

INQUIRIES

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PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRY
FEBRUARY 1977

SUMMARY OF MOVEMENTS

Prices of the materials included in this index are affected by many different influences and a significant proportion (particularly in the *Food, live animals and tobacco* and *Crude materials* commodity groups) fluctuate considerably in price. Current movements in the index, even at the all groups level, do not therefore necessarily indicate changes in trend.

Between January 1977 and February 1977 the *All groups* index rose by 2.5%, *Imported materials* rose by 3.3% and *Home produced materials* rose by 2.0%.

The increase in *Imported materials* was caused mainly by increased prices for crude petroleum and agricultural products (coffee and cocoa beans, tobacco, rubber). The increase in *Home produced materials* was mainly caused by increased prices for lambs, sheep, milk, electricity and some metallic concentrates.

	Percentage change between —		
	Jan. 1977 and Feb. 1977	Three months ended Nov. 1976 and three months ended Feb. 1977	Feb. 1976 and Feb. 1977
All groups	+2.5	+5.8	+16.4
Imported materials	+3.3	+11.9	+19.8
Home produced materials	+2.0	+2.7	+14.6
Commodity groupings —			
Manufactured materials (imported) —			
Chemicals	+0.8	+8.8	+9.6
Metal manufactures, components for machinery and transport equipment	+1.4	+13.1	+21.3
Other manufactured materials	+1.2	+8.6	+15.7
Other materials (imported and home produced) —			
Food, live animals and tobacco	+2.0	+0.8	+15.1
Crude materials (excl. fuels)	+2.5	+9.0	+22.9
Electricity, gas and fuels	+4.3	+8.3	+13.3

EXPLANATORY NOTES

Introduction

This bulletin contains index numbers of the Price Index of Materials Used in Manufacturing Industry. Index series in this bulletin relate to the years 1968-69 to 1975-76 and the months from January 1976 to February 1977.

2. It should be appreciated that while the index contained in this bulletin relates to an important input (namely materials and fuels), affecting the costs of manufacturing output it does not reflect changes in other important costs such as labour and capital inputs to manufacturing, and taxes incurred during manufacturing.

Scope and composition

3. The composition of the index presented in this publication is based on materials used by establishments classified to Division C, Manufacturing, of the Australian Standard Industrial Classification (ASIC). The index is on a *net basis*; that is, it relates in concept only to those materials which are used by establishments within the Manufacturing Division in Australia and which have been produced by establishments outside that Division. Such outside establishments are either Australian establishments classified to other Divisions of Australian industry (e.g. Mining or Agriculture) or are overseas establishments (including overseas manufacturing establishments).

4. Materials purchased by establishments classified to the Australian Manufacturing Division from other establishments in that Division are outside the scope of the index and are excluded, but the same materials when purchased from overseas are included. Thus, for example, prices of Australian produced cotton fabric (a product of establishments classified to the Manufacturing Division) are excluded from the index whereas prices of imported cotton fabric are included. It follows that the weight attributed to cotton fabric in the index only relates to cotton fabric of imported origin. A material which undergoes transformation at a number of stages during manufacturing will, at each stage, be an input to particular manufacturing industries. However, in keeping with the scope and *net basis* of this index, the material is only priced at the stage it first enters manufacturing. An example is the usage of copper concentrates. Prices of copper concentrates are reflected in the index; however, prices of copper ingots used in the manufacture of copper pipes, or of copper pipes used in the manufacture of plumbing items, are not included in the index. In other words, the pricing and weights for the index reflect *usage of materials at the point of entry to the Manufacturing Division*.

Method of calculation

5. The index is a *fixed weights index* and is calculated by the method known as the *weighted arithmetic mean of price relatives*.

Derivation of items and weights

6. The items included in the index were selected on the basis of values of materials used, in 1971-72, by establishments classified to the Manufacturing Division of ASIC. Only materials originating from outside the Manufacturing Division (that is, materials which are *net inputs* to manufacturing) were selected. The selection was made from data reported in the 1971-72 Census of Manufacturing Establishments, and in 1971-72 import statistics.

7. The selected items were allocated weights in accordance with estimated manufacturing usage in the year 1971-72. Many of the selected items carry not only the weight of directly priced materials but also the weight of unpriced materials whose prices are considered to move similarly to those of directly priced materials.

Weighting patterns and classifications

8. The selected items have been combined into broad *index groups* using two different classifications. Index numbers are published in this bulletin for each of the groups derived in this way. The classifications used for this purpose are:

- Australian Standard Industrial Classification (ASIC)
- Standard International Trade Classification (SITC)

9. The percentage contributions for each of the index items, groups and categories are based on estimated usage in 1971-72, valued at the relevant prices applying in the *reference base year 1968-69*. For details of the actual percentage contributions (as at the reference base year) applicable to this index, users should refer to Appendixes 1 and 2 to the April 1975 issue of this publication, or to the Supplement to this series.

10. Index numbers for index groups based on ASIC are presented in Table 2. In effect, Table 2 presents index numbers on an *industry of origin basis* and in addition makes the distinction between home produced materials and imported materials. It should be noted that "industry of origin" in some instances may not be identical with the industry from which manufacturers *directly* purchase their materials. For instance, some manufacturers purchase natural gas from establishments classified to ASIC Division B (Mining) while other manufacturers purchase this item from establishments classified to ASIC Division D (Electricity, Gas and Water).

11. Index numbers for index groups based on SITC are presented in Table 3. This is a *commodity-based* classification.

12. Measurement of price change in this field is particularly subject to index number problems arising from the combination of disparate price movements with marked changes in the relative importance of some items. The effect of these on the continuing representativeness of the measures will be greatest for some of the groupings into which the All groups index is disaggregated. This has been particularly so in the case of the commodity group "Electricity, gas and fuels" where marked changes in usage of items have occurred together with extremely disparate price movements such as the significant decreases in the price of gas associated with the increasing usage of natural gas and the significant increases in prices of imported crude petroleum since late 1973.

Prices

13. Prices incorporated in the index are reported to ABS each month, usually on mailed questionnaires. Prices of home-produced items are generally obtained from principal users (that is manufacturers) but in some

cases from major suppliers (producers or wholesalers). Prices of imported items are obtained from suppliers (importers) and users (manufacturers).

14. In concept, pricing for the index is at the point at which the materials physically enter the manufacturing sector. Therefore, as far as possible, prices are on a *delivered into store* basis.

15. Price series relate to *goods of fixed specifications* with the aim of incorporating in the index price changes for representative materials of *constant quality*.

16. Prices collected are mainly *monthly average prices* rather than prices relating to the mid-point of the month. This is because there is a high frequency of price change for many of the materials included in the index, and prices as at one point of time within a month are not always representative of average prices for the month.

17. Price series for electricity and gas are based on the average realised cost per unit of actual monthly sales to "industrial" users by selected major suppliers and are therefore subject to fluctuations due to changing usage patterns.

18. In general, prices recorded in the index for a given month refer to materials delivered to manufacturers in that month.

Prices of transferred goods

19. Transfers which do not take place on the open market present problems in the measurement of price change. An example is where a vertically-integrated enterprise extracts a mineral (mining activity) and also processes it (manufacturing activity). Since the material is transferred from one part of the enterprise to another there is usually no transaction price. In such instances various methods of imputing movements in market prices have been adopted. Depending on circumstances and the availability of data, these methods include using movements in *opportunity cost* (based, for example, on the price of the material in an established market) or movements in cost (based on expenses actually incurred in obtaining the material). Imputations of this kind enter partly into price series for goods such as iron ore, bauxite, nickel and coal.

Seasonal items

20. In the case of seasonally produced items such as fruit and vegetables where deliveries do not occur over the whole year, the previous season's prices are in general repeated for the months outside the selling season until the subsequent season's prices become operative.

21. For many seasonal items, and items with prices determined on an annual basis, the final prices are sometimes not known until during or after the relevant season or year, and sometimes not for many months after the close of the season or year. Incorporation of such final prices may involve revisions to index numbers

for the Agriculture and Mining groups of the Home produced category (Table 2) and the Food, live animals and tobacco and Crude materials (excl. fuels) groups (Table 3).

Index numbers

22. The index has been compiled for each month from July 1968 and for financial years from 1968-69 on the reference base year 1968-69. Index numbers for financial years are simple averages of the relevant monthly index numbers.

23. All index numbers for the current month and the previous month are preliminary and subject to revision. Figures for earlier months are generally not revised for changes which have a minor effect at the All groups level.

Percentage changes

24. Table 1 shows percentage changes for index groups based on SITC, and for the "Imported" and "Home produced" categories.

25. The following example illustrates the method of calculating percentage changes:

All groups -

Index number as at Feb. 1977 187.5 (see Table 2)

Index number as at Jan. 1977 182.9 (see Table 2)

Percentage change = $\frac{187.5 - 182.9}{182.9} \times 100 = +2.5\%$

Related publications

26. Users may also wish to refer to the following price index publications which are available on request:

- *Price Indexes of Articles Produced by Manufacturing Industry* (Reference No. 9.14)
- *Price Index of Materials Used in Building Other than House Building* (Reference No. 9.6)
- *Price Index of Materials Used in House Building* (Reference No. 9.9)
- *Price Index of Electrical Installation Materials* (Reference No. 9.5)
- *Price Indexes of Metallic Materials* (Reference No. 9.10)

27. Other ABS publications which may be of interest include:

- *Wage Rates Indexes, Preliminary* (Reference No. 6.37)
- *Wage Rates and Earnings* (Reference No. 6.16)
- *Average Weekly Earnings* (Reference No. 6.18)
- *Publications of the Australian Bureau of Statistics* (Reference No. 1.8)

Symbols used

- p - preliminary, subject to revision
- r - revised

TABLE 1. PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRY (a)
PERCENTAGE CHANGES

Value weight (%) (d)	Manufactured materials (imported) (b)			Other materials (imported and home produced) (c)					
	Chemicals 6.67%	Metal manufactures, components for transport equipment and machinery 5.21%	Other manufactured materials (b) 5.76%	Food, live animals and tobacco 45.87%	Crude materials (excl. fuels) 20.66%	Electricity, gas and fuels 15.83%	All groups 100%	Total imported materials 27.16%	Total home produced materials 72.84%
	%	%	%	%	%	%	%	%	%
Percentage change from previous year -									
1973-74	+ 5.4	- 0.6	+ 8.7	+18.7	+21.3	+27.3	+18.3	+20.8	+17.4
1974-75	+47.4	+25.4	+29.5	- 9.3	+ 6.1	+42.2	+ 7.7	+42.8	- 4.4
1975-76	+ 5.3	+20.8	+ 7.9	+ 0.1	+ 8.9	+27.6	+ 9.2	+11.8	+ 7.8
Percentage change from previous month -									
1975-76									
January	+ 3.5	+ 5.0	+ 0.1	+ 2.0	+ 0.9	+ 1.2	+ 1.8	+ 1.7	+ 1.8
February	+ 0.5	+ 0.8	..	- 0.4	+ 1.2	+ 0.4	+ 0.2	+ 0.4	+ 0.1
March	- 0.3	+ 0.4	+ 0.9	- 0.4	+ 1.8	- 0.1	+ 0.2	+ 0.5	+ 0.1
April	+ 0.1	+ 0.4	+ 0.7	- 1.9	+ 3.1	+ 0.3	+ 0.1	+ 0.8	- 0.3
May	..	+ 0.9	+ 0.4	+ 1.2	+ 2.6	+ 0.3	+ 1.2	+ 0.5	+ 1.5
June	+ 0.6	+ 0.8	+ 0.4	+ 4.0	+ 1.7	+ 0.5	+ 2.1	+ 0.8	+ 2.8
1976-77									
July	..	+ 1.2	+ 0.7	+ 3.1	+ 3.0	+ 0.1	+ 2.0	..	+ 3.1
August	+ 0.7	+ 0.2	+ 0.5	+ 5.6	- 1.1	- 0.5	+ 1.9	+ 0.6	+ 2.5
September	- 0.5	+ 1.1	+ 0.2	+ 1.8	- 1.4	- 0.1	+ 0.4	+ 0.3	+ 0.5
October	- 0.3	- 1.1	+ 0.5	- 1.0	+ 1.5	+ 0.6	..	+ 0.2	- 0.1
November	- 0.1	+ 1.2	- 0.1	- 4.7	- 0.8	+ 0.1	- 2.0	+ 0.5	- 3.2
December	+ 9.0	+ 8.8	+ 4.9	+ 1.5	+ 7.7	+ 4.7	+ 4.6	+ 8.2	+ 2.7
January p	- 0.4	+ 4.5	+ 4.6	+ 3.3	+ 0.6	+ 2.6	+ 2.4	+ 2.8	+ 2.3
February p	+ 0.8	+ 1.4	+ 1.2	+ 2.0	+ 2.5	+ 4.3	+ 2.5	+ 3.3	+ 2.0
Percentage change from corresponding month of previous year -									
1975-76									
January	+ 2.0	+21.3	+ 6.5	+ 5.2	+ 7.3	+29.6	+11.2	+ 9.8	+12.1
February	+ 1.2	+18.4	+ 6.2	+ 6.3	+ 8.6	+29.1	+11.6	+ 9.2	+12.9
March	+ 0.5	+14.8	+ 5.2	+ 4.0	+ 9.7	+29.7	+10.8	+ 9.1	+11.6
April	- 1.6	+13.3	+ 5.0	+ 0.7	+13.2	+22.3	+ 8.6	+ 9.5	+ 8.1
May	- 1.4	+12.7	+ 4.9	+ 3.0	+16.9	+22.6	+10.4	+ 9.4	+10.9
June	- 0.6	+13.3	+ 4.8	+ 8.6	+22.1	+22.8	+13.8	+10.9	+15.4
1976-77									
July	- 0.1	+12.9	+ 5.2	+10.6	+21.4	+22.0	+14.4	+ 9.5	+17.1
August	+ 1.9	+13.6	+ 5.6	+15.8	+16.4	+17.7	+14.7	+10.1	+17.1
September	+ 3.1	+12.0	+ 5.1	+17.6	+13.7	+ 8.5	+12.8	+ 9.5	+14.5
October	+ 3.6	+10.3	+ 5.2	+14.2	+13.5	+ 6.3	+10.9	+ 8.6	+12.0
November	+ 3.0	+12.3	+ 4.7	+10.4	+12.7	+ 3.7	+8.7	+ 7.1	+ 9.4
December	+13.5	+21.2	+ 9.5	+10.9	+21.7	+ 7.7	+13.1	+15.2	+12.0
January p	+ 9.2	+20.6	+14.3	+12.3	+21.3	+ 9.1	+13.8	+16.5	+12.4
February p	+ 9.6	+21.3	+15.7	+15.1	+22.9	+13.3	+16.4	+19.8	+14.6

For footnotes see Table 3.

TABLE 2.
PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRY (a)
GROUP INDEX NUMBERS BASED ON INDUSTRY OF ORIGIN
(Base of each index : Year 1968-69 = 100.0) (e)

Value weight (%) (d)	Imported materials				Home produced materials					All groups 100%
	Agriculture 1.92%	Mining 4.17%	Manufacturing 21.07%	Total imported materials 27.16%	Agriculture 47.04%	Forestry and fishing 1.12%	Mining 18.92%	Electricity 5.76%	Total home produced materials 72.84%	
1969-70	104.5	96.2	101.0	100.5	101.6	103.5	108.8	99.7	103.4	102.6
1970-71	101.8	105.3	102.0	102.5	99.3	110.1	98.7	99.4	99.3	100.1
1971-72	95.5	112.0	103.4	104.1	103.5	120.9	97.1	101.7	102.0	102.6
1972-73	105.2	109.1	104.4	105.2	125.3	131.0	100.4	103.7	117.2	113.9
1973-74	130.6	196.3	113.1	127.1	147.9	157.3	119.0	109.9	137.6	134.7
1974-75	149.3	357.8	149.5	181.5	132.2	187.8	129.0	124.6	131.6	145.1
1975-76	166.5	423.6	162.6	202.9	132.3	213.7	162.8	137.9	141.9	158.5
1975-76										
January	164.3	435.6	164.0	205.7	134.8	209.7	163.7	140.0	143.9	160.7
February	168.2	434.7	165.0	206.6	134.1	218.5	164.9	143.0	144.1	161.1
March	173.8	435.2	165.6	207.6	133.5	223.3	167.1	142.3	144.3	161.5
April	185.5	436.7	166.4	209.3	130.5	228.9	172.3	142.4	143.8	161.6
May	188.7	437.2	167.5	210.4	132.2	229.0	176.4	142.3	146.0	163.5
June	197.9	439.9	168.2	212.0	137.5	229.1	178.5	144.6	150.1	166.9
1976-77										
July	194.5	435.6	169.3	212.0	141.9	229.9	185.1	144.4	154.7	170.2
August	203.9	435.7	170.2	213.3	149.2	229.8	183.0	140.4	158.5	173.4
September	211.6	433.4	170.7	213.9	151.6	235.6	179.5	141.1	159.3	174.1
October	218.4	433.3	170.7	214.4	150.5	235.4	180.8	143.6	159.1	174.1
November	224.3	434.8	171.2	215.4	143.1	241.0	179.4	142.7	154.0	170.7
December	245.9	478.9	183.2	233.1	145.8	245.6	189.0	142.1	158.2	178.6
January p	256.8	490.5	188.3	239.6	150.0	246.5	189.1	152.9	161.8	182.9
February p	275.3	524.1	190.3	247.6	152.4	250.5	192.6	162.0	165.1	187.5

For footnotes see Table 3.

TABLE 3.
PRICE INDEX OF MATERIALS USED IN MANUFACTURING INDUSTRY (a)
GROUP INDEX NUMBERS BASED ON STANDARD INTERNATIONAL TRADE CLASSIFICATION
(Base of each index : Year 1968-69 = 100.0) (e)

Value weight (%) (d)	Manufactured materials (imported) (b)			Other materials (imported and home produced) (c)			
	Chemicals 6.67%	Metal manufactures, components for transport equipment and machinery 5.21%	Other manufactured materials (b) 5.76%	Food, live animals and tobacco 45.87%	Crude materials (excl. fuels) 20.66%	Electricity, gas and fuels 15.83%	All groups 100%
1969-70	98.1	103.9	99.4	102.4	108.2	98.4	102.6
1970-71	97.2	108.4	98.2	100.9	99.9	97.3	100.1
1971-72	95.6	114.9	97.8	104.7	100.9	95.1	102.6
1972-73	91.4	119.3	97.6	122.9	116.0	99.1	113.9
1973-74	96.3	118.6	106.1	145.9	140.7	126.2	134.7
1974-75	141.9	148.7	137.4	132.4	149.3	179.5	145.1
1975-76	149.4	179.6	148.4	132.5	162.6	229.0	158.5
1975-76							
January	150.4	183.6	148.3	134.9	160.3	237.3	160.7
February	151.1	185.1	148.3	134.3	162.2	238.4	161.1
March	150.6	185.9	149.7	133.7	165.1	238.1	161.5
April	150.7	186.6	150.7	131.2	170.2	238.8	161.6
May	150.7	188.3	151.3	132.8	174.7	239.5	163.5
June	151.6	189.8	151.9	138.1	177.6	240.7	166.9
1976-77							
July	151.6	192.0	152.9	142.4	183.0	241.0	170.2
August	152.7	192.4	153.7	150.4	180.9	239.9	173.4
September	152.0	194.5	154.0	153.1	178.3	239.6	174.1
October	151.5	192.4	154.8	151.6	181.0	241.0	174.1
November	151.3	194.8	154.6	144.4	179.6	241.2	170.7
December	164.9	211.9	162.1	146.6	193.4	252.5	178.6
January p	164.3	221.4	169.5	151.5	194.5	259.0	182.9
February p	165.6	224.5	171.6	154.6	199.4	270.1	187.5

(a) The index is on a net basis, and relates in concept only to materials that enter Australian manufacturing industry from other sectors of the Australian economy or from overseas. See paragraphs 3 and 4.

(b) Excluding the manufactured imported crude materials listed in footnote (c).

(c) Includes imported fuel oil and the following manufactured imported crude materials : Synthetic rubber, hardwood, softwood, woodpulp, synthetic fibre, vegetable oils.

(d) Composition and weighting pattern as at reference base year : see paragraphs 3 and 9.

(e) Figures are shown to one decimal place to avoid distortions that would occur in rounding the index numbers to the nearest whole number.

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