

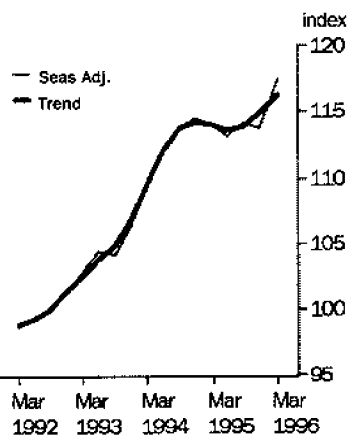
INDEXES OF INDUSTRIAL PRODUCTION

AUSTRALIA

EMBARGOED UNTIL 11:30AM TUES 4 JUNE 1996

MARCH QTR KEY FIGURES *

Total Industrial Production



TREND ESTIMATES

	% change Dec Qtr 95 to Mar Qtr 96	% change Mar Qtr 95 to Mar Qtr 96
Gross product at constant prices		
Mining**	1.4	2.5
Manufacturing	1.3	2.2
Electricity, gas and water	0.4	0.2
Total industrial	1.1	1.9

SEASONALLY ADJUSTED

	% change Dec Qtr 95 to Mar Qtr 96	% change Mar Qtr 95 to Mar Qtr 96
Gross product at constant prices		
Mining**	6.2	4.0
Manufacturing	2.9	3.1
Electricity, gas and water	1.8	1.6
Total industrial	3.3	3.0

* At average 1989-90 prices

** Excludes services to mining

MARCH QTR KEY POINTS

TREND ESTIMATES

- The estimate for March quarter 1996 represents a record high level following 1.1% growth for the quarter. Production is 1.9% higher than March quarter 1995.
- The pattern of industrial production shows twelve consecutive quarters of growth to December quarter 1994 followed by two quarters of falls then three quarters of growth.
- Production grew for all the main industry groups. Largest growth was by the mining industry (1.4%) followed by Manufacturing (1.3%) and the Utilities (0.4%).
- Four of the nine manufacturing subdivisions showed growth. Largest rises were for Machinery and equipment manufacturing (3.1%) and for Petroleum, coal, chemical and associated products manufacturing (2.8%). The largest fall was for Non-metallic mineral products manufacturing (1.3%). All other falls were of less than 1%.

SEASONALLY ADJUSTED ESTIMATES

- The estimate for March quarter 1996 was 3.3% higher than for December quarter 1995.
- Production grew for all the main industry groups. Most notable growth was by the Mining industry (6.2%) followed by Manufacturing (2.9%) and the Utilities (1.8%).

INQUIRIES

- For further information about these and related statistics, contact Harvey Bissett on 06 252 5639, or any ABS Office.

NOTES

FORTHCOMING ISSUES

ISSUE (Quarter)

RELEASE DATE

June 1996

To be advised

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CHANGES IN THIS ISSUE

This issue of *Indexes of Industrial Production* contains a number of changes. The format has been updated in line with changes to ABS major economic indicator publications. Recent quarterly estimates have also been affected by the availability of more complete survey data.

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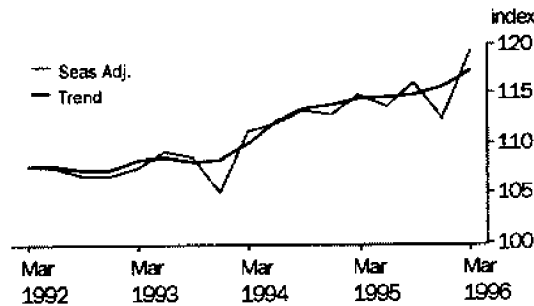
W. McLennan
Australian Statistician

INDUSTRIAL PRODUCTION: Gross product(a)

INDEX NUMBERS: BASE OF INDEX 1989-90 = 100.0

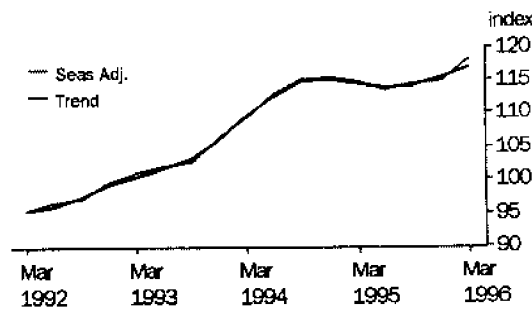
MINING

The rise of 1.4% in the March quarter 1996 trend estimate for the index of mining industry production made that quarter the tenth successive quarter of growth. The trend estimate for March quarter 1996 is 2.5% higher than for March quarter 1995 and 6.7% higher than for March quarter 1994.



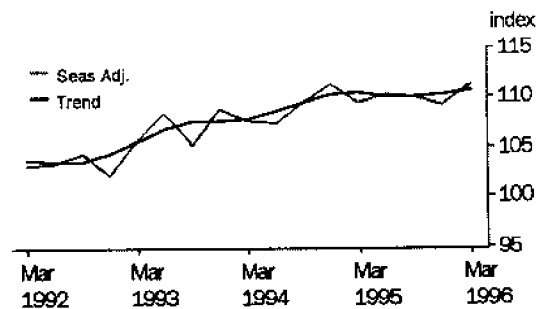
MANUFACTURING

The trend estimate has grown in each of the last three quarters, following two quarters of decline. Prior to that, there had been eleven consecutive quarters of growth. March quarter 1996 growth took the estimate to a record high level 2.2% higher than the March quarter 1995 and 6.8% above the estimate for March quarter 1994.



ELECTRICITY, GAS AND WATER

March quarter 1995 saw a rise of 0.4% in the trend series for electricity, gas and water utility industries bringing the estimate to a record level. This rise followed a similar rise in the previous quarter, which followed falls for two quarters. The index for these industries in March quarter 1996 is 0.2% higher than in March quarter 1995.



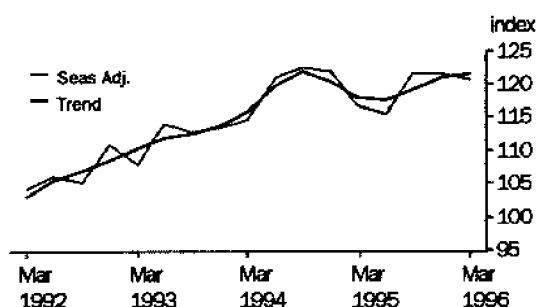
(a) At average 1989-90 prices

MANUFACTURING: Gross product(a)

INDEX NUMBERS: BASE OF INDEX 1989-90 = 100.0

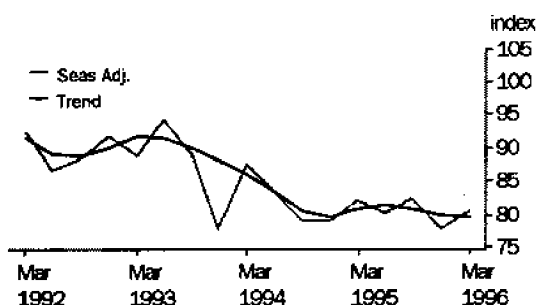
FOOD, BEVERAGE AND TOBACCO

March quarter 1996 saw a rise of 0.6% in the trend series for this industry, following a 1.4% rise in each of September quarter 1995 and December quarter 1995 and three successive falls from the record high level reached in September quarter 1994. Production in March quarter 1996 is 3.2% higher than in March quarter 1995 and only 0.2% below the record high level set in September quarter 1994.



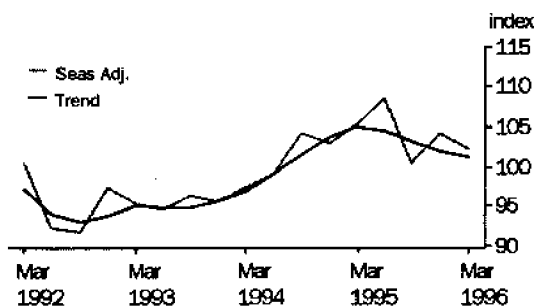
TEXTILE, CLOTHING, FOOTWEAR AND LEATHER

March quarter 1996 saw a fall of 0.3% in the trend series for this industry, following falls of 1.0% in December quarter 1995 and 0.9% in September quarter 1995. Production in March quarter 1996 is only 0.3% above the record low level set in December quarter 1994.



WOOD AND PAPER PRODUCT

A fall of 0.7% in the March quarter 1996 in the trend series for this industry is the fourth successive fall. These falls followed six quarters of growth. Production in March quarter 1996 is 3.5% lower than in March quarter 1995.



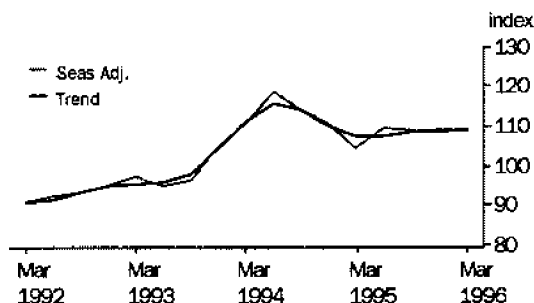
(a) At average 1989-90 prices

MANUFACTURING : Gross product(a) *continued*

INDEX NUMBERS: BASE OF INDEX 1989-90 = 100.0

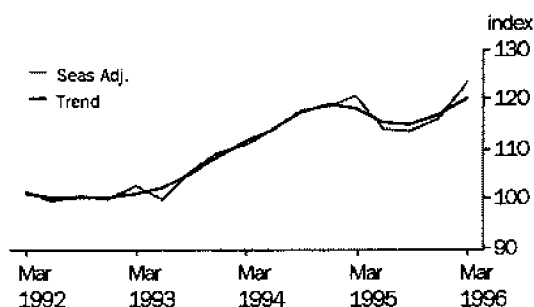
PRINTING, PUBLISHING AND RECORDED MEDIA

March quarter 1996 saw a fall of 0.2% in the trend series. This followed three quarters of gradual growth, after three quarters of falls. Production in March quarter 1996 is 1.5% higher than March quarter 1995 but 5.7% below the record level of June quarter 1994.



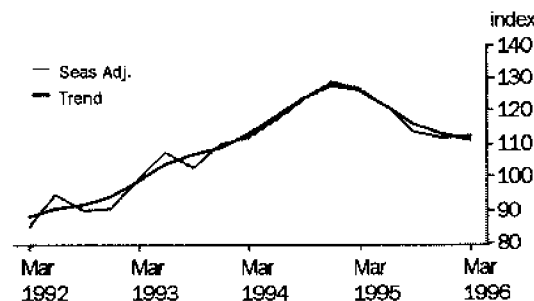
PETROLEUM, COAL, CHEMICAL AND ASSOCIATED PRODUCT

March quarter 1996 saw a rise of 2.8% in the trend series for this industry, the second successive rise following three quarters of falls. Production in March quarter 1996 is at a record high level and is 1.9% higher than March quarter 1995.



NON-METALLIC MINERAL PRODUCT

A 1.3% fall in the March quarter 1996 in the trend series for this industry is the fifth successive fall from the record level of December quarter 1994. These falls followed thirteen quarters of growth. Production in March quarter 1996 is 12.1% lower than in March quarter 1995.



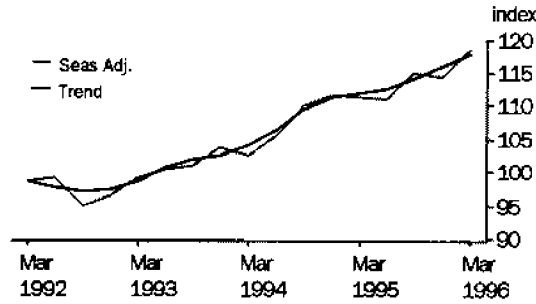
(a) At average 1989-90 prices

MANUFACTURING: Gross product(a) *continued*

INDEX NUMBERS: BASE OF INDEX 1989-90 = 100.0

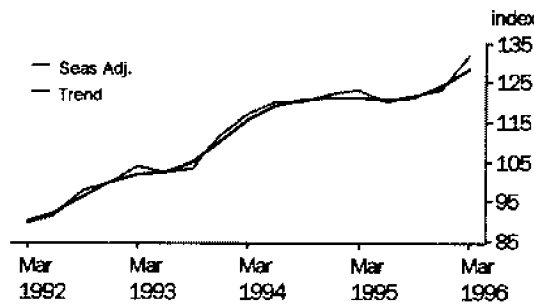
METAL PRODUCT

March quarter 1996 saw a 1.6% rise in the trend series for this industry to reach a record high level. This was the fourteenth successive quarter of growth. Production in March quarter 1996 is 5.2% higher than in March quarter 1995.



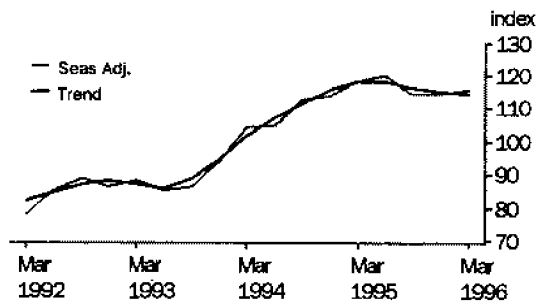
MACHINERY AND EQUIPMENT

March quarter 1996 growth of 3.1% in the trend series for this industry represented the third successive quarter of growth and has brought the series to a record high level. Production in March quarter 1996 is 5.7% higher than in March quarter 1995.

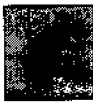


OTHER MANUFACTURING

A fall of 0.4% in the March quarter 1996 in the trend series for this industry is the fourth successive fall following seven quarters of strong growth. Production in March quarter 1996 is 3.1% lower than in March quarter 1995.



(a) At average 1989-90 prices



TOTAL INDUSTRIAL GROSS PRODUCT(a), Index Numbers(b)

Quarter Mining (excluding services to mining) Total manufacturing Electricity, gas and water Total industrial

ORIGINAL

1992-93				
March	103.7	95.6	104.1	98.3
June	109.2	100.6	107.0	103.1
1993-94				
September	113.0	104.6	109.3	106.8
December	104.6	110.7	107.8	109.2
March	107.3	103.7	105.8	104.7
June	112.2	111.5	106.2	110.9
1994-95				
September	117.9	117.4	113.6	116.9
December	112.1	120.6	110.3	117.5
March	110.8	108.8	107.5	109.0
June	113.9	111.8	109.1	111.8
1995-96				
September	121.1	116.9	114.4	117.3
December	111.4	120.0	108.1	116.7
March	115.3	112.2	109.2	112.3

SEASONALLY ADJUSTED

1992-93				
March	107.6	100.9	105.9	102.9
June	109.2	102.0	108.4	104.3
1993-94				
September	108.5	102.5	105.3	104.0
December	105.2	106.1	108.8	106.3
March	111.2	109.4	107.7	109.5
June	112.0	113.1	107.5	112.1
1994-95				
September	113.2	115.0	109.4	113.8
December	112.9	115.5	111.3	114.4
March	114.8	114.7	109.5	114.0
June	113.6	113.5	110.3	113.0
1995-96				
September	116.2	114.6	110.2	114.2
December	112.4	114.9	109.3	113.7
March	119.4	118.2	111.3	117.4

TREND

1992-93				
March	108.3	100.5	105.6	102.6
June	108.5	101.7	106.9	103.7
1993-94				
September	108.1	103.3	107.7	104.8
December	108.3	106.0	107.7	106.7
March	110.0	109.5	107.9	109.4
June	112.2	112.7	108.6	112.0
1994-95				
September	113.5	114.7	109.5	113.7
December	113.8	115.1	110.4	114.2
March	114.5	114.5	110.6	114.0
June	114.6	113.9	110.2	113.5
1995-96				
September	114.9	114.3	110.1	113.8
December	115.8	115.5	110.4	114.9
March	117.4	117.0	110.8	116.2

(a) At average 1989-90 prices.

(b) Base of index 1989-90 = 100.0

TOTAL INDUSTRIAL GROSS PRODUCT(a), Percentage Changes

Quarter	Mining (excluding services to mining)	Total manufacturing	Electricity, gas and water	Total industrial
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ORIGINAL

1992-93				
March	-2.6	-7.9	2.8	-5.4
June	5.3	5.2	2.8	4.9
1993-94				
September	3.5	4.0	2.1	3.6
December	-7.4	5.8	-1.4	2.2
March	2.6	-6.3	-1.9	-4.1
June	4.6	7.5	0.4	5.9
1994-95				
September	5.1	5.3	7.0	5.4
December	-4.9	2.7	-2.9	0.5
March	-1.2	-9.8	-2.5	-7.2
June	2.8	2.8	1.5	2.6
1995-96				
September	6.3	4.6	4.9	4.9
December	-8.0	2.7	-5.5	-0.5
March	3.5	-6.5	1.0	-3.8

SEASONALLY ADJUSTED

1992-93				
March	0.8	1.5	3.6	1.8
June	1.5	1.1	2.4	1.4
1993-94				
September	-0.6	0.5	-2.9	-0.3
December	-3.0	3.5	3.3	2.2
March	5.7	3.1	-1.0	3.0
June	0.7	3.4	-0.2	2.4
1994-95				
September	1.1	1.7	1.8	1.5
December	-0.3	0.4	1.7	0.5
March	1.7	-0.7	-1.6	-0.3
June	-1.0	-1.0	0.7	-0.9
1995-96				
September	2.3	1.0	-0.1	1.1
December	-3.3	0.3	-0.8	-0.4
March	6.2	2.9	1.8	3.3

TREND

1992-93				
March	0.9	1.4	1.2	1.3
June	0.2	1.2	1.2	1.1
1993-94				
September	-0.4	1.6	0.7	1.1
December	0.2	2.6	0.0	1.8
March	1.6	3.3	0.2	2.5
June	2.0	2.9	0.6	2.4
1994-95				
September	1.2	1.8	0.8	1.5
December	0.3	0.3	0.8	0.4
March	0.6	-0.5	0.2	-0.2
June	0.1	-0.5	-0.4	-0.4
1995-96				
September	0.3	0.4	-0.1	0.3
December	0.8	1.0	0.3	1.0
March	1.4	1.3	0.4	1.1

(a) At average 1989-90 prices.

MANUFACTURING GROSS PRODUCT(a), Index Numbers(b)—By ANZSIC Subdivision

Quarter	Food, beverage and tobacco mfg	Textile, clothing and footwear and leather mfg	Wood and paper product mfg	Printing, publishing and recorded media	Petroleum, coal, chemical and assoc. product mfg	Non-metallic mineral product mfg	Metal product mfg	Machinery and equipment mfg	Other manufacturing	Total manufacturing
ORIGINAL										
1992-93										
March	104.5	83.6	90.2	91.8	99.2	94.0	94.7	96.3	80.2	95.6
June	109.9	93.7	90.7	92.6	100.2	104.8	100.0	103.5	81.5	100.6
1993-94										
September	112.7	92.2	100.0	98.5	107.6	107.4	103.4	106.1	90.8	104.6
December	121.2	79.5	101.1	110.5	111.0	113.4	106.2	115.5	102.4	110.7
March	110.5	83.1	92.4	104.1	107.2	105.8	97.7	109.2	95.8	103.7
June	116.8	82.9	94.8	116.5	114.1	114.9	105.1	120.8	99.3	111.5
1994-95										
September	122.6	81.6	108.1	116.1	120.0	129.0	113.1	123.1	118.4	117.4
December	130.6	80.1	109.1	117.0	120.6	132.5	114.4	126.5	123.6	120.6
March	112.3	78.0	99.9	98.2	116.6	120.0	106.1	115.4	109.7	108.8
June	111.8	79.9	103.6	107.7	114.1	119.2	110.6	120.8	113.9	111.8
1995-96										
September	121.5	85.1	104.1	111.0	115.7	118.7	117.9	124.6	119.7	116.9
December	130.4	78.6	110.4	115.4	118.1	115.2	117.3	127.8	123.5	120.0
March	115.9	76.9	96.8	102.6	119.2	106.1	112.9	123.4	107.9	112.2
SEASONALLY ADJUSTED										
1992-93										
March	107.8	88.8	95.3	97.6	102.7	99.5	99.3	103.9	88.2	100.9
June	113.9	94.4	94.6	94.6	100.0	107.3	100.3	102.5	85.5	102.0
1993-94										
September	112.8	89.0	96.5	96.5	105.7	102.6	100.9	103.5	86.8	102.5
December	113.3	77.9	95.7	104.4	109.2	110.1	103.8	111.4	94.0	106.1
March	114.6	87.6	97.5	110.7	110.9	112.0	102.5	117.2	104.2	109.4
June	120.9	83.4	99.1	118.7	114.0	117.5	105.7	120.0	104.7	113.1
1994-95										
September	122.7	78.9	104.3	114.0	117.6	123.3	110.3	120.4	113.0	115.0
December	121.9	78.9	103.0	110.4	118.7	128.7	111.7	122.0	114.3	115.5
March	116.8	81.9	105.4	104.7	120.7	126.9	111.4	123.4	118.3	114.7
June	115.6	80.3	108.6	109.5	114.1	121.7	111.2	120.2	120.4	113.5
1995-96										
September	121.5	82.4	100.4	109.2	113.5	113.6	115.0	121.9	114.4	114.6
December	121.6	77.7	104.2	108.8	116.3	112.0	114.5	123.3	114.4	114.9
March	120.6	80.4	102.2	109.3	123.4	112.2	118.5	131.7	115.7	118.2
TREND										
1992-93										
March	110.3	91.7	95.0	95.3	100.9	98.9	98.7	101.6	86.9	100.5
June	111.9	91.4	94.9	95.6	102.2	104.0	100.7	102.4	86.2	101.7
1993-94										
September	112.6	90.1	94.9	97.7	105.0	106.8	101.9	105.1	88.9	103.3
December	113.6	88.3	95.5	103.8	108.2	108.9	102.7	110.1	94.5	106.0
March	115.9	85.9	96.9	111.3	111.5	112.9	104.1	115.7	101.7	109.5
June	119.8	83.2	99.3	115.5	114.2	118.5	106.6	119.0	107.5	112.7
1994-95										
September	121.9	80.4	101.6	114.1	117.3	124.0	109.6	120.6	111.7	114.7
December	120.5	79.5	103.9	110.0	119.1	127.8	111.5	121.3	115.8	115.1
March	117.9	80.7	105.0	107.3	118.1	126.8	112.1	121.3	118.5	114.5
June	117.6	81.4	104.5	107.6	115.4	121.6	112.6	120.6	118.4	113.9
1995-96										
September	119.3	80.7	103.3	108.6	114.8	116.1	114.1	121.4	116.8	114.3
December	121.0	79.9	102.0	109.1	117.0	112.9	116.1	124.4	115.3	115.5
March	121.7	79.7	101.3	108.9	120.3	111.4	117.9	128.2	114.8	117.0

(a) At average 1989-90 prices

(b) Base of index 1989-90 = 100.0

MANUFACTURING GROSS PRODUCT(a), By ANZSIC Subdivision-Percentage Changes

Quarter	Food, beverage and tobacco mfg	Textile, clothing, footwear and leather mfg	Wood and paper product mfg	Printing, publishing and recorded media	Petroleum, coal, chemical and assoc. product mfg	Non-metallic mineral product mfg	Metal product mfg	Machinery and equipment mfg	Other manufacturing	Total manufacturing
ORIGINAL										
1992-93										
March	-11.8	-11.1	-12.0	-8.6	-2.5	0.4	-4.0	-6.9	-15.6	-7.9
June	5.2	12.1	0.6	0.9	1.0	11.5	5.6	7.5	1.6	5.2
1993-94										
September	2.5	-1.6	10.3	6.4	7.4	2.5	3.4	2.5	11.4	4.0
December	7.5	-13.8	1.1	12.2	3.2	5.6	2.7	8.9	12.8	5.8
March	-8.8	4.5	-8.6	-5.8	-3.4	-6.7	-8.0	-5.5	-6.4	-6.3
June	5.7	-0.2	2.6	11.9	6.4	8.6	7.6	10.6	3.7	7.5
1994-95										
September	5.0	-1.6	14.0	-0.3	5.2	12.3	7.6	1.9	19.2	5.3
December	6.5	-1.8	0.9	0.8	0.5	2.7	1.1	2.8	4.4	2.7
March	-14.0	-2.6	-8.4	-16.1	-3.3	-9.4	-7.3	-8.8	-11.2	-9.8
June	-0.4	2.4	3.7	9.7	-2.1	-0.7	4.2	4.7	3.8	2.8
1995-96										
September	8.7	6.5	0.5	3.1	1.4	-0.4	6.6	3.1	5.1	4.6
December	7.3	-7.6	6.1	4.0	2.1	-2.9	-0.5	2.6	3.2	2.7
March	-11.1	-2.2	-12.3	-11.1	0.9	-7.9	-3.8	-3.4	-12.6	-6.5
SEASONALLY ADJUSTED										
1992-93										
March	-2.9	-3.3	-2.2	2.8	2.7	9.7	2.9	4.2	2.0	1.5
June	5.7	6.3	-0.7	-3.1	-2.6	7.8	1.0	-1.3	-3.1	1.1
1993-94										
September	-1.0	-5.7	2.0	2.0	5.7	-4.4	0.6	1.0	1.5	0.5
December	0.4	-12.5	-0.8	8.2	3.3	7.3	2.9	7.6	8.3	3.5
March	1.1	12.5	1.9	6.0	1.6	1.7	-1.3	5.2	10.9	3.1
June	5.5	-4.8	1.6	7.2	2.8	4.9	3.1	2.4	0.5	3.4
1994-95										
September	1.5	-5.4	5.2	-4.0	3.2	4.9	4.4	0.3	7.9	1.7
December	-0.7	0.0	-1.2	-3.2	0.9	4.4	1.3	1.3	1.2	0.4
March	-4.2	3.8	2.3	-5.2	1.7	-1.4	-0.3	1.1	3.5	-0.7
June	-1.0	-2.0	3.0	4.6	-5.5	-4.1	-0.2	-2.6	1.8	-1.0
1995-96										
September	5.1	2.6	-7.6	-0.3	-0.5	-6.7	3.4	1.4	-5.0	1.0
December	0.1	-5.7	3.8	-0.4	2.5	-1.4	-0.4	1.1	0.0	0.3
March	-0.8	3.5	-1.9	0.5	6.1	0.2	3.5	6.8	1.1	2.9
TREND										
1992-93										
March	1.8	1.8	1.3	0.3	0.5	4.9	1.5	1.6	-1.7	1.4
June	1.5	-0.3	-0.1	0.3	1.3	5.2	2.0	0.8	-0.8	1.2
1993-94										
September	0.6	-1.4	0.0	2.2	2.7	2.7	1.2	2.6	3.1	1.6
December	0.9	-2.0	0.6	6.2	3.0	2.0	0.8	4.8	6.3	2.6
March	2.0	-2.7	1.5	7.2	3.0	3.7	1.4	5.1	7.6	3.3
June	3.4	-3.1	2.5	3.8	2.4	5.0	2.4	2.9	5.7	2.9
1994-95										
September	1.8	-3.4	2.3	-1.2	2.7	4.6	2.8	1.3	3.9	1.8
December	-1.1	-1.1	2.3	-3.6	1.5	3.1	1.7	0.6	3.7	0.3
March	-2.2	1.5	1.1	-2.5	-0.8	-0.8	0.5	0.0	2.3	-0.5
June	-0.3	0.9	-0.5	0.3	-2.3	-4.1	0.4	-0.6	-0.1	-0.5
1995-96										
September	1.4	-0.9	-1.1	0.9	-0.5	-4.5	1.3	0.7	-1.4	0.4
December	1.4	-1.0	-1.3	0.5	1.9	-2.8	1.8	2.5	-1.3	1.0
March	0.6	-0.3	-0.7	-0.2	2.8	-1.3	1.6	3.1	-0.4	1.3

(a) At average 1989-90 prices.

EXPLANATORY NOTES

INTRODUCTION

1 This publication presents in index number form, quarterly estimates of gross product at constant average 1989–90 prices for the non-farm, goods producing sector which, for brevity, is termed the 'total industrial' (see paragraph 3).

2 Also presented are indexes for component industries, including individual manufacturing subdivisions.

SCOPE AND COVERAGE

3 The scope of 'total industrial' referred to in this publication is defined to include all establishments classified to the Australian and New Zealand Standard Industrial Classification (ANZSIC) Division B (Mining), excluding ANZSIC subdivision 15 (Services to mining); Division C (Manufacturing); and Division D (Electricity, gas and water).

4 The base year weights used in constructing the indexes in this publication have been derived from establishment data. However, the quarterly indicator series used for manufacturing are based on data relating to business units which may cover more than one establishment.

5 The table below sets out the base year weights associated with the major components of the industrial sector, and each manufacturing subdivision

	1989–90 Weight %
Mining (excluding services to mining)	18.0
Manufacturing	67.5
Food, beverage and tobacco mfg	13.7
Textiles, clothing, footwear and leather mfg	3.7
Wood and paper product mfg	3.5
Printing, publishing and recorded media	6.4
Petroleum, coal, chemical and associated product mfg	6.5
Non-metallic mineral product mfg	3.4
Metal product mfg	11.4
Machinery and equipment mfg	15.6
Other manufacturing	3.3
Electricity, gas and water	14.5
Total Industrial sector	100.0

6 Quarterly manufacturers' sales and stocks data provides the main indicator series for the manufacturing indexes. As a result, these indexes have three important limitations as measures of manufacturing production:

- changes in quarterly production by manufacturing establishments of non-manufacturing businesses are not reflected in the indexes;
- changes in a part of the quarterly production of non-manufacturing establishments of manufacturing businesses are reflected in the indexes; and
- changes in quarterly production by government bodies such as shipyards are not reflected in the indexes.

7 The scope of the data used in the manufacturing indicator series also differs slightly from the general definition of manufacturing gross product. The stocks estimates used include finished goods bought in, but not manufactured, by a business. As far as can be assessed this has not had a significant influence on the estimates.

EXPLANATORY NOTES

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DERIVATION OF THE ESTIMATES OF GROSS PRODUCT

8 The estimates are derived using the gross output method whereby base year (1989-90) estimates of gross product are extrapolated by constant price estimates of gross output. All the quarterly indexes contained in this publication have been benchmarked, where possible, to annual estimates (see paragraph 12 below).

9 For further details on the derivation of constant price gross product for individual industries refer to Chapter 18 in *Australian National Accounts: Concepts, Sources and Methods* (5216.0).

BENCHMARKING

10 Deriving quarterly estimates presents special problems in that it is often difficult to adhere strictly to the definitions and concepts used in annual estimates. Frequently, it is not possible to use the same data sources as used for annual estimates, and alternative quarterly data sources are generally much less detailed.

11 For example, annual estimates of gross product for the Mining industry (as published in *Australian National Accounts: National Income, Expenditure and Product* (5204.0)) are compiled (using the double deflation method) from detailed output and input data from the annual census of mining establishments. On the other hand, the quarterly series draw on the quantities of minerals mined (gross output), reported in surveys of mining establishments.

12 In such cases, where the quarterly estimates are inferior to the annual, the quarterly estimates are adjusted to agree with the annual estimates in such a way that preserves, as far as practical, the movements of the quarterly series. This is commonly referred to as benchmarking.

DATA SOURCES FOR QUARTERLY OUTPUT SERIES

MINING (EXCLUDING SERVICES TO MINING)

13 Quarterly constant price output estimates are derived for major ANZSIC classes by quantity revaluation (i.e. quantities produced each quarter multiplied by associated base year (1989-90) average prices). Estimates of quantities produced are obtained from data contained in Quarterly Mineral Statistics (Australian Bureau of Agricultural and Resource Economics) and *The Australian Mining Industry* (8414.0).

14 Constant price estimates of value added are derived by the gross output method (see paragraph 8) for each ANZSIC class. Total quarterly estimates of value added are then benchmarked (see paragraph 12) to annual gross product estimates obtained from the mining census.

MANUFACTURING

15 Quarterly constant price estimates of gross output for each manufacturing industry subdivision (excluding petroleum refining) are derived by summing constant price estimates of manufacturers' sales of manufactured goods, other operating revenue (where significant) and changes in the level of stocks of finished goods and work-in-progress.

16 Constant price estimates of all components of manufacturing output except petroleum refining are derived by price deflation, i.e. current price components (obtained from the quarterly Survey of Stocks and Manufacturers' Sales) are deflated by fixed weighted producer price indexes (published in *Price Indexes of Articles Produced by Manufacturing Industry, Australia* (6412.0)).

17 Quarterly petroleum refining estimates are based on quarterly quantity data published in *Major Energy Statistics* (released by the Department of Primary Industries and Energy).

EXPLANATORY NOTES

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MANUFACTURING (continued) **18** Quarterly constant price estimates of output are used to derive constant price estimates of gross product at factor cost by the gross output method. The latter estimates are then benchmarked to corresponding annual estimates of gross product at market prices (based on annual Manufacturing Survey data).

ELECTRICITY **19** Quarterly quantities of electricity produced, as published in *Manufacturing Production, Australia* (8301.0), are benchmarked to annual gross product estimates based on the quantity of electricity sold (published by the Electricity Supply Association of Australia in *The Electricity Industry of Australia*).

GAS **20** Quarterly quantities of gas available through mains, as published in *Manufacturing Production, Australia* (8301.0), are benchmarked to gross product estimates derived from ABS economic census data relating to the performance of the gas production and distribution industry.

WATER AND SEWERAGE **21** Quarterly constant price output estimates are derived by quantity revaluation, i.e. quantities of water sold (to final consumers and for irrigation) and sewerage connections, are multiplied by average 1989-90 prices for each type of service.

22 The quantity data are supplied by a selection of State and Local government authorities. Quarterly output estimates are then benchmarked to annual constant price gross product estimates.

SAMPLE REVISION **23** Each year the sample used for the survey of stocks and manufacturers' sales is revised. Differences between the old and revised samples have in general been apportioned back over the preceding quarters of each year, and incorporated in the estimates included in this publication.

24 For more information on the sample revision, refer to *Stocks, Selected Industry Sales and Expected Sales, Australia* (5629.0).

RELIABILITY OF ESTIMATES **25** Because the measures used in the derivation of the manufacturing indexes are based on a sample survey, the indexes themselves are subject to sampling variability.

26 In terms of original estimates the standard errors in percentage terms approximate the errors reported in *Stocks, Selected Industry Sales and Expected Sales, Australia* (5629.0). However, for constant price estimates the standard errors may be up to 10 per cent higher than those for the corresponding current price estimates because of the sampling variability contained in the prices data used to deflate the current price estimates. Seasonally adjusting the estimates has an insignificant effect on standard errors.

27 The imprecision due to sampling variability, which is measured by the standard error, should not be confused with inaccuracies that may occur because of imperfections in reporting by respondents and errors made in collecting and processing data. Inaccuracies of this kind are known as non-sampling errors and may occur in any collection, whether it be a sample or a full count.

28 In addition to the non-sampling errors which may occur in current prices estimates, there may be non-sampling errors introduced by the process of compiling constant price estimates. These further errors may arise from the introduction of additional data and from the assumptions and approximations which are necessary in compiling constant price estimates.

29 Every effort is made to minimise non-sampling errors by careful design of forms, editing of data and efficient operating procedures.

EXPLANATORY NOTES

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SEASONAL ADJUSTMENT

30 Seasonal adjustment is a means of removing the estimated effects of normal seasonal variation from the series so that the effects of other influences on the series may be more clearly recognized.

31 Seasonal adjustment procedures do not aim to remove the irregular or non-seasonal influences which may be present in any particular quarter, such as the effect of a major industrial dispute or major plant breakdowns.

32 Irregular factors of this nature can make it difficult to interpret the movement of the series even after adjustment for seasonal variation.

33 Seasonal adjustment may be carried out by various methods and the results may vary slightly according to the procedure adopted. Accordingly, seasonally adjusted statistics should not be regarded as in any way definitive.

34 In interpreting particular seasonally adjusted statistics it is important to note the methods by which they have been derived and the limitations to which the methods used are subject. Details of the various seasonal adjustment methods used are available on request.

TREND ESTIMATES

35 The seasonally adjusted series can be smoothed to reduce the impact of the irregular component in the adjusted series. There are a number of ways of accomplishing this, depending on the intended uses of the smoothed series.

36 If importance is attached to measuring the underlying change in the most recent periods, moving averages employing appropriate weighting patterns should be adopted; the choice of averaging technique will determine the degree of smoothness of the derived series.

37 For example, a 9-term moving average will even out more of the short term fluctuation in a series (and therefore appear 'smoother') than will a 5-term moving average. However, the longer the term of the moving average the longer the series affected by revisions resulting from more recent data becoming available.

38 Such smoothed seasonally adjusted estimates are referred to as 'trend estimates' in this publication.

39 Trend estimates included in this issue are derived using a 7-term Henderson moving average. (The weights of the 7-term average are available upon request.) As a moving average approaches the end of a time series and begins to run out of observations, asymmetric averages have been used. Unlike the asymmetric weights of the standard 7-term Henderson moving averages, the weights employed here have been tailored to suit the particular characteristics of individual manufacturing subdivisions.

40 Users may wish to refer to the ABS Information Paper *A Guide to Interpreting Time Series - Monitoring Trends - An Overview* (1348.0) for more detailed information on smoothing seasonally adjusted time series data.

EXPLANATORY NOTES

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RELATED PUBLICATIONS

41 Users may also wish to refer to the following publications:

- *Australian National Accounts : National Income, Expenditure and Product* (5204.0) — issued annually
- *Australian National Accounts : National Income, Expenditure and Product* (5206.0) — issued quarterly
- *Australian National Accounts : Concepts, Sources and Methods* (5216.0)
- *Manufacturing Industry, Australia* (8221.0) — issued annually
- *The Australian Mining Industry* (8414.0) — issued annually
- *Price Indexes of Articles Produced by Manufacturing Industry, Australia* (6412.0) — issued monthly
- *Manufacturing Production, Australia* (8301.0) — issued monthly
- *Stocks, Selected Industry Sales and Expected Sales, Australia* (5629.0) — issued quarterly

42 Current publications produced by the ABS are listed in the *Catalogue of Publications and Products, Australia* (1101.0). The ABS also issues on Tuesdays and Fridays, a *Release Advice* (1105.0) which lists publications to be released in the next few days. The Catalogue and Release Advice are available from any ABS office.

SYMBOLS AND OTHER USAGES

ANZSIC Australian and New Zealand Standard Industrial Classification

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