	6.6	2.2	1.3	0.9	4.4
Market sector	**4.6**	**2.7**	**1.9**	**0.8**	**1.8**
Average for low growth industries	4.0	4.0	3.0	1.1	0.1
1998-99 to 2001-02					
Average for high growth industries	3.5	0.6	1.0	-0.4	2.9
Market sector	**2.8**	**2.3**	**1.7**	**0.5**	**0.5**
Average for low growth industries	2.6	4.3	3.0	1.4	-1.7

a May not add due to rounding. The industries classified as high and low growth are not the same in each period. The average estimates are based on a group of industries that have high and low MFP performance. The industries around the market sector MFP growth rate have not been allocated. A list of individual industries within a group can be found in table B.1. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure 4.1 **High MFP growth industries, 1974-75 to 2001-02[a]**
Per cent per year



a May not add due to rounding. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Data sources: Estimates based on unpublished ABS data; Cat. no. ABS 5204.0.

4.2 Low MFP growth industries

MFP growth in the low growth industries declined between 1974-75 and 1988-89 and between 1988-89 and 1993-94 (-0.7 and -1.4 per cent a year), increased slightly between 1993-94 and 1998-99 (0.1 per cent a year) but declined sharply between 1998-99 to 2001-02 (-1.7 per cent a year) (table 4.1).

Output growth and input usage

Table 4.1 shows that average output growth in the low MFP growth industries was strong between 1974-75 and 1988-89 (3.3 per cent a year), was lower between 1988-89 and 1993-94 (1.0 per cent a year) and returned to strong growth between 1993-94 and 1998-99 and 1998-99 and 2001-02 (4.0 and 2.6 per cent a year). It was above the market sector from 1974-75 to 1988-89 and below the market sector from 1988-89 to 2001-02.

Total input growth was high between 1974-75 and 1988-89 (4.0 per cent a year), more modest between 1988-89 and 1993-94 (2.5 per cent a year) and high again between 1993-94 and 1998-99 and 1998-99 and 2001-02 (4.0 and 4.3 per cent a year). It was above average over the whole period and significantly above the market sector from 1974-75 to 1988-89 and 1993-94 to 2001-02 (table 4.1).

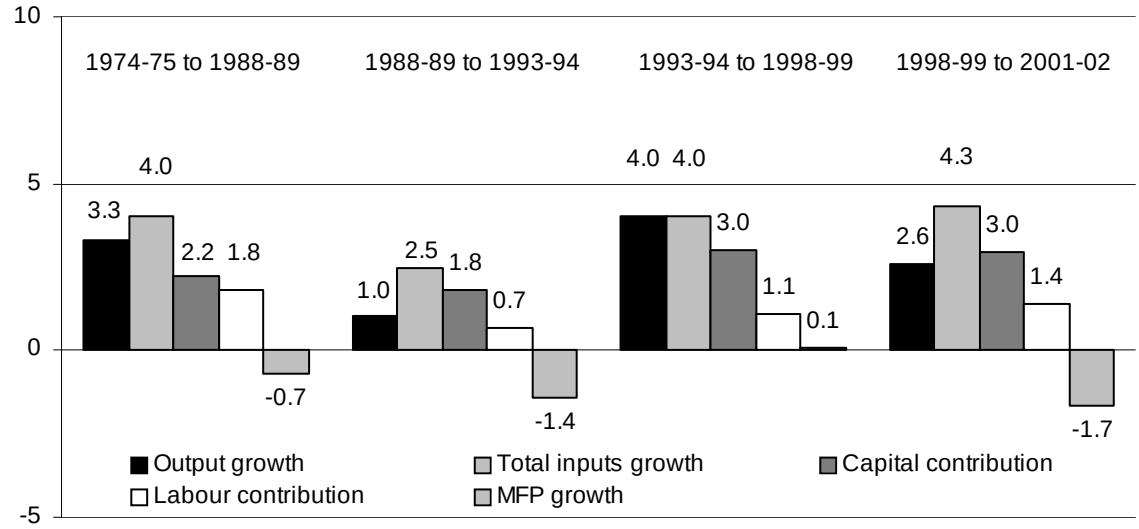
Contributions to output growth

Total input growth contributed the largest proportion of output growth in the low MFP growth industries in all periods since 1974-75 (figure 4.2). The MFP growth contribution was negative for most periods. There was very small positive MFP growth contribution in the 1993-94 to 1998-99 period. The increase in output growth in the mid and late 1990s was contributed to by increased growth of total inputs and a significant turnaround in MFP growth from strongly negative to slightly positive.

Capital input growth accounted for the main part of total input growth in each period, contributing 55 per cent between 1974-75 and 1988-89 72 per cent between 1988-89 and 1993-94, 75 per cent between 1993-94 and 1998-99 and 70 per cent between 1998-99 and 2001-02. These proportions were below the market sector between 1974-75 and 1993-94, but similar to the market sector between 1993-94 and 2001-02.

The increase in total input growth for the low MFP growth industries between 1974-75 and 2001-02 was contributed by increased capital and labour input growth (figure 4.2).

Figure 4.2 **Low MFP growth industries, 1974-75 to 2001-02[a]**
Per cent per year



a May not add due to rounding. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Data sources: Estimates based on unpublished ABS data; ABS cat. no. 5204.0.

4.3 High labour productivity growth industries

Labour productivity growth in the high growth industries was significantly higher in the 1990s compared with the 1970s and 1980s (table 4.2). It increased at 5.8 per cent a year in the early and late 1990s compared with 3.5 per cent in the 1970s and 1980s.

Growth in the capital/labour ratio was above average in the high labour productivity growth industries between 1974-75 and 2001-02. Capital input growth was equal to the market sector in the 1974-75 to 1993-94 period, while it was below average in the 1993-94 to 2001-02 period. Labour input growth was below average throughout the whole period. The capital share in factor income was above the market sector for the whole period.

Contributions to labour productivity growth

The higher labour productivity growth between 1988-89 and 2001-02 was contributed by increased capital deepening and MFP growth. Table 4.2 and figure 4.3 show that MFP growth provided the main contribution to labour productivity growth between 1974-75 and 2001-02. Between 1974-75 and 1988-89, the MFP contribution was 69 per cent, between 1988-89 and 1998-99 it was 53 per cent and 66 per cent between 1998-99 and 2001-02. The capital deepening contribution to labour productivity growth was below the market sector in almost all the periods. Between 1993-94 and 1998-99, the MFP contribution to labour productivity growth was above the market sector.

Table 4.2 **High and low labour productivity growth industries, 1974-75 to 2001-02[a]**

	Labour productivity growth	*Capital input growth*	*Labour input growth*	*Capital-labour ratio growth*	*Capital share of factor income*	*Contributions to labour productivity growth*	
						Capital deepening	*MFP growth*
	% per year	% per year	% per year	% per year	% share	% points	% points
1974-75 to 1988-89							
Average for high growth industries	3.5	3.8	0.1	3.7	39	1.1	2.4
Market sector	**1.9**	**3.8**	**0.9**	**2.9**	**36**	**1.0**	**0.9**
Average for low growth industries	0.2	6.6	3.0	3.6	29	1.0	-0.8
1988-89 to 1993-94							
Average for high growth industries	5.8	3.1	-2.0	5.2	55	2.6	3.1
Market sector	**2.0**	**3.1**	**-0.2**	**3.4**	**40**	**1.4**	**0.7**
Average for low growth industries	0.1	4.6	1.2	3.4	30	1.0	-0.9
1993-94 to 1998-99							
Average for high growth industries	5.8	4.1	-0.4	4.5	55	2.7	3.1
Market sector	**3.2**	**4.7**	**1.3**	**3.3**	**41**	**1.3**	**1.8**
Average for low growth industries	1.7	6.6	2.4	4.0	31	1.4	0.4
1998-99 to 2001-02							
Average for high growth industries	4.4	2.4	-0.9	3.4	49	1.5	2.9
Market sector	**1.8**	**4.1**	**0.9**	**3.2**	**42**	**1.3**	**0.5**
Average for low growth industries	-0.1	6.3	2.6	3.6	40	1.4	-1.4

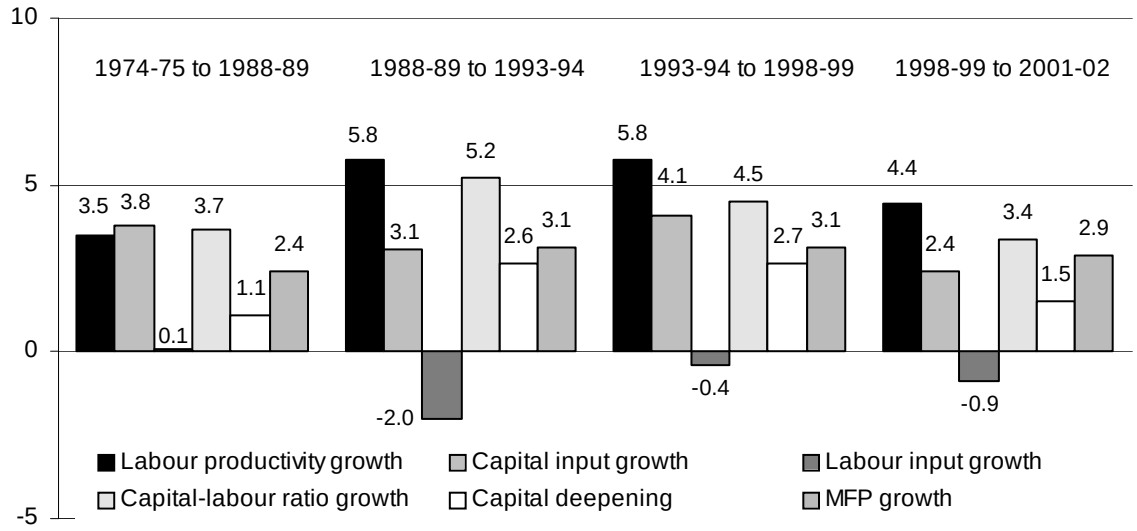
a May not add due to rounding. The industries classified as high and low growth are not the same in each period. The average estimates are based on a group of industries that have high and low labour productivity performance. The industries around the market sector labour productivity growth rate have not been allocated. A list of individual industries within a group can be found in table B.2. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

The increased contribution by capital deepening in the 1988-89 to 1998-99 period reflected both higher growth in the capital/labour ratio and a higher capital share in the factor income of the high labour productivity growth industries in the 1990s (table 4.2 and figure 4.3). Growth in the capital/labour ratio was over 4 per cent a year in the 1988-89 to 1998-99 period, compared with under 4 per cent a year in the 1974-75 to 1988-89 period and the late 1990s. The capital share in factor income was nearly 40 per cent higher in the 1990s than in the 1970s and 1980s, having increased from 39 to 55 per cent.

The higher growth in the capital/labour ratio in the 1990s reflected different input growth patterns during this period. Between 1988-89 and 1993-94, capital input growth was lower than in the earlier period (3.1 compared with 3.8 per cent a year) but there was a significant reduction in labour input (-2.0 per cent a year), compared with a slight increase between 1974-75 and 1988-89. Between 1993-94 and 1998-99, capital input growth was high (4.1 per cent a year) and there was only a slight reduction in labour input (-0.4 per cent a year). During the 1998-99 and 2001-02 period there was a reduction in capital input growth (to 2.4 per cent a year) and labour input (-0.9 per cent a year).

Figure 4.3 **High labour productivity growth industries, 1974-75 to 2001-02[a]**
Per cent per year



a May not add due to rounding. The average capital share was 39, 55, 55 and 49 per cent for the respective periods. The average estimates are based on a group of industries that have high labour productivity performance. The individual industries within a group can be found in table B.2. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

4.4 Low labour productivity growth industries

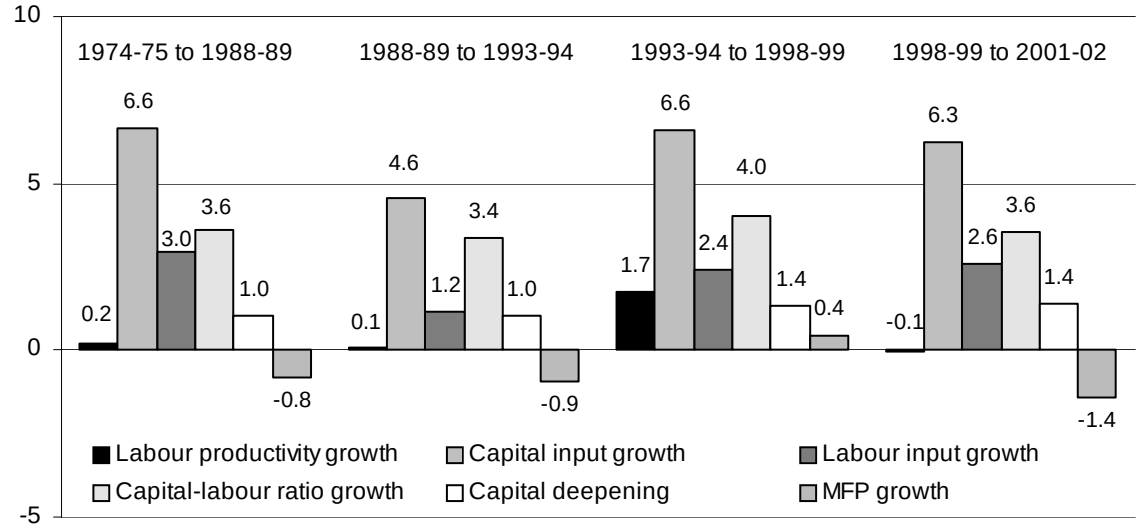
Average labour productivity growth in these industries was significantly higher between 1993-94 and 1998-99 than in the other periods — 1.7 per cent a year compared with 0.2, 0.1 and –0.1 per cent a year (table 4.2 and figure 4.4).

Growth in the capital/labour ratio was above the market sector in the 1970s and 1990s and similar to the market sector in the late 1980s, while the capital share of factor income was below the market sector in each period.

Contributions to labour productivity growth

Capital deepening provided the main contribution to labour productivity growth between 1974-75 and 2001-02 (table 4.2 and figure 4.4). It provided the basis for the slight growth in labour productivity for most of the periods — 1974-75 to 1993-94 and 1998-99 to 2001-02 — because MFP growth was negative in these periods. Capital deepening contributed about 82 per cent of labour productivity growth between 1993-94 and 1998-99.

Figure 4.4 **Low productivity growth industries, 1974-75 to 2001-02[a]**
Per cent per year



a May not add due to rounding. The average capital share was 29, 30, 31 and 40 per cent for the respective periods. The average estimates are based on a group of industries that have low labour productivity performance. The individual industries within a group can be found in table B.2. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

The turnaround from declining MFP to positive growth in the 1990s helped to increase labour productivity growth in this period. However, MFP growth was below the market sector in each period, while capital deepening tended to be either above or equal to the market sector, except in the 1988-89 to 1993-94 period when it was below the market sector.

There was little change in the primary influences on capital deepening. Growth in the capital/labour ratio was fairly stable at around 3.5 per cent — except in the 1993-94 to 1998-99 period when it rose to 4 per cent. The capital share of factor income was also generally steady — except in the late 1990s when it rose sharply. Both capital and labour input growth in the low growth industries was generally steady over the whole period. However, there was a decline in the growth rates in the 1988-98 to 1993-94 period. Over the entire period, capital and labour input growth for these industries were above the market sector growth rates.

4.5 New growth industries

As noted in chapter 2, market sector MFP and labour productivity growth was significantly higher in the mid to late 1990s than in earlier periods. The industries that increased MFP growth in this period (the new MFP growth industries) were both high and low MFP growth industries. Transport and storage was a high growth industry while Construction, Wholesale trade, Accommodation, cafes and restaurants and Finance and insurance were low growth industries. Both high and low MFP growth industries also had increased labour productivity growth.

Contributions to output growth in new MFP growth industries

Table 4.3 and figure 4.5 show that output growth in the new MFP growth industries of the mid to late 1990s was high (5.3 per cent a year). Average output growth in these industries was about 15 per cent higher than the market sector and was over four times that for the same industries between 1988-89 and 1993-94.

Total input growth was also strong (2.9 per cent a year) and was 7 per cent higher than the market sector. It was about 61 per cent higher than for the same industries between 1988-89 and 1993-94.

Total input growth contributed the major proportion of output growth (55 per cent) of the new growth industries — this was slightly lower than for the market sector (59 per cent). The MFP growth contribution was correspondingly slightly above the market sector.

The increase in output growth in these industries in the 1990s was largely accounted for by the strong turnaround in MFP growth from the previous period, when it was negative for the same industries.

Capital and labour input growth accounted for similar shares of total input growth between 1993-94 and 1998-99, whereas, in the market sector, capital input growth accounted for the larger proportion of total input growth (70 per cent). The increase in total input growth over the previous period was largely contributed by labour inputs.

Table 4.3 **New MFP growth industries, 1988-89 to 1998-99[a]**

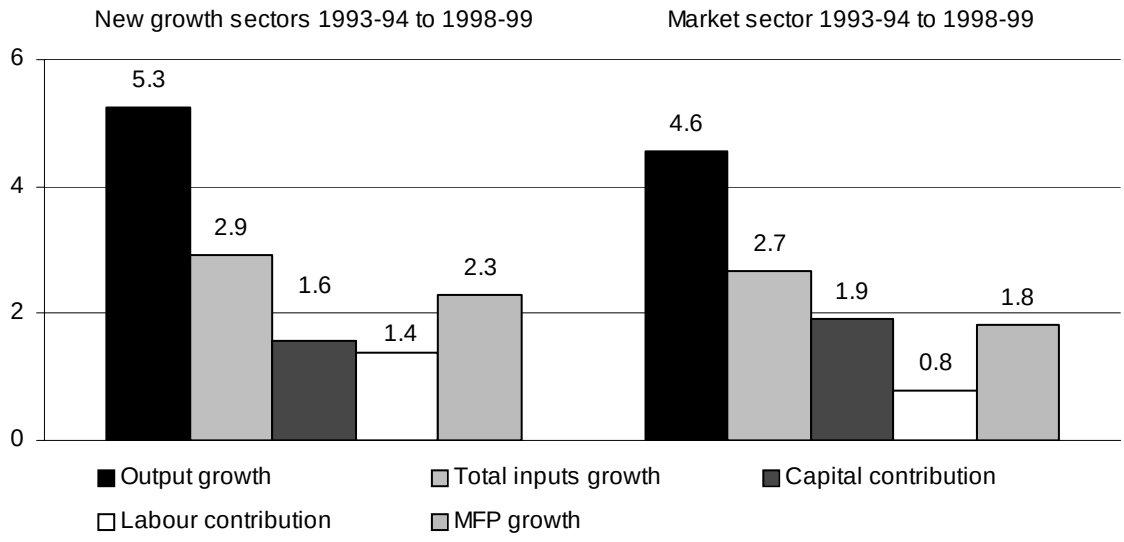
		Inputs			
	Output growth	*Total inputs growth*	*Capital contribution*	*Labour contribution*	*MFP growth*
	% per year	% per year	% points	% points	% per year
1988-89 to 1993-94					
Average for new MFP growth industries	1.2	1.8	1.4	0.4	-0.5
Market sector	**1.8**	**1.1**	**1.3**	**-0.1**	**0.7**
1993-94 to 1998-99					
Average for new MFP growth industries	5.3	2.9	1.6	1.4	2.3
Market sector	**4.6**	**2.7**	**1.9**	**0.8**	**1.8**

a May not add due to rounding. The average estimates are based on a group of industries that have recorded an improved MFP growth performance between the two periods 1988-89 to 1993-94 and 1993-94 to 1998-99. The individual industries within a group can be found in table B.3.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure 4.5 **New MFP growth industries and market sector, 1993-94 to 1998-99[a]**

Per cent per year



a May not add due to rounding. New growth sector estimates are an average. The average estimates are based on a group of industries identified as new MFP growth industries. The individual industries within a group can be found in table B.3.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Contributions to labour productivity growth

Table 4.4 and figure 4.6 show that MFP growth made a greater contribution than did capital deepening to labour productivity growth in the new growth industries between 1993-94 and 1998-99. The MFP growth contribution was about 70 per cent. This proportion was higher than that for the market sector (56 per cent).

The increase in labour productivity growth in these industries in the 1990s, compared with between 1988-89 and 1993-94, was almost entirely due to the increase in MFP growth.

Growth of the capital/labour ratio was the same as the market sector between 1993-94 and 1998-99, but was lower than in the previous period. Both capital input growth and labour input growth were above the market sector average. The capital share in factor income in these industries was below the market sector.

Table 4.4 **New labour productivity growth industries, 1988-89 to 1998-99[a]**

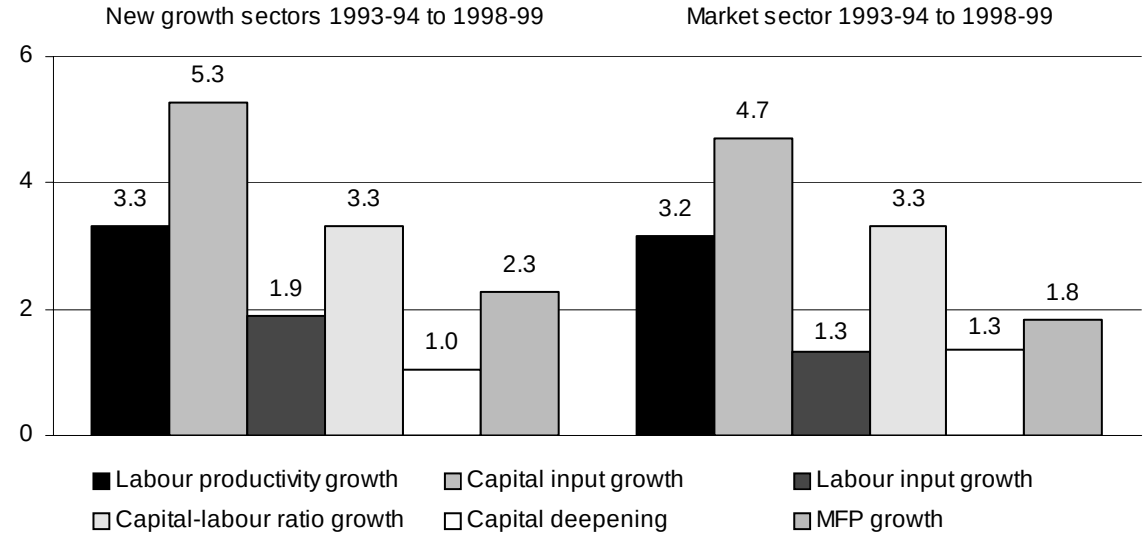
	Labour productivity growth	*Capital input growth*	*Labour input growth*	*Capital-labour ratio growth*	*Capital share of factor income*	*Contributions to labour productivity growth*	
						Capital deepening	*MFP growth*
	% per year	% per year	% per year	% per year	% per year	% points	% points
1988-89 to 1993-94							
Average for new labour productivity growth industries	0.7	4.5	0.5	4.0	30	1.3	-0.5
Market sector	**2.0**	**3.1**	**-0.2**	**3.4**	**40**	**1.4**	**0.7**
1993-94 to 1998-99							
Average for new labour productivity growth industries	3.3	5.3	1.9	3.3	30	1.0	2.3
Market sector	**3.2**	**4.7**	**1.3**	**3.3**	**41**	**1.3**	**1.8**

a May not add due to rounding. The average estimates are based on a group of industries that have recorded an improved labour productivity growth performance between the two periods 1988-89 to 1993-94 and 1993-94 to 1998-99. The individual industries within a group can be found in table B.3.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure 4.6 **New labour productivity growth industries and market sector, 1993-94 to 1998-99[a]**

Per cent per year



a May not add due to rounding. New growth sector estimates are an average. The average estimates are based on a group of industries identified as new MFP growth industries. The individual industries within a group can be found in table B.3. The average capital share for the new growth industries was 30 and the capital share for the market sector was 41.

Data sources Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

4.6 Summary

MFP growth increased more significantly in the high MFP growth industries during the 1990s (3.2 per cent a year between 1988-89 and 1993-94 and 4.4 per cent a year between 1993-94 and 1998-99) than in the 1970s and 1980s (2.4 per cent a year between 1974-75 and 1988-89). In contrast, market sector MFP growth only improved in the mid to late 1990s. It was 0.9 per cent a year between 1974-75 and 1988-89, 0.7 per cent a year between 1988-89 and 1993-94 and 1.8 per cent between 1993-94 and 1998-99.

MFP growth in the low MFP growth industries followed a similar pattern to market sector growth. It was negative between 1974-75 and 1993-94 but recorded a positive growth rate between 1993-94 and 1998-99. However, it was still very low in this latter period (0.1 per cent a year).

The MFP performance of the new growth industries in the mid to late 1990s was much improved over that between 1988-89 to 1993-94 for the same group of industries (2.3 per cent a year compared with -0.5 per cent a year).

Output growth and input usage

The pattern of output growth and input usage differed markedly between the high, low and new MFP growth industries.

Output growth in the high MFP growth industries was well above the market sector in each period and very high in the mid to late 1990s. In the low MFP growth industries, output growth was above the market sector in the 1970s and 1980s but below the market sector in the 1990s. Output growth in the new growth industries of the mid to late 1990s was above the market sector but below that of the high MFP growth industries.

Total input growth was high in the low MFP growth industries but below the market sector in the high MFP growth industries. Total input growth in the new growth industries in the mid to late 1990s was above the market sector and lower than that of the low MFP growth industries.

Contribution to output growth

MFP growth provided the main contribution to output growth in the high MFP growth industries in all periods since 1974-75, while total input growth contributed the largest proportion of output growth in all periods in the low MFP growth

industries. Total input growth also contributed the larger proportion of output growth in the new MFP growth industries in the mid to late 1990s.

Capital input growth provided the main contribution to total input growth in the high and low MFP growth industries in all periods. However, labour input growth contributed a greater proportion of total input growth in the low MFP growth industries than in the high growth industries. Capital and labour input growth contributed similar shares of total input growth in the new growth industries in the mid to late 1990s.

The increase in total input growth in the low MFP growth industries in the mid to late 1990s arose from higher capital and labour contributions compared with the previous period. For the high MFP growth industries, it was mainly a higher labour contribution. The increase in total input growth in the new MFP growth industries over the previous period was largely contributed by labour inputs.

Contribution to labour productivity growth

The pattern of contributions to labour productivity growth differed between the high and low labour productivity growth industries.

MFP growth provided the main contribution to labour productivity growth in the high growth industries but capital deepening increased its proportionate contribution during the mid to late 1990s. Capital deepening provided the largest contribution to labour productivity growth in the low growth industries in each period. MFP growth accounted for a larger share of labour productivity growth in the new growth industries of the mid to late 1990s.

A Industry data

This appendix provides some additional charts and data for each of the 12 industries in the market sector.

The market sector industries are the same as those commonly used by the ABS. The market sector is defined by the ABS as being ANZSIC divisions A to K and P. Further details can be found in ABS Cat. no. 5206.0.

The period covered is 1974-75 to 2001-02. The data have been divided into sub-periods. These sub-periods match the productivity cycles of the individual industry sectors. These cycles do not necessarily coincide with cycles in market sector productivity as defined by the ABS.

In addition, the ABS defined the 1970s market sector growth cycle as beginning in 1973-74. However, there is a lack of industry data for 1973-74, therefore in this paper the 1970s cycle commences in 1974-75.

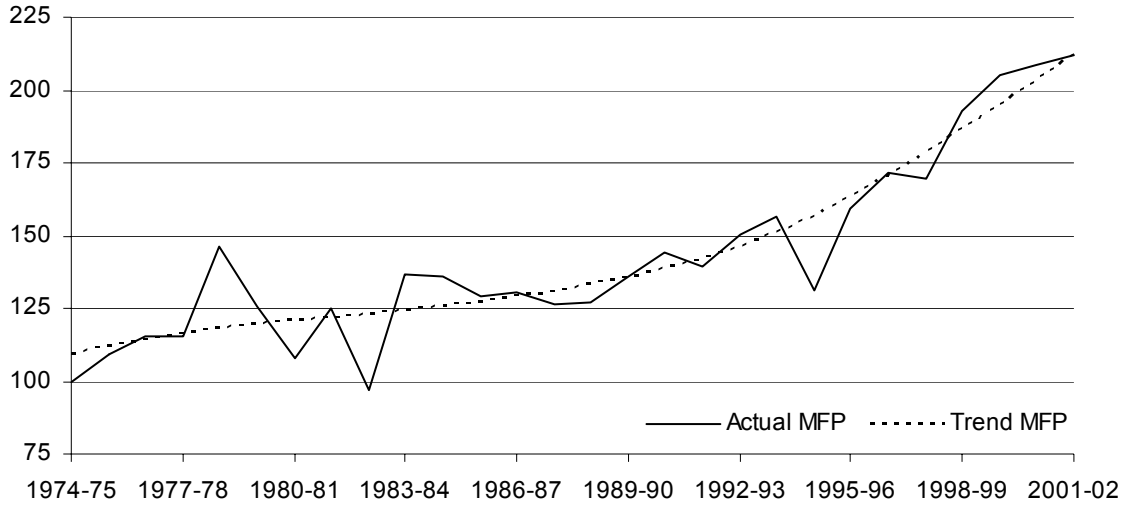
For each of the 12 industries in the market sector the following data are provided:

- index of actual and trend MFP;
- average annual growth in output, inputs and productivity (labour, capital and MFP) on an actual and trend basis; and
- contributions to output growth and labour productivity growth.

Agriculture, forestry and fishing

Figure A.1 **Agriculture, forestry and fishing, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



[a] The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.1 **Output, input and productivity growth in Agriculture, forestry and fishing, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

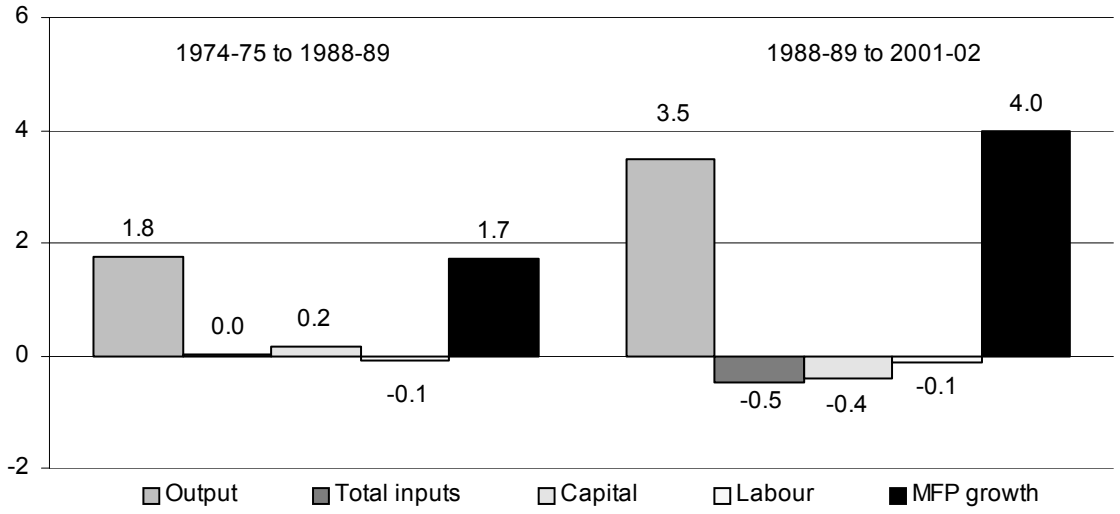
	1974-75 to 1988-89	*1988-89 to 2001-02*	*1974-75 to 1988-89*	*1988-89 to 2001-02*
	Trend	Trend	Actual	Actual
Output	1.6	3.2	1.8	3.5
Total inputs	0.1	-0.3	0.0	-0.5
Labour	-0.5	-0.2	-0.3	-0.3
Capital	0.5	-0.5	0.2	-0.7
Capital-labour ratio	1.0	-0.4	0.6	-0.4
Labour productivity	2.1	3.4	2.1	3.8
Capital productivity	1.0	3.8	1.5	4.2
Multifactor productivity	1.4	3.6	1.7	4.0

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.2 **Agriculture, forestry and fishing, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

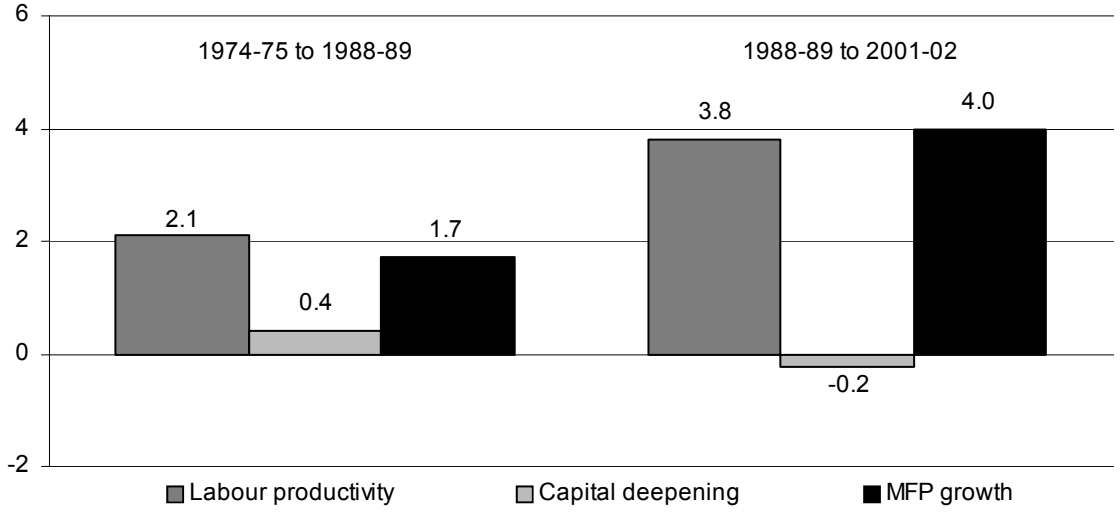


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1988-89, it was 71 per cent and, for 1988-89 to 2001-02, it was 62 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.3 **Agriculture, forestry and fishing, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



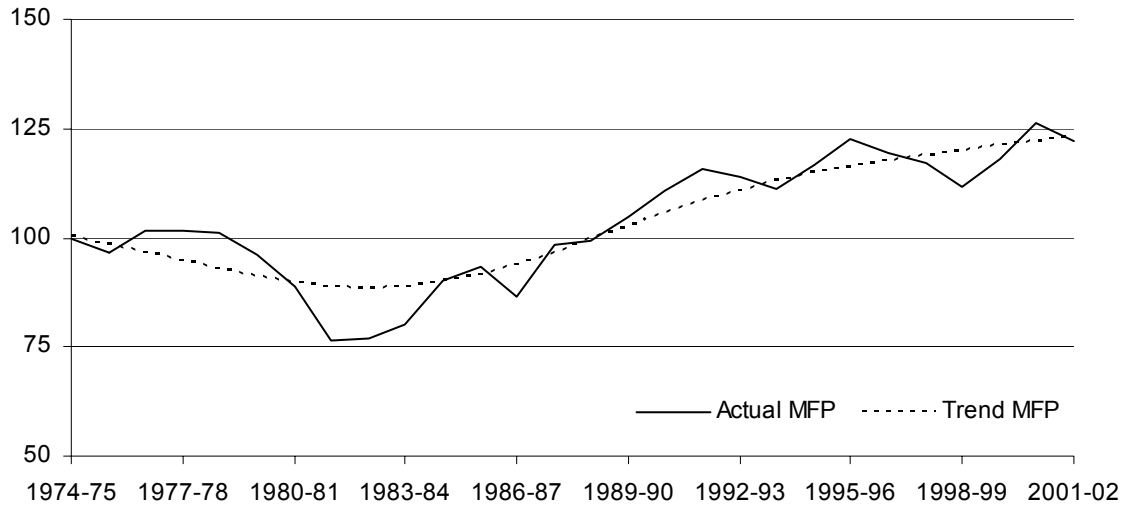
a The contributions are estimated by the equation: lp = α k + m where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1988-89, it was 71 per cent and, for 1988-89 to 2001-02, it was 62 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Mining

Figure A.4 **Mining, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.2 **Output, input and productivity growth in Mining, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

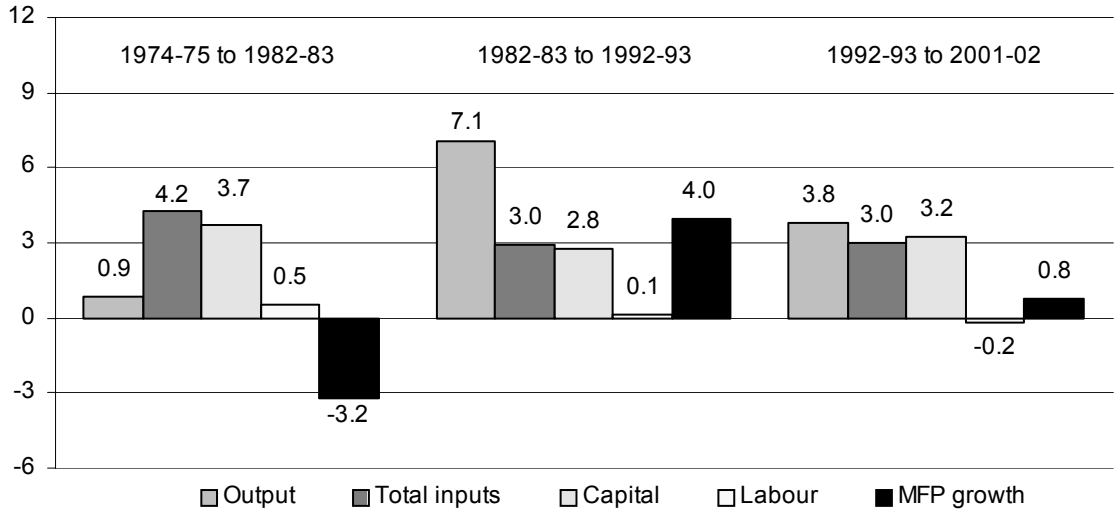
	1974-75 to 1982-83	*1982-83 to 1992-93*	*1992-93 to 2001-02*	*1974-75 to 1982-83*	*1982-83 to 1992-93*	*1992-93 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	3.0	5.9	3.9	0.9	7.1	3.8
Total inputs	4.8	3.5	2.8	4.2	3.0	3.0
Labour	2.4	1.0	-1.4	1.7	0.5	-0.8
Capital	6.1	4.5	4.1	5.5	3.9	4.2
Capital-labour ratio	3.3	3.6	5.5	3.8	3.4	5.0
Labour productivity	0.4	5.0	5.2	-0.8	6.6	4.6
Capital productivity	-2.5	1.2	-0.1	-4.4	3.0	-0.4
Multifactor productivity	-1.6	2.3	1.2	-3.2	4.0	0.8

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.5 **Mining, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

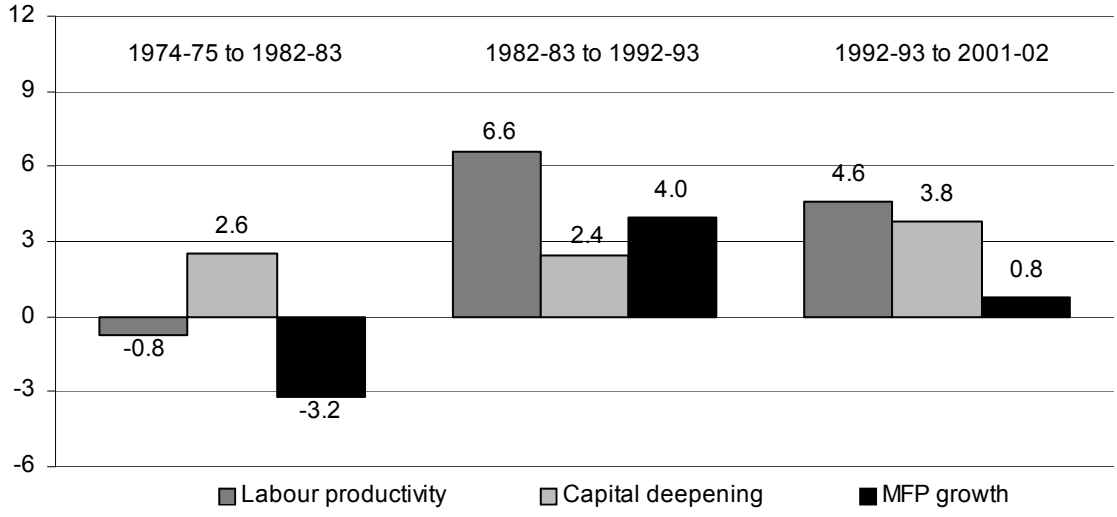


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 67 per cent, for 1982-83 to 1992-93, it was 70 per cent and, for 1992-93 to 2001-02, it was 76 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.6 **Mining, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points

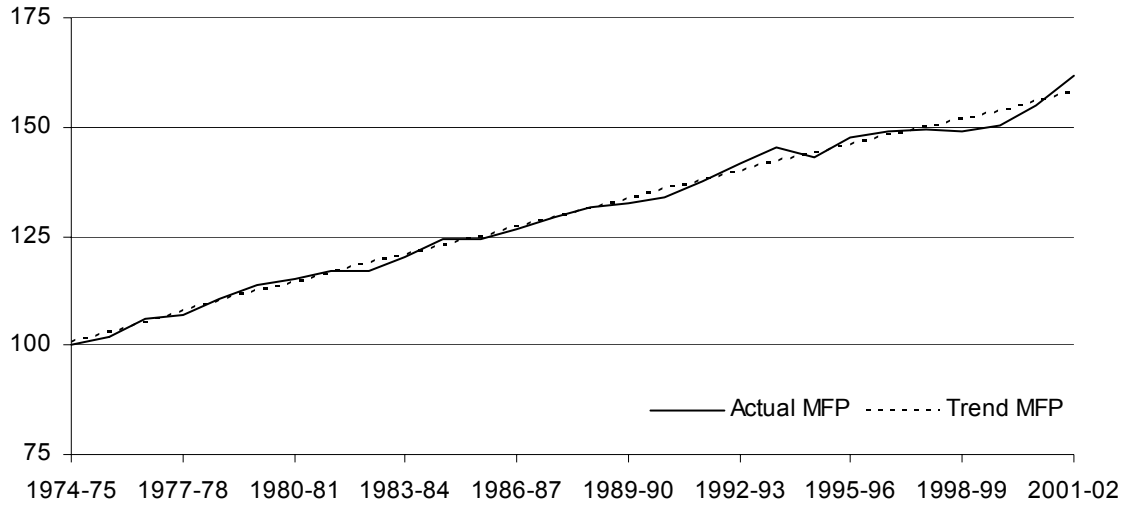


a The contributions are estimated by the equation: lp = α k + m where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 67 per cent, for 1982-83 to 1992-93, it was 70 per cent and, for 1992-93 to 2001-02, it was 76 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Manufacturing

Figure A.7 **Manufacturing, actual and trend MFP, 1974-75 to 2001-02[a]**
Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.3 **Output, input and productivity growth in Manufacturing, 1974-75 to 2001-02[a]**
Average annual growth rates, per cent per year

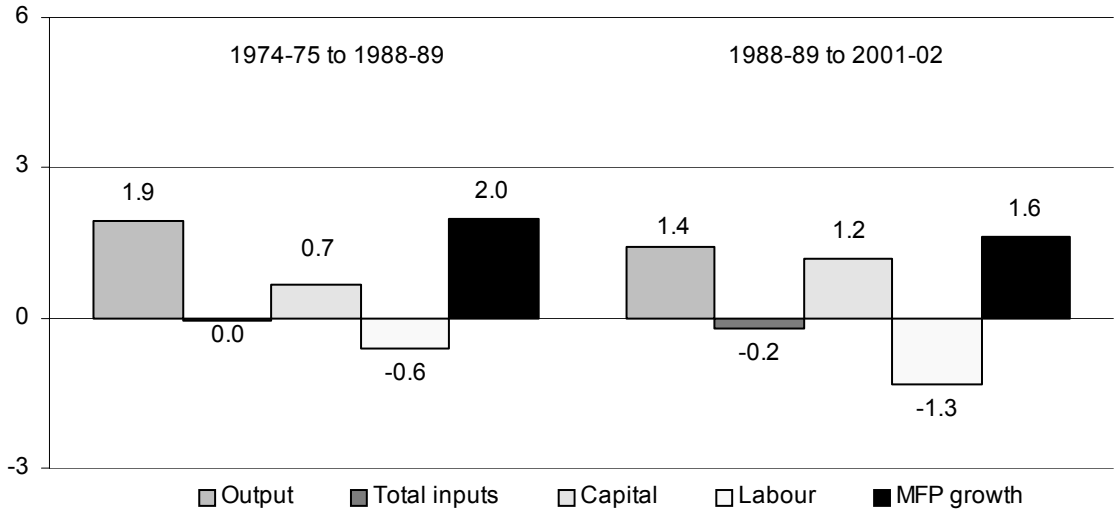
	1974-75 to 1988-89	*1988-89 to 2001-02*	*1974-75 to 1988-89*	*1988-89 to 2001-02*
	Trend	Trend	Actual	Actual
Output	1.5	1.9	1.9	1.4
Total inputs	-0.4	0.4	0.0	-0.2
Labour	-1.4	-1.3	-0.9	-2.2
Capital	2.2	3.2	2.1	3.1
Capital-labour ratio	3.7	4.6	3.0	5.4
Labour productivity	3.1	3.2	2.9	3.7
Capital productivity	-0.6	-1.4	-0.1	-1.6
Multifactor productivity	1.9	1.4	2.0	1.6

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.8 **Manufacturing, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

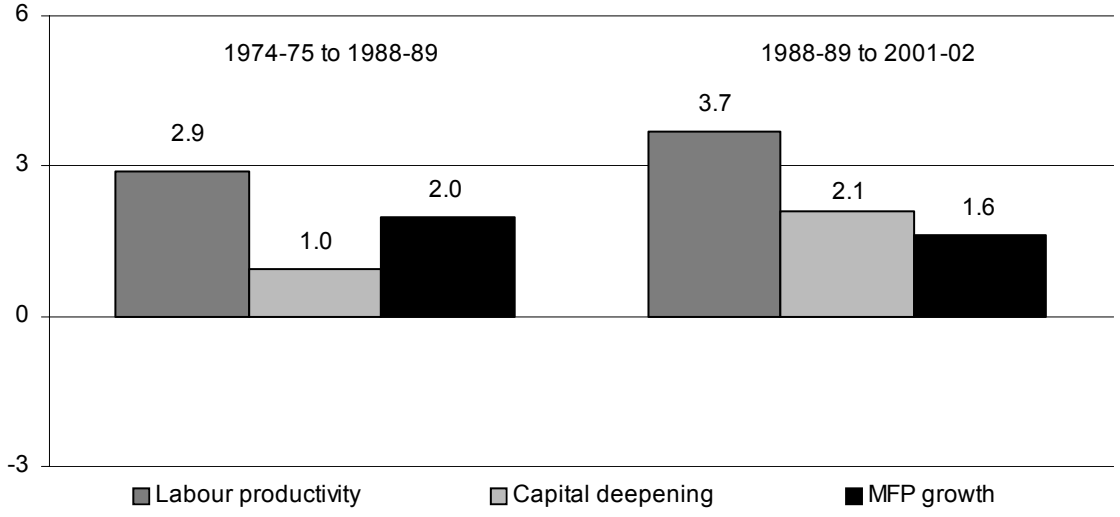


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1988-89, it was 31 per cent and, for 1988-89 to 2001-02, it was 39 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.9 **Manufacturing, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



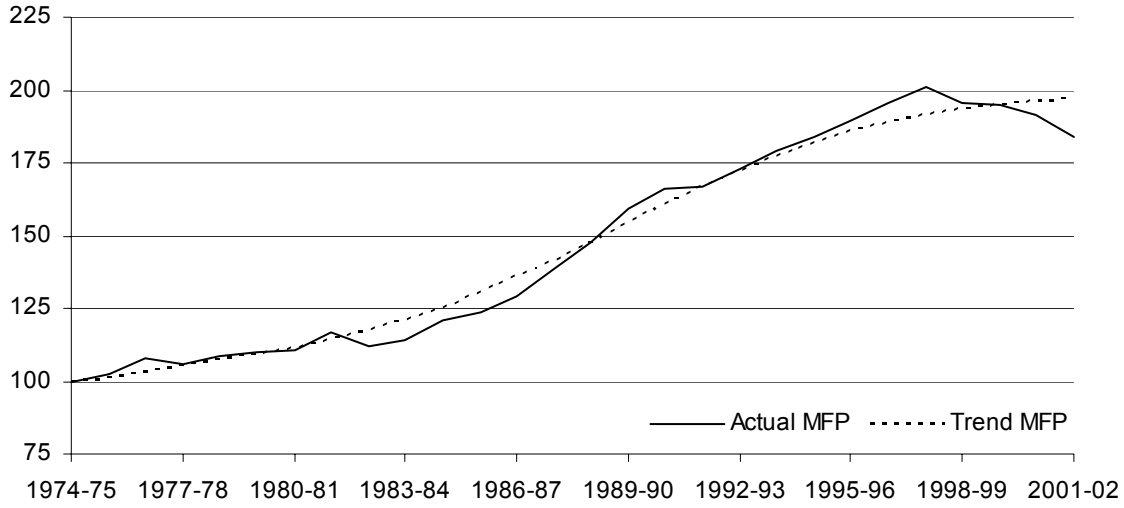
a The contributions are estimated by the equation: lp = α k + m where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1988-89, it was 31 per cent and, for 1988-89 to 2001-02, it was 39 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Electricity, gas and water

Figure A.10 **Electricity, gas and water, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.4 **Output, input and productivity growth in Electricity, gas and water, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

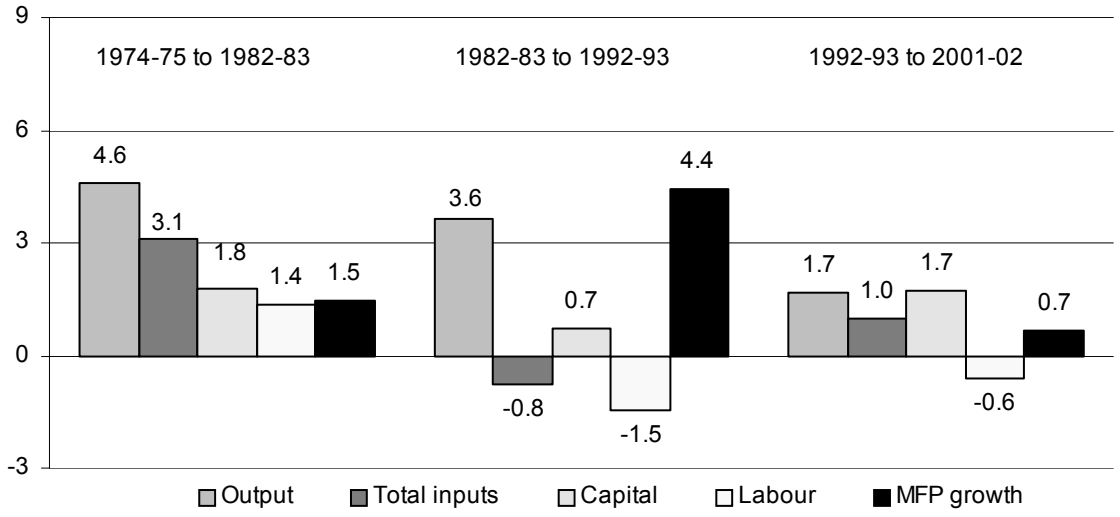
	1974-75 to 1982-83	*1982-83 to 1992-93*	*1992-93 to 2001-02*	*1974-75 to 1982-83*	*1982-83 to 1992-93*	*1992-93 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	5.1	3.6	1.8	4.6	3.6	1.7
Total inputs	2.8	-0.2	0.2	3.1	-0.8	1.0
Labour	1.9	-2.8	-4.0	2.6	-3.4	-2.4
Capital	3.7	1.6	1.9	3.7	1.2	2.4
Capital-labour ratio	1.5	5.1	5.2	1.0	4.8	4.9
Labour productivity	2.8	7.2	5.0	2.0	7.3	4.1
Capital productivity	1.2	2.0	-0.1	0.9	2.4	-0.7
Multifactor productivity	2.1	3.9	1.5	1.5	4.4	0.7

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.11 **Electricity, gas and water, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

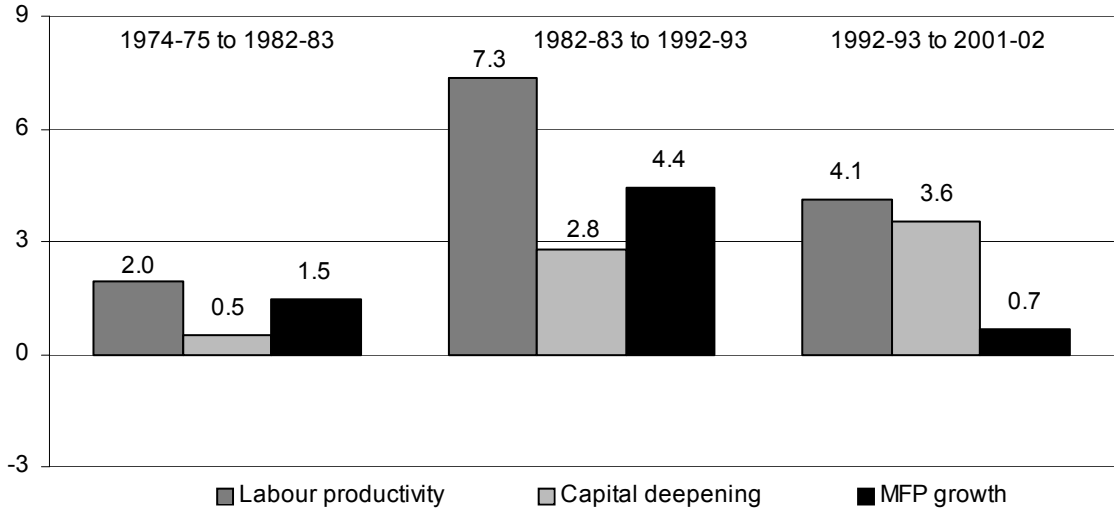


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 48 per cent, for 1982-83 to 1992-93, it was 58 per cent and, for 1992-93 to 2001-02, it was 73 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.12 **Electricity, gas and water, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points

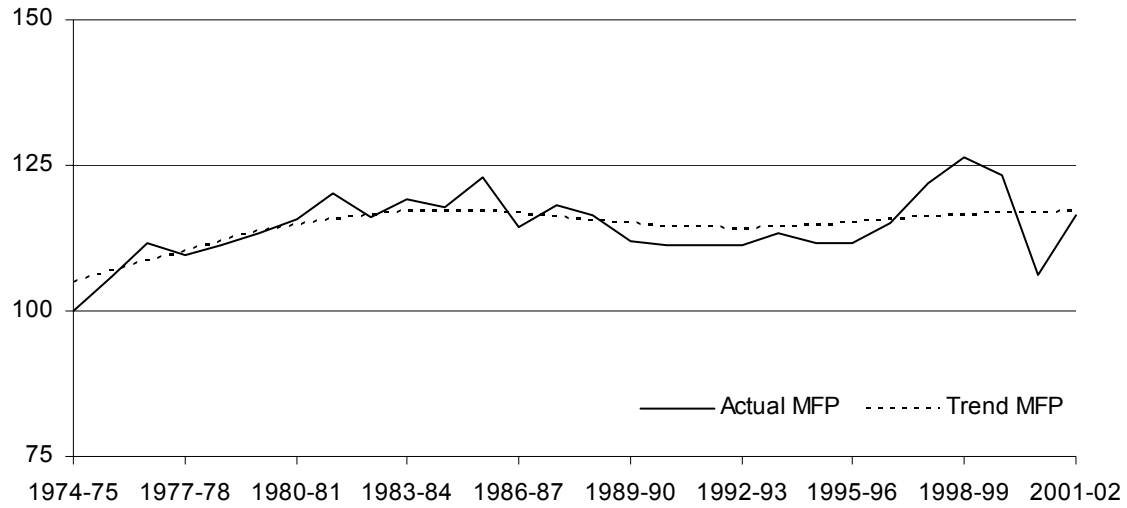


a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 48 per cent, for 1982-83 to 1992-93, it was 58 per cent and, for 1992-93 to 2001-02, it was 73 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Construction

Figure A.13 **Construction, actual and trend MFP, 1974-75 to 2001-02[a]**
Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.5 **Output, input and productivity growth in Construction, 1974-75 to 2001-02[a]**
Average annual growth rates, per cent per year

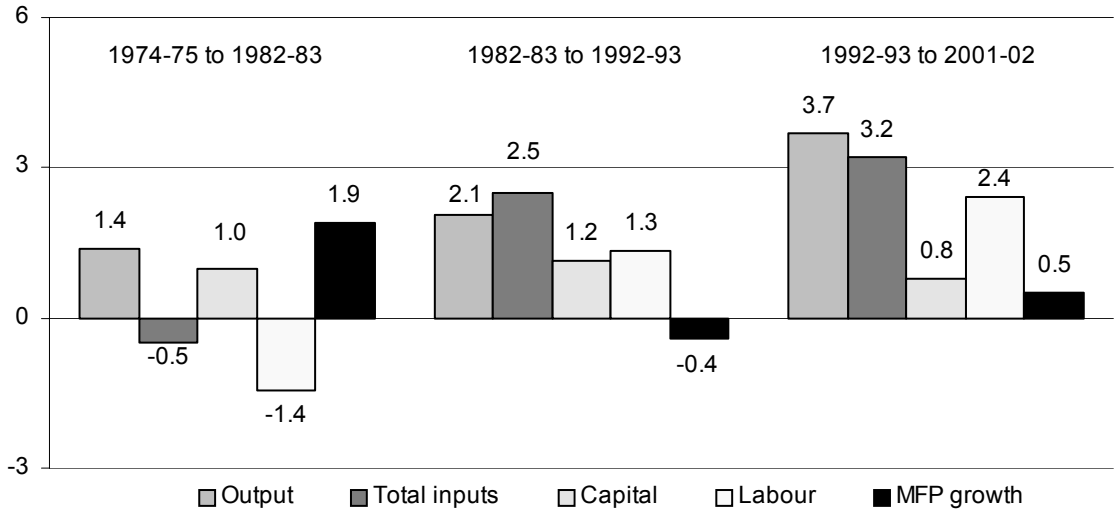
	1974-75 to 1982-83	*1982-83 to 1992-93*	*1992-93 to 2001-02*	*1974-75 to 1982-83*	*1982-83 to 1992-93*	*1992-93 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	1.9	2.1	3.0	1.4	2.1	3.7
Total inputs	0.6	2.3	2.7	-0.5	2.5	3.2
Labour	-0.5	1.5	2.6	-1.7	1.7	3.2
Capital	7.0	5.5	3.1	6.0	5.7	3.2
Capital-labour ratio	7.5	3.9	0.6	7.8	4.0	0.0
Labour productivity	2.5	0.6	0.4	3.2	0.4	0.5
Capital productivity	-3.8	-3.4	-0.1	-4.3	-3.4	0.5
Multifactor productivity	1.3	-0.2	0.3	1.9	-0.4	0.5

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.14 **Construction, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

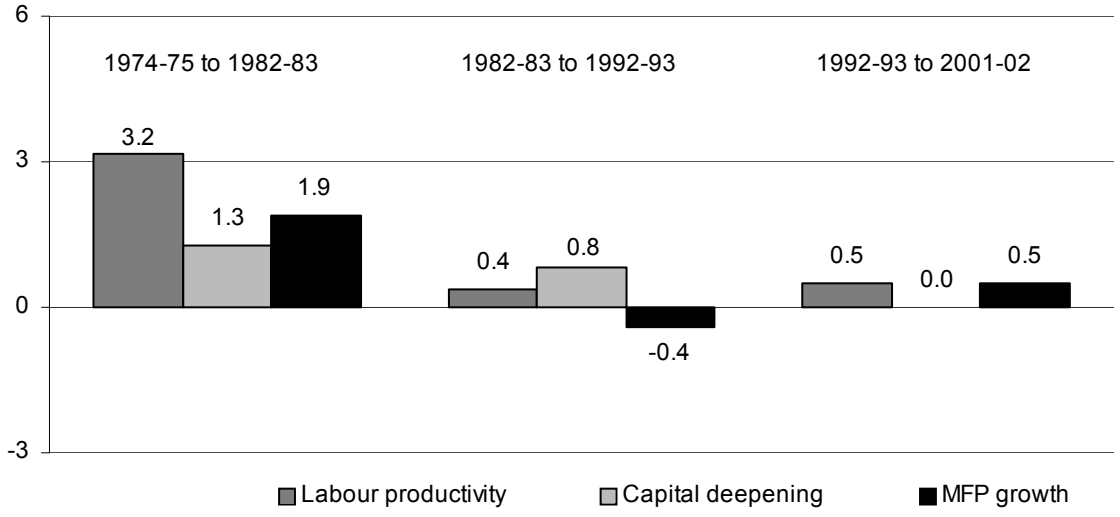


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 16 per cent, for 1982-83 to 1992-93, it was 20 per cent and, for 1992-93 to 2001-02, it was 25 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.15 **Construction, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points

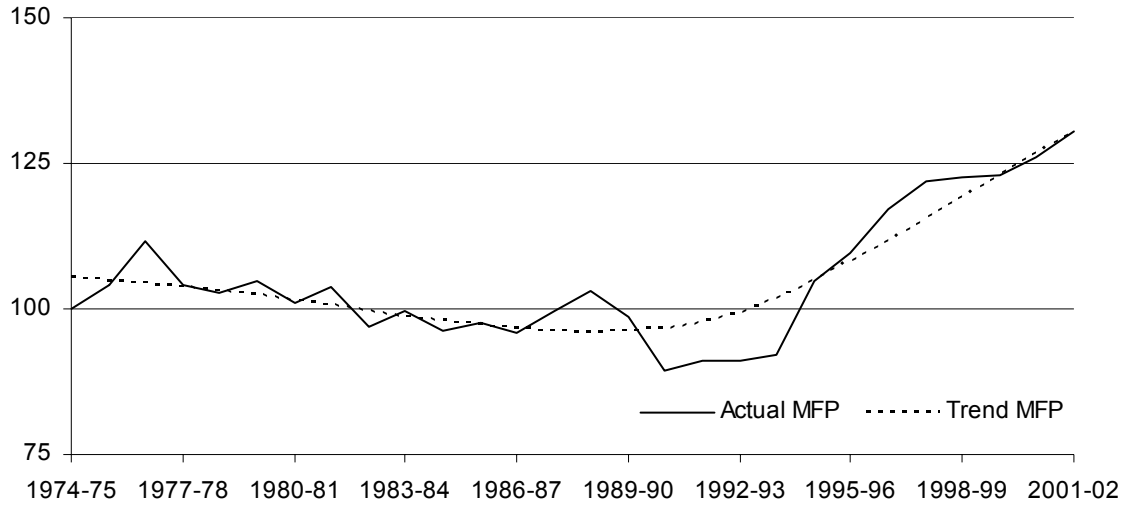


a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 16 per cent, for 1982-83 to 1992-93, it was 20 per cent and, for 1992-93 to 2001-02, it was 25 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Wholesale trade

Figure A.16 **Wholesale trade, actual and trend MFP, 1974-75 to 2001-02[a]**
Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.6 **Output, input and productivity growth in Wholesale trade, 1974-75 to 2001-02[a]**
Average annual growth rates, per cent per year

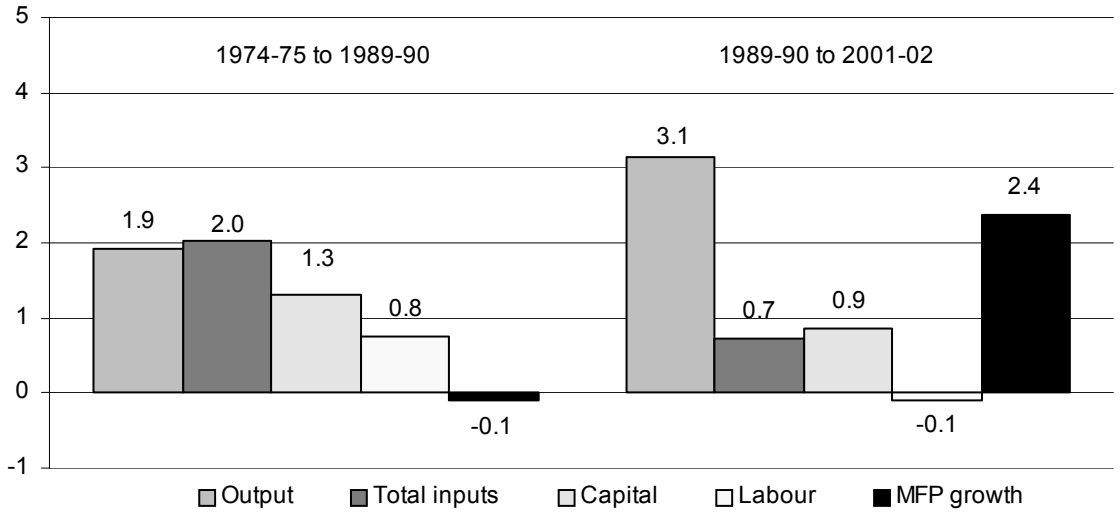
	1974-75 to 1989-90	*1989-90 to 2001-02*	*1974-75 to 1989-90*	*1989-90 to 2001-02*
	Trend	Trend	Actual	Actual
Output	1.4	3.9	1.9	3.1
Total inputs	2.1	1.4	2.0	0.7
Labour	1.2	0.6	1.1	-0.1
Capital	4.2	3.2	4.3	3.0
Capital-labour ratio	2.9	2.7	3.2	3.1
Labour productivity	0.2	3.4	0.8	3.3
Capital productivity	-2.5	0.7	-2.3	0.2
Multifactor productivity	-0.6	2.6	-0.1	2.4

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.17 **Wholesale trade, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

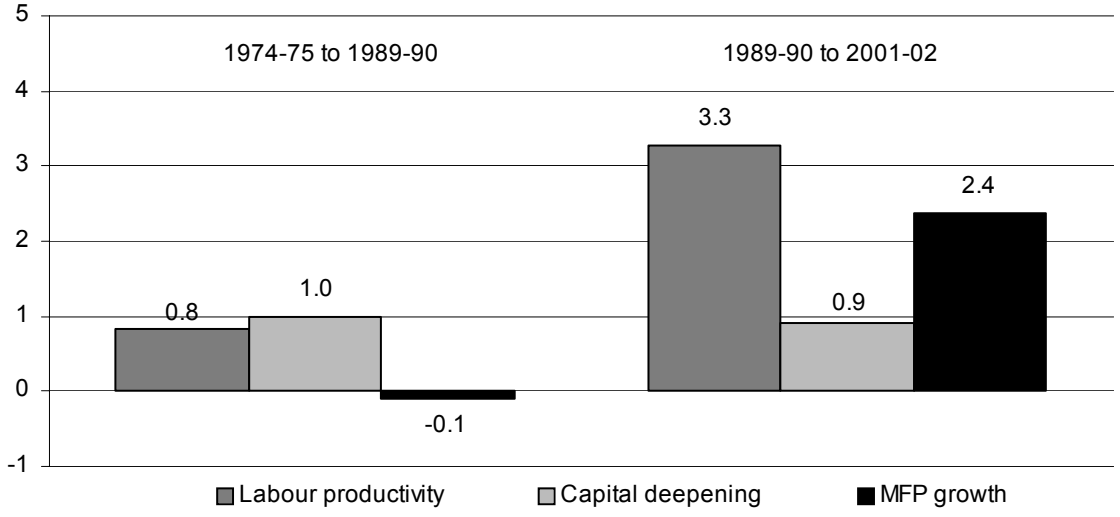


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1989-90, it was 30 per cent and, for 1989-90 to 2001-02, it was 29 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.18 **Wholesale trade, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points

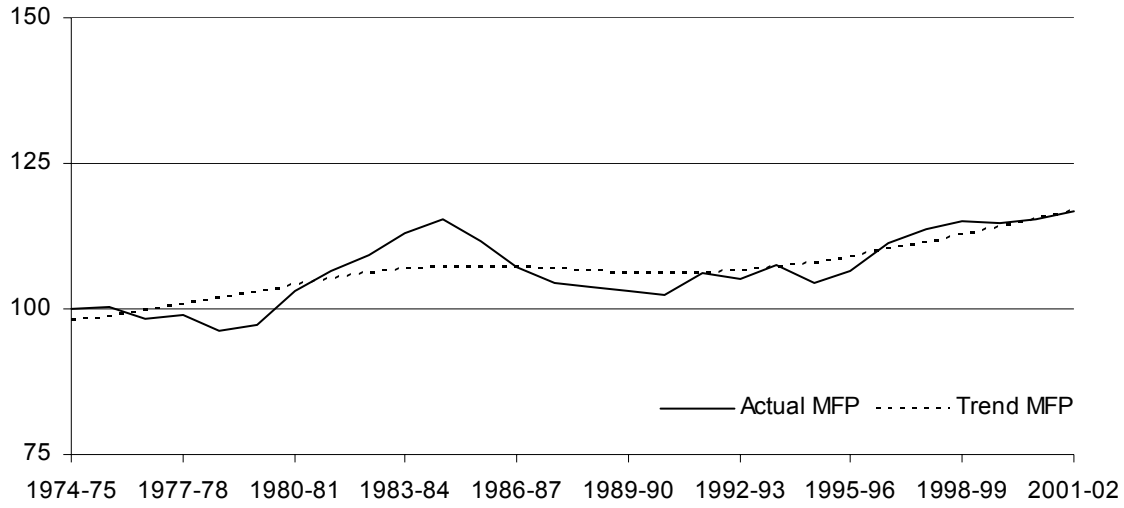


a The contributions are estimated by the equation: lp = α k + m where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1989-90, it was 30 per cent and, for 1989-90 to 2001-02, it was 29 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Retail trade

Figure A.19 **Retail trade, actual and trend MFP, 1974-75 to 2001-02[a]**
Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.7 **Output, input and productivity growth in Retail trade, 1974-75 to 2001-02[a]**
Average annual growth rates, per cent per year

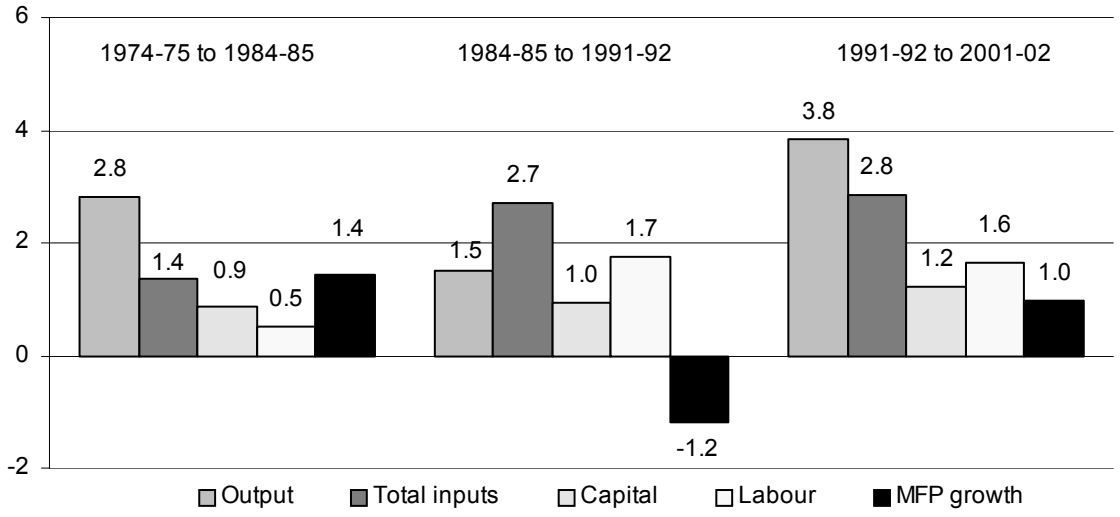
	1974-75 to 1984-85	*1984-85 to 1991-92*	*1991-92 to 2001-02*	*1974-75 to 1984-85*	*1984-85 to 1991-92*	*1991-92 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	2.7	2.3	3.5	2.8	1.5	3.8
Total inputs	1.8	2.5	2.6	1.4	2.7	2.8
Labour	1.1	1.8	1.7	0.6	2.2	2.0
Capital	5.3	5.3	6.2	5.3	4.8	6.7
Capital-labour ratio	4.1	3.4	4.5	4.7	2.6	4.6
Labour productivity	1.6	0.5	1.8	2.2	-0.7	1.8
Capital productivity	-2.3	-2.7	-2.8	-2.4	-3.2	-2.6
Multifactor productivity	0.9	-0.1	0.9	1.4	-1.2	1.0

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.20 **Retail trade, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

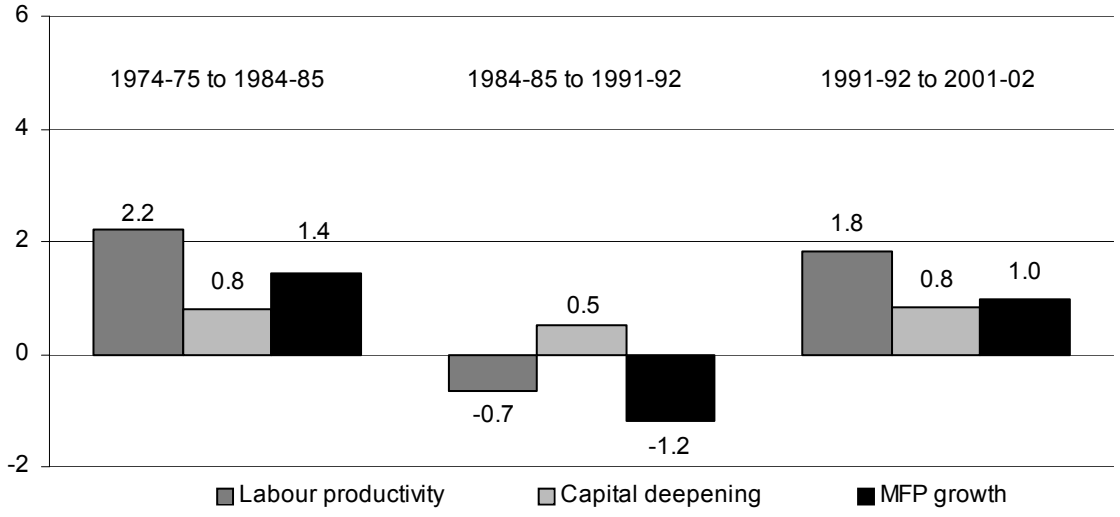


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1984-85, it was 17 per cent, for 1984-85 to 1991-92, it was 20 per cent and, for 1991-92 to 2001-02, it was 18 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.21 **Retail trade, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



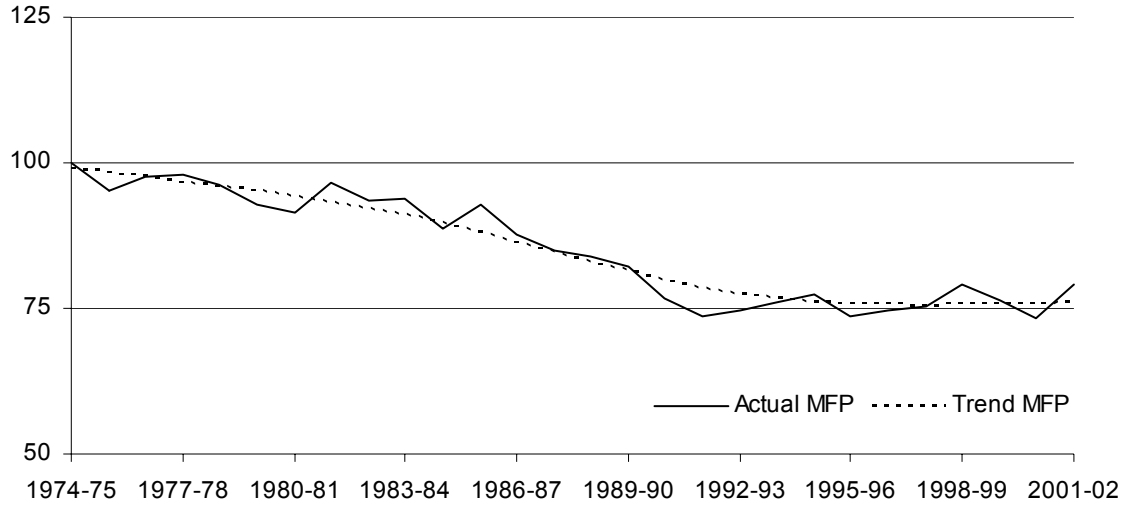
a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1984-85, it was 17 per cent, for 1984-85 to 1991-92, it was 20 per cent and, for 1991-92 to 2001-02, it was 18 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Accommodation, cafes and restaurants

Figure A.22 **Accommodation, cafes and restaurants, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.8 **Output, input and productivity growth in Accommodation, cafes and restaurants, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

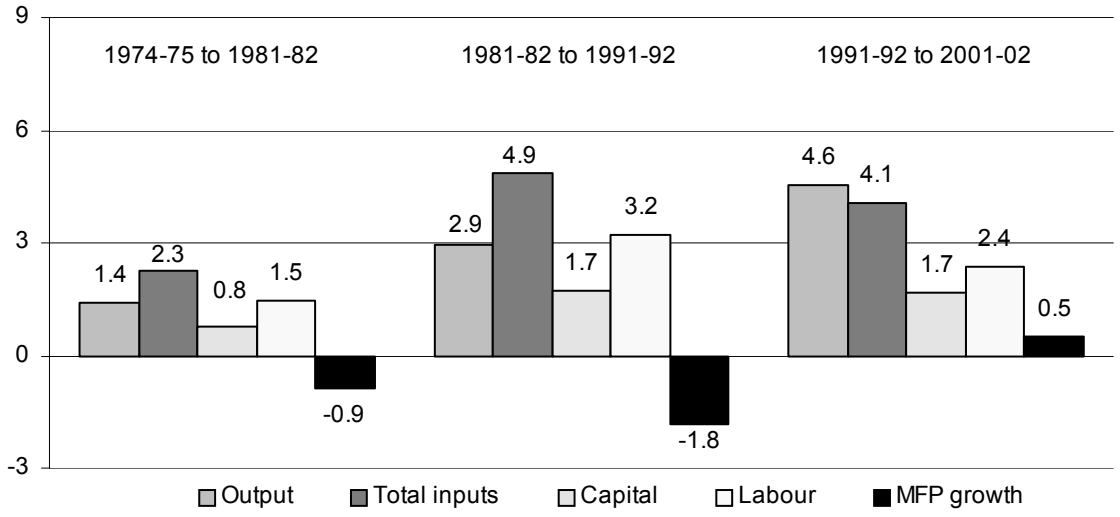
	1974-75 to 1982-83	*1982-83 to 1993-94*	*1993-94 to 2001-02*	*1974-75 to 1982-83*	*1982-83 to 1993-94*	*1993-94 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	2.0	3.1	4.0	1.4	2.9	4.6
Total inputs	3.1	4.9	4.0	2.3	4.9	4.1
Labour	2.4	4.1	3.3	1.9	4.1	3.2
Capital	5.7	7.5	6.0	3.7	7.6	6.7
Capital-labour ratio	2.8	3.2	2.8	1.8	3.4	3.4
Labour productivity	-0.4	-1.0	0.6	-0.5	-1.1	1.3
Capital productivity	-2.7	-4.2	-2.2	-2.2	-4.3	-2.0
Multifactor productivity	-0.9	-1.7	-0.1	-0.9	-1.8	0.5

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.23 **Accommodation, cafes and restaurants, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

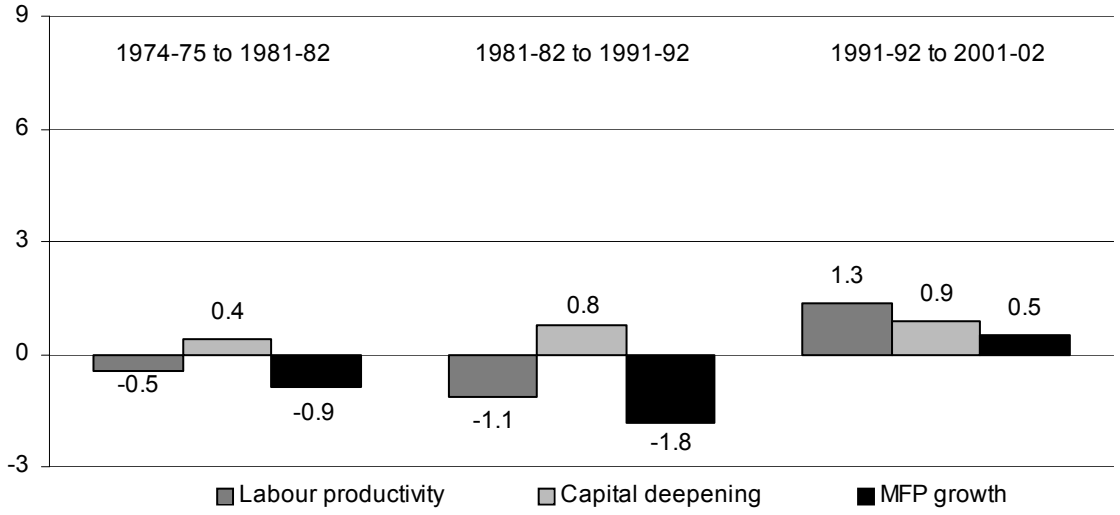


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 21 per cent, for 1982-83, to 1993-94, it was 22 per cent and, for 1993-94 to 2001-02, it was 25 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.24 **Accommodation, cafes and restaurants, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



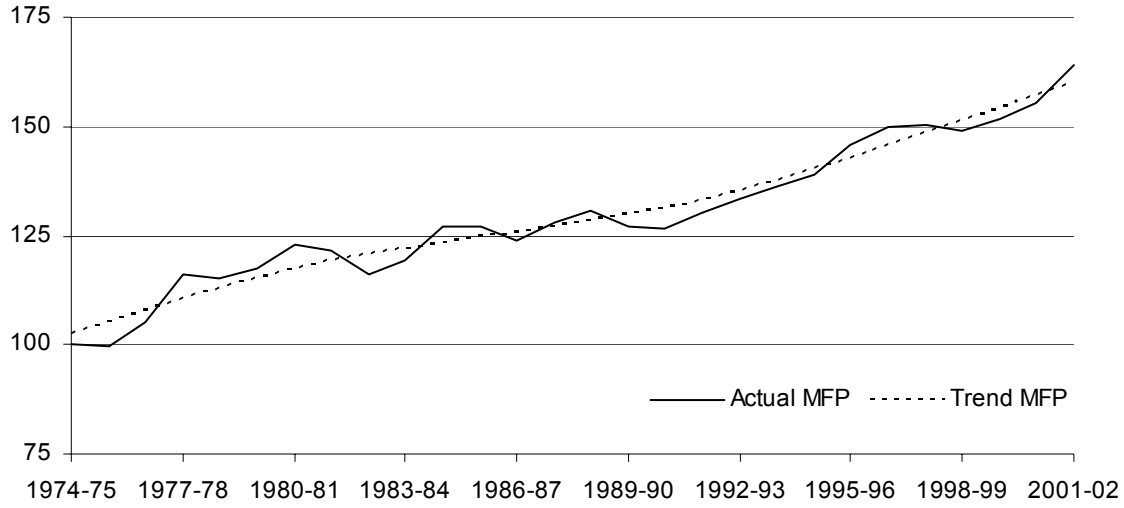
a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1982-83, it was 21 per cent, for 1982-83, to 1993-94, it was 22 per cent and, for 1993-94 to 2001-02, it was 25 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Transport and storage

Figure A.25 **Transport and storage, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.9 **Output, input and productivity growth in Transport and storage, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

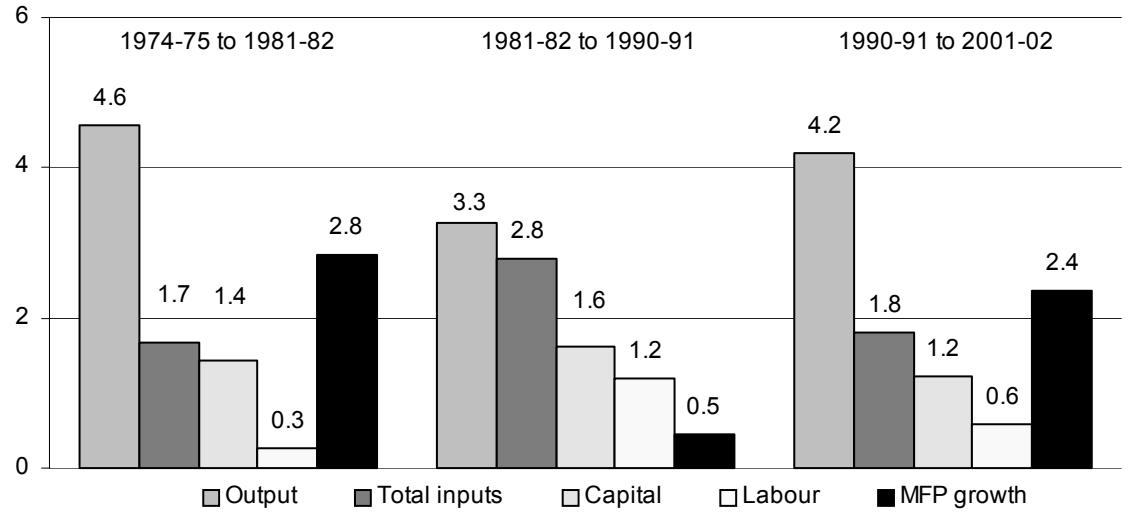
	1974-75 to 1981-82	*1981-82 to 1990-91*	*1990-91 to 2001-02*	*1974-75 to 1981-82*	*1981-82 to 1990-91*	*1990-91 to 2001-02*
	Trend	Trend	Trend	Actual	Actual	Actual
Output	4.4	3.6	3.9	4.6	3.3	4.2
Total inputs	2.1	2.4	2.1	1.7	2.8	1.8
Labour	0.8	1.4	1.3	0.4	1.8	0.9
Capital	5.8	4.7	3.5	5.5	4.8	3.4
Capital-labour ratio	4.8	3.3	2.2	5.1	3.0	2.5
Labour productivity	3.5	2.1	2.6	4.2	1.5	3.2
Capital productivity	-1.0	-1.1	0.4	-0.9	-1.5	0.7
Multifactor productivity	2.2	1.1	1.8	2.8	0.5	2.4

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.26 **Transport and storage, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

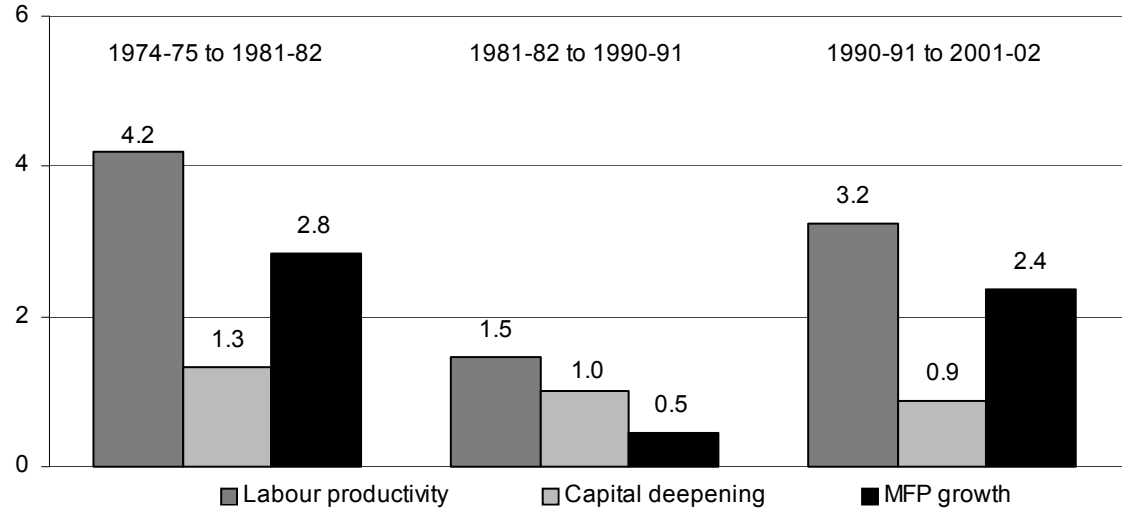


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1981-82, it was 26 per cent, for 1981-82 to 1990-91, it was 34 per cent and, for 1990-91 to 2001-02, it was 36 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.27 **Transport and storage, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



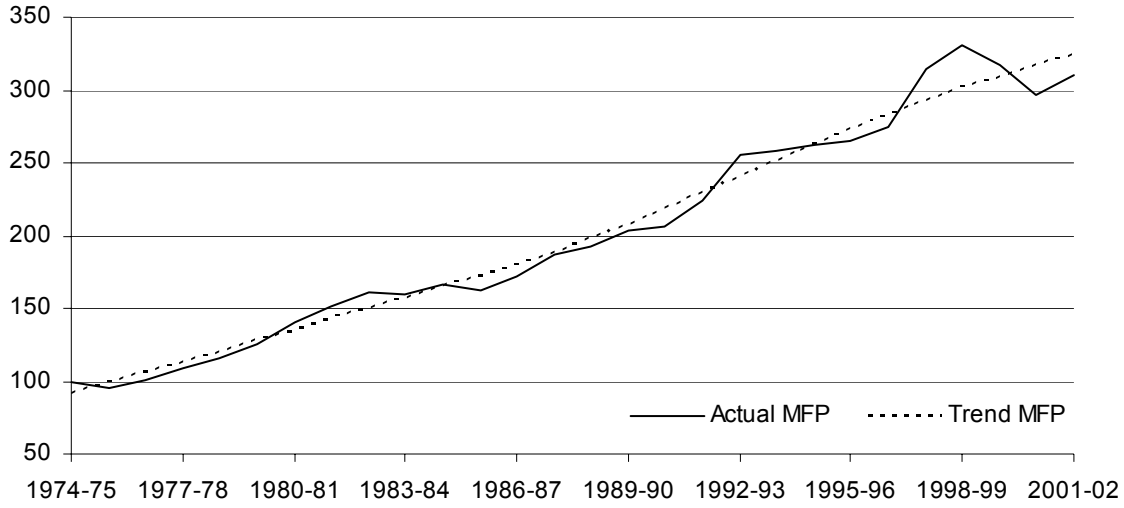
a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1981-82, it was 26 per cent, for 1981-82 to 1990-91, it was 34 per cent and, for 1990-91 to 2001-02, it was 36 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Communication services

Figure A.28 **Communication services, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.10 **Output, input and productivity growth in Communication services, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

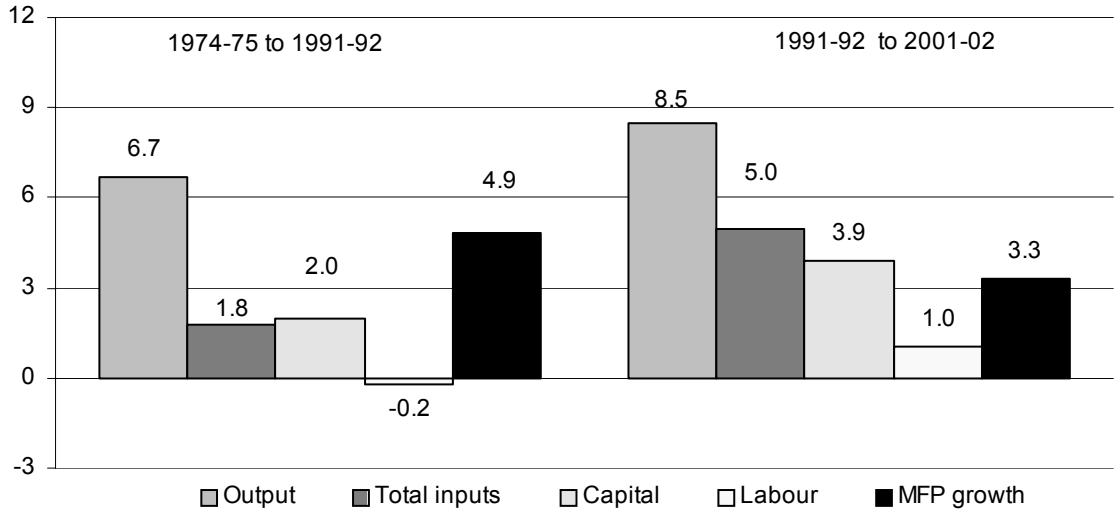
	1974-75 to 1991-92	*1991-92 to 2001-02*	*1974-75 to 1991-92*	*1991-92 to 2001-02*
	Trend	Trend	Actual	Actual
Output	8.0	8.1	6.7	8.5
Total inputs	2.1	4.8	1.8	5.0
Labour	0.1	2.2	-0.3	2.1
Capital	6.2	7.3	5.7	7.8
Capital-labour ratio	6.1	5.1	6.1	5.6
Labour productivity	7.9	6.0	7.1	6.2
Capital productivity	1.5	1.1	0.9	0.6
Multifactor productivity	5.5	3.5	4.9	3.3

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.29 **Communication services, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

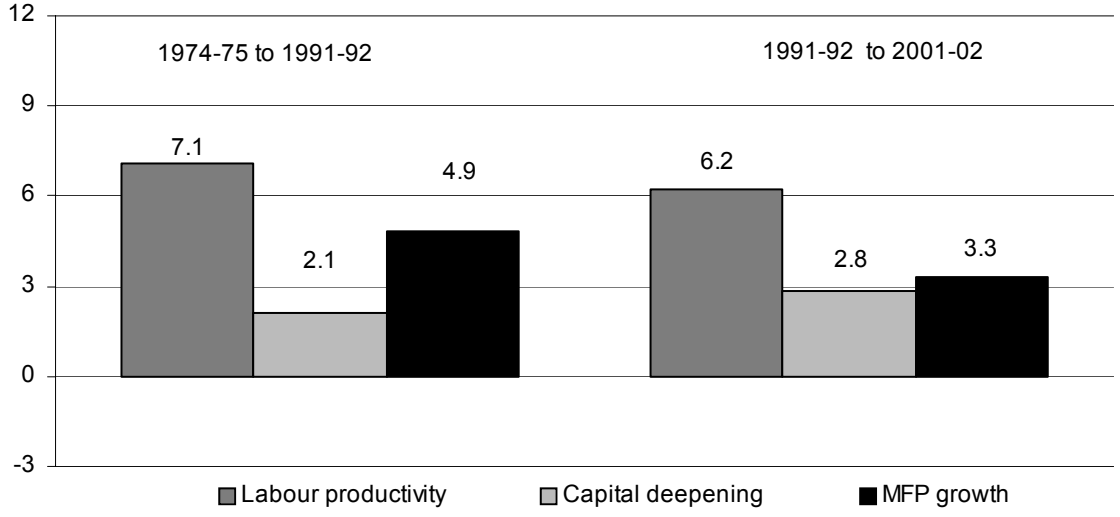


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1991-92, it was 34 per cent and, for 1991-92 to 2001-02, it was 50 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.30 **Communication services, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



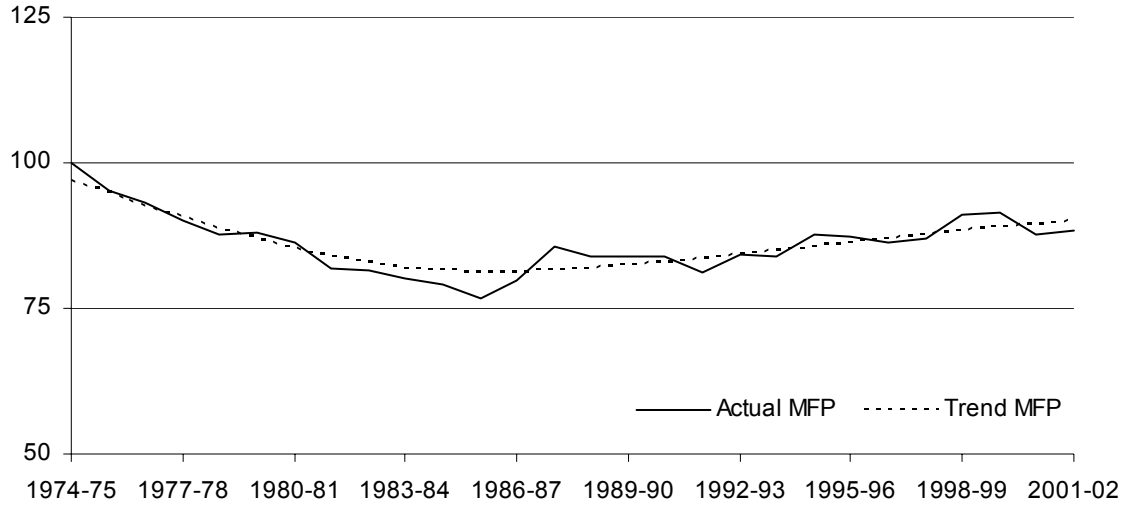
a The contributions are estimated by the equation: lp = α k + m where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1991-92, it was 34 per cent and, for 1991-92 to 2001-02, it was 50 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Finance and insurance

Figure A.31 **Finance and insurance, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.11 **Output, input and productivity growth in Finance and insurance, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

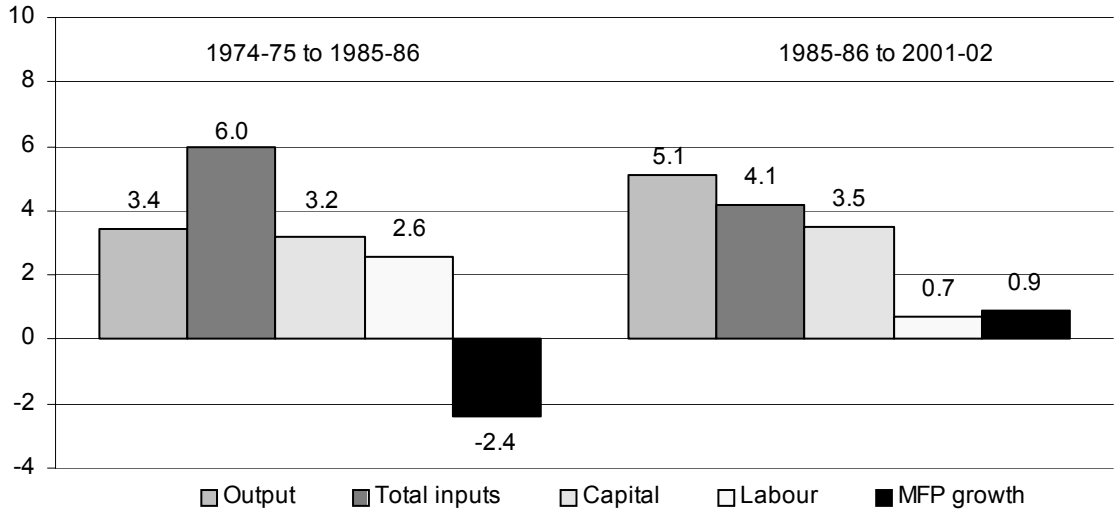
	1974-75 to 1985-86	*1985-86 to 2001-02*	*1974-75 to 1985-86*	*1985-86 to 2001-02*
	Trend	Trend	Actual	Actual
Output	4.8	4.5	3.4	5.1
Total inputs	6.7	3.9	6.0	4.1
Labour	4.6	1.1	4.0	1.2
Capital	10.9	7.9	9.1	8.5
Capital-labour ratio	5.1	6.8	4.9	7.2
Labour productivity	0.1	3.4	-0.6	3.8
Capital productivity	-4.6	-3.3	-5.2	-3.2
Multifactor productivity	-1.6	0.6	-2.4	0.9

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.32 **Finance and insurance, contributions to average annual output growth, 1974-75 to 2001-02[a]**

Percentage points

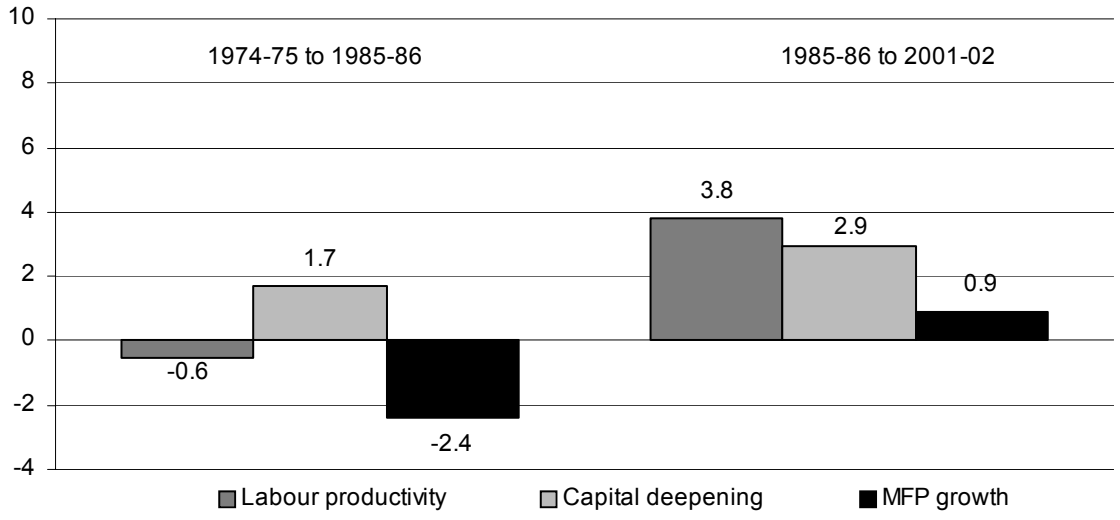


a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1985-86, it was 35 per cent and, for 1985-86 to 2001-02, it was 41 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.33 **Finance and insurance, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



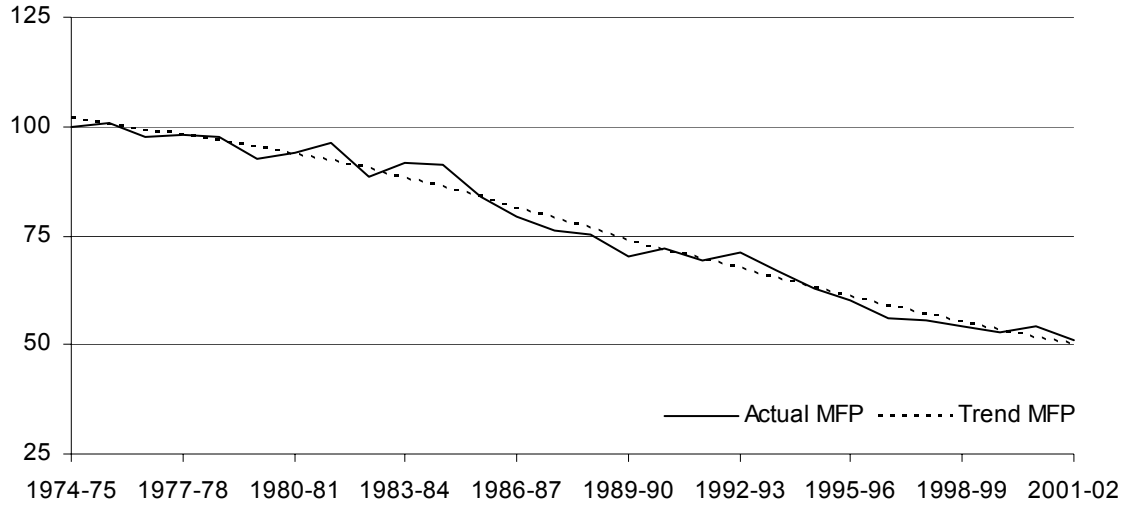
a The contributions are estimated by the equation: $lp = \alpha\ k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1985-86, it was 35 per cent and, for 1985-86 to 2001-02, it was 41 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Cultural and recreational services

Figure A.34 **Cultural and recreational services, actual and trend MFP, 1974-75 to 2001-02[a]**

Index 1974-75 = 100 for actual MFP



a The trend estimates are based on a Hodrick-Prescott filter (gamma = 100).

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table A.12 **Output, input and productivity growth in Cultural and recreational services, 1974-75 to 2001-02[a]**

Average annual growth rates, per cent per year

	1974-75 to 1995-96	*1995-96 to 2001-02*	*1974-75 to 1995-96*	*1995-96 to 2001-02*
	Trend	Trend	Actual	Actual
Output	3.5	3.0	3.3	3.4
Total inputs	6.2	5.7	5.9	6.3
Labour	4.6	2.8	4.5	2.6
Capital	8.6	9.5	7.8	11.9
Capital-labour ratio	3.7	7.2	3.2	9.1
Labour productivity	-1.0	0.1	-1.1	0.8
Capital productivity	-4.3	-8.7	-4.2	-7.6
Multifactor productivity	-2.4	-3.2	-2.4	-2.7

a The trend data were estimated using a Hodrick-Prescott filter (gamma = 100).

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.35 **Cultural and recreational services, contributions to average annual output growth, 1974-75 to 2001-02[a]**

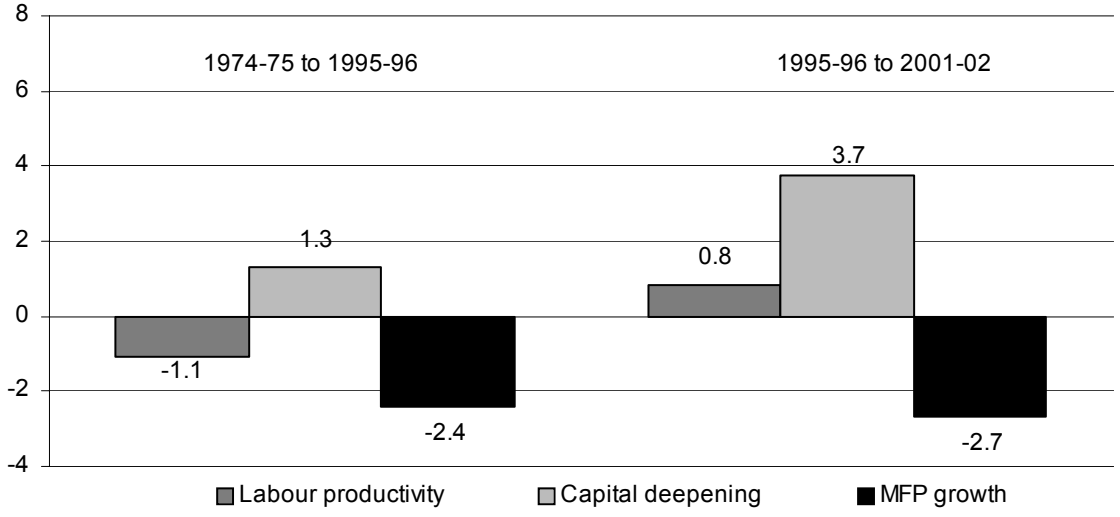
Percentage points

a May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1995-96, it was 41 per cent and, for 1995-96 to 2001-02, it was 41 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Figure A.36 **Cultural and recreational services, contributions to average annual labour productivity growth, 1974-75 to 2001-02[a]**

Percentage points



a The contributions are estimated by the equation: $lp = \alpha k + m$ where lp is labour productivity growth, α is the capital share in total factor income, k is growth in the capital-labour ratio and m is growth in MFP. May not add due to rounding. The capital income share of total factor income is based on an average share estimate. For 1974-75 to 1995-96, it was 41 per cent and, for 1995-96 to 2001-02, it was 41 per cent.

Data sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

B Industry performance

This appendix provides a series of tables that rank the various industries according to their growth performance.

Table B.1 identifies the industries that have recorded a high or low MFP growth performance over a number of productivity cycles.

Table B.2 identifies the industries that have recorded a high or low labour productivity growth performance over the same productivity cycles.

Table B.3 shows the new MFP growth industries and the new labour productivity growth industries over the 1988-89 to 1998-99 period.

Table B.1 **High and low MFP growth industries, 1974-75 to 2001-02[a]**

Per cent per year

High MFP growth industries		*Low MFP growth industries*		*Excluded industries*[b]	
1974-75 to 1988-89					
Agriculture, forestry & fishing	1.7	Mining	0.0	nil	
Manufacturing	2.0	Wholesale trade	0.2		
Electricity, gas & water	2.8	Retail trade	0.3		
Construction	1.1	Accommodation, cafes & restaurants	-1.2		
Transport & storage	1.9	Finance & insurance	-1.2		
Communication services	4.8	Cultural & recreational services	-2.0		
Market sector	**0.9**				
1988-89 to 1993-94					
Agriculture, forestry & fishing	4.3	Construction	-0.5	Retail trade	0.7
Mining	2.3	Wholesale trade	-2.2		
Manufacturing	2.0	Accommodation, cafes & restaurants	-1.9		
Electricity, gas & water	4.0	Finance & insurance	0.0		
Transport & storage	0.8	Cultural & recreational services	-2.4		
Communication services	6.1				
Market sector	**0.7**				
1993-94 to 1998-99					
Agriculture, forestry & fishing	4.3	Mining	0.1	Transport & storage	1.8
Construction	2.2	Manufacturing	0.5	Electricity, gas & water	1.8
Wholesale trade	5.8	Retail trade	1.4		
Communication services	5.1	Accommodation, cafes & restaurants	0.8		
		Finance & insurance	1.7		
		Cultural & recreational services	-4.1		
Market sector	**1.8**				
1998-99 to 2001-02					
Agriculture, forestry & fishing	3.1	Electricity, gas & water	-2.0	Retail trade	0.5
Mining	3.0	Construction	-2.7		
Manufacturing	2.8	Accommodation, cafes & restaurants	-0.1		
Wholesale trade	2.1	Communication services	-2.2		
Transport & storage	3.3	Finance & insurance	-1.1		
		Cultural & recreational services	-2.1		
Market sector	**0.5**				

a ABS productivity growth cycles are used. Compound annual percentage change between MFP growth cycle peaks. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle. **b** The industries around the market sector MFP growth rate have not been allocated.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table B.2 High and low labour productivity growth industries, 1974-75 to 2001-02

Per cent per year

High labour productivity growth industries		*Low labour productivity growth industries*		*Excluded industries*[b]	
1974-75 to 1988-89					
Agriculture, forestry & fishing	2.1	Wholesale trade	1.1	Mining	1.9
Manufacturing	2.9	Retail trade	0.9		
Electricity, gas & water	4.2	Accommodation, cafes & restaurants	-0.6		
Construction	2.0	Finance & insurance	0.7		
Transport & storage	3.1	Cultural & recreational services	-1.1		
Communication services	6.7				
Market sector	**1.9**				
1988-89 to 1993-94					
Agriculture, forestry & fishing	4.8	Construction	0.4	nil	
Mining	5.3	Wholesale trade	-1.4		
Manufacturing	4.1	Retail trade	1.6		
Electricity, gas & water	7.3	Accommodation, cafes & restaurants	-1.6		
Communication services	9.6	Transport & storage	1.9		
Finance & insurance	3.5	Cultural & recreational services	-0.4		
Market sector	**2.0**				
1993-94 to 1998-99					
Agriculture, forestry & fishing	3.7	Manufacturing	2.4	nil	
Mining	5.2	Construction	2.4		
Electricity, gas & water	7.2	Retail trade	2.3		
Wholesale trade	6.8	Accommodation, cafes & restaurants	1.8		
Communication services	7.4	Transport & storage	2.3		
Finance & insurance	4.4	Cultural & recreational services	-0.7		
Market sector	**3.2**				
1998-99 to 2001-02					
Agriculture, forestry & fishing	2.2	Electricity, gas & water	-1.7	Finance & Insurance	1.8
Mining	7.1	Construction	-2.9		
Manufacturing	5.1	Retail trade	1.1		
Wholesale trade	3.3	Accommodation, cafes & restaurants	0.6		
Transport & storage	4.4	Communication services	1.7		
		Cultural & recreational services	0.9		
Market sector	**1.8**				

[a] ABS productivity growth cycles are used. Compound annual percentage change between MFP growth cycle peaks. The cycle for the period 1998-99 to 2001-02 is an incomplete productivity cycle. [b] The industries around the market sector labour productivity growth rate have not been allocated.

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

Table B.3 **New growth industries, 1988-89 to 1998-99**

Per cent per year

New MFP growth industries

1988-89 to 1993-94 MFP growth		*1993-94 to 1998-99 MFP growth*		*Percentage point change*
Construction	-0.5	Construction	2.2	2.7
Wholesale trade	-2.2	Wholesale trade	5.8	8.0
Retail trade	0.7	Retail trade	1.4	0.7
Accommodation, cafes & restaurants	-1.9	Accommodation, cafes & restaurants	0.8	2.8
Transport & storage	0.8	Transport & storage	1.8	1.0
Finance & insurance	0.0	Finance & insurance	1.7	
Market sector	**0.7**	**Market sector**	**1.8**	**1.1**

New Labour productivity growth industries

1988-89 to 1993-94 Labour productivity growth		*1993-94 to 1998-99 Labour productivity growth*		*Percentage point change*
Construction	0.4	Construction	2.4	2.0
Wholesale trade	-1.4	Wholesale trade	6.8	8.2
Retail trade	1.6	Retail trade	2.3	0.7
Accommodation, cafes & restaurants	-1.6	Accommodation, cafes & restaurants	1.8	3.4
Transport & storage	1.9	Transport & storage	2.3	0.4
Finance & insurance	3.5	Finance & insurance	4.4	0.9
Market sector	**2.0**	**Market sector**	**3.2**	**1.2**

Sources: Estimates based on unpublished ABS data; ABS Cat. no. 5204.0.

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