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QUARTERLY INDEXES OF MANUFACTURING PRODUCTION, AUSTRALIA SEPTEMBER QUARTER 1989

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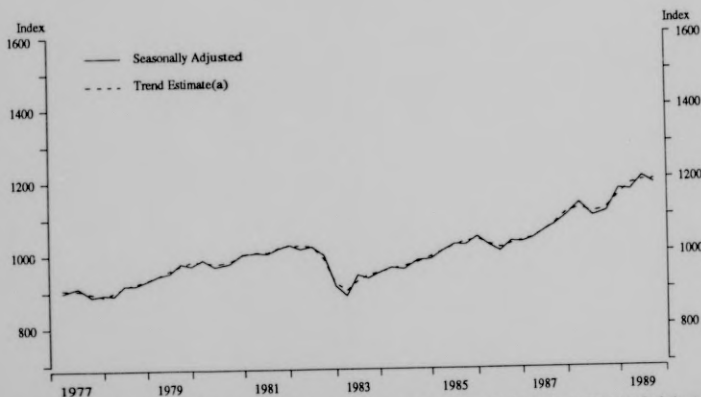
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MAIN FEATURES

INDEX OF TOTAL MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES (BASE: 1984-85 = 1000)



(a) See paragraphs 16 to 19 of the Explanatory Notes. Trend estimates for the most recent periods are provisional and could change when data for further quarters are available.

NOTE: The following comments are based on seasonally adjusted, constant price data unless otherwise stated.

Preliminary estimates for the September quarter 1989 show that the index of manufacturing production fell slightly (by 1.5 per cent).

The index fell in eight of the twelve industry subdivisions of Manufacturing. The largest fall occurred in the Transport equipment industry, which fell 11.7 per cent following a rise of 10.9 per cent in the June quarter.

Other industries recording reasonably large falls in the September quarter were the Textiles, Fabricated metal products, and Chemical, petroleum and coal products industries, which also recorded strong rise in the June quarter.

Industries recording moderate growth in the September quarter were the Non-metallic mineral products and Food,

beverages and tobacco industries, both of which had fallen in the June quarter.

The overall index of manufacturing production has increased by 6.8 per cent since the September quarter 1988. Subdivisions which recorded large changes in this period are Basic metal products (up 17.5 per cent), Miscellaneous manufacturing (up 10.3 per cent), Other machinery and equipment (up 10.2 per cent), and Paper, printing and publishing (up 9.6 per cent).

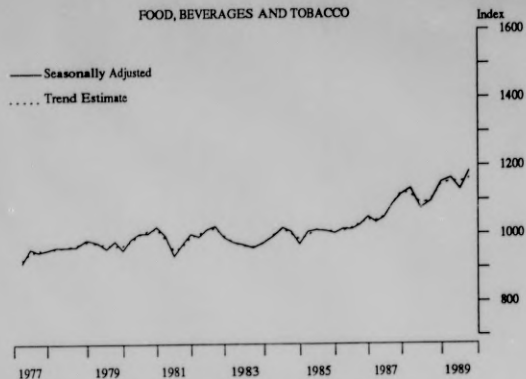
Revisions to data

Revisions to source data along with upgraded methodology have led to revisions to the index. For the overall index of manufacturing and for most industry subdivisions, the effects have been minor. However, for Textiles, Clothing and footwear, Wood, wood products and furniture and Chemical, petroleum and coal products, substantial revisions to data have been made.

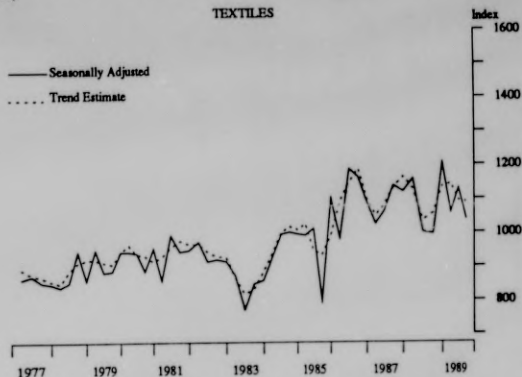
Note: Explanatory Notes are published at the back of this publication

INDEX OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES
(BASE: 1984-85 = 1000)

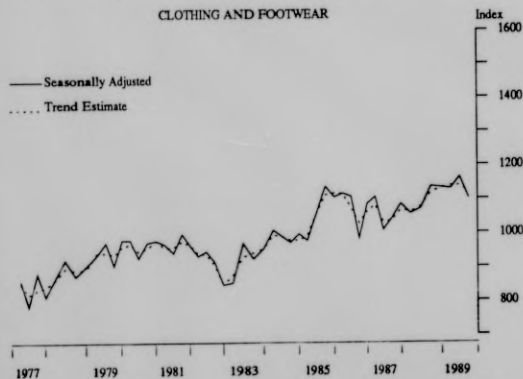
FOOD, BEVERAGES AND TOBACCO



TEXTILES



CLOTHING AND FOOTWEAR

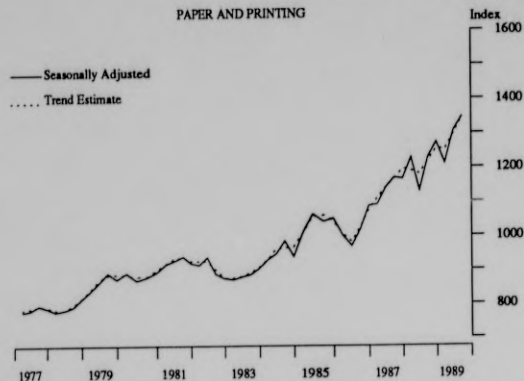


WOOD PRODUCTS

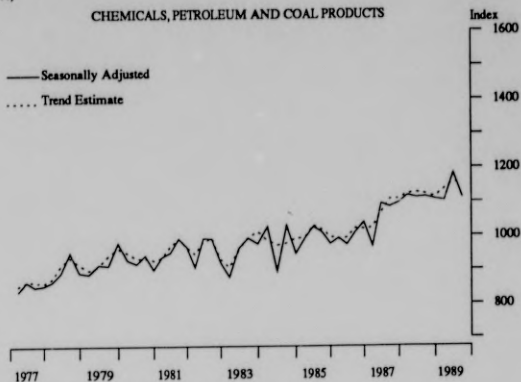


INDEX OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES
(BASE: 1984-85 = 1000)

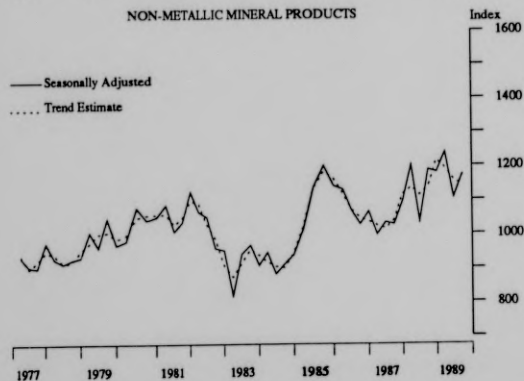
PAPER AND PRINTING



CHEMICALS, PETROLEUM AND COAL PRODUCTS



NON-METALLIC MINERAL PRODUCTS

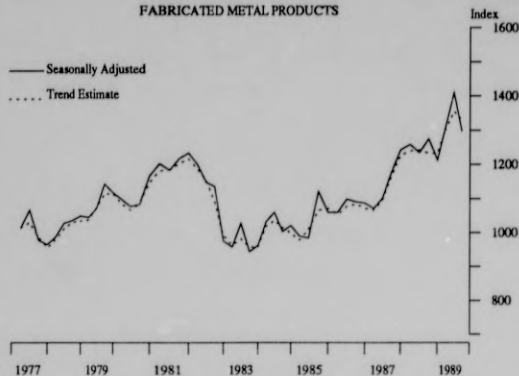


BASIC METAL PRODUCTS

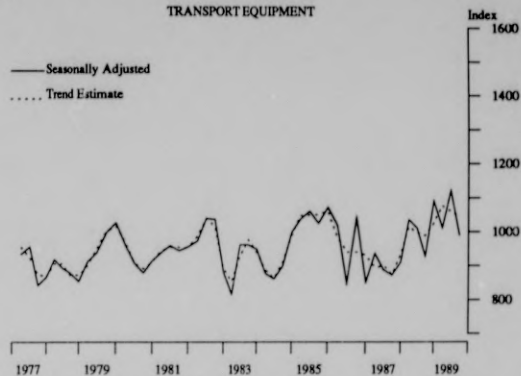


INDEX OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES
(BASE: 1984-85 = 1000)

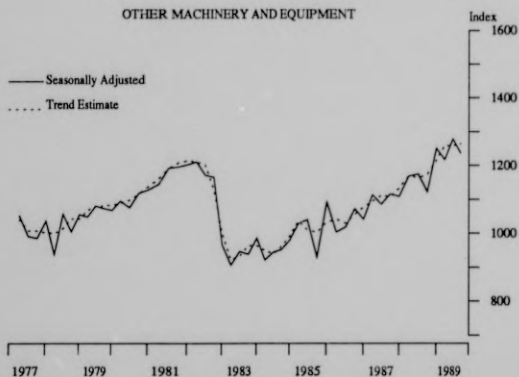
FABRICATED METAL PRODUCTS



TRANSPORT EQUIPMENT



OTHER MACHINERY AND EQUIPMENT



MISCELLANEOUS MANUFACTURING



TABLE 1 - INDEXES OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES BY SUBDIVISION
SEASONALLY ADJUSTED
(BASE: 1984-85 = 1000)

INDUSTRY	ASIC SUB- DIVISION	QUARTERS ENDED											
		1985-			1986-87			1987-88			1988-89		
		86	SEP	JUN	SEP	DEC	MAR	SEP	DEC	MAR	SEP	DEC	MAR
FOOD, BEVERAGES & TOBACCO	21	1015	1028	1050	1036	1049	1088	1117	1134	1075	1096	1152	1164
TEXTILES	23	1186	1163	1087	1025	1063	1139	1120	1158	1001	996	1205	1058
CLOTHING & FOOTWEAR	24	1107	983	1085	1105	1008	1042	1085	1056	1071	1136	1133	1130
WOOD, WOOD PRODUCTS & FURNITURE	25	1089	986	1018	1048	1072	1129	1159	1119	1213	1159	1231	1199
PAPER, ETC., PRINTING & PUBLISHING	26	970	1019	1088	1093	1141	1171	1167	1229	1132	1229	1273	1212
CHEMICAL, PETROLEUM & COAL PRODUCTS	27	975	1011	1040	969	1095	1086	1097	1118	1112	1115	1108	1103
NON-METALLIC MINERAL PRODUCTS	28	1068	1028	1066	998	1033	1028	1096	1202	1035	1188	1181	1239
BASIC METAL PRODUCTS	29	935	994	1001	1039	1034	988	1021	1019	1016	1010	1070	1168
FABRICATED METAL PRODUCTS	31	1098	1090	1087	1071	1101	1177	1242	1258	1234	1275	1213	1314
TRANSPORT EQUIPMENT	32	848	1042	851	936	888	873	911	1035	1012	928	1090	1011
OTHER MACHINERY & EQUIPMENT	33	1019	1072	1042	1114	1086	1116	1109	1169	1175	1123	1251	1218
MISCELLANEOUS MANUFACTURING	34	1045	1015	1011	1017	1176	1151	1151	1151	1070	1119	1198	1181
TOTAL MANUFACTURING		1005	1031	1029	1039	1059	1076	1101	1134	1098	1111	1171	1169

TABLE 2 - PERCENTAGE CHANGES IN INDEXES OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES
SEASONALLY ADJUSTED

INDUSTRY	ASIC SUB- DIVISION	CHANGE FROM PRECEDING QUARTER											
		1986-87			1987-88			1988-89			1989-		
		SEP	DEC	MAR	SEP	DEC	MAR	SEP	DEC	MAR	SEP	DEC	MAR
FOOD, BEVERAGES & TOBACCO	21	1.3	2.1	-1.3	1.3	3.7	2.7	1.5	-5.2	2.0	5.1	1.0	-2.9
TEXTILES	23	-1.9	-6.5	-5.7	3.7	7.1	-1.7	3.4	-13.6	-0.5	21.0	-12.2	6.7
CLOTHING & FOOTWEAR	24	-11.2	10.4	1.8	-8.8	3.4	4.1	-2.7	1.4	6.1	-0.3	-0.3	3.0
WOOD, WOOD PRODUCTS & FURNITURE	25	-9.5	3.2	2.9	2.3	5.3	2.7	-3.5	8.4	-4.5	6.2	-2.6	2.7
PAPER, ETC., PRINTING & PUBLISHING	26	5.1	6.8	0.5	4.4	2.6	-0.3	5.3	-7.9	8.6	3.6	-4.8	7.7
CHEMICAL, PETROLEUM & COAL PRODUCTS	27	3.7	2.9	-6.8	13.0	-0.8	1.0	1.9	-0.5	0.3	-0.6	-0.5	7.3
NON-METALLIC MINERAL PRODUCTS	28	-3.7	3.7	-6.4	3.5	-0.5	6.6	9.7	-13.9	14.8	-0.6	4.9	-10.7
BASIC METAL PRODUCTS	29	6.3	0.7	3.8	-0.5	-4.4	3.3	-0.2	-0.3	-0.6	5.9	9.2	-1.4
FABRICATED METAL PRODUCTS	31	-0.7	-0.3	-1.5	2.8	6.9	5.5	1.3	-1.9	-3.3	-4.9	8.3	7.3
TRANSPORT EQUIPMENT	32	22.9	-18.3	10.0	-5.1	-1.7	4.4	13.6	-2.2	-8.3	17.5	-7.2	10.9
OTHER MACHINERY & EQUIPMENT	33	5.2	-2.8	6.9	-2.5	2.8	-0.6	5.4	0.5	-4.4	11.4	-2.6	4.9
MISCELLANEOUS MANUFACTURING	34	-2.9	-0.4	0.6	15.6	-2.1	-	-	-7.9	4.6	7.1	-1.4	6.8
TOTAL MANUFACTURING		2.6	-0.2	1.0	1.9	1.6	2.3	3.0	-3.2	1.2	5.4	-0.2	3.0

TABLE 3 - INDEXES OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES BY SUBDIVISION
TREND ESTIMATES
(BASE: 1984-85 = 1000)

INDUSTRY	ASIC SUB- DIVISION	QUARTERS ENDED													
		1985- 86 JUN	1986-87				1987-88				1988-89				1989- 90 SEP
			SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	
FOOD, BEVERAGES & TOBACCO	21	1018	1031	1042	1040	1052	1086	1122	1118	1090	1099	1146	1154	1152	1163
TEXTILES	23	1148	1186	1099	1049	1082	1132	1164	1128	1035	1056	1136	1143	1094	1088
CLOTHING & FOOTWEAR	24	1072	1028	1062	1081	1032	1036	1068	1061	1077	1119	1132	1139	1137	1121
WOOD, WOOD PRODUCTS & FURNITURE	25	1071	1005	1003	1039	1074	1122	1136	1149	1166	1190	1196	1215	1204	1198
PAPER, ETC., PRINTING & PUBLISHING	26	983	1025	1021	1110	1142	1167	1196	1191	1181	1219	1255	1251	1296	1346
CHEMICAL, PETROLEUM & COAL PRODUCTS	27	996	1023	1021	1025	1069	1108	1110	1124	1127	1123	1113	1137	1158	1152
NON-METALLIC MINERAL PRODUCTS	28	1070	1046	1037	1024	1015	1040	1117	1136	1114	1137	1217	1192	1158	1142
BASIC METAL PRODUCTS	29	968	974	1014	1035	1026	1006	1011	1022	1011	1018	1080	1146	1173	1175
FABRICATED METAL PRODUCTS	31	1078	1085	1071	1066	1095	1165	1227	1240	1243	1232	1233	1304	1355	1329
TRANSPORT EQUIPMENT	32	941	941	932	896	901	874	933	1014	998	989	1025	1077	1060	1044
OTHER MACHINERY & EQUIPMENT	33	1030	1056	1077	1095	1112	1108	1133	1168	1165	1173	1215	1259	1260	1264
MISCELLANEOUS MANUFACTURING	34	987	1042	1004	1058	1142	1174	1161	1135	1099	1127	1180	1216	1241	1255
TOTAL MANUFACTURING		1015	1025	1034	1041	1059	1079	1109	1122	1109	1120	1157	1185	1193	1196

TABLE 4 - PERCENTAGE CHANGES IN INDEXES OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES
TREND ESTIMATES

INDUSTRY	ASIC SUB- DIVISION	CHANGE FROM PRECEDING QUARTER												SEP QTR 1988 TO SEP QTR 1989	
		1986-87				1987-88				1988-89				SEP QTR 1989	
		SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	SEP	
FOOD, BEVERAGES & TOBACCO	21	1.3	1.1	-0.2	1.2	3.2	3.3	-0.4	-2.5	0.8	4.3	0.7	-0.2	1.0	5.8
TEXTILES	23	3.3	-7.3	-4.5	3.1	4.6	2.8	-3.1	-8.2	2.0	7.6	0.6	-4.3	-0.5	3.0
CLOTHING & FOOTWEAR	24	-4.1	3.3	1.8	-4.5	0.4	3.1	-0.7	1.5	3.9	1.2	0.6	-0.2	-1.4	0.2
WOOD, WOOD PRODUCTS & FURNITURE	25	-6.2	-0.2	3.6	3.4	4.5	1.2	1.1	1.5	2.1	0.5	1.6	-0.9	-0.5	0.7
PAPER, ETC., PRINTING & PUBLISHING	26	4.3	5.2	3.0	2.9	2.2	2.5	-0.4	-0.8	3.2	3.0	-0.3	3.6	3.9	10.4
CHEMICAL, PETROLEUM & COAL PRODUCTS	27	2.7	-0.2	0.4	4.3	3.6	0.2	1.3	0.3	-0.4	-0.9	2.2	1.8	-0.5	2.6
NON-METALLIC MINERAL PRODUCTS	28	-2.2	-0.9	-1.3	-0.9	2.5	7.4	1.7	-1.9	2.1	7.0	-2.1	-2.9	-1.4	0.4
BASIC METAL PRODUCTS	29	0.6	4.1	2.1	-0.9	-1.9	0.5	1.1	-1.1	0.7	6.1	6.1	2.4	0.2	15.4
FABRICATED METAL PRODUCTS	31	0.6	-1.3	-0.5	2.7	6.4	5.3	1.1	0.2	-0.9	0.1	5.8	3.9	-1.9	7.9
TRANSPORT EQUIPMENT	32	-	-1.0	-3.9	0.6	-3.0	6.8	8.7	-1.6	-0.3	0.7	3.6	3.6	0.1	0.3
OTHER MACHINERY & EQUIPMENT	33	2.5	2.0	1.7	1.6	-0.4	2.3	3.1	-0.3	0.7	4.7	3.1	2.1	1.1	11.4
MISCELLANEOUS MANUFACTURING	34	5.6	-3.6	5.4	7.9	2.8	-1.1	-2.2	-3.2	2.5	4.7	3.1	2.1	1.1	6.8
TOTAL MANUFACTURING		1.0	0.9	0.7	1.7	1.9	2.8	1.2	-1.2	1.0	3.3	2.4	0.7	0.3	

TABLE 5 - INDEXES OF MANUFACTURING GROSS PRODUCT AT AVERAGE 1984-85 PRICES BY SUBDIVISION
ORIGINAL SERIES
(BASE: 1984-85 = 1000)

INDUSTRY	ASIC SUB- DIVISION	YEAR				QUARTERS ENDED								1989- 90 SEP
		1985- 86	1986- 87	1987- 88	1988- 89	1987-88				1988-89				
						SEP	DEC	MAR	JUN	SEP	DEC	MAR	JUN	
FOOD, BEVERAGES & TOBACCO	21	1012	1042	1105	1136	1081	1192	1097	1048	1089	1228	1127	1101	1174
TEXTILES	23	1016	1085	1097	1094	1240	1060	985	1103	1089	1141	899	1245	1136
CLOTHING & FOOTWEAR	24	1116	1041	1063	1140	1143	1101	932	1076	1245	1149	996	1169	1208
WOOD, WOOD PRODUCTS & FURNITURE	25	1138	1030	1157	1205	1199	1235	979	1213	1231	1311	1048	1231	1261
PAPER, ETC, PRINTING & PUBLISHING	26	1018	1087	1176	1258	1189	1245	1144	1124	1249	1358	1128	1295	1369
CHEMICAL, PETROLEUM & COAL PRODUCTS	27	990	1030	1105	1128	1083	1124	1121	1092	1112	1134	1106	1161	1111
NON-METALLIC MINERAL PRODUCTS	28	1137	1034	1090	1178	1060	1149	1105	1046	1220	1239	1137	1116	1203
BASIC METAL PRODUCTS	29	994	1016	1010	1097	1029	1052	943	1017	1050	1103	1081	1152	1233
FABRICATED METAL PRODUCTS	31	1084	1087	1227	1301	1230	1319	1145	1212	1336	1288	1196	1383	1361
TRANSPORT EQUIPMENT	32	993	934	956	1040	942	938	900	1045	1001	1123	879	1158	1068
OTHER MACHINERY & EQUIPMENT	33	1011	1079	1143	1218	1197	1097	1116	1161	1208	1234	1166	1262	1331
MISCELLANEOUS MANUFACTURING	34	911	1052	1129	1186	1195	1220	1057	1044	1161	1268	1082	1233	1277
TOTAL MANUFACTURING		1025	1040	1102	1164	1115	1146	1055	1092	1151	1218	1088	1197	1229

EXPLANATORY NOTES

Introduction

This publication presents, in index number form, quarterly constant price estimates of manufacturing gross product in total and for each manufacturing subdivision. The estimates are derived using the gross output method i.e. base year estimates of gross product are extrapolated by constant price estimates of gross output. Quarterly constant price estimates of gross output are derived mainly from quarterly survey data relating to manufacturers' sales and increase in stocks (of finished goods and work in progress). The quarterly estimates of gross product so derived are benchmarked to annual estimates of gross product which have been derived from annual output data from manufacturing censuses. These indexes are subject to a number of limitations and qualifications which are discussed below. It is important to take these into account when using the statistics.

Note: Quarterly estimates of manufacturing gross product at constant prices are included in the new quarterly publication, *Australian National Accounts: Gross Product, Employment and Hours Worked* (5222.0), which also include estimates of gross product at constant prices for the economy as a whole and for each ASIC Division.

Changes in this issue

2. Upgraded methodology and revisions to data have affected the estimates in this issue. The changes are:

- (a) The estimates of quarterly gross product, used to produce the quarterly indexes, have now been benchmarked to 1987-88 Manufacturing Census based estimates and revised estimates from the 1986-87 census. (See paragraph 13).
- (b) Base year (1984-85) gross product, which is extrapolated by constant price estimates of output to derive the estimates in this publication, has been revised.
- (c) Improved methodology has been incorporated for some industries (Food, beverages and tobacco, Basic metal products, Transport equipment, and Other machinery and equipment).
- (d) Data for manufacturers' sales adjusted for changes in stocks have been revised as a result of sample revision. (See paragraphs 11 and 12).

Scope of the estimates

3. The constant price value of manufacturing production is generally defined as the constant price gross product of all manufacturing establishments classified to Division C: Manufacturing, of the *Australian Standard Industrial Classification* (ASIC). The base year weights used in constructing the indexes in this publication have been derived from establishment data. However, the quarterly indicator series used are based on data relating to business units which may cover more than one establishment.

The table below sets out the base year weights associated with each manufacturing subdivision.

Manufacturing subdivision	ASIC No.	1984-85 Weight
		%
Food beverages and tobacco	21	20.2
Textiles	23	2.4
Clothing and footwear	24	4.1
Wood, wood products and furniture	25	5.8
Paper, etc., printing and publishing	26	10.7
Chemical, petroleum and coal products	27	7.7
Non-metallic mineral products	28	4.9
Basic metal products	29	10.6
Fabricated metal products	31	7.4
Transport equipment	32	10.0
Other machinery and equipment	33	10.7
Miscellaneous manufacturing	34	5.5
Total manufacturing		100.0

4. The use of this data means that the indexes have three important limitations as measures of manufacturing production:

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

5. The scope of the data used in the 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.

Derivation of the estimates

6. The estimates in this publication have been derived using the *gross output* method, i.e. gross product in the base year has been extrapolated by constant price estimates of output. A full description of the assumptions inherent in this methodology is contained in *Australian National Accounts: Concepts, Sources and Methods* (5216.0).

7. The measures of current price output underlying the indexes in this publication come mainly from estimates of manufacturers' sales and changes in stocks of finished goods and work-in-progress (published in aggregate in *Stocks and Manufacturers' Sales, Australia* (5629.0)). For four subdivisions (Printing and publishing, Chemicals and petroleum, Basic metal products and Transport equipment) additional data are obtained for other selected income e.g. advertising revenue of printers and publishers, and commission revenue. All series have been adjusted to

minimise discontinuities caused by sample revision and changes in the industry of a business.

8. Except for the petroleum industry, the component measures of constant price output are obtained by using price indexes to deflate the component current price estimates of sales, stocks, and other selected income. In an attempt to provide a more appropriate measure of activity in the petroleum industry additional information on quarterly petroleum production from *Major Energy Statistics* (published by the Department of Primary Industries and Energy) has been used. Major petroleum producers are not within the scope of the quarterly survey of Stocks and manufacturers sales because they are classified as wholesalers under industry classification (ASIC) procedures.

9. With one exception — a special computer equipment price index — the price indexes used to deflate current price sales are obtained from price data used in compiling the indexes published in *Price Indexes of Articles Produced by Manufacturing Industry, Australia* (6412.0) (APMI price indexes). The APMI indexes represent the price movements of commodities produced and sold by manufacturing establishments in each ASIC class. On the other hand, the current price sales figures are collected on a manufacturing business basis. The price indexes for each industry have been derived by combining the establishment-based APMI indexes according to turnover relationships from the 1984-85 integrated economic censuses.

10. Revaluation of stock levels is carried out largely using APMI-based price indexes. The constant price increase in stocks is then obtained as the difference between the closing and opening stock levels at constant prices. The 'other selected income' component is revalued using APMI price indexes.

Sample revision

11. Each year, the framework and the sample used in the quarterly business surveys are revised prior to the June quarter survey to ensure that they remain representative of the current population. In the course of this revision some of the business units from the sampled strata are rotated out of the sample and replaced by others in an effort to spread reporting workloads equitably. As a check on comparability, information is collected from both the old and revised samples for the June quarter.

12. Estimates of level derived from a new sample may differ from estimates derived from the previous sample. These differences are due to several factors including changes in the composition of the sample and inadequate provisions in the old sample estimate for growth in the number of new businesses during the year. The differences have in general been apportioned back over the preceding three quarters of each year to provide a consistent series over time.

Benchmarking

13. Estimating for a period of less than one year 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 refer to the same data sources as used for annual estimates, and alternative quarterly data sources are generally much less detailed and can have quite different movements. For the manufacturing industry, annual series are compiled using output data from the censuses of manufacturing establishments whereas the quarterly series draw largely on data relating to stocks held by and sales of goods manufactured by manufacturing businesses. To ensure consistency between the annual and quarterly estimates, the latter have been adjusted (i.e. benchmarked) to agree with the annual estimates, using an interpolation procedure.

Comparability with other estimates

14. The ABS publishes in a series of nine monthly and quarterly Production Bulletins (8357.0 to 8363.0, 8367.0, 8368.0) details of the quantities produced of about 600 manufacturing items. However, these items in total account for less than half of the output of the manufacturing sector, so that differences may occur between the general trends in those items and changes in the quarterly indexes of manufacturing production contained in this publication. This comment applies with still greater force to the preliminary details for approximately 30 production items published in the monthly publication *Production Statistics, Australia, Preliminary* (8301.0).

Seasonal adjustment

15. 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. In interpreting particular seasonally adjusted statistics it is important to bear in mind 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 which are used are available on request.

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

17. 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. 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. 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

time series affected by revisions resulting from more recent data becoming available. Smoothed seasonally adjusted estimates can be considered to be estimates of trend, and are referred to as such elsewhere in this publication.

18. The trend estimate of the Index of Manufacturing Production has been derived by applying a 5-term Henderson-weighted moving average to the seasonally adjusted series. The weighting pattern for the final three values of the series is of the form shown below, where 'N' is the last quarter for which a value in the seasonally adjusted series is available.

5-TERM HENDERSON

Trend-cycle value for quarter	Weight given to seasonally adjusted values in quarter				
	N-4	N-3	N-2	N-1	N
N	0	0	-.073	.403	.670
N-1	0	-.073	.294	.522	.257
N-2	-.073	.294	.558	.294	-.073

19. While this technique enables trend estimates for recent quarters to be produced, it does result in revisions to the estimates for the most recent two quarters as additional observations become available. There may also be revisions as a result of changes in the original data, and as a result of the re-estimation of the seasonal factors. Details of other trend-cycle weighting patterns are available on request.

Reliability of estimates

20. Seasonally adjusted and constant price estimates are also subject to sampling variability. For seasonally adjusted estimates the standard errors in percentage terms closely approximate those for the unadjusted series. 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.

21. 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. In addition to the non-sampling errors which may occur in current price 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. Every effort is made to minimise non-sampling errors by careful design of forms, editing of data and efficient operating procedures.

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Related publications

22. Users may also wish to refer to the following publications:

Australian National Accounts: Gross Product, Employment and Hours Worked, 1987-88 (5211.0) — previously known as *Australian National Accounts: Gross Product by Industry*.

Australian National Accounts: Gross Product, Employment and Hours worked (5222.0) — issued quarterly

Constant Price Estimates of Manufacturing Production, Australia, 1984-85 (8211.0)

Price Indexes of Articles Produced by Manufacturing Industry, Australia (6412.0)—issued monthly

Stocks and Manufacturers' Sales, Australia (5629.0)—issued quarterly

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

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