CHAPTER EIGHTEEN

MANUFACTURING AND INTERNAL TRADE

MANUFACTURING

An historical summary of the development of the manufacturing industry in Australia since 1788 is contained at the end of the chapter.

Government authorities

Industries Assistance Commission

The Industries Assistance Commission (IAC) is a statutory authority which came into existence on 1 January 1974 as a result of the passing of the *Industries Assistance Commission Act 1973* by the Commonwealth Parliament. The Commission replaced the Tariff Board which, since 1921, had been responsible for advising the government on assistance for industries mainly in the manufacturing sector of the economy.

The Commission is an advisory authority. The government is required to seek the Commission's advice before it makes changes in the assistance afforded industries, but the government is not obliged to accept the Commission's advice.

In August 1983, the Government initiated a review of the functions and operations of the Commission. Decisions taken on the recommendations of that review, and reflected in the *Industries Assistance Commission Amendment Act 1984*, were designed to improve the Commission's operations and procedures so that it could more effectively assist the government to meet its industry policy objectives.

The Commission's basic functions remain unchanged. These are to hold inquiries, conduct public hearings and to make reports to the government on assistance, and matters associated with assistance, to industries in the rural, mining, manufacturing and services sectors of the economy. Inquiries are initiated by references from the Minister administering the *Industries Assistance Commission Act 1973*. The Commission is also required to report annually to the government on its operations and on the general structure of industry assistance within Australia and its effects on the economy.

The Commission operates under general policy guidelines which are cast in terms of encouraging the growth of efficient and internationally competitive industries, facilitating structural adjustment and recognising the interests of other industries and consumers.

The Commission is required to give wide public notice that it is conducting an inquiry. Typically, the Commission prepares a draft report on the basis of consultation with interested parties, written submissions and the Commission's own investigatory work. Draft reports are published and public hearings are held to give interested parties an opportunity to examine and comment before Commission reports are finally settled. Public hearings are conducted in an informal manner and may be held in Canberra or other cities throughout Australia.

It is the government's intention that, in most cases, final Commission reports will be published prior to a government decision being taken. When released for publication, these Commission reports are sold by Commonwealth Government Bookshops.

If after receiving a report from the Commission, the government decides that assistance afforded a particular industry should be changed, it introduces a proposal to this effect in Parliament. Thus, the final responsibility for altering assistance given to particular industries within Australia rests with Parliament.

Bureau of Industry Economics

The Bureau of Industry Economics has been established by the Australian Government as a centre for research into the manufacturing and commerce sectors. Formally attached to

the Department of Industry, Technology and Commerce, it has professional independence in the conduct and reporting of its research.

The major objectives of the Bureau are to:

- carry out research work needed to assist the government in the formation of industrial policy;
- assist the Industries Assistance Commission and other government bodies by making submissions on the results of its research;
- attract a high standard of professional staff and publish its research findings;
- complement the work of other research agencies and co-operate with universities and colleges in developing research programs.

Activities coming within the Bureau's research area include manufacturing, wholesale and retail trade and personal and business services. These currently contribute well over 50 per cent of gross domestic product in Australia and absorb an even larger share of the labour force.

The Bureau is also concerned with developments in mining, rural industry, public and private services and international trade and investment where these impinge on the manufacturing and commerce sectors.

A Council of Advice advises the Minister of Industry, Technology and Commerce about the Bureau's work and ensures that it is relevant to contemporary and long-term issues in manufacturing and commerce. Its members are drawn from a wide range of industries and backgrounds, including the universities and the trade union movement. The Council assists with the work of the Bureau and the effective dissemination of the results of the Bureau's work.

As well as conducting longer-term research, the Bureau provides the Minister for Industry, Technology and Commerce with regular briefings on economic trends. It also undertakes short-term projects of immediate relevance. The techniques of economic analysis used include supply and demand estimation, industry structure-performance relationships, input-output analysis, econometrics, cost-benefit methods and socio-demographic investigations. Technical and social factors affecting industry structure and performance are also taken into account in investigations.

The staff of the Bureau consists of approximately 70 officers with backgrounds in business, government and university teaching and research.

Research projects often require special surveys where existing data sources are inadequate or more detailed information is required for particular industries. In certain projects, the Bureau undertakes joint research with other organisations and consultants are engaged when this will significantly enhance the quality of the research.

Current research projects include:

- investment;
- depreciation case studies;
- economies of scale;
- industrial development policies;
- evaluation of government programs;
- globalisation (growth in international industrial interdependence);
- trade in services;
- regulation case studies;
- technology transfer and diffusion.

Ongoing research areas include:

- small business;
- corporate taxation;
- economic conditions.

The results of the Bureau's research are published in working papers, which generally address technical issues or present preliminary results and information bulletins which contain statistics and other information and research reports which give comprehensive results of the Bureau's major projects.

Standardisation

The Commonwealth Scientific and Industrial Research Organisation—CSIRO

CSIRO is obliged by two Acts of Parliament to be associated with national standards. The functions of CSIRO as laid down by these Acts involve establishing, developing and maintaining standards of measurement of physical quantities and to promote the use of these standards.

CSIRO first undertook this role in 1938 after government acceptance of a recommendation by a Secondary Industries Testing and Research Committee that these functions were essential for the successful development of manufacturing industry in Australia. Since that time, standards and calibrations have been established for a very wide range of physical quantities, extending considerably beyond the minimum required by law. From 1978, CSIRO has been responsible for first level calibrations in the defence area.

In certain specialist areas, CSIRO has authorised other bodies to carry out functions related to standards. CSIRO has authorised the Australian Nuclear Science and Technology Organisation (Department of Primary Industries and Energy) and the Australian Radiation Laboratory (Department of Community Services and Health) to maintain standards for quantities relating to ionising radiations, such as radioactivity, exposure, and absorbed dose. It has also authorised the Division of National Mapping (Department of Administrative Services) to maintain working standards and co-ordinated universal time and the Australian Telecommunications Commission (Department of Transport and Communications) to maintain working standards of frequency.

At the international level, a treaty now widely known as the Metric Treaty has been signed by 45 member nations, including Australia. The International Bureau of Weights and Measures (BIPM) co-ordinates activities under the Treaty by providing a mechanism for making international agreements in scientific metrology and for co-ordinating research on basic scientific problems in measurement. CSIRO has representatives on five of the BIPM's consultative committees, while the Australian Radiation Laboratory and the Australian Nuclear Science and Technology Organisation (as CSIRO agents) are represented on another consultative committee. Statements recognising the equivalence of many of the Australian primary standards with those of the United States, the United Kingdom and Canada have been exchanged.

The Standards Association of Australia

The Standards Association of Australia is the organisation responsible for the preparation, on a national basis, of Australian standards for materials and products and standard codes of practice.

Formed as the Australian Commonwealth Engineering Standards Association in 1922, it was reconstituted as the Standards Association of Australia in 1929, and was incorporated by Royal Charter in 1950. It is an independent body, having the full recognition and support of the Commonwealth and State Governments and of industry. Approximately one-third of its funds are provided by Commonwealth Government grant, the remainder coming primarily from membership subscriptions and from the sale of publications. Organisations, companies, and individuals are eligible for subscribing membership.

The Association is controlled by a council comprising representatives from Commonwealth and State Governments and their departments, from associations of manufacturing and commercial interests, and from professional institutions. Standards are prepared by committees composed of expert representatives from the interests associated with the subject under consideration. This assistance is on a voluntary basis.

Preparation of a standard is undertaken in response to a request from any responsible source, subject to verification that the standard will meet a genuine need. Standards may relate to one or more of several aspects of industrial practice such as terminology, test methods, dimensions, specifications of performance and quality of products, and safety or design codes. In general, standards derive authority from voluntary adoption based on their intrinsic merit, but in many cases where safety of life or property or consumer protection is involved, they may have compulsory application through statutory reference.

The Association is the owner of a registered certification trademark covering conformity of products to standards. Manufacturers of products covered by Australian standards may obtain a licence to use the StandardsMark, under conditions established by the Association. It also operates a Supplier Assessment Scheme which attests to the adequacy of manufacturers' quality systems to national and international standards.

The Association has international affiliations and is a member, representing Australia, of the International Organization for Standardization (ISO) and of the International Electrotechnical Commission (IEC). Close links are maintained with overseas standards organisations, and the Association acts as Australian agent for the procurement of ISO and IEC publications and the standards of other countries.

The Association has two specialised information centres, one in Sydney and one in Melbourne, containing the national standards of all countries with standards organisations. These centres provide a necessary information service to those concerned with standards development and for researchers from all sectors of the community.

The headquarters of the Association is in Sydney, and there is a major office in Melbourne. Offices are also located in other capital cities and Newcastle.

The National Standards Commission

The Commission was established in 1948 and is presently located at North Ryde, Sydney. The Commission operates under the National Measurement Act and its principal objectives are to promote and co-ordinate the use in Australia of a uniform system of units and standards of measurement of physical quantities and to bring about the progressive introduction of the metric system as the sole system of measurement of these quantities. The Commission also examines and approves the patterns of measuring instruments used for trade, in order to control design and quality.

The Commission has close contact with all State and Territorial Weights and Measures Authorities and provides assistance in the accreditation and training of weights and measures inspectors. The Commission is currently chairing a working party developing Uniform Trade Measurement Legislation for Australia.

Close liaison is also maintained with the manufacturing industry, retailers, consumers and other users to ensure a balance between design, quality, cost and consumer protection.

The Commission has regular contacts overseas, provides the Australian member accredited to the International Organisation of Legal Metrology and provides training courses for countries in the Asia–Pacific region. The Commission is directed by a board of seven part-time Commissioners.

The National Association of Testing Authorities—NATA

NATA organises testing facilities throughout Australia to serve private and governmental needs. Membership is open to authorities whose testing laboratories conform to the standards of staffing and operations defined by the Association. Testing authorities may register their laboratories voluntarily. The Association assesses the competence of the laboratories and ensures that their standards of competence are maintained. Certificates of test issued by registered laboratories may be endorsed in the name of the Association. NATA-endorsed test certificates are generally accepted by governmental, industrial and commercial interests.

Laboratories are registered for performance of specific tests in the fields of acoustic and vibration measurement, biological testing, chemical testing, electrical testing, heat and temperature measurement, mechanical testing, medical testing, metrology, non-destructive testing and optics and radiometry.

The Industrial Design Council of Australia—IDCA

IDCA is a non profit-making design information body, offering assistance to manufacturers developing and launching new products in Australia.

The Council is representative of industry and commerce, together with designers and educationalists. In 1987–88 about 9 per cent of its funds will come from State government grants and the balance will be from fees for services to industry (75%) and Federal Government contracts (6%).

The Council's services include the Product Assessment Scheme (PASS scheme), technical

and market feasability evaluation of new products, design counselling, product development management and training programs for manufacturing management (Star Product Programs). The Council also administers the Australian Design Awards program for high quality products of Australian design and manufacture.

The Council has a membership scheme for information exchange and specialist referral services that include senior level manufacturers' designers, marketing and advertising executives, material suppliers and design students.

The Council's programs and activities are designed to promote easy access to, and collaboration between, Australia's service and manufacturing communities to help achieve international competitiveness through improvement of price and non-price factors in locally developed products. The Council has a professional staff comprising engineers, ergonomists and marketing consultants located in offices in Perth, Adelaide, Sydney and Brisbane. Its national office is located in Melbourne.

The Australian Standard Commodity Classification—ASCC

ASCC has been developed by the ABS to enable users to compare statistics of commodities produced in Australia with statistics of commodities imported and exported.

The ASCC manual (1207.0 and 1208.0) links production, import and export items at their most detailed level of comparability in the form of standard (ASCC) commodity items. In a large number of cases, however, due to the differences between production, import and export items, comparability is only achieved at fairly broad aggregate levels. In ASCC, commodities are grouped under industries (as defined in the Australian Standard Industrial Classification) in which they are typically produced.

The latest edition published is in respect of the year 1984–85. The classification will continue to be developed over the coming years to improve the alignment between production, imports and exports.

The Australian Standard Industrial Classification—ASIC

ASIC (1201.0 and 1202.0) was developed by the ABS as part of its program for the integration of economic statistics. Since its introduction in the processing of the 1969 Integrated Economic Censuses, ASIC has gained a wide acceptance by users of statistics outside the ABS and has been progressively applied in most ABS collections and compilations where data are classified by industry.

ASIC has been devised for the purpose of classifying statistical units by industry. It has been designed primarily as a system for the classification of establishments (e.g. individual mines, factories, shops, etc.) although it may also be used for classifying other economic units such as enterprises.

The fundamental concept of this classification system is that an industry (i.e. an individual class, group, etc.) in ASIC is composed of establishments that have been classified to it. Each industry class is defined in terms of the predominant activities of the establishment classified to it and these activities are specified in ASIC as *primary activities* of the individual industry classes. These industry definitions are revised only at relatively infrequent intervals so as to minimise the disruption to time series data assembled on an ASIC basis.

To date, ASIC has been revised twice. ASIC editions published hitherto are: 1969 (original), 1978 (first revision) and 1983 (second revision)—the latter (the 1983 edition) is the one currently in use.

Manufacturing industry statistics

Manufacturing industry statistics from 1901 to 1967–68

A series of substantially uniform statistics exist from 1901 up until 1967–68 when the framework within which manufacturing statistics were collected was changed. Detailed manufacturing statistics in respect of this period are included in *Year Book* No. 57, pages 721–9, and in earlier issues.

Manufacturing industry statistics from 1968–69

As from the year ended June 1969, the Censuses of Manufacturing, Electricity and Gas have been conducted within the framework of the Integrated Economic Censuses which

include the Censuses of Mining, Retail Trade, Wholesale Trade, Construction and Electricity and Gas industries. As a result, manufacturing industry statistics for 1968–69 and subsequent years are not directly comparable with previous years.

The standardisation of census units in the integration of economic censuses means that the basic census unit (the establishment), in general, covers all the operations carried on under the one ownership at a single physical location. The manufacturing establishment is thus one predominantly engaged in manufacturing, but the data supplied for it cover (with a few exceptions) all activities at the location. The establishment statistics also include data relating to separately located administrative offices and ancillary units serving the establishment and forming part of the business (enterprise) which owns and operates the establishment.

Census units are classified to industry as described in the ABS publication *Australian Standard Industrial Classification* (1201.0 and 1202.0). ASIC defines the industries in the economy for statistical purposes, thus permitting the scope of the different economic censuses to be specified without gaps or overlapping between them. It also sets out standard rules for identifying the statistical units (e.g. establishments) and for coding them to the industries of the classification. This classification is broadly convertible to the International Standard Industrial Classification adopted by the United Nations Statistical Commission. The adoption of ASIC has resulted in changes in scope between the integrated economic censuses introduced in 1968–69 and the individual economic censuses conducted in previous years.

In the 1967–68 Census there were approximately 62,600 manufacturing establishments (excluding electricity and gas establishments) with employment of 1,276,000. Of these, approximately 35,400, with employment of 1,097,000 would have been included in the 1967–68 Census if ASIC had been used.

MANUFACTURING ESTABLISHMENTS: SUMMARY OF OPERATIONS, AUSTRALIA

Census year	Establishments at 30 June	Average employment over whole year (a)			Wages and salaries (b)	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added	Fixed capital expenditure less disposals
		Males	Females	Persons			Opening	Closing			
	No.	No.	No.	No.	$m	$m	$m	$m	$m	$m	$m
1968–69	35,939	927,211	334,066	1,261,277	3,908.1	18,646.5	3,102.5	3,319.6	11,514.9	7,348.8	903.0
1969–70	35,674	950,055	345,578	1,295,633	4,328.7	20,687.6	3,322.8	3,634.7	12,862.3	8,137.1	1,030.7
1970–71	No manufacturing census was conducted in respect of this year.										
1971–72	36,206	953,967	347,672	1,301,639	5,250.0	23,620.4	3,920.1	4,182.5	14,374.8	9,508.1	1,297.8
1972–73	36,437	951,610	345,485	1,297,095	5,820.0	26,352.4	4,187.2	4,306.3	15,963.0	10,508.5	1,244.4
1973–74	37,143	969,338	369,041	1,338,379	7,176.4	31,246.7	4,299.1	5,268.5	19,329.8	12,886.3	1,215.5
1974–75(c)	36,836	931,367	333,440	1,264,807	8,588.0	35,468.0	5,267.2	6,572.2	21,712.3	15,060.7	1,456.4
1974–75(d)	26,973	916,896	328,341	1,245,237	8,533.5	35,133.7	5,241.0	6,542.7	21,522.3	14,913.1	1,445.9
1975–76	27,507	888,523	311,917	1,200,440	9,472.4	39,485.3	6,581.1	7,023.3	23,371.7	16,555.8	1,451.7
1976–77	26,780	876,111	299,720	1,175,831	10,535.8	44,814.3	6,985.1	7,996.8	27,010.0	18,816.1	1,548.0
1977–78(e)	25,998	855,448	290,237	1,145,685	11,151.4	48,210.8	7,880.2	8,510.8	29,087.8	19,753.6	1,871.8
1977–78(f)	26,065	853,966	290,233	1,144,199	11,135.8	48,112.6	7,863.5	8,498.1	28,992.7	19,754.4	1,877.3
1978–79	26,312	852,982	290,909	1,143,891	11,966.4	55,211.3	8,515.4	9,299.6	33,765.4	22,230.1	2,262.8
1979–80	27,430	862,368	291,816	1,154,184	13,357.5	65,354.8	9,287.6	11,126.4	41,579.5	25,614.0	2,186.7
1980–81	27,681	859,217	290,746	1,149,963	14,912.7	73,723.0	11,047.1	12,366.9	46,448.7	28,594.1	2,882.7
1981–82	28,706	862,542	292,266	1,154,808	17,002.8	81,869.3	12,377.4	13,297.3	51,240.4	31,548.7	4,084.2
1982–83	27,696	787,309	265,596	1,052,905	17,402.7	82,320.6	13,094.4	13,035.1	51,225.8	31,035.5	3,678.4
1983–84(g)	27,472	751,417	258,401	1,009,818	17,467.4	88,639.3	12,918.1	13,181.5	54,681.4	34,221.3	2,778.4
1984–85	27,611	753,665	264,783	1,018,448	18,780.3	98,208.7	13,088.8	14,473.8	61,206.6	38,387.1	3,133.7
1985–86	No manufacturing census was conducted in respect of this year.										

(a) Includes working proprietors. (b) Excludes the drawings of working proprietors. (c) These data and that of previous years include the data of all manufacturing establishments. (d) These data and those of following years exclude single establishment manufacturing enterprises with fewer than four persons employed. (e) These data and those of previous years are classified to the 1969 (preliminary) edition of ASIC. (f) These data and those up to and including 1982–83 are classified to the 1978 edition of ASIC. (g) These data and those of following years are classified to the 1983 edition of ASIC.

The items of data on the census forms were standardised for all census sectors, which has meant changes in the content of the statistics. For example, the value of 'turnover' is now collected instead of the 'value of output' at the factory, and purchases and selected expenses are collected as well as the value of specified materials, fuels, etc., used. However the underlying concept of 'value added' is similar to the former concept 'value of production', even though its method of derivation is different.

Even though the concept of 'value added' is similar to 'value of production', direct comparison of 1968–69 and previous figures is not possible because of the change in census units already mentioned which has resulted in the 'value added' for the whole establishment being reported, not merely the 'value added' for the manufacturing process. Comparison is also affected, of course, by the change in the scope of the Manufacturing Census due to the adoption of ASIC. In addition, 'value added' as calculated for the Manufacturing Census differs from the concept used in the National Accounts where the concept of 'value added' also excludes some administrative expenses and sundry charges and the change in stocks component is measured by valuing the physical change in stocks at current prices. It is not practicable in the Manufacturing Census to collect data fully in accord with the National Accounts concept of 'value added'.

For a more detailed description of the Integrated Economic Censuses reference should be made to *Year Book* No. 56, Chapter 31.

Since the introduction of the system of Integrated Economic Censuses the comparability of Manufacturing Census data has been affected by three additional changes to collection practices:

(i) Commencing with the 1975–76 Manufacturing Census, only a limited range of data (i.e. employment and wages and salaries) are collected from single establishment manufacturing enterprises with fewer than four persons employed. This procedure significantly reduces both the statistical reporting obligations of small businesses and the collecting and processing costs of the Australian Bureau of Statistics without affecting the reliability of information for the evaluation of trends in the manufacturing sector of the economy (as these small enterprises contribute only marginally to statistical aggregates). In order to provide a link with past and future years, 1974–75 data were processed on both bases.

(ii) Commencing with the 1977–78 Census the classification of census units to industry is based on the 1978 edition of ASIC which replaces the 1969 preliminary edition in use since the 1968–69 Census. In general the impact of the change in industrial classification is minimal at ASIC Division and Subdivision levels.

(iii) From 1983–84, the classification of census units to industry is based on the 1983 edition of ASIC. The only changes to manufacturing resulting from use of the revised version of ASIC relate to establishments mainly engaged in minor repairs to aircraft or railway or tramway rolling stock. Previously, these establishments were excluded from manufacturing but are now included in industry subdivision 32—Transport Equipment.

Multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed

Main structural aggregates relating to number of establishments, employment, wages and salaries, turnover, purchases, transfers in and selected expenses, stocks, and value added are shown in the following tables. Further detailed statistics are contained in the following ABS statistical publications: *Manufacturing Establishments, Details of Operations by Industry Class, Australia* (8203.0), *Manufacturing Establishments, Summary of Operations by Industry Class, Australia* (8202.0) and *Manufacturing Establishments: Selected Items of Data Classified by Industry and Employment Size, Australia* (8204.0).

Employment

The statistics on the number of persons employed shown in the following table relate to the average whole year employment, including working proprietors and those persons working at separately located administrative offices and ancillary units in the State.

It should be noted that persons employed in each State (and their wages and salaries) relate to those employed at establishments, administrative offices or ancillary units located in that State, even though the administrative offices or ancillary units may have served establishments located in another State.

MANUFACTURING ESTABLISHMENTS—MALES, FEMALES AND PERSONS EMPLOYED BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85

Industry sub-division										
ASIC code	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
					MALES EMPLOYED					
21	Food, beverages and tobacco	35,796	34,629	24,217	10,534	8,189	3,763	334	347	117,809
23	Textiles	5,495	10,989	530	1,519	560	n.p.	n.p.	—	19,920
24	Clothing and footwear	4,617	10,888	803	1,181	251	111	n.p.	n.p.	17,863
25	Wood, wood products and furniture	19,517	16,102	9,325	6,453	6,668	3,037	108	459	61,669
26	Paper, paper products, printing and publishing	24,258	24,348	7,270	5,202	4,622	4,591	182	960	71,433
27	Chemical, petroleum and coal products	17,651	15,159	2,644	2,051	2,673	n.p.	—	n.p.	40,973
28	Non-metallic mineral products	11,623	8,955	5,645	2,971	4,095	784	322	177	34,572
29	Basic metal products	36,790	11,435	6,155	6,811	5,667	3,262	n.p.	n.p.	70,800
31	Fabricated metal products	28,990	24,280	9,992	5,705	5,796	1,310	333	368	76,774
32	Transport equipment	29,591	45,398	10,372	14,674	4,555	499	57	37	105,183
33	Other machinery and equipment	40,264	32,246	7,124	9,518	6,117	635	32	159	96,095
34	Miscellaneous manufacturing	14,329	16,084	3,516	4,292	1,962	305	65	21	40,574
	Total manufacturing									
	1984–85	**268,921**	**250,513**	**87,593**	**70,911**	**51,155**	**19,902**	**2,103**	**2,567**	**753,665**
	1983–84	269,165	249,139	88,760	70,382	49,719	19,858	1,921	2,473	751,417
	1982–83	285,945	257,870	92,389	74,843	52,265	19,597	1,932	2,468	787,309
					FEMALES EMPLOYED					
21	Food, beverages and tobacco	15,971	15,022	7,350	4,750	3,801	1,989	120	142	49,145
23	Textiles	3,959	6,889	403	1,206	427	n.p.	n.p.	—	13,601
24	Clothing and footwear	16,847	31,928	3,221	3,105	1,201	259	n.p.	n.p.	56,637
25	Wood, wood products and furniture	3,758	3,132	1,545	1,066	1,195	239	19	68	11,022
26	Paper, paper products, printing and publishing	11,752	9,878	3,142	2,109	2,469	732	114	466	30,662
27	Chemical, petroleum and coal products	8,224	4,538	476	448	356	n.p.	—	n.p.	14,117
28	Non-metallic mineral products	1,480	1,283	499	283	367	52	34	12	4,010
29	Basic metal products	2,900	1,353	519	459	414	102	n.p.	n.p.	5,868
31	Fabricated metal products	6,574	5,476	1,929	1,237	935	177	57	63	16,448
32	Transport equipment	2,837	9,151	622	1,488	247	106	8	6	14,465
33	Other machinery and equipment	14,492	10,588	1,372	3,020	1,029	85	26	39	30,651
34	Miscellaneous manufacturing	7,090	6,936	1,269	2,123	646	69	11	13	18,157
	Total manufacturing									
	1984–85	**95,884**	**106,174**	**22,347**	**21,294**	**13,087**	**4,592**	**542**	**863**	**264,783**
	1983–84	94,135	104,109	21,678	20,276	12,278	4,640	511	774	258,401
	1982–83	98,663	105,148	22,257	21,063	12,715	4,488	502	760	265,596
					PERSONS EMPLOYED					
21	Food, beverages and tobacco	51,767	49,651	31,567	15,284	11,990	5,752	454	489	166,954
23	Textiles	9,454	17,878	933	2,725	987	n.p.	n.p.	—	33,521
24	Clothing and footwear	21,464	42,816	4,024	4,286	1,452	370	n.p.	n.p.	74,500
25	Wood, wood products and furniture	23,275	19,234	10,870	7,519	7,863	3,276	127	527	72,691
26	Paper, paper products, printing and publishing	36,010	34,226	10,412	7,311	7,091	5,323	296	1,426	102,095
27	Chemical, petroleum and coal products	25,875	19,697	3,120	2,499	3,029	n.p.	—	n.p.	55,090
28	Non-metallic mineral products	13,103	10,238	6,144	3,254	4,462	836	356	189	38,582
29	Basic metal products	39,690	12,788	6,674	7,270	6,081	3,364	n.p.	n.p.	76,668
31	Fabricated metal products	35,564	29,756	11,921	6,942	6,731	1,487	390	431	93,222
32	Transport equipment	32,428	54,549	10,994	16,162	4,802	605	65	43	119,648
33	Other machinery and equipment	54,756	42,834	8,496	12,538	7,146	720	58	198	126,746
34	Miscellaneous manufacturing	21,419	23,020	4,785	6,415	2,608	374	76	34	58,731
	Total manufacturing									
	1984–85	**364,805**	**356,687**	**109,940**	**92,205**	**64,242**	**24,494**	**2,645**	**3,430**	**1,018,448**
	1983–84	363,300	353,248	110,438	90,658	61,997	24,498	2,432	3,247	1,009,818
	1982–83	384,608	363,018	114,646	95,906	64,980	24,085	2,434	3,228	1,052,905

Wages and salaries

The following table shows wages and salaries of all employees of manufacturing establishments including those working at separately located administrative offices and ancillary units in the State. Drawings of working proprietors are not included.

MANUFACTURING ESTABLISHMENTS—WAGES AND SALARIES BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85
($ million)

Industry sub-division ASIC code	Description	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
21	Food, beverages and tobacco	1,000	898	565	248	195	86	12	8	3,012
23	Textiles	177	314	14	41	15	n.p.	n.p.	—	586
24	Clothing and footwear	280	598	46	58	18	5	n.p.	n.p.	1,006
25	Wood, wood products and furniture	366	293	153	117	107	55	2	9	1,102
26	Paper, paper products, printing and publishing	723	668	188	125	121	110	6	29	1,969
27	Chemical, petroleum and coal products	603	451	77	55	63	n.p.	—	n.p.	1,269
28	Non-metallic mineral products	275	227	121	66	86	17	8	4	802
29	Basic metal products	909	299	157	160	163	n.p.	n.p.	n.p.	1,782
31	Fabricated metal products	628	527	194	106	112	23	n.p.	n.p.	1,604
32	Transport equipment	640	1,070	202	310	92	10	1	1	2,326
33	Other machinery and equipment	1,014	787	144	215	126	12	1	4	2,304
34	Miscellaneous manufacturing	375	419	74	104	41	6	1	—	1,021
	Total manufacturing									
	1984–85	**6,988**	**6,551**	**1,934**	**1,604**	**1,138**	**443**	**58**	**64**	**18,780**
	1983–84	6,556	6,059	1,813	1,472	1,047	413	49	59	17,467
	1982–83	6,638	5,950	1,786	1,502	1,038	388	45	55	17,403

Turnover

The following table shows the value of turnover of manufacturing establishments. The figures include sales of goods whether produced by the establishment or not, transfers out of goods to other establishments of the same enterprise; bounties and subsidies on production; plus all other operating revenue from outside the enterprise (such as commission, repair and service revenue and rent, leasing and hiring revenue), plus capital work done for own use, or for rental or lease. Receipts from interest, royalties, dividends, and the sale of fixed tangible assets are excluded.

MANUFACTURING ESTABLISHMENTS—TURNOVER, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85
($ million)

Industry sub-division ASIC code	Description	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
21	Food, beverages and tobacco	6,228	6,673	4,124	1,695	1,494	685	58	51	21,008
23	Textiles	841	1,370	110	199	75	n.p.	n.p.	—	2,689
24	Clothing and footwear	1,113	2,057	126	184	50	18	n.p.	n.p.	3,551
25	Wood, wood products and furniture	1,667	1,292	625	527	479	328	10	40	4,969
26	Paper, paper products, printing and publishing	3,074	2,833	769	522	403	435	19	89	8,145
27	Chemical, petroleum and coal products	4,027	2,876	1,932	346	517	n.p.	—	n.p.	9,811
28	Non-metallic mineral products	1,545	1,188	846	407	459	105	62	45	4,656
29	Basic metal products	5,172	2,397	1,565	809	1,837	n.p.	n.p.	n.p.	12,439
31	Fabricated metal products	2,625	2,186	936	494	532	94	n.p.	n.p.	6,948
32	Transport equipment	2,024	5,159	907	1,395	252	45	6	3	9,790
33	Other machinery and equipment	4,001	3,326	585	817	486	36	4	13	9,268
34	Miscellaneous manufacturing	1,770	2,079	396	451	206	30	4	1	4,935
	Total manufacturing									
	1984–85	**34,087**	**33,436**	**12,921**	**7,847**	**6,789**	**2,423**	**407**	**299**	**98,209**
	1983–84	30,950	30,081	11,707	7,137	5,923	2,221	359	263	88,639
	1982–83	29,024	27,747	10,716	6,708	5,597	1,969	344	218	82,321

Purchases, transfers in and selected expenses

The following table gives details of the value of purchases, transfers in and selected expenses. Figures include purchases of materials, fuels, power, containers, etc. and goods for resale, plus transfers in of goods from other establishments of the enterprise, plus charges for commission and sub-contract work, repair and maintenance expenses, outward freight and cartage, motor vehicle running expenses, sales commission payments and rent, leasing and hiring expenses.

MANUFACTURING ESTABLISHMENTS—PURCHASES, TRANSFERS IN AND SELECTED EXPENSES, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING 1982–83 TO 1984–85
($ million)

Industry sub-division ASIC code	Description	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
21	Food, beverages and tobacco	4,101	4,495	2,933	1,215	1,047	475	37	36	14,336
23	Textiles	529	863	88	146	45	n.p.	n.p.	—	1,729
24	Clothing and footwear	658	1,115	57	91	22	11	n.p.	n.p.	1,954
25	Wood, wood products and furniture	964	744	340	306	266	198	6	23	2,847
26	Paper, paper products, printing and publishing	1,621	1,531	370	251	195	230	6	47	4,249
27	Chemical, petroleum and coal products	2,474	1,711	1,557	221	371	n.p.	—	n.p.	6,402
28	Non-metallic mineral products	950	629	507	226	267	62	41	34	2,717
29	Basic metal products	3,424	1,885	1,056	536	1,265	n.p.	n.p.	n.p.	8,661
31	Fabricated metal products	1,540	1,234	590	288	333	58	n.p.	n.p.	4,094
32	Transport equipment	1,030	3,468	571	919	129	20	3	2	6,142
33	Other machinery and equipment	2,180	1,856	324	427	278	17	2	7	5,092
34	Miscellaneous manufacturing	1,085	1,252	232	267	127	18	2	—	2,982
	Total manufacturing									
	1984–85	**20,556**	**20,782**	**8,623**	**4,894**	**4,343**	**1,549**	**279**	**182**	**61,207**
	1983–84	18,336	18,405	8,002	4,292	3,828	1,389	249	181	54,681
	1982–83	17,520	17,060	7,393	4,041	3,574	1,260	251	126	51,226

Stocks

Statistics on the value of opening and closing stocks at 30 June are shown in the following table. Figures include all the stocks of materials, fuels, etc., and finished goods and work-in-progress of the establishment whether located at the establishment or elsewhere.

MANUFACTURING ESTABLISHMENTS—OPENING AND CLOSING STOCKS BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING 1982–83 TO 1984–85
($ million)

Industry sub-division ASIC code	Description	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
	OPENING STOCKS AT 30 JUNE									
21	Food, beverages and tobacco	665	744	252	304	117	75	6	1	2,163
23	Textiles	133	211	10	30	8	n.p.	n.p.	—	407
24	Clothing and footwear	144	316	13	34	5	1	n.p.	n.p.	512
25	Wood, wood products and furniture	203	151	72	57	61	43	1	5	591
26	Paper, paper products, printing and publishing	256	291	58	47	34	40	1	5	733
27	Chemical, petroleum and coal products	639	452	216	49	59	n.p.	—	n.p.	1,438
28	Non-metallic mineral products	195	121	98	38	60	11	4	2	529
29	Basic metal products	899	273	297	165	240	n.p.	n.p.	n.p.	2,018
31	Fabricated metal products	356	316	110	56	58	12	n.p.	n.p.	979
32	Transport equipment	269	660	147	152	36	13	1	—	1,277
33	Other machinery and equipment	802	682	99	138	82	5	—	2	1,809
34	Miscellaneous manufacturing	242	269	41	58	21	3	—	—	634
	Total manufacturing									
	1984–85	**4,802**	**4,486**	**1,411**	**1,127**	**781**	**321**	**77**	**83**	**13,089**
	1983–84	4,735	4,444	1,401	1,130	747	324	77	62	12,918
	1982–83	4,978	4,480	1,297	1,129	738	342	83	48	13,094
	CLOSING STOCKS AT 30 JUNE									
21	Food, beverages and tobacco	712	768	288	353	123	77	4	1	2,326
23	Textiles	149	242	15	41	9	n.p.	n.p.	—	473
24	Clothing and footwear	166	345	17	39	6	1	n.p.	n.p.	574
25	Wood, wood products and furniture	219	174	77	61	72	52	1	5	659
26	Paper, paper products, printing and publishing	316	343	72	55	40	49	1	6	882
27	Chemical, petroleum and coal products	716	471	212	63	82	n.p.	—	n.p.	1,571
28	Non-metallic mineral products	204	125	105	40	66	14	4	2	561
29	Basic metal products	1,007	311	315	178	247	n.p.	n.p.	n.p.	2,236
31	Fabricated metal products	390	336	115	64	53	14	n.p.	n.p.	1,037
32	Transport equipment	298	780	143	166	40	12	1	—	1,438
33	Other machinery and equipment	881	788	93	144	85	6	—	2	1,999
34	Miscellaneous manufacturing	272	301	49	66	25	4	—	—	718
	Total manufacturing									
	1984–85	**5,330**	**4,986**	**1,499**	**1,269**	**849**	**385**	**78**	**78**	**14,474**
	1983–84	4,835	4,546	1,397	1,127	788	330	77	82	13,182
	1982–83	4,784	4,442	1,420	1,171	756	329	81	52	13,035

Value added

The statistics on 'value added' contained in the following table have been calculated by adding to the value of turnover the increase (or deducting the decrease) in the value of stocks, and deducting the value of purchases, transfers in and selected expenses.

MANUFACTURING ESTABLISHMENTS—VALUE ADDED, BY INDUSTRY SUB-DIVISION, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85
($ million)

Industry sub-division										
ASIC code	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	2,175	2,203	1,227	529	454	212	19	16	6,835
23	Textiles	329	538	27	64	31	n.p.	n.p.	—	1 026
24	Clothing and footwear	477	973	73	98	30	7	n.p.	n.p.	1,659
25	Wood, wood products and furniture	719	572	291	224	224	140	4	17	2,190
26	Paper, paper products, printing and publishing	1,514	1,354	413	279	214	214	13	43	4,045
27	Chemical, petroleum and coal products	1,630	1,184	372	139	169	n.p.	—	n.p.	3,542
28	Non-metallic mineral products	604	563	346	182	198	46	20	12	1,971
29	Basic metal products	1,857	550	527	287	578	n.p.	n.p.	n.p.	3,996
31	Fabricated metal products	1,119	973	351	214	194	38	n.p.	n.p.	2,912
32	Transport equipment	1,022	1,811	331	490	126	24	3	1	3,809
33	Other machinery and equipment	1,900	1,575	256	396	211	20	2	6	4,366
34	Miscellaneous manufacturing	716	859	172	192	83	13	2	—	2,037
	Total manufacturing									
	1984–85	**14,060**	**13,154**	**4,386**	**3,095**	**2,513**	**938**	**129**	**113**	**38,387**
	1983–84	12,713	11,779	3,701	2,842	2,137	838	110	102	34,221
	1982–83	11,309	10,650	3,445	2,709	2,041	695	91	97	31,036

Number of establishments

The following figures relate to manufacturing establishments as such and do not include the numbers of separately located administrative offices and ancillary units.

MANUFACTURING ESTABLISHMENTS—NUMBER OF ESTABLISHMENTS IN OPERATION AT 30 JUNE 1985 BY INDUSTRY SUB-DIVISION, AND TOTAL MANUFACTURING AT 30 JUNE 1983, 1984, 1985

Industry sub-division										
ASIC code	*Description*	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
21	Food, beverages and tobacco	972	1 003	550	349	369	115	18	11	3,387
23	Textiles	210	304	47	43	38	12	2	—	656
24	Clothing and footwear	790	955	113	81	60	6	2	4	2,011
25	Wood, wood products and furniture	1,365	1,124	601	329	417	138	17	32	4,023
26	Paper, paper products, printing and publishing	1,251	899	278	213	221	53	17	40	2,972
27	Chemical, petroleum and coal products	400	278	78	47	69	14	—	1	887
28	Non-metallic mineral products	556	388	346	139	199	47	22	14	1,711
29	Basic metal products	194	175	65	38	40	11	4	2	529
31	Fabricated metal products	1,661	1,074	538	336	395	89	29	15	4,137
32	Transport equipment	421	383	202	125	150	17	5	5	1,308
33	Other machinery and equipment	1,555	1,173	337	317	325	45	11	15	3,778
34	Miscellaneous manufacturing	843	743	237	179	168	28	10	4	2,212
	Total manufacturing									
	30 June 1985	**10,218**	**8,499**	**3,392**	**2,196**	**2,451**	**575**	**137**	**143**	**27,611**
	30 June 1984	10,278	8,404	3,451	2,110	2,408	558	115	148	27,472
	30 June 1983	10,471	8,392	3,440	2,099	2,499	528	117	150	27,696

MANUFACTURING ESTABLISHMENTS—SUMMARY OF OPERATIONS BY INDUSTRY SUB-DIVISION: AUSTRALIA

ASIC Description	Establishments operating at 30 June No.	Average employment over whole year (a) Persons	Wages and salaries (b) $ m	Turnover $ m	Stocks at 30 June Opening $ m	Stocks at 30 June Closing $ m	Purchases, transfers in and selected expenses $ m	Value added $ m	Fixed capital expenditure less disposals $ m
			1983–84						
Food, beverages and tobacco	3,435	169,582	2,906	19,751	2,052	2,191	13,376	6,515	527
Textiles	631	32,523	538	2,347	373	398	1,467	904	53
Clothing and footwear	1,941	71,509	916	3,256	458	522	1,771	1,549	41
Wood, wood products and furniture	3,974	70,037	1,005	4,417	547	601	2,515	1,957	78
Paper, paper products, printing and publishing	2,911	99,282	1,771	7,089	721	732	3,719	3,381	182
Chemical, petroleum and coal products	910	55,812	1,199	8,908	1,424	1,454	5,832	3,106	266
Non-metallic mineral products	1,713	38,200	741	4,070	566	537	2,310	1,731	154
Basic metal products	533	77,073	1,646	10,855	1,951	2,019	7,565	3,357	775
Fabricated metal products	4,165	94,106	1,543	6,506	930	1,011	3,823	2,763	123
Transport equipment	1,290	116,815	2,108	8,503	1,419	1,252	5,011	3,325	270
Other machinery and equipment	3,771	127,370	2,165	8,540	1,867	1,821	4,650	3,845	171
Miscellaneous manufacturing	2,198	57,509	930	4,397	610	644	2,643	1,789	140
Total manufacturing	**27 472**	**1 009 818**	**17 467**	**88 639**	**12 918**	**13 182**	**54 681**	**34 221**	**2 778**
			1984–85						
Food, beverages and tobacco	3,387	166,954	3,012	21,008	2,163	2,326	14,336	6,835	544
Textiles	656	33,521	586	2,689	407	473	1,729	1,026	106
Clothing and footwear	2,011	74,500	1,005	3,551	512	574	1,954	1,659	59
Wood, wood products and furniture	4,023	72,691	1,102	4,969	591	659	2,847	2,190	116
Paper, paper products, printing and publishing	2,972	102,095	1,969	8,145	733	882	4,249	4,044	311
Chemical, petroleum and coal products	887	55,090	1,269	9,811	1,438	1,570	6,402	3,542	293
Non-metallic mineral products	1,711	38,582	802	4,656	529	561	2,717	1,971	168
Basic metal products	529	76,668	1,782	12,439	2,018	2,236	8,661	3,996	672
Fabricated metal products	4,137	93,222	1,604	6,948	979	1,037	4,094	2,912	152
Transport equipment	1,308	119,648	2,326	9,790	1,277	1,438	6,142	3,809	346
Other machinery and equipment	3,778	126,746	2,304	9,268	1,809	1,999	5,092	4,366	219
Miscellaneous manufacturing	2,212	58,731	1,021	4,935	634	718	2,982	2,037	149
Total manufacturing	**27,611**	**1,018,448**	**18,780**	**98,209**	**13,089**	**14,474**	**61,207**	**38,387**	**3,134**

(a) Includes working proprietors. (b) Excludes the drawings of working proprietors.

Single establishment manufacturing enterprises with less than four persons employed

SINGLE ESTABLISHMENT MANUFACTURING ENTERPRISES WITH FEWER THAN FOUR PERSONS EMPLOYED: SUMMARY OF OPERATIONS, BY INDUSTRY SUB-DIVISION, AUSTRALIA, 1984–85 AND TOTAL MANUFACTURING, 1982–83 TO 1984–85

Industry sub-division ASIC code	Description	Establishments operating at 30 June	Employment at 30 June (a) Males	Females	Persons	Wages and salaries (b)
			—No.—			$m
21	Food, beverages and tobacco	823	1,228	699	1,927	11.2
23	Textiles	262	340	211	551	3.7
24	Clothing and footwear	587	506	743	1,249	7.9
25	Wood, wood products and furniture	3,400	5,463	1,389	6,852	36.8
26	Paper, paper products, printing and publishing	1,405	1,869	1,120	2,989	22.7
27	Chemical, petroleum and coal products	237	343	153	496	4.4
28	Non-metallic mineral products	543	833	290	1,123	6.9
29	Basic metal products	140	251	52	303	2.4
31	Fabricated metal products	2,427	3,928	1,077	5,005	35.8
32	Transport equipment	782	1,304	309	1,613	10.5
33	Other machinery and equipment	1,894	2,836	1,061	3,897	32.3
34	Miscellaneous manufacturing	1,743	2,450	1,044	3,494	20.8
	Total manufacturing					
	1984-85	**14,243**	**21,351**	**8,148**	**29,499**	**195.4**
	1983-84	14,109	21,061	7,695	28,756	159.2
	1982-83	14,587	21,714	7,921	29,635	159.5

(a) Includes working proprietors. (b) Excludes the drawings of working proprietors.

Principal manufacturing commodities

The factory production of certain commodities is shown in the monthly publications of the ABS, and in the annual publication, *Manufacturing Commodities, Selected Principal Articles Produced, Australia (Preliminary)* (8365.0). A more comprehensive list of articles produced is contained in the annual publication, *Manufacturing Commodities, Principal Articles Produced, Australia* (8303.0).

The table following shows the total recorded production of some selected articles manufactured in Australia. A more complete list is published in the ABS publication 8303.0 mentioned above.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
	Acid (in terms of 100%)—				
401.29	Hydrochloric	tonnes	60,959	58,935	57,920
401.37	Nitric	"	190,048	189,922	202,033
401.57	Sulphuric	'000 tonnes	1,734	1,706	1,783
171.01, 02, 03, 07, 08	Aerated and carbonated waters	kL	1,009,029	1,007,900	1,044,634
	Animal feeds—				
	From wheat—				
152.06	Pollard	'000 tonnes	206	232	229
159.11	Poultry pellets and crumbles	"	1,402	1,385	1,499
159.15	Poultry mash	"	176	143	139
159.01	Canned dog and cat food	tonnes	189,975	199,078	n.p.
159.02	Dog biscuits (whole)	"	23,084	17 120	18,921
159.03	Other manufactured dog and cat food	"	101,605	112,500	112,059
647.98	Audio cassettes, pre-recorded	'000	14,904	16,388	18,835
	Bags, leather, fibre, etc.—				
864.31, 33, 39	Handbags, ladies	"	n.p.	679	520
654.31	Bath heaters, electric	No.	2,654	2,631	2,474
	Baths (exclude infants' baths)—				
671.08	Plastic (include fibreglass)	'000	n.p.	26	43
	Batteries, wet cell type—				
685.13	Auto (S.L.I.) 6 volts	"	154	145	137
685.17	Auto (S.L.I.) 12 volts	"	2,398	2,753	2,285
172.02, 04, 06	Beer(*a*)	ML	1,972	1,873	1,861
064.21	Biscuits	tonnes	129,119	132,270	13,220
386.07-23	Blankets, woollen—pure and mixtures	'000	850	732	745
152.02	Bran (wheaten)	'000 tonnes	93	91	94
172.21	Brandy	kL	1,504	2,091	2,411
791.11-15	Brassieres	'000	7,248	8,295	7,690
066.01, 05	Breakfast food, cereal (ready to eat)	tonnes	80,301	86,798	87,915
471.91, 93, 98	Bricks, clay	million	1,694	1,771	1,982
261.41	Briquettes, brown coal	'000 tonnes	760	746	789
052.20	Butter—from cream (exclude whey cream)	tonnes	75,777	105,199	110,535
789.71-83	**Cardigans**, jumpers, etc	'000	21,072	21,845	18,791
474.02	Cement, Portland	'000 tonnes	5,350	5,072	5,680
053.01, 11, 21, 31	Cheese (non-processed)	tonnes	154,066	170,707	159,812
	Cloth (including mixtures)—				
384.89-99	Cotton(*b*)	'000m²	22,776	23,597	25,638
384.31-83	Of man-made fibres	"	125,658	146,762	154,897
385.01-35	Wool (excluding blanketing and rug)	"	10,353	9,888	10,529
435.22	Coke—metallurgical	'000 tonnes	3,338	3,181	3,266
475.90	Concrete, ready mixed	'000m³	11,400	11,865	13,477
	Confectionery—				
104.02-18	Chocolate	tonnes	83,178	86,655	91,921
104.21-29	Other	"	57,489	63,265	61,626
452.04	Copper, refined(*c*)	'000 tonnes	172	166	165

(*a*) Excludes waste beer and beverages with alcohol content of 1.15% or less. (*b*) Excludes tyre-cord fabric and towelling. (*c*) Primary origin only. *Source*—Bureau of Mineral Resources.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
171.06, 10	Cordials and syrups	kL	140,835	130,795	(*a*)121,890
499.42	**Electricity**	mil. kWh	105,933	111,696	119,189
523.76–78	Electrodes for manual welding	tonnes	20,800	18,785	15,980
	Essences, flavouring—				
139.31	Domestic	kL	763	953	535
139.35	Industrial	"	7,199	13,910	7,062
696.01, 03, 05	**Fans**, electric (propellor type)	No.	606,114	622,127	605,922
	Floorboards—				
332.06	Australian timber	m^3	136,740	181,787	239,179
332.08	Imported timber	"	n.p.	n.p.	6,349
	Floor coverings—(*b*)				
	Tufted carpets, floor rugs, mats and matting of or predominantly of—				
386.63	Man-made fibres	'000m^2	19,746	22,030	24,050
386.71	Wool or fine animal hair	"	9,799	11,554	12,041
	Flour—				
068.01	Self-raising	tonnes	25,461	20,405	19,662
062.01, 32	Wheaten (*c*)	'000 tonnes	1,098	1,179	1,166
	Fruit juices, natural—				
074.61–69,79	Single strength	kL	201,110	214,055	317 688
074.76,77,89	Concentrated	"	30,309	n.p.	51,632
127.21	**Glucose**	tonnes	44,777	71,254	70,404
832.57	Golf clubs	'000	257,448	214,494	255,210
	Heaters, room—				
651.01, 03	Solid fuel	No.	10,722	8,307	26,600
651.11–20	Electric radiators and fires	'000	572	559	493
651.15	Gas fires and space heaters	No.	60,751	64,929	64,442
	Hosiery—				
789.53, 54, 55, 57, 59	Men's	'000 pairs	25,788	23,541	26,942
789.63, 65	Children's and infants' (excl panty hose)	"	13,200	15,282	17,328
051.56, 58, 59	**Ice cream** (*d*)	kL	208,714	201,634	205,851
051.87, 89, 90	Infants', invalids' and health beverages from cows milk (*e*)	tonnes	28,291	27,184	27,123
	Iron and steel—				
442.04, 08	Iron	'000 tonnes	4,990	5,258	5,341
442.71–73	Steel ingots (including continuous cast billets)	"	5,392	6,093	6,301
442.28	Blooms and slabs (*f*)	"	3,750	3,981	3,989
076.60	**Jams** (including conserves, jellies, etc.)	tonnes	30,700	29,110	30,393
391.04	**Lard**	"	2,109	2,339	2,573
	Lawn mowers—				
699.51	Petrol, rotary	No.	250,941	237,894	280,921
699.41, 45, 55, 61	Other types (*g*)	"	n.p.	7,523	2,821
453.04	Lead refined (*h*)	'000 tonnes	212	190	189
	Leather, dressed or finished—				
301.43–65	Chrome tanned (including retanned)	'000 m^2	3,390	3,824	3,868
	Lime—				
275.43, 45	Crushed	tonnes	341,367	419,676	416,478
479.18	Hydrated	'000 tonnes	175	165	144
479.12	Quick	"	500	516	643
802.21	Lipstick	tonnes	37	38	36
063.15	**Malt** (excluding extract)	'000 tonnes	536	481	438

(*a*) Prior to 1984–85 some manufacturers included post-mix concentrates in commodity code 171.10. (*b*) Excludes underfelts and products of coir, sisal or other hard fibres (*c*) Includes wheatmeal for baking, excludes sharps and atta and other flour. (*d*) Includes ice cream combined with other confections, including those aerated milk-based confections which contain 10% or more butterfat. (*e*) Includes malted milk and milk sugar (lactose). (*f*) Primary mills output. (*g*) Petrol cylinder, electric and hand. (*h*) Includes lead content of lead alloys from primary sources but excludes lead-silver bullion.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
	Margarine—				
121.01	Table	tonnes	104,562	108,236	105,488
121.06, 08	Other	„	47,326	45,362	37,558
844.22, 25, 27	Mattresses, inner spring	'000	664	669	711
027.02–77	Meat, canned(*a*)	tonnes	40,823	40,573	39,260
703.11	Meters (domestic), water consumption	'000	197	207	244
	Milk, condensed, concentrated and evaporated—				
051.28	Skim	tonnes	21,157	23,804	23,599
	Milk powder in powdered form—				
051.71	Full cream	„	58,932	46,662	46,091
051.75, 80	Skim	„	88,276	117,678	136,954
051.83	Buttermilk or mixed skim and buttermilk	„	8,290	10,420	9,360
503.13–32	Motors, electric (excl. automotive)	'000	2,540	2,641	2,456
	Motor vehicles, finished and partly finished—				
581.02–08, 22	Cars	No.	293,805	264,086	298,710
581.10–16, 28	Station wagons	„	69,284	66,006	66,163
582.04, 31, 06, 32	Utilities and panel vans	„	15,392	11,750	13,474
582.07, 19, 47, 48	Trucks and truck-type vehicles	„	16,270	10,747	16,325
465.16	**Nails**, steel	tonnes	16,483	17,467	17,499
	Oatmeal and rolled oats—				
062.62	For porridge, etc.	„	23,173	22,750	27,154
	Paints, etc.—				
	Architectural and decorative(*b*)—				
	Solvent thinned—				
410.01	Primers and undercoats	kL	8,778	8,708	7,059
410.03, 05, 07	Finishing coats	„	22,481	23,060	23,317
	Water thinned—				
410.11, 13, 15	Plastic latex	„	45,994	50,284	55,045
410.17	Other water based	„	4,152	3,570	3,330
	Paper—				
351.11	Newsprint	'000 tonnes	366	365	365
351.18–79	Other	„	634	727	712
352.01	Paperboard(*c*)	„	429	451	502
336.12	Particle board (resin bonded)	'000 m²	572	673	696
479.32, 33	Plaster sheets, non-acoustic	'000 m²	51,229	60,312	69,207
334.32, 34, 36, 38	Plywood, 1 mm basis	„	(*d*)61,877	75,136	76,060
	Preserves—				
	Fruit—				
076.01–50	Canned or bottled	tonnes	161,241	146,602	166,038
074.01	Pulp and puree, single strength	„	1,080	772	933
	Vegetables—				
094.02–48	Canned or bottled	„	129,610	130,080	138,160
092.02, 06, 10, 19	Quick frozen	„	183,658	197,587	202,377
	Pyjamas—				
791.75, 80	Men's and boys', woven (suits only)	'000	3,228	2,657	3,105
	Records (gramophone)(*e*)—				
647.93	Single play	"	7,783	6,618	7,905
647.94	Extended play	„	67	208	
647.95	Long play	„	17,208	15,303	16,528
657.33, 34, 35	Refrigerators, domestic, electric	„	277	265	259
403.22–94	Resins, synthetic and plastics, for moulding, extrusion, lamination, calendering, etc.	'000 tonnes	544	592	656

(*a*) Excludes poultry and baby food. (*b*) Excludes heavy duty coatings. (*c*) Excludes coated container board. (*d*) Excludes case plywood. (*e*) Conventional stereophonic discs.

QUANTITIES OF SELECTED ARTICLES PRODUCED IN MANUFACTURING ESTABLISHMENTS: AUSTRALIA—*continued*

Commodity code	*Article*	*Unit of quantity*	*1982–83*	*1983–84*	*1984–85*
123.18	**Sauce**, tomato (incl. tomato ketchup)	kL	23,347	27,608	26,588
062.04	Semolina	'000 tonnes	39	35	37
791.22, 24, 33, 35	Shirts, woven (men's, and boys') (*a*)	'000	4,548	4,843	7,153
654.41	Sink heaters, electric	No.	7,880	6,900	4,307
805.01–13	Soap, for personal toilet use (*b*)	tonnes	33,617	33,578	29,286
	Soup—				
122.13	Dry powders, granules and cubes	"	5,835	4,009	4,209
127.15	Starch (incl. cornflour)	"	161,459	142,493	170,707
	Stoves, ovens and ranges, domestic cooking—				
661.02–11	Electric (*c*)	No.	160,247	(*d*)196,739	(*d*)217,627
662.26, 31, 34	Gas, upright or elevated (with oven)	"	n.p.	106,264	115,359
102.01	Sugar, raw	'000 tonnes	3,534	3,113	3,545
405.36	Sulphate of ammonia	tonnes	196,520	228,151	231,283
415.07, 405.25	Superphosphate (*e*)	'000 tonnes	2,877	2,668	2,647
792.03–10	Swimwear (*f*)	'000	4,560	4,190	4,975
803.61	**Talcum** powder	tonnes	4,461	5,779	6,258
	Tallow (including dripping), rendered—				
391.15	Edible	"	80,714	59,525	69,267
391.24	Inedible	"	258,179	249,096	245,126
647.25–28	Television sets (colour)	No.	271,908	255,211	298,824
	Tiles, roofing—				
475.30	Concrete	'000	128,739	165,039	186,187
472.12	Terracotta	"	40,704	37,915	41,025
	Timber—				
	From native logs—				
331.01–07	Hardwood, etc.	'000 m^3	1,788	1,829	1,933
331.09–19	Softwood	"	1,196	989	1,055
661.22	Toasters, electric (domestic)	No.	526,002	374,646	319,996
094.51	Tomato juice	kL	5,598	8,348	5,935
094.53	Tomato paste and puree	"	15,846	10,206	11,394
386.35–43	Towels (*g*)	'000 m^2	7,592	7,964	8,014
671.51–59	Toilet cisterns	No.	n.p.	655,855	(*h*)610,920
683.03–11	Transformers, chokes and ballasts, for distribution of power and light, etc.	"	20,627	12,458	14,269
	Wash basins—				
671.37	Earthenware	'000	212	218	250
693.02, 04	Washing machines, household, electric	"	240	293	278
	Weatherboards—				
332.12	Australian timber	m^3	20,422	25,784	27,916
332.14	Imported timber	"	2,733	5,522	6,606
152.14	Wheatmeal for stock feed	'000 tonnes	414	286	265
519.01	Wheelbarrows (metal)	No.	172,256	155,484	141,283
	Wine, beverage—				
172.42	Fortified	kL	39,223	32,296	46,855
172.46	Unfortified	"	258,141	320,498	345,841
341.32–45	Wood pulp (air dried)	'000 tonnes	626	782	(*i*)613
383.09, 11, 12	Wool, scoured or carbonised	tonnes	79,661	86,393	(*j*)99,897
383.27–31	Wool tops, pure	"	22,198	21,238	22,508
	Yarn (including mixtures)—				
383.79–87	Cotton	"	18,884	18,505	20,333
383.89–95	Woollen	"	4,920	4,939	5,613
383.97, 99, 384.01, 03	Worsted	"	13,431	14,663	17,399
383.41–77	Synthetic (all types)	"	24,552	25,585	24,035
457.04	**Zinc**, refined (*k*)	'000 tonnes	288	300	299

(*a*) Business or formal. (*b*) Excludes powdered shampoo. (*c*) Includes wall ovens but excludes cooking tops and portable units. (*d*) Excludes grill boilers. (*e*) Includes double and triple superphosphate and ammonium phosphate expressed in terms of single superphosphate i.e. 22% P_2O_5 equivalent. (*f*) Includes swim shorts. Excludes infants' and babies' swimwear. (*g*) Towels or tea towels of cotton or terry fabrics. (*h*) Metal and plastic only. (*i*) Excludes chemical. (*j*) Excludes wool from the fellmongered, dead or waste wool. (*k*) Primary origin only includes small quantities of zinc dust.

Enterprise statistics—Integrated Economic Censuses and Surveys

The Integrated Economic Censuses and Surveys conducted by the Australian Bureau of Statistics have, since 1977–78, included enterprises primarily engaged in Mining and Manufacturing annually, with Electricity and Gas Production and Distribution collected in 1977–78 and annually from 1979–80, while other economic sectors are approached on a rotating basis. Statistics in respect of enterprises have been published in *Integrated Economic Censuses and Surveys, Enterprise Statistics: Details by Industry Class, Australia* (8103.0).

Below is a brief summary of the Censuses' collection units and methodology and a summary table of enterprise statistics. More detailed explanations on the Censuses are shown in the above publication.

The business units, as standardised for purposes of the Integrated Economic Censuses and Surveys are at three levels: the establishment (and associated administrative offices and ancillary units); the enterprise; and the enterprise group.

The central unit from which statistical information was collected is the *enterprise*, defined broadly as the unit comprising all operations in Australia of a single operating legal entity. The term legal entity is used to cover a sole proprietor, or partnership, or company, but also includes co-operative societies and some government authorities mainly engaged in the industries included in the Censuses and Surveys.

The group of legal entities owned or controlled by a single company is recognised as a separate type of unit—the *enterprise group*. The basic unit for which most data were collected and tabulated is the *establishment*, defined in general as a unit comprising all the operations carried on by the one enterprise at a single physical location—such as an individual factory, shop or mine.

In the Integrated Economic Censuses and Surveys, information was collected using a common framework of reporting units (enterprises and establishments as defined above) and data concepts and in accordance with a standard industrial classification (the *Australian Standard Industrial Classification*, 1983 Edition). As a result the statistics for the industries covered by the Censuses and Surveys are provided with no overlapping or gaps in scope, so that aggregates for economic data such as value added, employment, wages and salaries, fixed capital expenditure and stocks are obtained on a consistent basis for all industries and business units covered by the Censuses and Surveys. A detailed description of the Integration of Economic Censuses is contained in Chapter 31, *Year Book* No. 56, 1970.

ENTERPRISES—SUMMARY OF OPERATIONS BY INDUSTRY, AUSTRALIA

Industry and year	*Enterprises operating during year (a)*	*Persons employed at 30 June (b)*	*Wages and salaries (c)*	*Turnover (d)*	*Purchases and selected expenses (e)*	*Rent leasing and hiring expenses (f)*	*Stocks (g)*		*Value added (h)*	*Fixed capital expenditure less disposals (i)*
							Opening	*Closing*		
	No.	No.	$m	$m	$m	$m	$m	$m	$m	$m
Mining (excluding services to Mining)—										
1983–84	890	72,743	2,002.5	12,687.7	4,210.1	202.3	1,853.2	1,852.7	8,274.7	2,428.7
1984–85(*j*)	925	76,696	2,235.1	15,891.3	5,237.3	197.8	1,993.5	1,895.4	10,358.1	1,920.7
Manufacturing—										
1983–84	22,807	1,026,041	17,679.9	88,744.3	51,613.7	1,484.1	14,085.2	14,294.1	35,855.3	2,914.0
1984–85(*j*)	23,105	1,045,821	19,215.5	99,525.0	58,621.9	1,630.3	14,386.1	16,052.4	40,938.9	3,236.1
Electricity and Gas—										
1983–84	97	94,981	2,119.0	10,383.4	4,762.4	163.9	766.2	785.8	5,476.9	3,684.2
1984–85(*j*)	97	94,519	2,295.3	11,461.2	5,252.6	266.5	781.6	697.2	5,857.7	3,076.6

(*a*) The number of enterprises in operation for all or any part of the year which were in the scope of the censuses and surveys. (*b*) Working proprietors and employees, including part-time and casual employees as at 30 June. (*c*) Wages and salaries paid during the year to employees of the enterprise. Drawings of working proprietors are excluded. (*d*) Sales of goods, commission revenue, repair and service revenue, rent, leasing and hiring revenue, government bounties and subsidies and all other operating revenue except interest, royalties and dividends. (*e*) Purchases by the enterprise of goods for manufacture or resale, containers, stores and supplies (except office supplies) and charges for fuels, electricity and water, freight and cartage, vehicle running expenses, sales commission expenses, repair and maintenance expenses, and commission and sub-contract expenses. (*f*) Amount paid for rent and leasing premises, vehicles and equipment. (*g*) Stocks of materials, fuels, etc. work in progress and finished goods owned by the enterprise. (*h*) This is derived as turnover plus increase (less decrease) in stocks, less purchases and selected expenses, less rent, leasing and hiring expenses. (*i*) Outlay on new assets (including progress payments) and land and secondhand fixed tangible assets less disposals. (*j*) Preliminary estimates and may be subject to revision.

Foreign ownership and control in the manufacturing industry

Summary information on foreign ownership and control in the manufacturing industry is shown in Chapter 26.

INTERNAL TRADE

Estimates of the value of retail sales of goods (excluding motor vehicles parts, petrol, etc.) by industry, and quarterly estimates by commodity groups, are obtained by means of sample survey for each State and the Australian Capital Territory. Tables showing estimates derived from these surveys are given below.

VALUE OF RETAIL SALES OF GOODS (EXCLUDING MOTOR VEHICLES, PARTS, PETROL, ETC.) AT CURRENT PRICES: INDUSTRIES (*a*)

($ million)

ASIC Code	*Description*	*1983–84*	*1984–85*	*1985–86*
4881	Grocers, confectioners, tobacconists	13,840.5	14,852.7	16,585.7
4882	Butchers	1,517.8	1,550.5	1,814.0
4815	General stores	475.0	470.9	498.4
4883,5,6	Other food stores	2,716.0	2,910.1	3,301.7
4884; 9232; 9241,2,3	Hotels, liquor stores, licensed clubs	5,159.6	5,487.6	6,068.5
4843,4,7	Clothiers	4,050.1	4,363.0	4,964.1
4814	Department stores	4,767.6	5,438.8	5,934.1
4845	Footwear stores	751.7	806.2	883.5
4853,4	Hardware stores	1,174.1	1,188.7	1,367.7
4855,6	Electrical goods stores	2,698.4	2,705.2	2,861.8
4849	Furniture stores	1,113.3	1,215.2	1,460.0
4848	Floor coverings stores	449.0	522.4	572.4
4891	Chemists	1,779.4	1,854.4	2,052.2
4894	Newsagents	1,545.0	1,728.1	1,798.5
4892,3,5,6,7; 9231; 9251,2	Other	1,799.6	1,960.3	2,382.3
	Total (*b*)	**43,836.7**	**47,054.1**	**52,544.1**

(*a*) Excludes ASIC groups 486 (Motor vehicle dealers; petrol and tyre retailers) and 934 (Laundries and dry-cleaners) and ASIC classes 4846 (Shoe repairers), 4857 (Electrical appliance repairers), 9133 (Motion picture threatres), and 9233 (Accommodation) which were included in the census of Retail Establishments and Selected Services Establishments for 1979–80. Excludes Northern Territory. (*b*) A small difference between this figure and that for the total value of retail sales shown in the table below occurs due to some businesses having access to more up-to-date records when supplying the data for commodities.

VALUE OF RETAIL SALES OF GOODS (EXCLUDING MOTOR VEHICLES, PARTS, PETROL, ETC.) AT CURRENT AND CONSTANT PRICES: COMMODITY GROUPS (*a*)

($ million)

	Current prices			*Average 1979–80 Prices*		
Commodity group	*1983–84*	*1984–85*	*1985–86*	*1983–84*	*1984–85*	*1985–86*
Groceries (*b*)	9,851.6	10,554.0	11,912.6	6,857.8	7,004.2	7,336.3
Fresh meat	2,369.9	2,385.9	2,716.1	2,007.2	1,922.0	2,140.2
Other food (*c*)	4,273.5	4,717.3	5,289.8	2,777.7	2,946.1	3,032.1
Beer, wine and spirits	5,499.7	5,883.0	6,435.0	3,832.2	3,804.8	3,860.9
Clothing and drapery	6,019.5	6,416.4	7,107.8	4,665.3	4,706.9	4,790.2
Footwear	1,025.2	1,121.8	1,244.4	764.0	784.0	807.0
Hardware, china and glassware (*d*)	2,011.7	2,144.1	2,339.9	1,409.6	1,437.9	1,455.0
Electrical goods (*e*)	3,296.5	3,452.5	3,659.4	2,987.5	3,214.7	3,289.2
Furniture	1,386.2	1,529.4	1,798.0	945.7	988.6	1,064.1
Floorcoverings	552.4	608.9	673.8	418.2	439.0	430.0
Cosmetics	1,057.9	1,177.4	1,353.3	697.1	720.0	764.9
Medicines etc.	1,061.9	1,107.2	1,201.9	775.6	772.3	789.8
Newspapers, books and stationery	1,796.4	2,037.7	2,233.3	1,113.6	1,182.1	1,168.7
Other goods (*f*)	3,593.8	3,892.4	4,554.0	2,588.0	2,692.1	2,896.8
Total (excluding motor vehicles, etc.)	**43,796.1**	**47,028.0**	**52,519.5**	**31,839.6**	**32,614.7**	**33,825.2**

(*a*) Excludes Northern Territory. (*b*) Includes confectionery, milk (except home deliveries by vendors) and frozen foods. (*c*) Includes fresh fruit and vegetables, bread (except home deliveries by vendors), cakes and pastries (except frozen), seafoods (fresh and cooked), hamburgers, cooked chicken, sandwiches, pizzas (except frozen), Chinese food, ice cream and soft drink. (*d*) Excludes basic building materials, builders' hardware and supplies such as tools of trade, paint, etc. (*e*) Includes radios, television and accessories, musical instruments, domestic refrigerators, etc. (*f*) Includes tobacco, cigarettes, etc., sporting goods, etc., but excludes grain and produce and business machines.

DEVELOPMENT OF MANUFACTURING INDUSTRIES IN AUSTRALIA

(This special article has been contributed by the Bureau of Industry Economics)

1788–1820: the first years of settlement

In the early years of Australia's settlement, there was little scope for industrial or commercial enterprises. The government, as both main producer and main consumer, established workshops in order to produce the basic necessities of life in a small, isolated community—flour, salt, bread, candles, leather and leather articles, blacksmith's products, tools and domestic items.

With agriculture languishing and commerce in its infancy, private ventures prospered little. The volume of domestic demand was too small to serve as a firm basis for economic development and, generally, was met by imports.

The lack of skilled labour and the small number of free settlers limited severely both the availability of investment funds and business skills generally.

1820–1850: the pastoral age

In the years between 1820 and 1850 the pastoral industry exerted a dynamic influence on economic expansion and by 1850 was supplying well over 50 per cent of the British market for imported wool.

The growth of the wool industry brought great advances in the rest of the economy. Local manufacturing industries were established in response to new market opportunities, though production was geared to the growing agricultural output and, also, was limited to products which were naturally protected from imports.

During the 1840s a severe and protracted depression in the pastoral industry and in the economy as a whole seriously interrupted Australia's economic expansion. Changes in economic conditions in Britain resulted in falls in export prices and reduced capital inflow to Australia. The rate of increase in the production of wool slackened and at the same time the population increase declined.

Despite the depression of the pastoral industry in the 1840s, New South Wales experienced strong industrial growth between 1820 and 1850, arising from a number of factors. These included the rapidly-growing population, which rose from under 13,000 in 1815 to over 180,000 by 1851, greater diversity and level of skills with the influx of free settlers, and the outward spread of settlement. In turn these led to substantial increases in the demand for food and drink, transport equipment, construction materials and other implements.

In other colonies manufacturing developed as circumstances permitted. In Tasmania an emphasis on processing primary produce, a limited local market, a shortage and higher cost of skilled labour and the more immediate rewards from sheep farming and commerce combined to slow the pace of industrial development. Flour milling, ship building and metal working activities were established nevertheless.

Despite its smaller population, industry developed further in South Australia than in Victoria, which was showing few signs of specialisation at this time. Flour milling, metal smelting, brewing and tanning were established in South Australia, and some success was also achieved in the design and manufacture of agricultural equipment. Neither Western Australia nor Queensland experienced any significant industrial activity during this period.

The 1850s: implications of the gold rush for manufacturing

Gold worth $125 million was mined between 1851 and 1861, surpassing wool as the great export earner—a position it maintained until the 1870s. Banking and commerce expanded rapidly as gold became the nation's currency; financing improved shipping facilities, railways, telegraphs and other amenities. The demand for goods and the clamour for swift passage for eager migrants brought new prosperity to British and American shipyards and revived allied and local trades. For their role in stimulating confidence and activity in a depressed era, the gold fields have been described as 'huge public works'.

1860–1900: economic growth leading to structural imbalance and the depression of the 1890s

In the years between 1860 and 1900 Australian economic growth was rapid and generally well-sustained.

In Victoria, where the gold rush had led to an annual population growth of 19 per cent between 1851 and 1860, there was a rapid increase in factory activity. The building industry was thriving and an increasing demand for gold-mining equipment boosted Victoria's metal working trade. Government incentives encouraged new activities, speculative finance became more available and there was an increase in public works; all were instrumental in fostering industrial growth in the colony.

A protective tariff system against overseas imports was first introduced in Victoria in 1867 in order to encourage the manufacturing industry, as surplus labour became available after the gold rush. In 1871 and again in 1877 there were substantial increases in the tariff, the revenue raised being used primarily to finance public works expenditure.

In New South Wales industry grew at a steady pace and by 1877–78 factory workforce structures in New South Wales and Victoria were similar. Clothing and footwear, metals, engineering and transport, and the food, drink and tobacco industries were major employers in both colonies.

Tasmania and South Australia both experienced long-run declines in manufacturing between 1860 and 1890, but in Queensland and Western Australia the opposite was the case.

Overall, manufacturing demonstrated long-run growth during this period with factory employment increasing from 11,000 in 1851 to 149,000 in 1891 and output increasing from 4.9 per cent of total Gross National Product (GNP) in 1861 to 10.9 per cent in 1890. It was then in fourth place behind services, pastoral activities and construction.

Public companies were establishing multiple branches, industrial activity was spreading to non-metropolitan areas and overseas investors were sharing an interest in activities such as timber milling and meat processing. As well, governments were increasing their own efforts, organising and subsidising the processing industry in recognition of the importance of trade.

Increasing activity in public works, especially government railway construction, played an important role in encouraging expansion in manufacturing during the 1870s. In the second half of the 1880s, capital inflow increased dramatically with overseas loans from Britain underpinning the construction of the railways. In 1890 the Baring crisis prompted Britain to reassess her overseas investments, and in November of that year there was an abrupt halt to the growth in capital inflow which in turn brought railway construction to an unexpected halt.

The process of economic change between 1860 and 1890 left industry's share of total investment unchanged. Manufacturing enterprises remained essentially small-scale, labour intensive and utilising only the simplest technology. Investment in railway building, the pastoral industry, and construction, all of which were funded primarily from overseas sources, ceased with the onset of the depression of the 1890s. The affluence of the previous decades was at an end.

1901–1930: from Federation to Depression

Though the economy recovered rapidly from the depression of the 1890s, the rate of growth for Gross Domestic Product (GDP) in the first thirty years of Federation was significantly lower than it was during the previous thirty years.

Between 1901 and 1930 there were major changes in the industry environment. By eliminating customs barriers between the States, Federation encouraged trade and assisted the further expansion of industry. Though total manufacturing employment had increased from 190,000 in 1903 to 328,000 by 1913, the sector was still relatively small. In 1911 it contributed only 13 per cent of GDP, behind services (55%) and the rural sector (19.9%) and had a limited heavy industry base. Its growth had been supported by tariffs—the Lyne Tariff of 1908 established protection as part of Federal Policy.

The development of Australian manufacturing industry received some further impetus from increases in customs duties in 1911 and 1914, and then grew more strongly in the environment of World War I.

The opening of the steel works at Newcastle during World War I allowed the growth and diversification of basic metal-working industries. However, the shortage of essential capital equipment limited expansion to a narrow range of industrial products.

The years following World War I saw the manufacturing industry expand in an atmosphere of expansionary fiscal policy, high prices for wool and wheat, and with a population which increased from four to six million between 1910 and 1930.

The growth of the manufacturing industry held a promise of employment for a rapidly growing population. In addition, if Australia was to achieve a high degree of self-sufficiency then the existing industrial base needed to be broadened, and the tariff was seen as an important instrument in the achievement of this aim. In 1921, in an endeavor to assist the development of existing and new industries, protection was increased under the Greene Tariff. In the same year, the Tariff Board was established to advise the government on Tariff matters. Protection policy received further attention with the establishment of the Brigden Committee in 1927—set up to conduct an economic inquiry into the tariff. Both bodies recommended that futher protection be given only after the most careful consideration. Despite the warning implicit in the recommendation, protection was increased substantially over the decade in order to assist industry development in the face of growing unemployment and external payment difficulties—problems destined to increase during the Depression.

By 1929, 440,000 people were employed in manufacturing—34 per cent above the 1913 level. Until that time more than 60 per cent of manufacturing employment was concentrated in metals and machinery, processed foods, and clothing and textiles, with the latter leading the field in terms of size. However, within manufacturing, average employment was declining steadily in clothing and textiles and rising in metals and machinery and by 1928–29, this latter group had become a major contributor to both the employment and production of the manufacturing sector.

Within the metals and machinery sector, production of motor vehicles and associated activities accelerated during this period, in response to the expanding demand for consumer durables which characterised the 1920s. Holden's Motor Body Builders were well established, the Ford Motor Company opened a large motor body assembly plant at Geelong in 1925, while General Motors commenced operations in Adelaide the following year.

In summary, the increased activity of this period saw Australia's productive capacity significantly broadened under the stimulus of wartime shortages and subsequent tariff protection. But despite the great expansion of output and employment, many of the new industries were able to satisfy only a small proportion of domestic demand.

1930–1945: Depression to War's end

The Depression of the 1930s had its origins overseas although the structural weaknesses of the Australian economy made some contribution. Manufacturing growth in Australia was severely checked in the early years of the decade despite large and widespread increases in ordinary tariff rates in 1930 (the Scullin Tariff).

Though the sector's share of total employment had fallen from 22 per cent in 1920–21 to 18 per cent in 1930–31, manufacturing led the recovery in total employment, accounting for 25 per cent by the start of World War II. Domestic demand continued to grow. Skill levels of the labour force were increasing and overseas enterprises were bringing in new capital. Just as important were the new and sophisticated techniques being introduced, which included the processing of cement and rubber. In 1939 major industries included iron and steel, non-ferrous metals, machinery and engineering, electronic and electrical equipment, motor vehicle assembly and parts, food processing, textiles and clothing, wood products, and printing and publishing.

Some of the pre-1930 trends were continued in the following decade. Industrial metals, machines and conveyances continued to increase their share of manufacturing employment (32%) and value added (32.5%), whilst clothing, food, drink and tobacco continued to decline. By 1938–39 the manufacturing sector's contribution to GDP had reached 19 per cent, a level almost equal to the rural sector's 20 per cent.

When World War II broke out in 1939 the Australian manufacturing sector was sufficiently developed and diversified to respond to the demand for war materials and equipment. Industrialisation proceeded apace as Australia switched her resources to wartime manufacturing production. Key industries expanded and new ones developed rapidly to produce munitions, ships, aircraft, new kinds of equipment and machinery, chemicals, textiles and so on. By 1940–41 manufacturing's share of employment, at 25 per cent, had overtaken the rural sector's share and, combined with the efflux of men and women from the labour force to the armed services, contributed to a sharp fall in unemployment. The resultant acquisition of new skills and development of new strategies and techniques, with subsequent diversification of scientific and technical knowledge, established a firm basis for the growth of the post-war era.

1945–1968: post-war years of prosperity

After World War II Australia entered an era of sustained expansion, with all sectors experiencing growth. Large-scale immigration, increasing availability of raw materials after wartime shortages, technical and scientific progress, and capital inflow all contributed to growth.

Government intervention in the working of the economy became more pronounced, with macro stabilisation policies targeting specific goals such as full employment, growth and economic development. In addition, influence was brought to bear on the location of industries through government regional development policies. After 1945 it was agreed that State governments should promote decentralisation by offering incentives to certain industries, while the Commonwealth further assisted decentralisation through its allocation of defence activities and by encouraging migrants and overseas firms to establish themselves in provincial areas.

With the manufacturing sector seen as a vital element in this process of national development and growth, the protection of the pre-war tariff was continued, and the import licensing restrictions and controls retained until 1960 (apart from a short break after the Korean War wool boom). These measures undoubtedly allowed the domestic manufacturing sector to capture an increased share of the domestic market, reap economies of scale, and improve productivity to more internationally competitive levels.

In this environment, the manufacturing sector made the transition to peacetime activities without undue difficulty, but it was not until the early 1950s that labour and material shortages began to subside, and bottlenecks disappear. Larger-scale immigration, private capital investment and government works, particularly in infrastructure, set the tone for the remainder of the era and allowed rapid expansion. By 1960, manufacturing's share of GDP and employment had reached historic highs, and Australia's industrial base could claim to have reached maturity.

In this period, significant structural change occurred within the manufacturing sector itself. In the traditional, more labour intensive industries such as food, clothing, sawmilling and wood products, the relative share of employment and production declined whilst the more capital intensive groups such as chemicals, electrical goods and industrial metals, machines, and conveyances steadily increased their shares. The growth of these industries was tied to their increasing comparative advantage within the sector, and to the expansion of the domestic market due to rising incomes, high rates of population increase and the unsatisfied demands of the previous era for consumer goods.

The developing maturity of the motor vehicle industry created further demands for steel, glass, plastics and rubber. By 1960, the first indigenous vehicles had been produced and one person in sixteen in the workforce was employed in the manufacture, distribution or servicing sector of this industry.

The petroleum refining industry also grew to prominence in the 1950s to service the needs of both motorists and industry. In the 1960s, new petrochemical complexes using advanced technology were built to transform the by-products of the oil refining process to a variety of petrochemicals and synthetic materials. This basic chemicals industry allowed domestic production of inputs for the further development of the plastics, synthetic fibres and rubber industries and the chemicals, fertilizer, paint, adhesives and sealant industries. Demand for other consumer and producer goods arising in these years provided a challenge for the development of our electronics industries.

The structural changes which occurred during this time were extensive but, when Australia's manufacturing performance is compared with that of other developed countries over a similar time frame, Australia's record was not so impressive, particularly in the 1960s. By this time, the rapid growth afforded by the domestic market in the 1950s had ended, and, although manufacturing exports did increase, the rate of growth was small and compared poorly with other developed countries.

1968–1979: years of contrast

The era of the 1970s saw a sharp transformation in the world economic environment, from the relative stability and high growth of the post-war period to the inflation and low growth which followed the oil price shocks of the 1970s.

The onset of the oil price rises in 1973–74 led the world into recession and added greatly

to inflation, with similar effects on most OECD countries—slower growth of GDPs, employment and trade. This combination of slow growth and inflation became known as stagflation, and affected all sectors of the Australian economy.

GROSS DOMESTIC PRODUCT AND EMPLOYMENT, BY SECTOR: AUSTRALIA

	Proportion of total GDP at factor cost (a) attributable to each sector				*Proportion of employment in each sector*			
Year	*Rural*	*Mining*	*Manufacturing*	*Services*	*Rural*	*Mining*	*Manufacturing*	*Services*
1900-01	19	10	12	59	n.a	n.a	n.a	n.a
1910-11	26	6	13	55	25	6	21	48
1920-21	28	3	13	56	24	3	22	51
1930-31	21	2	16	61	26	2	18	54
1940-41	(*b*) 20	(*b*) 3	(*b*) 19	(*b*) 58	19	2	25	54
1950-51	31	2	23	44	14	2	29	55
1955-56	16	2	28	54	13	2	28	57
1960-61	13	2	29	56	11	1	28	60
1965-66	10	2	27	61	9	1	26	63
1970-71	7	4	25	64	7	2	25	66
1972-73	8	4	24	64	7	1	24	68
1974-75	6	4	22	68	7	1	22	70
1976-77	5	4	21	70	7	1	21	71
1978-79	7	4	19	70	7	1	20	72
1980-81	6	4	20	70	7	1	20	72
1982-83	4	5	18	73	7	2	18	73
1983-84	5	5	18	72	6	2	18	74
1984-85	5	5	18	72	6	1	18	75

(*a*) At current prices. (*b*) 1938–39.
Source: Industries Assistance Commission, *Structural Change in Australia*, AGPS, Canberra, 1977.

What little employment growth there was in this period was dominated by the service sector. While levels of employment changed little in the mining sector, both the manufacturing and the rural sectors experienced substantial declines in employment levels between 1973 and 1980 (by 80,000 and 15,000 respectively). Manufacturing, as the hardest hit sector, saw its sectoral share of total employment fall from 25 per cent in 1970 to slightly less than 20 per cent in 1980, against a background of depressed growth in other sectors.

A number of changes occurred to reduce the competitiveness of local industry in the early 1970s. First, the world wide disturbances in exchange rates following the collapse of the Bretton Woods agreement, increases in oil and other commodity prices, and increasing competition from the newly-industrialised countries in Asia served to undermine Australia's existing comparative advantages. Second, domestic developments such as the move toward equal pay for women, sharp rises in real wage costs generally and tariff cuts compounded the problem, causing a squeeze of rapidly escalating costs and intensified import competition.

Quantitative import restrictions were imposed on those labour intensive goods where domestic employment levels were being severely affected and where overseas competition was rapidly undercutting domestic producers in terms of costs. These were predominantly the textiles, clothing, footwear, automotive and whitegoods industries.

Initially instituted as temporary measures to facilitate adaptation, import quotas were increasingly seen as indispensable to the survival of some local industries. They served to offset to some degree the overall decline in levels of assistance—estimated average effective rates of assistance to manufacturing fell from 36 per cent to 26 per cent in the years between 1968 and 1979, largely as a result of the 25 per cent general tariff cut of July 1973. More importantly, the quota restrictions undermined the reductions in dispersion of assistance across the sector which had been achieved by tariff reductions.

In addition to specific protective policies, the Government instituted an exchange rate devaluation in 1976 which helped to restore competitiveness to the manufacturing sector, but subsequent erosion due to inflation differentials, and reluctance to initiate further devaluation in order to 'fight inflation first', reduced the benefits to industry as the decade wore on.

In the late 1970s expectations of a 'resources boom' gained momentum, partly fuelled by the sustained high prices of energy (such as oil and coal). Investment attention thus swung to the mining sector, reducing the ability of the manufacturing sector to rationalise and make adjustments for a changed world economic environment.

1980–1986: declining terms of trade

Despite significant rationalisation, the manufacturing industry has responded to economic recovery more slowly than other sectors. Its shares of total GDP and employment declined further in the early 1980s, with both falling to 18 per cent in 1983. In 1983–84 the food, beverages and tobacco industry held the largest share of manufacturing output (22%) followed by transport equipment (10%). In 1983–84 the greatest share of manufacturing employment was in food, beverages and tobacco (17%), followed by other machinery and equipment (13%). The textiles, clothing and footwear industry held the smallest share of manufacturing output and employment at this time with 7 per cent and 10 per cent respectively.

Industries based on Australia's natural resources which are capital or skill-intensive, or based on new technology, have continued to experience relatively healthy growth. In the period 1978–79 to 1983–84 the paper, paper products, printing and publishing industry experienced the highest trend annual growth followed by chemical, petroleum and coal products.

Poor prices and market prospects for Australia's traditional exports of agricultural commodities and minerals together with a high level of imports saw a growing current account deficit in the mid-1980s. The need to restructure Australia's export profile if the balance of payments is not to be a continuing constraint on economic growth and, hence, rising living standards, is increasingly clear and acknowledged by most of the community. Australia needs to shift economic resources into the traded goods and services sector. Substantial depreciations of the Australian dollar in 1985 and 1986 provided an important opportunity to boost manufacturing. However, import substitution has been slow, partly due to the erosion of the manufacturing base over the last one and a half decades, and the non-competitive nature of many of Australia's imports. While there have been some signs of exports increasing in response to the devaluation, further large increases in this area will require considerable investment in plant and equipment.

Neither industry nor government expect the increased price competitiveness that has stemmed from the depreciation to be effective, on its own, in bringing about a revitalised manufacturing sector. Approaches and policies which emphasise non-price factors such as quality and marketing are now in evidence and will play an important role.

Recognition of Australia's changing circumstances and the imperative of restructuring the economy has changed industry policy from its former defensive role of reliance on protection against imports to a more positive, catalytic role in renewing the sector. Today's policies seek to deal with root causes of lack of competitiveness (such as outdated technology) rather than its symptom (loss of market share). This is reflected by positive assistance measures such as information and marketing services, programs sponsoring private research and development, and corporate taxation reform.

Towards 2000: the prospect for manufacturing

The future of manufacturing will be determined by a host of factors, many of them inter-related. Government policy will continue to play a significant influence, both in the creation of the economic environment in which business operates, and in specific industry policies. There is large public sector involvement in important economic spheres such as transport, energy, communications and education, and the future of Australian manufacturing will very much depend on the efficient and effective delivery of these services. The extent to which industry adapts to the rapidly changing technological environment, and its ability to recognise and respond to the exigencies of both domestic and international markets, will determine its capacity to achieve international competitiveness.

Industrialisation of Asian countries and the prospect that they will become highly competitive suppliers of an increasing range of goods, implies that a much higher proportion of Australian manufactured products will come under challenge. However, with its large population and rising income, Asia should generate increased demand for Australian products which are internationally competitive.

The availability of capital to finance greater investment will also be important to the growth of the manufacturing industry. The recent deregulation of capital markets, in tandem with government-sponsored venture capital schemes, is expected to diversify the range of finance available for potentially profitable investments.

The Australian manufacturing sector will continue to face pressures for change. Its ability to respond to these pressures will determine its future contribution to economic growth.

BIBLIOGRAPHY

ABS Publications

Integration of Economic Statistics: The Conceptual and Operational Framework (1113.0)
Australian National Accounts: Concepts, Sources and Methods (5216.0)—Chapter 4 'Estimates at Constant Prices'
Retail Sales of Goods (Excluding Motor Vehicles, Parts, Petrol, etc.), Australia (8501.0 and 8503.0)
Census of Retail Establishments and Selected Service Establishments: Details of Operations by Industry Class, Australia (8622.0)
Census of Retail Establishments and Selected Service Establishments: Hotels and Accommodation Establishments, Australia (8624.0)
Census of Retail Establishments and Selected Service Establishments: Commodity Sales and Service Takings, Australia (8625.0)
Census of Retail Establishments and Selected Service Establishments: Industry and Commodity Details by Size of Establishments, Australia (8626.0)
Census of Retail Establishments and Selected Service Establishments: Industry Concentration Statistics, Australia (8627.0)
Wholesale Establishments: Details of Operations by Industry Class, Australia (8638.0)