

REAL PRODUCT,
INCOME, and
RELATIVE PRICES
in AUSTRALIA
and the UNITED
KINGDOM

B.D. Haig

This monograph provides a statistical comparison of the levels of real product and income in Australia and the United Kingdom. As well as overall totals, details are given of the expenditure and relative prices of individual goods and services comprising national product. These estimates provide much of the information needed to compare the levels of living standards and industrial production in the two countries, and therefore enable these aspects of Australian economic conditions to be placed in international perspective.

The study should be of particular interest to intending migrants and tourists from the United Kingdom as it shows prices and distribution of personal expenditure compared with those in their own country. Business firms operating in both countries should find useful the figures of the comparative cost of producing different goods and services. Finally, the estimates of product and expenditure should assist economists and sociologists in studying the pattern of consumer and national spending in Australia compared with that in the United Kingdom.

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**REAL PRODUCT, INCOME, AND RELATIVE PRICES
IN AUSTRALIA AND THE UNITED KINGDOM**

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B. D. HAIG

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PREFACE

The object of this study is to provide a statistical comparison of the levels of real product and income in Australia and the United Kingdom. Real product refers to the total value of goods and services produced and real income to the incomes—wages and salaries, business profits, etc.—arising from this production. The results show much of the information needed for a comparison of living standards and the levels of production in the two countries.

The study is largely confined to detailed presentation of the results, to a description of the concepts and methods of comparison, and to a full account of the sources of the estimates. Some attempt is made to discuss the meaning of the estimates for the two main purposes of comparing living standards and levels of production. However, no attempt is made to interpret the results fully for these purposes. This would entail the use of much additional information and is beyond the intention of this study.

The main results relate to 1958-9, and in this year detailed information is shown of product, income, and relative prices of individual items of goods and services. Summary figures are, however, also given for each year from 1948-9 to 1964-5. These are obtained by varying the details in 1958-9 by official figures of national income and expenditure of the two countries.

The methods used in the comparison are based on techniques developed by the OEEC (Organisation for European Economic Co-operation) for comparing the real product of member countries. There are some differences in approach, which are set out in detail in Chapter 1, and some additional methods are used, particularly for comparing the level of real income. However, the main figures are comparable with those compiled by the OEEC, and the results of this study can therefore be directly related to OEEC comparisons. The present estimates of Australian real product and income can be compared with figures for European countries and the United States, given in the OEEC publications of *An International Comparison of National Products and the Purchasing Power of Currencies* and *Comparative National Products and Price Levels*.

The study was completed early in 1967. Publication has been delayed by printing difficulties. This has not affected the reliability of any of the estimates. However, in the summary of the results and in Table 9 in

Chapter 3, comparisons of prices of goods and services in Australia and the United Kingdom are shown after adjusting for the rate of exchange of the currencies of the two countries. Prices are compared using the exchange rate of \$250 (£A125) to £Stg100. As a result of the devaluation of sterling, these adjusted prices are unlikely to reflect comparative prices closely at the present time. The devaluation of sterling does not affect the figures of real product or income, nor the relevance of the prices given before allowing for the rate of exchange of the currencies.

The main sources of information used in compiling the detailed figures given in this study are official statistics of national income, expenditure, and prices for Australia and the United Kingdom. These are supplemented by unpublished details made available by the official statistical offices, and by information collected from business firms, trade organisations, and other sources about production and prices of individual goods and services. The detailed sources are set out fully in an appendix to the main chapters. I owe, however, a major debt to the official statisticians of the two countries—Mr K. M. Archer, the Australian Commonwealth Statistician and Sir Harry Campion, the Director of the United Kingdom Central Statistical Office—for providing detailed information needed for this study and for help in interpreting official statistics. I am also indebted to Mr J. Tippetts and Mr L. Surman for advice in comparing figures of relative prices in the two countries.

B.D.H.

Canberra
May 1968

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SUMMARY AND CONCLUSIONS

In recent years there has been considerable interest in the comparison of Australian living standards and levels of production of goods and services with those of other countries. Australia's growth to maturity in the international scene plus the large numbers of migrants and tourists attracted to this country since the end of World War II are among the main factors leading to interest in the measurement of the levels of Australian real product and living standards. There has also been a growing desire to compare the output of goods and services used in Australia to meet various political and social objectives, such as defence or education, with that in other countries.

Until recently, Australian levels of income and product per head were well above those of other developed countries. But since World War II low rates of increase of Australian real income and product per head have led to a decline in the absolute levels of Australian income and product per head compared with those in other countries. United Nations estimates show that between 1950 and 1960 the rate of growth of Australian real product per head was only slightly more than one-half of that of all developed countries and that between 1960 and 1964 the rate of increase, although relatively higher, was still only about 70 per cent of that of developed countries. At present there is not a big difference in the level of Australian real income and product per head compared with Norway, the United Kingdom, Denmark, and Germany, as well as of some other developed countries.

This has a number of implications for government policies. It adds to the difficulty of attracting migrants from other countries; it increases the burden on living standards of matching the contributions of other countries in aid to less developed countries and of meeting commitments of military aid; and it affects the possibility of achieving the same relative level of social services as in other countries. There are, of course, more general and academic purposes in having accurate information about comparative levels of income and product. Comparison of the costs and standard of living in Australia and other countries is useful to businessmen and travellers, this information is useful in sociological studies of the impact of the affluent society on patterns of income and expenditure, and comparisons of real product provide some information about the comparative efficiency of industries.

Up to the present time, however, no satisfactory estimates have been available for the comparison of income and product in Australia with other countries. Existing Australian comparisons have a large margin of error and there are major gaps in the detailed information available about aspects of living conditions. Comparative studies of Australian real product or income have often had little more basis than the impressions of travellers.

This study, which is based on rather more comprehensive methods than have hitherto been used, compares real product and income in Australia and the United Kingdom in 1958-9. Traditional political and economic ties between Australia and the United Kingdom and the large number of British migrants to Australia in the post-war years, make comparisons of the real income and product with those of the United Kingdom particularly relevant. The detailed figures relate only to the one year, 1958-9, but summary estimates are also shown for each year from 1948-9 to 1964-5.

The main conclusions are summarised in the following paragraphs, and deal in turn with the comparison of relative prices, of real product, and of real income.

1. Relative prices

In 1958-9 average prices were some 6 or 13 per cent higher in Australia than in the United Kingdom.¹ But there were considerable variations in the prices of individual items of national product. The prices of total consumption goods were a little higher in Australia, while prices of items of both fixed investment and public authority expenditure were much higher in Australia. Comparisons of these components, and of total national product, are shown in Fig. 1.

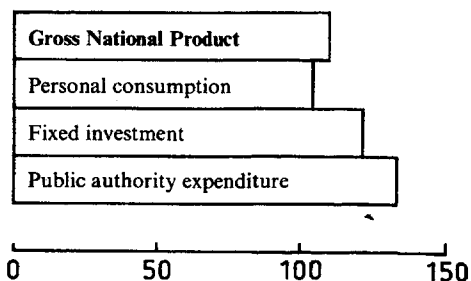


Fig. 1 *Relative prices of items of gross national product*
(Australia relative to U.K. = 100)

¹ The overall price comparison is obtained by weighting the relative prices of individual goods and services by the values of expenditure. The two comparisons shown are based on the relative expenditure patterns in Australia and the United Kingdom, respectively. This variation in the relative figures is similar to the difference in price indexes used in inter-temporal comparisons based on different periods. As is customary, prices are relatively higher where the expenditure weights are those of another country or from another period.

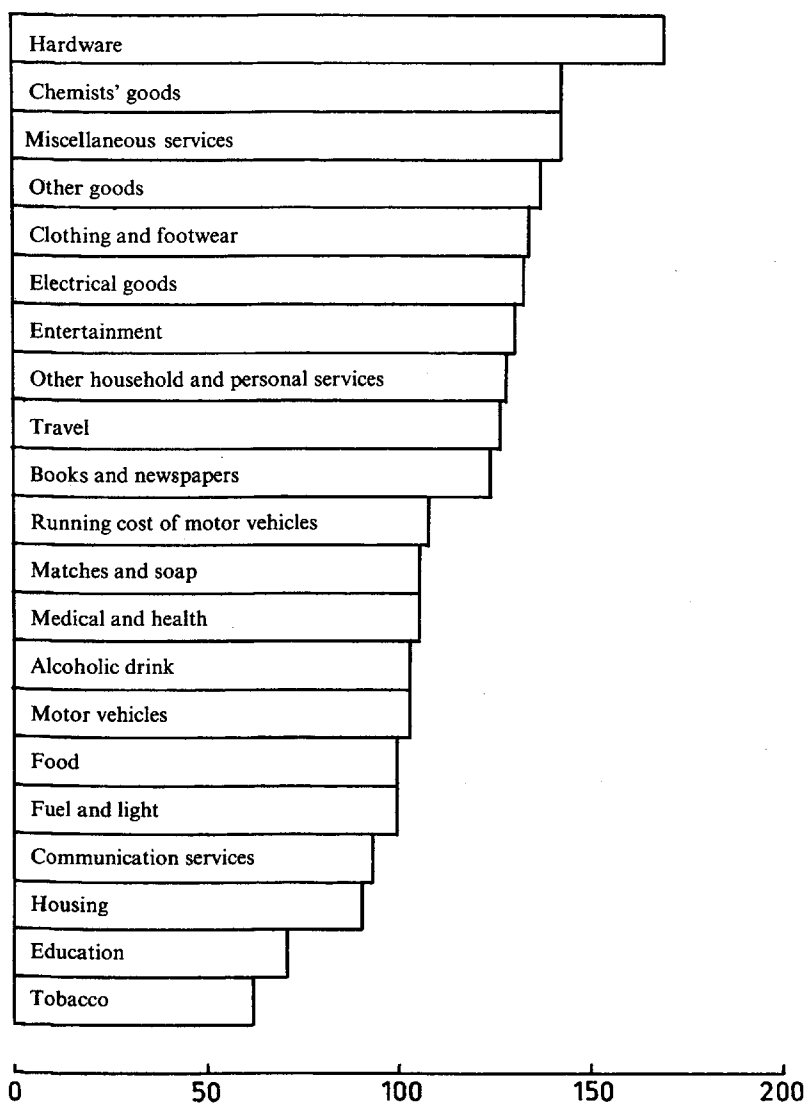


Fig. 2 *Relative prices of personal consumption expenditure*
(Australia relative to U.K. = 100)

In the following discussion, the relative prices are based on the use of the expenditure pattern in the U.K. to weight prices of individual products. Relative prices are after allowing for the official rate of exchange of £A125 or \$A250 = £Stg 100.

The comparison of prices of items of consumption expenditure is set out in Fig. 2. Individual prices are widely dispersed, and the variation ranges from hardware, where Australian prices are some 70 per cent above United Kingdom prices, to tobacco, where Australian prices are some 40 per cent lower.

The dispersion of prices of individual goods and services is not unusual in international comparisons and a similar result appears in the comparisons of prices of European countries and the United States made by the OEEC. It has been suggested that prices of services will tend to be higher than the prices of goods in countries with high incomes per head of the population and that this is one factor leading to differences in prices. This is due to the tendency for costs of labour to be relatively higher than the cost of capital in countries with higher per capita incomes, and for wages to account for a larger proportion of the cost of producing services than goods. In the present comparison, however, there is little difference in the real income of Australia and the United Kingdom per head of the population and, for items of consumption expenditure, the prices of services are much the same as those of goods.

One of the reasons for the higher price of investment goods in Australia is the freight charge on imported items of plant and machinery, and generally prices of the locally produced items are lower than the products imported. Prices of items of building and construction are also higher in Australia than in the United Kingdom, although these comparative prices are based mainly on the cost of materials and labour used and thus do not allow for any difference in the productiveness of the building and construction industries in the two countries. It may be the case, for example, that the drier Australian climate leads to greater efficiency in building and construction work which would mean that Australian prices of these products, and total investment goods, are overstated.

Australian prices of items of public authority expenditure are also much higher than the comparable prices in the United Kingdom. In 1958-9 these prices were in the ratio of 132 to 100. Again the prices are based on the cost of labour and materials used and make no allowance for differences either in the productivity of using inputs or in the different functions performed by the public services in the two countries. But this is the conventional practice in measuring this output at constant prices in intertemporal comparisons of real product.

There have been divergent trends in the internal prices of the two countries over the post-war years. In 1948-9 the overall level of Australian prices was some 10 per cent below that in the United Kingdom. Since then, however, Australian prices have risen faster so that by 1958-9 Australian prices were 13 per cent above those in the United Kingdom. Since 1958-9, however, relative price movements have not diverged very much and the comparisons for this year are not likely to be very different from those of today.

2. Real product and expenditure

The comparison of total product and of expenditure on individual items of product is based on the revaluation of money figures of product and expenditure of the two countries into equivalent prices using the data of actual relative price of goods and services. In order to obtain per capita estimates, these figures are then divided by the mean population of the two countries.

In 1958-9 Australian real product per head of the population was between 6 and 13 per cent above that of the United Kingdom.² There were substantial differences, however, in the real product used for different purposes. Australian consumption expenditure was some 5 per cent higher per head of the population than the equivalent expenditure in the United Kingdom, but fixed investment was about 50 per cent higher and the expenditure by public authorities on current goods and services considerably lower.

The overall comparisons of real product are rather more meaningfully expressed in terms of the resources used in producing output. For this purpose the figures can be divided by numbers of persons employed rather than, as in the case of the comparative figures given in the previous paragraph, by the number in the population. These results show the comparative levels of labour productivity in the two countries.

In 1958-9, Australian real product per person employed was some 23 per cent higher than the comparable United Kingdom figures.³ The difference between this figure and the real product per head of the population is due to the different proportion of the population in the workforce which is, in turn, largely a reflection of the different age structure of the two populations.

Details of expenditure per head of the population on items of consumption expenditure in 1958-9 are shown in Fig. 3. Australian expenditure is highest on motor vehicles, running cost of motor vehicles, electrical goods, alcoholic drink, and education, and lowest on entertainment, other household and personal services, and fuel and light. The classification used in this figure is not intended to show the use of goods and services, and some of the difference in expenditure on goods or on services is balanced by a corresponding difference in the expenditure on other items which may meet a similar purpose. Larger expenditure on purchased

² The two comparisons of real product reflect, in the same way as the alternative price comparisons shown in the previous section, differences in the weights used to combine quantity relatives for items of national product. Australian real product per capita is 6 per cent higher where quantities are weighted by Australian prices and 13 per cent higher where they are weighted by United Kingdom prices. In the following comparisons the quantities are weighted by United Kingdom prices.

³ In this comparison quantities of items of products are weighted by prices at factor cost instead of market prices, as is the case with other comparisons of real product shown in this section. Generally, factor costs provide a more satisfactory method of combining quantities for purposes of production or productivity comparisons although there is very little difference in the results from using the alternative methods.

television sets (which is part of the item of electrical goods) in Australia, for example, is matched partly by larger United Kingdom expenditure on hired sets or TV rediffusion (included in expenditure on entertainment).

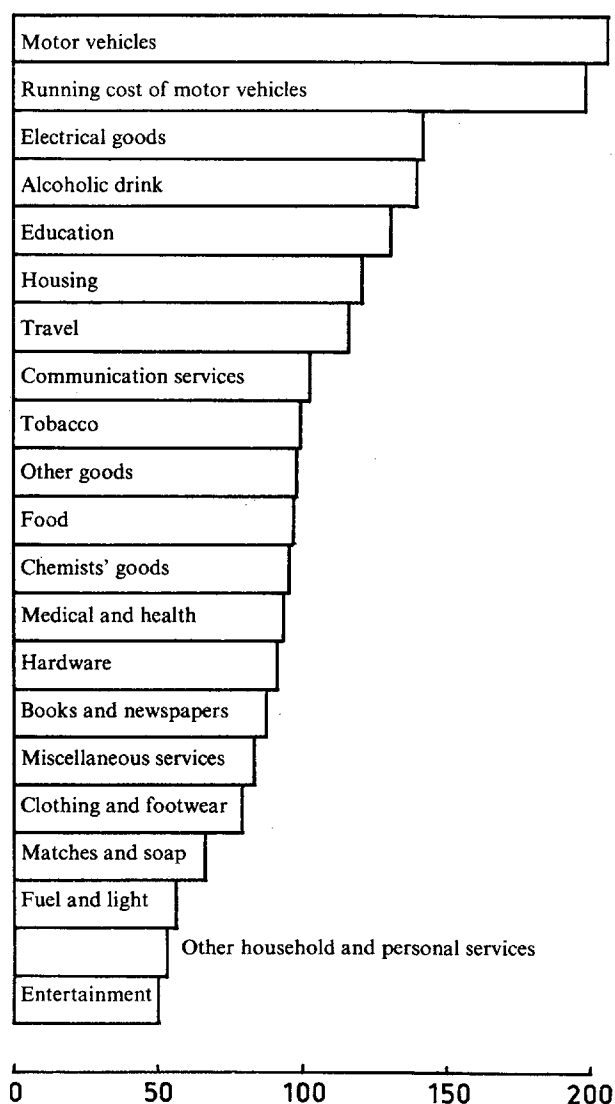


Fig. 3 *Personal consumption expenditure per head*
(Australia relative to U.K. = 100)

This is one reason why Australian expenditure on electrical goods is relatively much greater than the expenditure on entertainment.

Expenditure per head of the population on investment goods is nearly 50 per cent higher in Australia than in the United Kingdom. But much of this expenditure in Australia is on relatively unproductive capital goods (in the sense of not leading directly to higher business output). As is shown in Fig. 4, expenditure on other capital equipment, largely plant and machinery, that is not agricultural machinery and equipment, is comparable in the two countries. A major reason for the higher Australian total investment expenditure is larger outlay on roads, other building and construction, and motor vehicles.

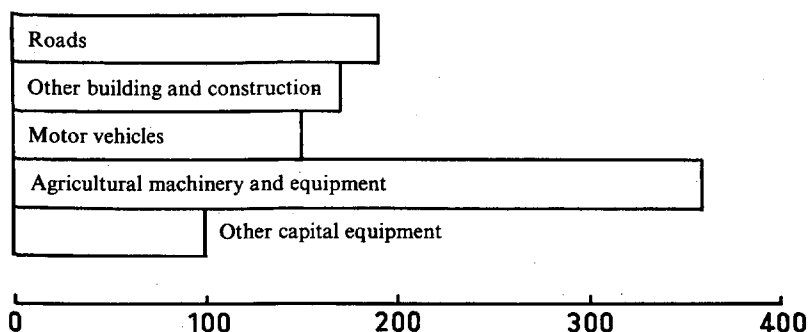


Fig. 4 Expenditure per head on fixed investment
(Australia relative to U.K. = 100)

The larger expenditure in Australia on roads and motor vehicles matches the higher figures of personal consumption expenditure on the purchase and running cost of vehicles. The Australian figure for expenditure on building and construction (which includes substantial public authority outlays) may reflect the need for basic communal services (such as water supply, communication, etc.) to meet the rapidly growing population. The relative expenditure on agricultural machinery and equipment is only partly explainable in terms of the different proportions of national product originating in the sector.

These results help to explain an apparent paradox in the comparison of investment ratios and economic growth rates of Australia and the United Kingdom. While it is now widely held that an important factor leading to differences in the growth rate of countries is the proportion of national product used for investment purposes, Australian investment expenditure has been some 23 per cent of gross national product in the post-war years compared with 16 per cent for the United Kingdom. The present results show that the larger Australian expenditure on investment goods is partly due to the higher prices of these items and it also reflects a larger relative outlay on less productive assets. The real expenditure on

business plant and equipment per head of population is, as indicated above, similar in the two countries.

3. Real income

The details of real product, expenditure, and relative prices can be used to show three different measures of real income. One comparison of real income can be obtained by simply contrasting the overall levels of national product, adjusted to include the net income received from abroad. This comparison shows Australian income per head of the population some 10 per cent higher than that in the United Kingdom.

These figures show the total product accruing to residents in the two countries, valued at equivalent prices, which is available for consumption, investment, purchase by public authority, and net exports. They do not measure, therefore, the actual product which contributes directly to higher living standards of inhabitants of the two countries. For this purpose two alternative measures can be used which describe (a) the output of goods and services which represents final consumption outlay and (b) the purchasing power of average wages and salaries.

(a) Details of personal consumption expenditure per head of the population by type of goods and services have been set out in Fig. 3. Figure

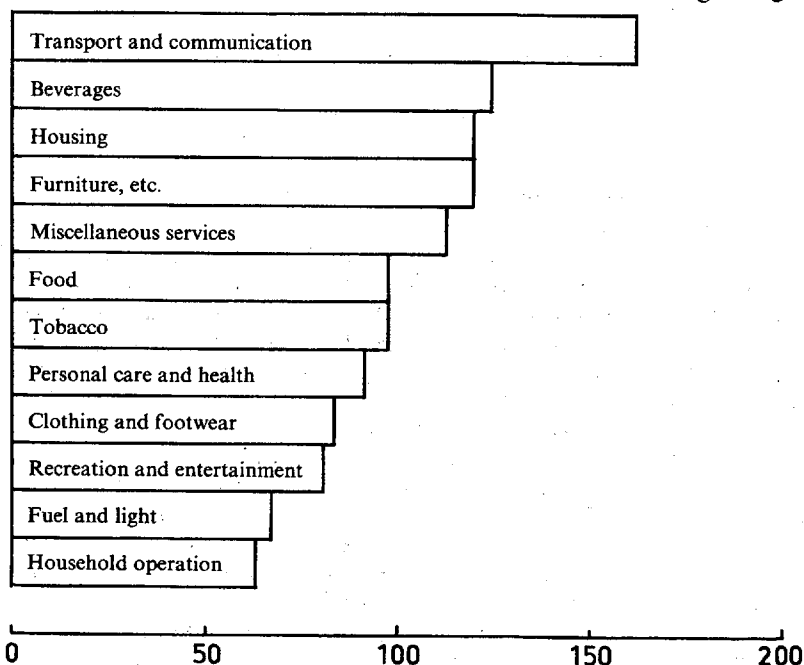


Fig. 5 Personal consumption expenditure per head by purpose
(Australia relative to U.K. = 100)

5 shows a rearrangement of the individual products to provide a classification according to the main purpose or function of the expenditure. The difference between the two classifications is that in Fig. 3 goods and services are shown separately whereas in Fig. 5 these have been combined in each category of expenditure. Expenditure on transport and communication, for example, in Fig. 4, shows both the expenditure on motor vehicles and the running cost of motor vehicles and on purchased transport services.

Total Australian consumption expenditure per head of the population is slightly higher than the United Kingdom expenditure, but there are big differences in the purpose for which the goods and services are used.⁴ Some of the variations in expenditure can be explained by differences in climate and geographic conditions in the two countries. Thus the relatively lower Australian figures of expenditure on fuel and light (67 per cent of the United Kingdom expenditure) and clothing and footwear (84 per cent) may be in large measure due to differences in the climate, and may reflect little real difference in living standards. If these two items are excluded, the Australian real expenditure on consumption goods is increased by about 4 per cent. The lower figure of Australian expenditure on recreation and entertainment (83 per cent of the United Kingdom expenditure) may also partly reflect differences in the climate and a much higher proportion of the United Kingdom expenditure is accounted for by admissions to entertainments. But, as well, part of the difference is due to the higher United Kingdom expenditure on hired TV sets and TV rediffusion. Australian expenditure on items of transport and communication, beverages, housing, and furniture, etc., is more than 20 per cent above the United Kingdom expenditure. The higher figure for transport may be partly, but is unlikely to be predominantly, the result of the greater dispersion of the population. Expenditure on new motor vehicles and on the running cost of motor vehicles is about double in Australia, and the ownership and use of motor cars is traditionally one of the principal determinants of real incomes. Expenditure on beverages is higher in Australia, mainly due to a greater consumption per head of the population of beer (30 per cent higher) and brandy (five times as much). The larger expenditure in Australia on miscellaneous services is partly the result of higher expenditure on education which is a reflection of the different age structure of the population of the two countries.

Basing comparison of real income simply on overall figures of real expenditure on consumption goods and services may therefore tend to

⁴ As previously explained the comparison of real expenditure is obtained by weighting relative quantities of items by their prices in the United Kingdom. On this basis Australian consumption expenditure per head of the population is 5 per cent above the expenditure in the United Kingdom. If Australian prices are used the Australian expenditure per head of the population is some 98 per cent of the United Kingdom expenditure. Roughly similar proportional adjustments would be made to relative real expenditure on individual items.

understate the level of Australian real income compared with that of the United Kingdom. Although a good deal of subjective interpretation is needed in assessing the relative contribution of expenditure used for different purposes to living standards it would appear that the Australian pattern of expenditure does lead to a higher real income than the expenditure pattern in the United Kingdom.

(b) This conclusion is supported by a comparison of the real purchasing power of average earnings in the two countries over items regarded as comprising the cost of living. This comparison is obtained by dividing money figures of average earnings by the relative prices combined by the expenditure weights used in compiling official indexes of consumer or retail prices.

While real personal consumption expenditure per head of the population is broadly comparable in the two countries, the purchasing power of Australian average earnings is some 12 per cent higher than that of the United Kingdom average earnings. These two comparisons represent different ways of looking at real incomes. The figures of comparative real consumption expenditure show more directly the actual consumption levels in the two countries, while the comparison of real wages shows the potential real incomes of wage and salary earnings over particular goods and services.

1

CONCEPTS AND METHODS

The primary aim of this study is to provide a comparison of the levels of income and product in Australia and the United Kingdom. It deals therefore with total estimates rather than the limited figures which formed the basis of comparisons made before World War II. Earlier estimates were confined largely to comparisons of the real income of wage earners, the prices of items of household expenditure and standards of housing, education and other social services in different countries. The shift in interest to comparisons of total income and product since the war is partly the result of the development of estimates of national income and expenditure based on internationally accepted definitions which show the aggregate income and product of countries. These provide a convenient starting point for total income and product of countries. But the shift has also been the result of practical needs for total comparisons arising from the growth in numbers and activities of international bodies and the increasing interdependence of countries.

In addition to these total figures, the results also include estimates of expenditure on items of national income and the relative prices of goods and services. These estimates were necessary to prepare the total figures, and they also help in evaluating the meaning of these figures.

Before setting out the nature of the estimates of national income and product used in this study and the methods used to compare the available estimates for Australia and the United Kingdom it may be useful to summarise some of the main uses of the figures. This may help to evaluate the relevance of the definitions used and the methods of comparison.

Probably the most important use of comparative figures of total product is as a measure of the relative economic strength of countries to provide goods and services for everyday living. This covers not only the provision of specific types of consumer goods and services which are part of material living standards but also output used for investment purposes and in providing public authority services. Estimates of the relative economic strength of countries is needed, for example, in connection with various schemes of economic and political co-operation between nations, including assessment of contributions needed to meet administrative costs of international bodies or in deciding on the distribution

of aid programs, and the comparison of the bargaining power of countries in proposals for closer economic integration.

Comparison of the level of real income and product of Australia with that in other countries is relevant to government economic policies. The Australian government is committed to a high rate of economic growth and rising living standards. One way of assessing the success of these policies is by comparison of the rates of growth and levels of living standards with those in other countries. It is fair to add, however, that the Commonwealth Treasury considers that comparisons are of limited use for this purpose because of statistical limitation on the figures and the need to consider the usefulness of output to consumers.

Recent studies have shown the importance of economic considerations in immigration. Although not the prime cause of migration from one country to another the possibility of increasing living standards is an important factor in immigration. Comparison of the level of Australian real income with that of other countries will help in assessing the possibility of achieving the government's aim of a high rate of population growth through immigration.

A further use of comparisons of real product is in the analysis of the causes of differences in growth rates of countries. Many modern theories of economic growth are based on concepts of national product and income and the use of these theories in economic analysis, or the testing of their validity, requires details of the estimates of these magnitudes.

As well as comparisons of total national product there is a good deal of interest in the comparison of the structure of economies in terms of the use of resources for different purposes or the industrial composition of product. While this information can be obtained from national product estimates in current money values it is more meaningful where expressed in real terms, that is after allowing for differences in the relative prices of these items between countries. Comparisons of the use of resources for education in Australia and the United Kingdom, for example, may be distorted if based on the proportions of the money values of national product used for this purpose if the relative prices of education goods and services differ in the two countries from those of all items of national product.

Comparative figures of national product are also useful as a measure of the relative levels of real income of the inhabitants of the countries by showing the quantities of goods and services available for consumption or other use. As is mentioned later in this chapter and explained in detail in Chapter 4, this use of national product data raises important problems of interpretation, and any conclusions about the comparative real income based on national product estimates would need to be qualified by other statistical data and quantitative information. Nevertheless they provide one estimate of real income and in some cases this is likely to be more useful than other sources of information available.

The details of the expenditure on different goods and services for countries at different levels of economic development will also assist in sociological studies of the effect of changes in levels of living standards on spending habits. The emergence of an affluent society in Australia has led to much interest in how this has affected ways of living, and one of the important aspects of this is the change in the composition of the pattern of expenditure by consumers. Studies of the composition of Australian consumption expenditure compared with those of other countries at different levels of real per capita product are useful for this purpose and require estimates of the details of consumption expenditure in real terms.

Concepts

As has been noted, the basic figures used in this study are estimates of national income and product of Australia and the United Kingdom. These estimates show the total value of goods and services produced by economic activity and used for the purposes of consumption, investment, and net export. They provide the most comprehensive measure available of output and income of the two countries. The definitions are based on the concepts proposed by the Statistical Office of the United Nations which are used, with some slight differences due to limitations in the basic information available and to differences in the treatment of particular items, by the national statistical offices of Australia and the United Kingdom.

National income and product covers largely those goods and services produced and sold for money. Some allowance is also made for production which is not exchanged for money in order to avoid distortions which could arise where a varying proportion of output of countries or over time is sold for money. For example, the total rent on both tenanted and owner-occupied dwellings is included so that national income is not affected by differences in the proportion of tenanted and owned houses.

The use of the market-based definition of national product means that output is confined to particular types of goods and services and that the coverage of output could vary between different economies where a varying proportion of production is sold for money. The first point has particular relevance in comparisons of real income and some of the limitations of the definitions for this purpose are discussed in Chapter 4. The main objections to the use of the concept as a measure of real income is that some of the output included may not contribute to the standard of living, some services—such as those arising from the ownership of books, pictures or furniture—not being measured in money and therefore omitted from national product, and that all of the value of goods and services which are produced in the home, such as the value of the services of housewives or goods produced as a hobby, are excluded. It is possible to make some allowance for this, confining comparisons to goods and

services which obviously have a bearing on material living standards, and to impute values to omitted items, but this leads to a major revision of the total figure of national product. The point is that national product, while it is a useful starting point for comparing real incomes, may need to be considerably modified to take account of deficiencies in the definition for this purpose. The definition has more relevance to comparisons of total output but for this use also the concept has some limitations.

In the first place, the deductions for current output which is used up in producing further goods and services, and thus omitted in order to avoid double counting, are confined largely to those items which normal accounting practice treats as a cost of sales. But in addition to these charges a good deal of public authority expenditure could also be considered as a cost of producing output. Government expenditure on roads, on law, order, and public safety, on development of resources and assistance to industry and for the regulation of industry and trade, for example, may simply be providing communal services which, in the absence of the government expenditure, would need to be met by private businesses. In the latter event they would be treated as a direct cost to sales and thus excluded from business product and total national product. In the usual methods of national accounting they are part of final output, which means that to a large extent they are counted twice—once in the form of public authority and once by being included in the value of product of business firms.

Secondly, the income accruing from a large part of the stock of government assets and all of personal assets (other than of the rent of houses) is omitted from national product. The omission of some of the latter income has already been referred to in commenting on the relevance of national product to measure real income. In proportionate terms, however, the inability to make any accurate valuation of the income of government assets is likely to lead to a much greater error in using the figures of national product as a measure of the total value of the flow of goods and services in an economy. Some national income calculations do include some of the income of government assets, such as in the case of the United Kingdom estimates which include the imputed rent on government buildings, but this is only a minor part of the total income. In addition there are problems in ensuring that such imputed estimates are consistent between countries.

It is difficult to say how far these imperfections in the measurement of national product detract from the usefulness of the figures as a measure of real product. It may be suggested, however, that they do not lead to a great error in comparisons between countries at similar stages of economic development, or with similar levels of real per capita incomes. National income figures have been widely used for this purpose in recent years and statisticians have become increasingly used to accepting the

comparisons as being meaningful. In countries as highly developed economically as Australia and the United Kingdom it is unlikely that a large proportion of output is not recorded in money values—with the exception of the unrecorded value of the services of government assets. In this case, however, there is not likely to be a very great difference in the relationship between the stock of government assets (and thus of the income from these assets) and the recorded value of production in the two countries.

Omitted activities could, however, affect comparisons of real product of economies with greatly different levels of real per capita incomes. In basically subsistence type economies, for example, a large part of productive activity may be undertaken outside the market economy and this would obviously distort comparisons between these and more highly developed economies. But even in the case of highly developed economies there is a chance that the proportion of total output covered by national product will vary with even small differences in levels of real income. An instance of this is the increasing tendency for married women to enter the workforce at higher levels of income and to buy the services which were previously performed as unpaid household activities. But while there may be a number of minor causes of difference in coverage in the comparison of the national product figures of Australia and the United Kingdom, the fact that there is not a great difference in the real per capita incomes of the two countries would suggest that there is not likely to be a large scope for bias to arise as a result of differences in income levels.

It should be noted that national product simply refers to the goods and services currently produced. In using the figures to assess the performance of economies in producing particular types of goods and services, the estimates would need to be qualified by institutional or structural conditions of production which make it difficult to transfer resources between different uses, or the availability of skills or technical equipment needed for the production of this output. In addition, the use of the figures to gauge potential output will need to take into account any under-utilisation of capacity, of employment or capital equipment, at the time of the comparison. Thus, the estimates of national product show only the output currently produced.

Methods

The main problem in comparing the real product and income of countries is to revalue the money figures of national product from the prices of the currency units of each country into an equivalent level of prices. This leads to the need for some way of comparing the relative price levels of countries. There are a number of ways in which this could be done.¹

¹ A general survey of methods of international comparisons is provided in *International Comparisons of Real Incomes* (Organisation for European Co-operation and Development, Paris, 1966).

Method of exchange rate conversion

The traditional approach is simply to use the official rate of exchange as an indication of the relative levels of prices. This approach is easy to apply since exchange rates are readily available and it does not require any detailed statistical calculations. It was used by the OEEC in the early years after World War II before being superseded by a method based on the direct comparison of prices of countries and is still one of the main methods used by the Statistical Office of the United Nations. Results using this method are set out for some 150 countries (including Australia) for several recent years (1953, 1958, 1963, and 1964) in the 1965 issue of the *Yearbook of National Accounts Statistics*. In presenting the results, however, the Statistical Office of the United Nations qualifies them with the comment that:

The estimates . . . have been prepared in response to many requests for statistics of this nature. They should be considered as indicators of the total and per capita production of goods and services of the countries represented and not as measures of the standard of living of their inhabitants. No particular significance should be attached to small differences between the estimates of two countries because of the margin of error inherent in the method of estimation.²

The use of this approach to compare the real income of countries was examined by a Committee of Experts appointed by the United Nations in 1954 on the definition and measurement of standards and levels of living which reported that:

Disparities between the official ratios of exchange and the purchasing power parities are such that it is almost meaningless to convert the national incomes of different countries at the official rates of exchange for purposes of international comparison. In fact, the publication by the United Nations of statistics of national incomes of different countries expressed in terms of the dollar has led to somewhat distorted inferences regarding the differences in levels of living in different parts of the world.³

The assumption of this method is that exchange rates need to be in the ratio of relative price levels in order to ensure stability in the balance of payments of countries. Any tendency for exchange rates to get too far out of line from price levels would result in a discrepancy in the balance of payments, since it would lead to a flow of goods from countries where the national currency value is undervalued to other countries. This could be supported in the short run by international borrowing or the running down of international reserves, but in the long run the position is an unstable one and would inevitably lead to exchange revaluation.

² *Yearbook of National Accounts Statistics* (United Nations, New York, 1965), p. 497.

³ *Report on International Definition and Measurement of Standards and Levels of Living* (United Nations, New York, 1954), p. 50.

In practice, however, the exchange rates could diverge from the relative levels of prices for the following reasons:

1. There could be restrictions on the free transfer of goods and services between countries. The obvious instance of this is quantitative restrictions on imports such as applied in Australia during most of the 1950s. No matter how far relative prices differed from the rate of exchange these would restrain any free flow of goods and services into a country.

2. The exchange rates are only likely to reflect price relationships of goods and services which enter, or are capable of entering, into international trade. This excludes some 50 per cent of the national product of most advanced Western countries (these items comprise most of the output of the service industries and gas and electricity, and probably some other products) and any difference between the relative prices of these products and those of traded goods could have an important effect on the comparison of exchange rates and international price levels.

3. Actual price relationships are affected by costs of transporting products between countries (freight, insurance, stevedoring charges, etc.) and by customs duties. Thus the prices in Australia of goods imported from the United Kingdom will tend to be higher than the prices of similar products in the United Kingdom by these costs of transport and Australian customs duties. Similarly, of course, the prices of Australian exports to the United Kingdom will tend to be cheaper in Australia than in the United Kingdom. The point is that these costs of transfer lead to a wide range within which prices of individual products between countries could differ from the rate of exchange of their currencies.

International comparisons of national product by the method of exchange rate conversion are therefore inaccurate because exchange rates provide an unreliable measure of relative prices. Studies made by the OEEC show that the error can be 50 per cent or more.

A further limitation of exchange rates for this purpose is that they are even less appropriate to compare prices of individual goods and services. In practice relative prices vary considerably and this means that real comparisons based on the method of exchange rate conversion could distort the pattern of real expenditure between countries.

Indicators of living conditions

A second approach which is sometimes used but which is more appropriate to compare real income than the product of countries is based on quantity indicators of economic and social activities. This does not lead to a comparison of total national product but it is somewhat akin to the direct comparison of real product estimates, since the indicators cover many of the items comprising national product. A good deal of information about economic and social activities of countries is now available and this can be used to show how certain aspects of living conditions compare between countries. The *United Nations Compendium of Social Statistics*

shows, for example, details of the numbers of doctors and teachers and the consumption of foodstuffs in different countries. These and other figures were used by the Vernon Committee of Economic Enquiry to compare living standards in Australia with those in other countries in terms of standards of health, nutrition, education, housing, ownership of motor cars and other durable goods, and various non-material elements including social security and working conditions.⁴

The available indicators cover, however, only some of the items which contribute to material living standards of countries and they exclude those items which cannot be expressed in quantities; these include much of the output of the service industries. In some circumstances, the available information may lead to a biased comparison of living standards of countries. For example, conclusions may be unduly affected by special factors, such as the climate or geographic conditions of countries. If the indicators cover ownership of motor cars but not purchased transport services they will reflect the availability of different forms of transport services. The ownership of motor cars may also reflect social attitudes or customs as well as levels of real income.

In practice this method is more appropriate to compare living standards in terms of certain social goals. Thus, for example, it is possible to determine minimum or adequate levels of nutrition or of the ratio of doctors to the population, and the quantity indicators can be used to show in what respects the living standards of countries satisfy these criteria. But this is obviously a different proposition to comparisons of the real income of countries in terms of the goods and services available and their relative valuations as expressed in market prices.

Direct price comparison

A third method of adjusting for differences in prices of national product and income of countries is to revalue the money figures of national product by the actual prices of goods and services. The results of this method show the sum of quantities of items comprising national product weighted by their relative prices. It involves a more complex revaluation than the use of the rate of exchange as the measure of relative price levels, and the items covered are a more comprehensive selection of goods and services than those used in comparisons based on quantity indicators. This method has been used in several studies by the OEEC of the real product of member countries and the results have been generally accepted as being more reliable and useful than those obtained by the use of alternative methods.⁵

⁴ Commonwealth of Australia, *Report of the Committee of Economic Enquiry* (Vernon Report), Chapter 6.

⁵ Milton Gilbert and Irving B. Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies* (OEEC, Paris, 1954). See also Milton Gilbert and Associates, *Comparative National Products and Price Levels* (OEEC, Paris, 1958).

The method entails, first, breaking down the total values of national product of each country into equivalent product groupings; secondly, assembling price or quantity data for the representative selection of items in each product grouping; thirdly, using these relative price comparisons to revalue the expenditure on each product grouping into equivalent prices. A final step is simply to add the details of these components to provide the required comparison of real national product.

Several different methods may be used to divide up national product into product groupings which correspond to the different ways in which national product may be estimated in current prices. National product may be obtained either by summing the values of final expenditure (consumption, investment, and exports) and deducting imports, by adding the values of product of industry sectors, by combining the earnings of factors of production (wages and salaries and business profit) or by adding the totals of consumption expenditure and savings. If similar data and definitions of items are used in these four methods the overall results will be the same. In practice, the results will not be identical because of some slight inconsistencies in the data used in the different methods, but the discrepancies are not likely to be significant in relation to the overall figures.

In practice only the first two methods can be applied in comparisons in real terms. These two methods may be described as the expenditure approach and the industry of origin approach. In the expenditure approach an attempt is made to compare the real quantities of goods and services comprising expenditure on consumption, investment, and net exports. In the industry of origin approach, on the other hand, the comparison is based on the real values of production of different industries. The two methods thus rely largely on different data and the choice between them will turn partly on statistical considerations.

As well, however, the details of real expenditure and of industry products are useful for different analytical questions. Comparison of real expenditure on items of national product shows how resources are used in different countries to meet various political or social goals, such as for defence or education. Comparison of real product of industries can be used to assess the relative production of industry sectors and, divided by the employment, to provide a comparison of labour productivity of these sectors. Ideally, of course, it would be desirable to have estimates based on both methods, not only because the results may be used for different questions of economic analysis but also because the difference between the two results will help in assessing the margins of error in the figures. This would simply follow the practice used in intertemporal comparisons of real product where estimates are now often compiled on both methods.

In this comparison of Australian and United Kingdom real product in 1958-9 the method of revaluation of expenditure details has been adopted.

The starting point was the official estimates of national product and expenditure compiled by the national statistical offices of each country. After adjusting the totals to remove major inconsistencies in the coverage and definition of items, thus producing two comparable measures of the value of production of goods and services, the money values were broken down to show the expenditure on some two hundred items of national product. Prices and quantities were then assembled for the major products within each expenditure category which were used to revalue the expenditure figures and imports to the one equivalent price level. Finally, the overall comparison of real product was derived by adding the separate estimates of real expenditure and deducting imports in equivalent prices for each country.

In revaluing expenditure to equivalent prices an attempt is made to provide quantity equivalents for the relative values of expenditure on the main components of national product. This could be done either by deflating the values by price indexes or by directly substituting quantity indicators for the relative values. There are different circumstances in which one method may be more appropriate but in the present study the indirect method of price deflation has been preferred. The relative quantities of items are then aggregated by combining them in the proportions of their relative prices in either Australia or the United Kingdom and this leads to two alternative comparisons which reflect the different structures of the economies and the pattern of tastes of the inhabitants of the two countries.

For most of national product the meaning of the quantity indicators is fairly straightforward. They simply show the quantities of similar items of goods and services used in the two countries. For some items, however, and this applies particularly to services, there are difficulties in specifying units of quantity. In these cases it is necessary to rely on conventional methods of describing products; these involve either describing output in terms of only some of the main characteristics of products or deriving quantity indicators from the quantities of labour and materials used in their production. The use of these methods is not likely to lead to any major distortion in comparing the total product of countries but they could lead to errors in comparing real expenditure on different items if the methods provide an inaccurate comparison of the real quantities involved.

The main problem in making the comparison is thus to combine collections of prices and quantities of items of product into groupings which provide a useful summary of real expenditure and total product. The conceptual problems in doing this are similar to those encountered in intertemporal comparisons of changes in indexes of prices or quantities and they give rise to the same index number considerations. The main differences in applying these methods in international and intertemporal comparisons is in the magnitudes of the statistical tasks involved and in the differences in the dispersion of prices and quantities. It is more

difficult in the case of comparisons between different countries to ensure that the price and quantity data relate to comparable products, while at the same time it is more likely that there will be gaps in the information available leading to the need to impute price and quantity comparisons from those of other items. These are largely statistical problems, and their importance partly depends on the time and resources available for collecting and assembling the basic information.

The effect on the results of differences in the relative price and quantities of similar products in different countries cannot, however, be overcome by collecting additional information. It is a basic problem stemming from the index number formula used in such comparisons and it has important implications on the meaning of the estimates due to the resulting differences in price weights. Although this is a problem which affects the interpretation of intertemporal comparisons of real product and income it is much more important in the case of comparisons between countries; that is in comparisons over time in one country, at least between periods which are not too far distant, the variations in relative prices are not likely to be so great as to lead to any great difficulty in interpreting the meaning of differences in the results based on price weights in one or the other period. In comparisons between countries, however, the possibility of large differences is much greater.

It is sometimes argued that differences in the pattern of prices and quantities in different countries is a reflection of different tastes of the inhabitants of the countries, and that greatly dissimilar patterns mean that the tastes are so different that it is impossible to draw any conclusions from international comparisons of the real income of the countries. In fact, however, the only empirical evidence that is available, in the case of comparisons between some European countries and the United States, shows that the pattern of tastes in these countries is quite similar.⁶ This is based on the fact that differences in relative quantities of expenditure between these countries can be largely explained by different levels of real income and relative prices.

The concepts and methods used in this study are broadly similar to those adopted in a comparison of the real product and prices of OEEC member countries in 1950. In several instances, however, different procedures were used to handle particular problems in the comparison and some additional estimates have also been made.

1. In the first place, a good deal more reliance was placed on secondary sources of information about prices and quantities. This was mainly because the present study was undertaken by one person and it was not possible to carry out the intensive series of field inquiries made in the OEEC study. However, many of these data were the information collected by the national statistical offices for compiling price and quantity indexes and it is thought that these sources avoided many of the limitations in

⁶ *International Comparisons of Real Incomes*, p. 9.

using indirect data, such as lack of specification of qualities.

2. A more detailed analysis is provided in the present study of product and expenditure at factor cost.

3. Where qualities of items for which price information was available differed in a way that could affect the utilities derived from products, an attempt has to be made to adjust prices for differences in the specifications. In the OEEC study different products meeting similar uses were equated by the relative costs of production; in the present study, however, products are compared in terms of their main attributes.

4. Adjustments are made to figures of real product to improve their usefulness for comparisons of real income, or living standards, in Australia and the United Kingdom. In the OEEC study it is argued that, since these adjustments are not based on statistical information, they are invalid and comparisons are confined to real product and the main components.

5. Additional estimates are shown in this study of the real income of wage and salary earners, obtained by revaluing average earnings by the prices of items of consumers' goods and services.

2

THE COMPARISON OF MONEY VALUES OF NATIONAL PRODUCT AND RELATIVE PRICES

The two major steps in obtaining consistent estimates of real product and relative prices in the two countries were, first, to adjust published figures of national product and expenditure to provide comparable estimates valued in the prices of the currency units of each country and, secondly, to revalue the details of expenditure and imports to equivalent prices. The procedures used are set out fully in the appendixes; this chapter is intended to provide a brief summary of the concepts and methods used and to explain the reasons for the techniques adopted.

Total National Product

The basic figures of national product are the official estimates published by the national statistical offices of the two countries. There are, however, several definitions of national product and some preliminary consideration had to be given to the one most appropriate for this comparison. Also the official estimates are not completely consistent and some adjustments were required to the estimates of both countries to obtain comparable figures.

There are three main variants of national product. First, national product may or may not include net income from abroad. Since the basic purpose of this comparison is to measure output it seemed more appropriate to exclude income earned abroad by domestically owned factors of production. In the standard definition proposed by the Statistical Office of the United Nations this concept is referred to as domestic product, but in the Australian official estimates it is described as national product, and this terminology has been used in this study. The alternative concept (including net income from abroad) is, however, also used in the comparison of real income and this is described as domestic product.

The second question is whether the depreciation of capital should be included or excluded. Ideally it would be preferable to measure national product net of depreciation since this is part of output which is used up in producing other goods and services and hence should be excluded to

avoid double-counting. But for this purpose depreciation should be valued at replacement cost prices, that is at the current cost of replacing the value of capital used up, and estimates on this basis are not available for Australia. For this reason no attempt was made to eliminate depreciation and thus the national product figures are measured gross. This means that the figures of national product of both countries are overstated by the amount of capital used up in current production.

In the third place, the goods and services comprising national product could be valued at either actual prices of market transactions (market prices) or at prices paid to the factors of production used (factor costs). The distinction between these methods of valuation is described later in this chapter, but briefly market prices provide the more appropriate valuation in using the results to compare real income or expenditure while factor cost is relevant in comparisons of real output or production. Both methods of valuation have been used in this study but the main concept is that at market prices.

Thus the main concept used in this study is the gross national product (at market prices) as defined in the Australian official national income estimates. Alternative concepts of domestic product and national product at factor cost are also used.

Estimates of national product on these definitions are available in the official national income publications of each country, but there are some differences in the figures due in part to differences in definitions and in part to the type of basic information available for making the estimates. In order to provide comparable estimates several adjustments were therefore needed to the published estimates.

Since the United Kingdom definitions conform closely to those proposed by the Statistical Office of the United Nations it was decided to adopt these estimates as the basic figures and to make the adjustments to the Australian estimates. In one case, however, the information needed to adjust the Australian figures was not available and the correction was made to the United Kingdom estimates. This was for a difference in the treatment of imputed rent on government buildings, which is included in the United Kingdom figures but excluded from the official Australian estimates. The amount of the imputed rent in the United Kingdom is shown in the official national income publication.

The principal adjustments made to the Australian figures are as follows. First, the estimated value of stock appreciation was deducted. This is a component of stock change which is due to rising prices and does not represent a real addition to output; it is generally interpreted as a capital gain or loss and hence excluded from the measurement of national product. Although this item is included in the official Australian estimate of national product an estimate of the amount is available in a subsidiary table.

Secondly, the Australian estimates include the current expenditure of

financial enterprises (banks, instalment companies, short-term money market companies, and building societies, etc.) after deduction of bank charges as part of final output. Some of this expenditure is included in the internationally accepted definition, but is completely excluded in the United Kingdom estimates, and this amount was therefore deducted.

Thirdly, a different treatment was adopted for the item of statistical discrepancy, that is the difference between national product estimated as the sum of items of expenditure less imports and as the sum of income items. This amount is treated as an unrecorded item of income in the official national income estimates of the United Kingdom but as an item of expenditure in the Australian estimates. In the present study it has been treated as an income item and is thus excluded from the estimates of national product derived from expenditure data. This means that the present estimates of Australian national product are less than the official figures by this amount.

Fourthly, customs duties on imports were deducted from the value of national product. The reason for the adjustment is that customs duties are a part of the value of final expenditure and in deducting imports to obtain net final output it seems preferable to exclude the total cost of imports and not simply the imports of goods and services. If the adjustment were not made the customs duties on imports would be shown as a part of national product even though it does not arise as a result of productive activities; national product could be raised, in other words, simply by increasing the rate of duty on imported goods.

Finally, a difference between the methods of valuing farm produce consumed on farms has been corrected by adjusting the Australian valuations. In the United Kingdom estimates this product is valued at wholesale selling prices while the Australian practice is to value it at farm selling cost. The result of correcting for this difference is to add to the Australian estimates the estimated cost of marketing farm produce through wholesale markets.

The Main Components

The definitions of output used for consumption expenditure, investment, purchases by public authorities and export follow international recommendations, with the exception that all of the expenditure on education, health, and medical services, whether financed by persons or governments, is included in personal consumption, and total expenditure on roads is included in investment. These changes were made in order to improve the comparability of the totals of public authority expenditure and the expenditure used for these purposes in the two countries. It would probably have been preferable to have divided expenditure on roads between capital and current outlays according to whether the expenditure was for the construction of new roads or for maintenance, but the information is not available in Australia to make this distinction. In the

case of expenditure on education and medical and health services the proportions of output purchased by persons and public authorities simply reflects differences in the method of financing these services in the two countries without affecting the object or nature of this expenditure. Thus, more meaningful estimates of comparative expenditure used for different purposes are obtained by combining the expenditure used for these purposes in one item. A further adjustment to the United Kingdom figures was made by transferring expenditure on alterations and additions to dwellings met by government grants from personal consumption expenditure on rent to public authority capital expenditure.

These main components of expenditure were then divided into additional categories in order to show details of expenditure used for various purposes of consumption and investment. The relationship between these items and the published official figures of expenditure for the two countries is set out in Appendix I, and the sources of the estimates are described in Appendix II.

Comparison of Prices

It would be possible to revalue expenditure to equivalent prices either directly by substituting indicators of the quantities of goods and services for the relative values or by deflating the expenditure figures by price indexes. Both methods were used in this study depending on the data available. In some instances, data of both price and quantity were available and in this case the indirect method of price revaluation was preferred. These different methods should give the same result, apart from some technical problems of index number construction, but there are several practical reasons for preferring to use the method of price deflation rather than the direct substitution of quantities.

In the first place, prices are generally available in more detailed specification than quantities and this makes it easier to ensure that the same products are being compared. A good deal of the detail of prices used was based on collections made by the national statistical offices for compiling indexes of retail and wholesale prices and this source provided complete details of the specifications of the products. But even where other sources were used they generally provided some information about the qualities of products. Quantity data, on the other hand, usually show only the main characteristics of the items.

Secondly, it was not practicable to revalue all individual items of expenditure and the prices and quantities for a large number of products had to be imputed from those available for other goods and services. Since within each expenditure classification there is more likelihood that prices rather than quantities will vary together, the use of prices is likely to lead to a more accurate comparison of real expenditure. A few expenditure items, however, comprised homogeneous products, and in this case the use of the quantity indicators would lead to the same results as the deflation by prices.

As well as the direct data of price, some prices were derived from the comparison of quantities and values of production or consumption. These derived unit values have the advantage that they average out the effect of seasonal fluctuations in prices, and they also allow for differences in prices between localities. Unit values were used to compare real expenditure on some items of food, and an attempt was made to check them with direct information of prices.

The main sources used to collect the prices are described in the following paragraphs. For all goods and services prices were those quoted by the seller, and no allowance was made for discounts, credit terms, or trade-in allowances.

There were five main sources of information about prices. The most important source was the prices collected by the national statistical offices of Australia and the United Kingdom for the purpose of compiling price index numbers and for deflating items of national expenditure to constant prices.

Most of these data were collected in particular specifications, and they could be compared in terms of the main attributes. Australian prices were usually weighted averages for the six capital cities and the United Kingdom figures mostly national averages. An allowance was made for the effect of seasonal variations from an examination of monthly changes and with the help of the national statisticians. This source provided much of the detail of prices needed to revalue expenditure on clothing, food, drink and tobacco, fuel and light, newspapers, travel, running costs of vehicles, communications, entertainment services, and some of fixed investment expenditure on equipment.

Secondly, retail price lists were available for many items, including chemists' goods, groceries, food, tobacco, confectionery, and farm machinery. These lists covered a wider range of items for some products than were available from the prices collected by the national statistical offices, but little information was provided of the specifications. The products included, however, many brand lines such as articles of toiletry and breakfast foods, which could be assumed to be comparable in the two countries. The prices, also, were often only a guide to minimum or maximum prices and do not allow for regional differences in prices. The main uses made of these price lists were as a check on the price data obtained from other sources and where alternative sources of information were completely missing.

Thirdly, estimated prices were derived for some items from data of quantities and values of production, imports and exports, and from figures of household or total consumption expenditure per head of population. A good deal of useful data on the quantity of food consumed in the United Kingdom is available in the annual reports of the National Food Survey Committee and for Australia in the Commonwealth Statistician's annual report on *Food Production and the Consumption of Foodstuffs and Nutrients*. In addition to this source, data of quantity and

price could be obtained from the national income work-sheets for items where expenditure is estimated by multiplying consumption by average price.

Fourthly, a number of business firms were approached for details of the prices of specific products in Australia and the United Kingdom. For example, manufacturers of electrical goods and agricultural implements and machinery, which either manufacture or distribute comparable products in both countries, were able to supply list prices for comparable products selling simultaneously in both countries.

Finally, in areas where other sources were inadequate and where there were doubts about the representativeness of the price and quantity data assembled for an item category, persons with experience of conditions in both countries and experts in particular trades were asked for a personal assessment of the relevant comparison.

These data of price and quantity were used to compile price and quantity relatives for each of some two hundred items of expenditure. The individual relatives were obtained in various ways depending on the type of data available; in some cases prices were weighted within each item category by the estimated consumption in both Australia and the United Kingdom, in other cases only one overall weighting pattern could be determined. In several instances, where the item comprised a single product, the price and quantity relatives were quite consistent. Because of the difference in the sources of data for each item, and the need to use different methods to compile the relatives, they are not strictly consistent in terms of one type of index number formula, and the tables which show the items at the price and quantity weighting of each country are only approximately correct. The individual items were, however, combined into the main components of expenditure and total national product, using a consistent index formula which can be described as follows. Using P and Q to represent the price and quantity data, and the subscripts a and u to refer to Australia and the United Kingdom respectively, the real product comparison was obtained as:

(1) using United Kingdom price weights $\frac{QuPu}{QaPu}$

(2) using Australian price weights $\frac{QuPa}{QaPa}$

and the relative purchasing power of currencies as:

(3) using United Kingdom quantity weights $\frac{PuQu}{PaQu}$

(4) using Australian quantity weights $\frac{PuQa}{PaQa}$

Adjustment for Differences in Quality

As far as possible an attempt was made to collect details of prices for identical items in the two countries. In a large number of instances,

however, there were minor differences in the specifications of products for which prices could be obtained and it was then necessary to adjust the prices to take account of the effect of these differences.

Where the specifications differed simply because statistical offices choose different products for price indexes and both products were common in the two countries, an estimate was made of the price of the alternative product. This involved some margin of error because of the reliance on the subjective assessment, but since it would be unlikely to lead to systematic bias any errors would tend to cancel out. In some instances, also, this comparison could be improved by obtaining price relatives for each of the products and combining them according to the estimated relative expenditure in each country. In this case, both prices were used and the different quantities of consumption were assumed to represent relatively slight differences in tastes leading to a different expenditure weighting in the two countries. For example, a higher proportion of small motor cars is used in the United Kingdom compared with Australia, but instead of making a direct comparison between the typical car in Australia and in the United Kingdom the item was divided between cars of different horsepower categories, and the comparison made of the prices and quantities of cars in each of these categories. This method serves to avoid the need to make an assessment of the attributes of the different cars by introducing an allowance for differences in tastes and hence leads to a weighting difference in the comparison. In the case of cars, however, the difference in size is obvious, and the real problems arise where products which are common in each country differ in a way which significantly affects their usefulness. Differences in textile products, due to the type and quantity of material used, and in consumers' durable goods as a result of slightly different technical specifications, and differences in the congestion of train travel may be important factors in comparing levels of real product and expenditure. If the differences in horsepower of motor cars can be overcome, there is still the need to equate the Australian Holden with a United Kingdom car of comparable size; superficially, the Velox may be a similar car, but there are differences in particular characteristics of the two cars.

In the second method, an attempt was made to compare the most common goods and services in each country or those for which price data were available in terms of the attributes. This procedure was essential where a common type of product was not available within an item group. It was used also for several products where it seemed preferable to evaluate the characteristics rather than rely on the advice of the statisticians in the national statistical offices. In practice, however, this method was not followed to any depth, and only a few of the major characteristics of products were taken into account. For example, the quality of material was compared for textile products, refrigerators were compared in terms of cubic capacity, and cigarettes by means of the tobacco content. Rela-

tively minor differences in products were ignored, including differences in styling and gadgets on consumers' durable goods, and differences in cut and styling of items of clothing were generally assumed to be due to caprices of fashion, rather than reflecting basic differences in tastes or affecting the usefulness of the product.

This is the traditional way of allowing for differences in the quality of items in compiling indexes of movements in prices and quantities over time. An alternative method has, however, been proposed by Milton Gilbert which has been adopted in international comparisons of real product and prices undertaken by the OEEC. In this approach the quality of items is compared in terms of their relative costs of production. The difference between this method and that used in this comparison may be illustrated by showing how they would be applied to adjust prices of different types of refrigerator. In the traditional approach refrigerators are compared by reference to physical characteristics, such as cubic size, extra accessories, and so on; other things being equal, a refrigerator which is twice as big is assumed to provide twice the quantity of refrigerator services. In the method prepared by Gilbert the relative cost of producing identical refrigerators is used to compare their prices. If, for example, refrigerators are of a different size in Australia from those used in the United Kingdom, an attempt is made to assess the relative costs of producing refrigerators of an equivalent size in the two countries. The price comparison is then based simply on the relationship between the hypothetical costs of producing these refrigerators.

In describing the method of comparison based on relative costs of production, Gilbert makes a distinction between differences in products which are the result of 'economic' and 'non-economic' factors.

As between two periods of time or between two countries, a product may be of a higher quality in the sense of being more attractive to the purchaser for one of two reasons. The one is that there is a more advanced state of the arts or state of technical knowledge which enables a better product to be made without requiring the use of more resources. The other is due to the fact that the purchasers in one of the markets are either willing, because of their taste preferences, or able, because of their level of income, to pay for a product that requires more resources to produce it. The first type of higher quality is cost free, and hence is non-economic. The second type requires higher cost, and hence is economic.¹

The quality difference which is economic can be measured by the relative costs of products. Non-economic differences cannot be measured in any quantitative, or objective way 'because there is no economic unit of quantity by which to measure them'.² According to Gilbert, allowance may be made in international comparison of common products for economic differences in quality, but 'insofar as common products differ

¹ Gilbert and Kravis, *An International Comparison of National Products*, p. 80.

² Ibid.

in quality of a non-economic character, they are identical products from the standpoint of quantitative economic measurement, both for productivity measures and economic welfare measures'.³

The approach advocated by Gilbert is based on actual costs of production and it ignores differences in the quality of goods and services which are not reflected in different costs or methods of production. Since economic change over time is partly a matter of change in quality as well as in the quantity of goods and services available and in international comparison quality improvements might be expected to be relatively more important the more developed the economy or the higher the real per capita income, limiting the comparison to 'economic' differences will lead to a downward bias in estimates of real product of developed economies. There are, of course, many items and attributes for which it is difficult or impossible to make an assessment of quality differences and the most that can be done in the traditional approach is to allow partially, and subjectively, for any bias in ignoring quality improvement altogether. Simply because quality differences are more important in interspatial comparison than in intertemporal comparison, there is more justification for using a method which is objective and does not depend on subjective interpretation of the attributes, but on the other hand it could lead to a bias. Gilbert would not deny that such a bias will exist, but his view is that it is preferable to a method based on subjective comparison.

In the present study the traditional method of comparing common goods is preferred to the method proposed by Gilbert and based on costs of production—for three reasons. First, economic statisticians are often required to make subjective comparisons which go beyond the simple enumerative recording of facts. In measuring the value of national product, for example, it is impossible to avoid some element of personal judgment in both selecting and pricing goods and services; the common rule to include those goods and services which can be brought into the measuring rod of money in practice leads to a wide scope in the selection of items and leaves open the method of valuation. Comparison of methods used to prepare estimates of national product at constant prices in different countries shows clearly the effect on the results due to different attitudes or preferences of statisticians on questions where there is scope for subjective judgment. It may be suggested that the problems involved in allowing for quality change are rather different, but in fact these problems have been tackled for many years by government as well as private statisticians.

Secondly, there is a good practical reason for preferring to use the traditional method. Data of relative cost of producing goods of different kinds are difficult to obtain and use, and it probably would have been impossible to obtain accurate estimates of relative costs of production in

³ Ibid., pp. 82–3.

1958-9. On the other hand, the information of prices available from the national statistical offices used in this study did give some details of the specifications of products, which provided a basis for matching attributes.

Thirdly, a correction for differences in quality is required in using the results, and the statistician is often in a better position to do this than the user; for example, he may have information not available to the general user, and be able to obtain details of specifications from manufacturers. Even if it is debatable whether such an adjustment can be made accurately, simply on practical grounds it seems desirable to attempt a correction for differences in quality.

Comparison of the output of the service industries raises particularly difficult problems, because of the absence of any clear way of describing the output in terms of attributes of the product. A large part of this output does not, in fact, appear to have any identifiable product, particularly the output of public authorities which is supplied virtually free of charge. In dealing with this item in intertemporal comparison, the conventional practice is to measure the output partly or entirely by the quantities of labour and materials used, and this method has been followed in the present study. Public authority current expenditure on goods and services, excluding health services, was compared in terms of numbers of employees and the deflated value of purchases of goods and services. Other items of services were also treated in this manner; for example, the output of medical services was compared partly in terms of numbers of doctors and other professional medical practitioners, and of domestic services by the numbers of domestic servants. For some services, however, an attempt was made to obtain a quantity indicator for output, including the transport services where rail and air travel were compared as passenger miles and bus travel as passenger journeys. While these methods of comparing the output of the service industries are largely conventional, they may give a not unreasonable answer; the major source of error is likely to occur from the assumption that the public services of the two countries are equally efficient.

The quantity of the services provided by retail distribution has been assumed proportional to the quantum of goods sold. This is the usual practice in measuring real national product, but it means that no allowance has been made for differences in the quality of services of retailers in the two countries, either in selling products or in the convenience of location or hours of trading of stores. This would have entailed dividing prices paid between the value of the goods acquired and the value of the service of trading, and then selecting and measuring the attributes of each, and the information is not available to carry this out. In the estimates the relative prices paid for the goods have been assumed, therefore, to relate entirely to the quantum of goods supplied.

Factor Costs

In comparing economic production, output should preferably be weighted by factor costs rather than market prices (factor costs plus net indirect taxes). The resources used in each industry are measured by the payments to the factors of production employed, and net indirect taxes, which do not represent a cost of a factor of production, are irrelevant for this purpose. The resources used in producing the output of food and drink purchased by consumers, for example, are properly measured before any addition is made for the value of excise duty or sales tax levied on the value of wholesale or retail sales. In addition to the net indirect taxes levied on wholesale and retail trade, and which can be apportioned fairly easily to specific items of expenditure, net indirect taxes are also levied on intermediate output used again in further processing and on production which has several uses, and there are statistical difficulties in apportioning these taxes to particular items of final expenditure. The result is that the allocation of the total net indirect taxes includes a considerable amount of arbitrary apportionment.

Objections have also been made to the usefulness of the factor cost concept on the grounds that, since the prices paid for factors should be proportional to the marginal product of the factors, it is more appropriate to value them at their actual cost to the purchasers, including the value of indirect taxes levied at intermediate stages of production. According to this argument, factor cost prices should exclude only those indirect taxes 'which are levied after the final stage of production, and which cannot therefore affect the proportions in which different factors or materials have been combined in the production process'.⁴ However, other and more fundamental criticisms have been made of the use of factor costs as a measure of the marginal productiveness of resources used, and there seems little point in attempting further refinement of the concept.⁵ The statistical problems encountered in dividing the net indirect taxes between those levied on intermediate and final sales are considerable and would add a further margin of error to the estimates. Finally, a substantial proportion of indirect taxes, including the sales, purchase, and excise taxes, are in fact levied directly on items of final expenditure. For these reasons the estimates of product and expenditure at factor costs shown in this study follow the more conventional method of deducting all of net indirect taxes from the market prices of final expenditure.

Because of the uncertainty as to the meaning of the figures and the margins for statistical error in deriving the figures of factor costs, the real

⁴ J. L. Nicholson, 'National Income at Factor Cost or Market Prices', *Economic Journal*, Vol. LXV, June 1955, p. 219.

⁵ See the comments by contributors to 'A Critique of the United States Income and Product Accounts', *Studies in Income and Wealth*, Vol. 22 (National Bureau of Economic Research, 1958), and A. Bergson, *Soviet National Income and Product* (Columbia University Press, 1953).

product comparisons are shown at both market prices and factor costs.

In compiling prices at factor cost, no attempt was made to value all individual items at factor cost. The information to do this is not available for either the United Kingdom or Australia. Net indirect taxes were distributed over the main product groupings such as hardware, electrical goods, investment expenditure, and they were then assumed to be proportional over the products in these categories. This means that within the main groups of items products are valued at their relative market prices.

The estimated factor costs were obtained by adjusting the market prices by the ratio of factor cost to market prices in each country. If, for example, the market price relatives for hardware were 1:1 between Australia and the United Kingdom, and net indirect taxes were 50 per cent of the market price in Australia and nil in the United Kingdom, the relative factor costs for this item were estimated as 1:2 between Australia and the United Kingdom.

The ratio between market price and factor cost for United Kingdom expenditure was derived from statistics published in the national income accounts of net indirect taxes and subsidies on items of personal consumption expenditure and from published figures of national expenditure at market prices and factor costs. An unallocated item of indirect taxes and subsidies on personal consumption expenditure was distributed, and the published data divided into further detail to obtain the item categories used in the present comparison. No official estimates are available in Australia of expenditure at factor cost nor of the allocation of net indirect taxes between items of expenditure, and the figures were compiled in the following way. First, the amounts of excise and sales tax were allocated using data of excise collected and applying rates of sales tax to the estimated expenditure on individual items of national expenditure. Other net indirect taxes were then apportioned using the detail shown in the official input-output publication of the net indirect taxes in the output of each industry and the industry composition of final expenditure. The resulting total of excise, sales, and other net indirect taxes was short of the amount of all net indirect taxes, and the difference was simply distributed *pro rata* over the items.

The Year of Comparison

The data of expenditure relate to 1958-9 for Australia and to 1958 for the United Kingdom. Real national product rose in the United Kingdom by about 3.5 per cent, or 3 per cent per head, between 1958 and 1959, and this will lead to a slight downwards bias in the United Kingdom figures. The direct price data for both countries were collected mainly for the last quarter of 1958, and an allowance was made for seasonal effects so that the prices are approximately representative for the year 1958-9. This will lead to a further slight understatement of the United Kingdom figures

since the 1958 estimates of expenditure are deflated by prices slightly higher than those which are strictly appropriate.

The main reason for choosing 1958-9 for the comparison rather than a more recent year is that the secondary data are more complete, and the official income data subject to smaller revisions than those for the current year. Virtually all the official data used in this study in 1958-9 had been published by 1964 (when the study was commenced) and the national income estimates for this year were based on a wider range of data, and more supporting detail was available from the work-sheets. However, this effectively eliminated the possibility of any field work to complete gaps in the secondary sources, and made it more difficult to use some other sources; information on the comparability of different products was more dependent on memory and therefore subject to greater error, and some information had since been discarded from business records. There is no great difficulty updating the results to a more recent year (estimates for 1964-5 are given in Chapter 3), and most of the information needed to do this is provided in the official national income publications.

The national product data were taken from the official publications, *Australian National Accounts, National Income and Expenditure, 1948-49 to 1961-62*, dated 1 July 1963, and for the United Kingdom, *National Income and Expenditure, 1963*, dated August 1963. Some minor revisions have been made to these data in later national income publications.

A comparison of the latest estimates with those used in this study is provided in Table 1.

Table 1—REVISED ESTIMATES OF NATIONAL PRODUCT*
(£A and £Stg)

	Aust. (1958-9)		U.K. (1958)	
	Used in comparison	Revised estimate	Used in comparison	Revised estimate
Personal consumption expenditure	3,996	3,993	15,212	15,373
Fixed investment expenditure	1,487	1,483	3,486	3,478
Current expenditure of public authorities	608	608	3,705	3,675
Investment in stocks	142	139	100	100
Net exports of goods and services	- 51	- 51	109	108
G.N.P.	6,182	6,172	22,612	22,734

*As shown in the official publications. Australian figures exclude net current expenditure of financial enterprises, stock appreciation and the statistical discrepancy. Revised figures are from *Australian National Accounts, 1948-49 to 1964-65* (Preliminary Statement No. 1), and the United Kingdom publication, *National Income and Expenditure, 1965*.

3

EXPENDITURE ON NATIONAL PRODUCT AND RELATIVE PRICES IN AUSTRALIA AND THE UNITED KINGDOM

This chapter sets out the detailed comparative figures of real product and expenditure on consumption, investment, purchases by public authorities, The first section shows the total product and the main components of expenditure, the second part gives the data of relative prices, and the final two sections deal with the expenditure on items of consumption goods and services and fixed investment.

Product and expenditure is valued at Australian and United Kingdom prices and in both market prices and factor costs. The significance of factor costs has been discussed in Chapter 2; the meaning of the difference between valuations in the prices of each country may be indicated as follows.

The relative prices of Australia differ from those of the United Kingdom, and two separate comparisons are therefore obtained by weighting the quantities of goods and services produced and used in the two countries by prices in Australia and in the United Kingdom. In general, product and expenditure of one country are higher where the quantities of goods and services are valued at the prices of another country. This is because of an inverse relationship between prices and quantities—the goods and services which are higher in price also tend to be relatively less consumed—leading to a larger weight being given to the products which are more important in one country when the goods and services are valued at another country's prices. A similar result also appears in the comparison of prices where they are weighted by the relative quantities of goods and services of different countries, and the overall prices of one country, compared with those of another country, are higher where the prices of individual items are weighted by the quantities of goods and services produced in the other country. Since the difference between the pattern of relative prices and expenditure of countries reflects fundamental differences in tastes, needs, resources, and methods of production there is little point in averaging the results to obtain one comparison.

Real Product and Expenditure

The comparative figures of real product, using different methods of valuing goods and services in the two countries, are set out in Table 2.

Table 2—NATIONAL PRODUCT PER HEAD
(£A and £Stg)

	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K. = 100</i>
Market prices			
Local prices (£A)	513·5*	614·5	120
U.K. prices (£Stg)	410·8	464·3	113
Australian prices (£A)	581·2	614·5	106
Factor cost			
Local prices (£A)	480·0*	552·0	115
U.K. prices (£Stg)	384·0	421·6	110
Australian prices (£A)	526·9	552·0	105

* Sterling converted to £A at current exchange rate.

Using the direct method of revaluing national product figures by the actual prices of goods in the two countries, Australian real product is relatively highest in terms of United Kingdom market prices. On this comparison, the Australian real product per head of the population is some 13 per cent higher than that of the United Kingdom. At Australian market prices, Australian real product per head of the population is 6 per cent above the United Kingdom figure.

Measured at factor costs, Australian real product per head of the population is also above that of the United Kingdom. There is not a large difference in the comparative levels of real product valued at market prices and factor cost, however, and difficulties in providing comparable estimates of these two sets of prices, discussed in Chapter 2, could be one reason for the difference. But to the extent that Australian product is higher than that of the United Kingdom where quantities are valued at market prices instead of at factor cost this would suggest that Australian real expenditure is relatively higher on those goods and services on which net indirect taxes are greater in both countries.

Table 2 also shows that the method of exchange rate conversion overstates the level of Australian real product compared with that of the United Kingdom. On this comparison Australian real product per head of the population is 20 per cent higher, at market prices, than the United Kingdom figure, or some 6 or 12 per cent more than shown by the method of direct price revaluation.

Expenditure on the major components of national product is shown in Tables 3 and 4. These tables show substantial differences in the relative real expenditure on the main components of national product. There is not much difference in the levels of real personal consumption expenditure,

Table 3—COMPONENTS OF NATIONAL PRODUCT PER HEAD
(£A and £Stg)

	<i>U.K. price weights</i>			<i>Aust. price weights</i>		
	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100</i>	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100</i>
Personal consumption expenditure	317.5	332.7	105	428.1	419.9	98
Fixed investment expenditure	70.8	104.7	148	107.5	149.5	139
Current expenditure of public authorities	42.8	26.0	61	70.7	43.1	61
Investment in stocks	1.9	10.8		2.7	14.3	
Net exports	-22.2	-9.9		-27.8	-12.3	
G.N.P.	410.8	464.3	113	581.2	614.5	106

Table 4—COMPONENTS OF NATIONAL PRODUCT PER HEAD—
FACTOR COST
(£A and £Stg)

	<i>U.K. price weights</i>			<i>Aust. price weights</i>		
	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100</i>	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100</i>
Personal consumption expenditure	273.9	281.0	103	383.0	370.0	97
Fixed investment expenditure	66.7	98.7	(148)	99.8	138.8	(139)
Current expenditure of public authorities	41.5	25.2	(61)	65.8	40.1	(61)
Investment in stocks	1.8	10.2		2.5	13.2	
Net exports	0.1	6.5		-24.2	-10.1	
G.N.P.	384.0	421.6	110	526.9	552.0	105

using either method of valuation. In United Kingdom prices, the Australian expenditure per head of the population is slightly above the comparable United Kingdom expenditure, but it is slightly lower at Australian prices.

Expenditure on investment goods per head of the population is much higher in Australia, while expenditure by public authorities per head of the population is considerably lower. For these two items the relative expenditure at market prices and factor cost is similar as a result of the statistical methods of estimation. In measuring personal consumption expenditure at factor cost individual items of product were separately valued at their factor costs but it was not possible (nor, perhaps, necessary) to value the items of expenditure on investment and the individual items making up public authority purchases at factor costs and hence the relative levels of real expenditure on these components at market price and factor cost valuations are the same.

Expenditure on items of personal consumption and fixed investment expenditure is discussed later in this chapter. There seem to be two reasons why Australian expenditure is much lower than the United Kingdom expenditure on public authority goods and services.

One difference is the larger expenditure in the United Kingdom on items of war and defence. War and defence accounts for more than 50 per cent of public authority expenditure (as defined in this study) in the United Kingdom compared with about one-third in Australia. Excluding this item, the Australian expenditure on public authority goods and services per head of the population is about 87 per cent of the United Kingdom expenditure, at United Kingdom market prices, and 82 per cent at Australian market prices.

The second reason is, as previously stated, that public authority expenditure is measured by the quantities of labour and materials used and this does not allow for any difference in the productivity of the public services in the two countries or in the types of goods and services produced. Earnings of Australian public servants are higher relative to those of total wage and salary earners in Australia than in the United Kingdom suggesting that their 'productivity' may also be higher and that a larger output is obtained from the same numbers of public servants.

Using 1958-9 as a bench-mark for relating real product series of the two countries since 1948-9 it is possible to show how relative levels of real product have varied in the post-war years. These figures have a larger margin of error than the comparisons at one date; nevertheless, they provide an indication of the main trends. These comparative estimates are shown in Table 5, using United Kingdom price weights.

Australian real product was relatively higher in the early post-war years when it was nearly 20 per cent above that for the United Kingdom. Subsequently, the Australian real product showed a slower rate of increase than that of the United Kingdom leading to a level less than 10 per cent

Table 5—REAL PRODUCT AND EXPENDITURE PER HEAD,
1948-9 to 1964-5
(Australia relative to U.K. = 100)

	<i>Consumption expenditure</i>	<i>Investment expenditure</i>	<i>Expenditure by public authorities</i>	<i>G.N.P.</i>
1948-49	115	154	52	117
1949-50	116	167	56	117
1950-51	117	190	66	119
1951-52	114	200	67	112
1952-53	110	177	59	116
1953-54	111	169	51	112
1954-55	111	163	51	109
1955-56	108	159	54	110
1956-57	106	149	54	110
1957-58	106	145	54	106
1958-59	105	148	61	113
1959-60	105	148	57	108
1960-61	102	139	56	107
1961-62	101	125	57	105
1962-63	104	134	56	108
1963-64	103	139	57	107
1964-65	102	132	61	105

higher by the early 1960s. Real consumption expenditure varied in much the same way as total real product, while real public authority expenditure rose slightly and real fixed investment expenditure showed a rather larger relative decline.

So far the figures presented have related to real product and expenditure per head of the population of the two countries. These results may be thought of as providing an overall measure of the capacity of the countries to produce goods and services after allowing for the different size of the population. A more useful measure of productive efficiency is obtained by taking account of the quantities of resources (labour and capital) used up in current production. These results show the comparative levels of labour productivity in the two countries. Labour productivity takes account only of one of the factors used in production, and is affected by the efficiency of labour and the quantities of capital used. It is not possible, however, to allow for differences in the capital used and the problem of measuring capital on an equivalent basis in international comparisons is almost insuperable; certainly there are no figures of capital stock for Australia similar to those for the United Kingdom. There are, as well, reasons why the engaged labour force is only an approximation to labour input—it ignores, for example, differences in hours worked—although it

may serve well enough as a working approximation for the present purpose.

The comparative figures of real product per person employed are £1,553 for Australia and £1,328 for the United Kingdom in Australian factor cost (a ratio of 117 to 100) and £1,186 for Australia and £968 for the United Kingdom in United Kingdom factor cost (123 to 100).

Australian real product per person employed is relatively 12 per cent higher than real product per head of the population. The difference between these two comparisons is due to a different proportion of the population in the workforce in the two countries which is, in turn, partly a reflection of the different age distributions. In 1958-9 about 58 per cent of the United Kingdom population was aged between nineteen and sixty-five compared with 54 per cent in Australia.¹

One advantage of the method of revaluing money estimates to equivalent prices by the actual prices of goods and services is that this allows a direct comparison to be made of the proportions of national product used for various purposes valued at the same prices. The proportion of expenditure on main components of national product at the same prices is shown in Table 6. The first four columns of this table show the distribution of Australian and United Kingdom national expenditure in their own market price and factor cost valuations. The last two columns show how the proportions compare if the United Kingdom expenditure is valued at Australian factor costs and the Australian expenditure at United Kingdom factor costs. There is not a great deal of difference in these figures apart from a slight fall in the proportion of Australian

Table 6—MAIN COMPONENTS AS PERCENTAGE OF
NATIONAL EXPENDITURE

	<i>Market prices (local currencies)</i>		<i>Factor cost (local currencies)</i>		<i>Aust. factor cost</i>	<i>U.K. factor cost</i>
	<i>U.K.</i>	<i>Aust.</i>	<i>U.K.</i>	<i>Aust.</i>	<i>U.K.</i>	<i>Aust.</i>
Personal consumption expenditure	61	58	58	57	58	58
Fixed investment expenditure	14	21	14	21	15	20
Current expenditure of public authorities	8	6	9	6	10	5
NATIONAL EXPENDITURE	100	100	100	100	100	100

¹ The figures relate to 1961: *United Nations Compendium of Social Statistics*.

product used for investment purposes and public authority expenditure where these items are valued at United Kingdom prices and a corresponding rise in the United Kingdom expenditure where these items are valued at Australian prices.

Relative Prices

The prices of national product and the main components of expenditure are set out in Table 7. Overall market prices are 41 per cent higher in Australia, using United Kingdom quantities as weights, and 32 per cent higher using Australian quantities as weights. (These figures are before allowing for the rate of exchange of the currencies; they show Australian prices in £A compared with United Kingdom prices in £Stg). There is only a small difference between the relative market prices and factor cost which is due to a slightly higher ratio of net indirect taxes to national product in Australia than in the United Kingdom.²

Table 7—PRICE RELATIVES OF NATIONAL PRODUCT
(£A relative to £Stg = 100)

	<i>U.K. quantity weights</i>	<i>Aust. quantity weights</i>
Market prices		
Personal consumption expenditure	135	126
Fixed investment expenditure	152	143
Current expenditure of public authorities	165	166
G.N.P.	141	132
Factor cost		
Personal consumption expenditure	140	132
Fixed investment expenditure	150	141
Current expenditure of public authorities	159	159
G.N.P.	137	131

Australian market prices are relatively highest on items of public authority expenditure and fixed investment expenditure. The public authority prices, as has been stated, are based on the cost of materials and labour used and they partly reflect the fact that the earnings of Australian public servants, relative to those of other wage and salary earners, are higher in Australia than in the United Kingdom. The individual prices of items of consumption and investment expenditure are discussed later in this chapter.

² In this study net indirect taxes are defined to exclude customs duties on imports; see Chapter 2.

The comparative prices can be used to show the purchasing power of the currency units of Australia and the United Kingdom over items comprising national product and expenditure. This involves allowing for the rate of exchange of the two currencies of £A125 to £Stg100. The results set out in Table 8 compare the value of goods and services which can be bought in Australia and in the United Kingdom if the United Kingdom and Australian currencies were simply converted by the exchange rate assuming the same pattern of expenditure.

Table 8—PURCHASING POWER OF AUSTRALIAN AND UNITED KINGDOM CURRENCIES

<i>Market prices</i>	<i>Exchange rate</i>	<i>Purchasing power of £A in U.K. (Aust. quantity weights)</i>	<i>Purchasing power of £Stg in Aust. (U.K. quantity weights)</i>
Personal consumption expenditure	1.00	1.01	0.93
Fixed investment expenditure	1.00	1.14	0.82
Current expenditure of public authorities	1.00	1.33	0.76
G.N.P.	1.00	1.06	0.89

This table shows that more could be bought in the United Kingdom than in Australia for an equivalent cash outlay of Australian pounds if allowance is made for the different relative prices in the two countries than would be indicated by the current rate of exchange. Similarly, less could be bought in Australia than in the United Kingdom in terms of sterling pounds. The differences are greatest over items of public authority expenditure and fixed investment but there is little difference between the purchasing power of the two countries over personal consumption commodities.

Because of variations in internal price levels the figures for 1958-9 are not necessarily applicable to other post-war years. In order to provide an indication of relative price levels since 1948-9 it is possible, however, to link in the figures for 1958-9 with indexes of relevant price changes, based on the implied price indexes of items of national product and expenditure. These comparisons are set out in Table 9, based on United Kingdom quantity weights.³ In contrast to other figures of relative prices shown in this chapter, allowance has been made for the official exchange rate.

³ These figures are only likely to be approximately correct, and their accuracy is affected by index number problems as well as margins of error and possible inconsistencies in the basic data for both countries.

Table 9—PRICES, 1948-9 to 1963-4
(Australia relative to U.K. = 100)

	<i>Consumption expenditure</i>	<i>Investment expenditure</i>	<i>G.N.P.</i>
1948-49	81	90	90
1949-50	85	97	97
1950-51	91	106	116
1951-52	102	114	112
1952-53	107	118	122
1953-54	108	121	122
1954-55	107	122	120
1955-56	108	122	118
1956-57	109	121	120
1957-58	108	121	116
1958-59	108	122	113
1959-60	110	125	117
1960-61	113	127	118
1961-62	110	126	116
1962-63	108	125	115
1963-64	108	125	117

In 1948-9 Australian prices were some 10 per cent below the United Kingdom level, but during the next two years internal prices rose much more steeply in Australia than in the United Kingdom, leading to a price level in Australia some 16 per cent higher. The figure for 1950-1 was affected by abnormally high prices for primary products which reflected substantially a rise in export prices of some 70 per cent. But for the remaining years until 1963-4 Australian prices continued to be some 15 to 20 per cent above those in the United Kingdom.

Overall relative prices have not varied much since 1958-9 and the results for 1958-9 set out in detail in this study might not be far out of line as an indication of the prices of individual products in the two countries in 1963-4, or even later.

Table 10—PERSONAL CONSUMPTION EXPENDITURE PER HEAD
(£A and £Stg)

	<i>U.K. price weights</i>			<i>Aust. price weights</i>		
	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100*</i>	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100*</i>
Food						
Bread and cereals	12.1	11.6	96	16.2	15.5	96
Meat and fish	26.6	30.3	114	27.6	27.7	100
Fruit and vegetables	15.2	15.9	105	17.6	16.3	93
Dairy products	13.8	11.3	82	18.9	15.5	82
Oils and fats	4.5	4.0	88	7.4	6.5	88
Beverages	5.6	4.2	75	6.0	5.3	89
Sugar, preserves, and confectionery	8.4	6.2	75	12.7	9.2	72
Other food	2.7	2.6	97	4.4	4.2	95
Total food*	88.9	86.2	97	110.8	100.2	90
Alcoholic drink	16.3	23.2	143	20.6	27.7	135
Tobacco	20.0	19.7	99	15.7	14.6	93
Housing	26.0	31.3	121	29.2	35.2	121
Fuel and light	13.3	9.0	67	16.6	11.2	67
Clothing and footwear	28.3	23.6	84	46.5	38.3	82
Matches and soap	3.4	2.8	83	4.4	3.5	79
Chemists' goods	5.7	5.5	96	10.3	9.4	91
Books and newspapers	4.6	4.1	89	7.2	6.0	84
Electrical goods	8.0	11.6	145	13.1	17.3	132
Hardware	2.8	2.6	94	5.9	4.4	75
Motor vehicles	7.8	16.4	211	9.8	18.4	189
Other goods	18.6	18.3	98	31.8	30.5	96
Running cost of motor vehicles	6.4	12.9	200	8.5	14.8	174
Travel	10.1	11.6	115	15.7	14.7	94
Communication services	2.5	2.5	101	2.9	2.8	95
Entertainment	4.9	2.6	53	7.9	4.6	59
Education	12.4	16.5	133	11.2	14.9	133
Medical and health	13.0	12.3	95	17.0	16.2	95
Other household and personal services	7.0	4.0	57	11.2	6.4	58
Miscellaneous services	17.8	15.9	89	32.0	28.7	90
TOTAL*	317.5	332.7	105	428.1	419.9	98

* Relatives and totals derived from unrounded data and totals may not add.

Table 11—PRICE RELATIVES OF PERSONAL
CONSUMPTION EXPENDITURE
(£A relative to £Stg = 100)

	<i>U.K. quantity weights</i>	<i>Aust. quantity weights</i>
Food		
Bread and cereals	133	134
Meat and fish	104	91
Fruit and vegetables	116	102
Dairy products	137	137
Oils and fats	165	164
Beverages	107	127
Sugar, preserves, and confectionery	152	147
Other food	161	157
Total food	125	116
Alcoholic drink	126	119
Tobacco	79	74
Housing	112	112
Fuel and light	125	126
Clothing and footwear	164	162
Matches and soap	131	125
Chemists' goods	180	171
Books and newspapers	155	147
Electrical goods	163	149
Hardware	212	169
Motor vehicles	126	113
Other goods	171	167
Running cost of motor vehicles	133	115
Travel	156	127
Communication services	118	111
Entertainment	161	177
Education	90	90
Medical and health	131	131
Other household and personal services	160	162
Miscellaneous services	180	180
TOTAL	135	126

Table 12—PERSONAL CONSUMPTION EXPENDITURE PER HEAD—
FACTOR COST
(£A and £Stg)

	<i>U.K.</i> <i>price weights</i>		<i>Aust.</i> <i>price weights</i>	
	<i>U.K.</i>	<i>Aust.</i>	<i>U.K.</i>	<i>Aust.</i>
Food	90.3	87.6	106.0	95.9
Alcoholic drink	8.8	12.6	11.7	15.8
Tobacco	5.2	5.2	8.0	7.4
Housing	20.9	25.2	24.6	29.7
Fuel and light	12.8	8.7	15.9	10.8
Clothing and footwear	26.2	21.9	44.1	36.3
Matches and soap	2.9	2.4	4.1	3.2
Chemists' goods	4.7	4.5	9.1	8.3
Books and newspapers	4.5	4.0	6.8	5.7
Electrical goods	6.2	9.4	11.2	14.9
Hardware	2.5	2.4	5.1	3.8
Motor vehicles	5.6	11.8	7.7	14.5
Other goods	16.0	15.8	28.9	27.8
Running cost of motor vehicles	4.1	8.3	7.4	12.8
Travel	9.2	10.5	14.0	13.1
Communication services	2.4	2.4	2.6	2.4
Entertainment	4.3	2.3	7.7	4.5
Education	12.0	15.9	10.4	13.9
Medical and health	12.6	11.9	15.8	15.1
Other household and personal services	6.5	3.7	10.8	6.2
Miscellaneous services	16.2	14.5	31.0	27.8
TOTAL*	273.9	281.0	383.0	370.0

* May not add because of rounding.

Table 13—PRICE RELATIVES OF PERSONAL CONSUMPTION
EXPENDITURE—FACTOR COST
(£A relative to £Stg = 100)

	<i>U.K. quantity weights</i>	<i>Aust. quantity weights</i>
Food	117	109
Alcoholic drink	133	126
Tobacco	153	144
Housing	118	118
Fuel and light	124	124
Clothing and footwear	168	166
Matches and soap	140	134
Chemists' goods	196	186
Books and newspapers	152	143
Electrical goods	181	157
Hardware	204	163
Motor vehicles	138	123
Other goods	180	176
Running cost of motor vehicles	178	155
Travel	153	125
Communication services	109	103
Entertainment	179	196
Education	87	87
Medical and health	126	126
Other household and personal services	165	167
Miscellaneous services	191	191
TOTAL	140	132

Personal Consumption Expenditure

Details are shown in this section of the prices and real expenditure on twenty-eight items of personal consumption expenditure, of which eight are food products. The classification used is broadly comparable with that adopted in the official national income publications of Australia and the United Kingdom. The only important difference from this classification is that the expenditure on education and medical and health services includes, in addition to the outlay by persons, the current expenditure by public authorities on these functions. This avoids any distortion in the comparison of expenditure on these items as a result of differences in methods of financing these expenditures in the two countries.

The classification shown distinguishes different types of goods and services and it is not primarily a classification by function. Thus the expenditure on transport services is included in both expenditure on the purchase and operation of motor vehicles and in purchased transport services, such as rail, bus, and air. A rearrangement of the items to show more clearly the distribution of expenditure in the two countries according to the use of products is set out in the next chapter. Some of the variation in the level of expenditure on products simply reflects differences in geographic or institutional conditions which lead to the use of different products to meet similar purposes. The meaning of the figures is discussed in the next chapter.

Expenditure per head of the population and price and quantity relatives for items of expenditure are shown in Tables 10 to 13.

The items on which expenditure in Australia per head of the population is greater (or the same as) the United Kingdom expenditure are, in order:

At United Kingdom market prices

Motor vehicles
Running cost of motor vehicles
Electrical goods
Alcoholic drink
Education
Housing
Travel
Meat and fish
Fruit and vegetables
Communication services

At Australian market prices

Motor vehicles
Running cost of motor vehicles
Alcoholic drink
Education
Electrical goods
Housing
Meat and fish

Australian expenditure per head of the population is lower than the expenditure in the United Kingdom on the following items:

At United Kingdom market prices

Tobacco
Other goods
Other food
Bread and cereals
Chemists' goods

At Australian market prices

Other goods
Bread and cereals
Communication services
Medical and health
Other food

At United Kingdom market prices

Medical and health
 Hardware
 Books and newspapers
 Miscellaneous services
 Oils and fats
 Clothing and footwear
 Matches and soap
 Dairy products
 Beverages
 Sugar, preserves, and confectionery
 Fuel and light
 Other household and personal services
 Entertainment

At Australian market prices

Travel
 Fruit and vegetables
 Tobacco
 Chemists' goods
 Miscellaneous services
 Beverages
 Oils and fats
 Books and newspapers
 Dairy products
 Clothing and footwear
 Matches and soap
 Hardware
 Sugar, preserves, and confectionery
 Fuel and light
 Entertainment
 Other household and personal services

The items are listed below according to the order in which Australian prices are higher relative to those in the United Kingdom.

United Kingdom quantity weights

Hardware
 Chemists' goods
 Miscellaneous services
 Other goods
 Oils and fats
 Clothing and footwear
 Electrical goods
 Other food
 Entertainment
 Other household and personal services
 Travel
 Books and newspapers
 Sugar, preserves, and confectionery
 Dairy products
 Bread and cereals
 Running cost of motor vehicles
 Matches and soap
 Medical and health
 Alcoholic drink
 Motor vehicles
 Fuel and light
 Fruit and vegetables
 Communication services
 Housing
 Beverages
 Meat and fish
 Education
 Tobacco

Australian quantity weights

Miscellaneous services
 Entertainment
 Chemists' goods
 Hardware
 Other goods
 Oils and fats
 Clothing and footwear
 Other household and personal services
 Other food
 Electrical goods
 Sugar, preserves, and confectionery
 Books and newspapers
 Dairy products
 Bread and cereals
 Medical and health
 Beverages
 Travel
 Fuel and light
 Matches and soap
 Alcoholic drink
 Running cost of motor vehicles
 Motor vehicles
 Housing
 Communication services
 Fruit and vegetables
 Meat and fish
 Education
 Tobacco

There is a considerable range of dispersion in both the relative prices and quantities in the two countries for individual items of expenditure. Total consumption expenditure per head of the population is 5 per cent higher in Australia than in the United Kingdom (at United Kingdom market prices) but for seventeen of the twenty-eight items the Australian expenditure is more than 20 per cent greater or less than 90 per cent of the expenditure in the United Kingdom. Australian expenditure on the purchase and running cost of motor vehicles is twice that in the United Kingdom but expenditure on entertainment and other household and personal services is less than 60 per cent of the United Kingdom expenditure. The price relatives are also widely dispersed, but the extreme values are not as great as for quantity relatives.

Generally the items where Australian expenditure is relatively highest are also those where Australian prices are relatively lowest. The relationship between the market price quantity and price relatives is set out in Table 14.

Table 14—RELATIONSHIP OF PRICE AND QUANTITY RELATIVES

Number of items for which—	
Price relatives above average, quantity relatives below average	12
Price relatives below average, quantity relatives above average	6
Price and quantity relatives both above or below average	10

The inverse relativity indicated by this table is a customary feature of price and quantity comparisons. In the studies made by Milton Gilbert and Irving Kravis of the OEEC countries, it was found that the inverse relationship applied to most items—including items of private investment and government expenditure as well as personal consumption expenditure.

With relatively few exceptions the products with high purchasing power equivalents have a low ranking among the quantity ratios, while low-priced products have a high ranking. The medium purchasing power equivalents are more scattered over the range of quantity ratios, but even in this case they tend to be concentrated in the middle third of the product classes. In the lower third of the quantity ratios there are almost no product classes with low relative prices, while in the upper third there are almost no product classes with high relative prices. . . . Some of the exceptions to the relationship between price and quantity ratios reflect merely the national preference for close substitutes.⁴

The inverse relationship between relative prices and quantities in the present comparison is not as marked as in the case of the comparison between the OEEC countries, and for ten of the twenty-eight items

⁴ Gilbert and Kravis, *An International Comparison of National Products*, p. 52.

both price and quantity relatives (Australian price and quantities relative to those of the United Kingdom) are either above or below that for all personal consumption expenditure. This could be due in part to greater differences in geographic factors, in tastes, and costs of producing goods and services in Australia and the United Kingdom than in the case of the OEEC countries. These differences could lead to both a larger demand and a higher cost of producing identical goods and services in different countries. As well, however, comparisons are affected by the varying relevance of items in product classes to meet similar needs. For example, some services of entertainment in the United Kingdom (such as hiring of TV sets) are met by expenditure on electrical goods in Australia (on TV sets) and thus the two items of expenditure do not cover the same needs in the two countries.

The price and quantity relatives at factor cost are also widely dispersed. It might be thought that the varying incidence of net indirect taxes would be a major factor leading to the dispersion of relative market prices but this is not the case. As Table 15 shows, only for two items (tobacco and the running cost of motor vehicles) does the market price relative differ from the factor cost relative by more than 10 per cent. This table also shows that net indirect taxes are relatively more important in the United Kingdom on items of tobacco, running cost of motor vehicles, entertainment, electrical goods, motor vehicles, and chemists' goods and less important on communication services, food, hardware, and medical and health. In this table net indirect taxes on each item includes not only the purchase or sales taxes on wholesale or retail sales but also other taxes, such as pay-roll tax, levied at intermediate stages of production, and subsidies.

Individual items of personal consumption are discussed in the next chapter; and the following comments are intended simply to amplify the statistical estimates shown in the previous tables and to indicate how the figures may be affected by the methods used to revalue money expenditure to equivalent prices.

Food

Total food accounts for 24 per cent of consumption expenditure in Australia and 28 per cent in the United Kingdom (in local prices). Australian expenditure per head of the population is a little less than the expenditure in the United Kingdom in both Australian and United Kingdom prices.

Australian expenditure is highest on meat and fish, and fruit and vegetables, and lowest on sugar, preserves, and confectionery, and beverages. Comparison of the expenditure on these items, however, conceals large differences in individual products. For example, the higher expenditure in Australia on meat and fish is due entirely to meat and the Australian expenditure on fish per head of the population is not much

Table 15—MARKET PRICE AND FACTOR COST RELATIVES OF
PERSONAL CONSUMPTION EXPENDITURE
(£A relative to £Stg = 100; U.K. quantity weights)

	<i>Market prices</i>	<i>Factor cost</i>	<i>Market prices as per cent of factor cost</i>
Food	125	117	107
Alcoholic drink	126	133	95
Tobacco	79	153	52
Housing	112	118	95
Fuel and light	125	124	101
Clothing and footwear	164	168	98
Matches and soap	131	140	94
Chemists' goods	180	196	92
Books and newspapers	155	152	102
Electrical goods	163	181	90
Hardware	212	204	104
Motor vehicles	126	138	91
Other goods	171	180	95
Running cost of motor vehicles	133	178	75
Travel	156	153	102
Communication services	118	109	108
Entertainment	161	179	90
Education	90	87	103
Medical and health	131	126	104
Other household and personal services	160	165	97
Miscellaneous services	180	191	94
TOTAL	135	140	96

more than 60 per cent of the United Kingdom expenditure. Australians consume more beef, mutton and lamb, poultry, about the same quantity of pork, but less corned meat and bacon and ham.

The lower Australian expenditure on sugar, preserves, and confectionery is almost entirely due to confectionery, where the Australian expenditure is about one-half that in the United Kingdom. Similarly, the lower expenditure on beverages is largely due to the one item of tea where the United Kingdom expenditure is much higher.

The comparison of expenditure on dairy products is affected by the difficulty of handling backyard production of eggs which leads to some inconsistency in the estimates. United Kingdom value of consumption of eggs excludes the value of eggs retained by farmers, smallholders, and domestic poultry keepers for their own consumption, while Australian expenditure is the total value of all eggs consumed. It was not possible

to obtain comparable figures and the inconsistency could amount to between one-quarter and one-half of the value of Australian consumption of eggs. There is some margin of error, therefore, in the comparison of expenditure on dairy products. The inconsistency in the treatment of backyard eggs production might affect the comparison of total expenditure on food by about 1 or 2 per cent.

There is not a great deal of difference, and probably very little significant difference, in expenditure per head on other items. Australian expenditure per head on fruit is higher than on vegetables, but there is a considerable margin of error in these estimates. Expenditure per head on other items, mainly bread, flour, and butter, is broadly comparable in the two countries.

Prices are relatively highest in Australia for oils and fats, 'other food' products, and sugar, preserves, and confectionery. The higher price of sugar, etc. is partly the result of a 12½ per cent sales tax on a large part of this item. Prices of cheese, butter, and margarine are much higher in Australia (after allowing for the exchange rate conversion) and the price of whole milk is relatively higher. 'Other food' includes soup, salt, and fruit juice cordials where Australian prices are higher, and ice cream, for which relative prices in the two countries are approximately the same as the official rate of exchange.

Alcoholic beverages

Australian expenditure on alcoholic beverages per head is about 40 per cent above the United Kingdom expenditure, this being due mainly to higher consumption of beer. Expenditure on wine is also higher per head in Australia, while United Kingdom expenditure is higher per head on spirits. No allowance is made for differences in the quality of alcoholic beverages, and Australian beer and wine are assumed to be similar in quality to United Kingdom beer and wine. However, draught and bottled beer were treated as different products, as also were Scotch and Australian whisky.

Expenditure per head on the main alcoholic beverages (in United Kingdom market prices) is given in Table 16. Net indirect taxes are important on this item in both Australia and the United Kingdom, and are proportionately higher in the United Kingdom; Australian market prices are slightly higher (in terms of United Kingdom quantity weights) than in the United Kingdom, but the factor cost prices are 6 per cent higher after allowing for the rate of exchange.

Tobacco

The expenditure on tobacco and cigarettes in the two countries per head is broadly similar; the United Kingdom expenditure per head on cigarettes is higher but is lower on tobacco and cigars. United Kingdom market prices are relatively higher, compared with Australian prices, than

Table 16—EXPENDITURE PER HEAD ON
ALCOHOLIC BEVERAGES

(U.K. price weights; Aust. relative to U.K. = 1)

Beer	1.3
Wine	3.1
Brandy	5.0
Scotch whisky	0.5
Gin	0.5
Rum	2.2

factor prices, and this reflects the heavier indirect taxation on tobacco and cigarettes in the United Kingdom.

Housing

Expenditure on housing at equivalent prices is measured as numbers of houses per head of the population, and this gives roughly the same result as a comparison of numbers of rooms per head. This comparison, however, ignores other factors, such as the size, amenities, age, etc. of dwellings, which could affect the quality of housing services. The likely effect of this method of comparison is discussed in Appendix II.

Fuel and light

The quantity relatives of electricity and gas per head are comparable, but other fuels are much more important in the United Kingdom. The price of other fuels (which include coal) is imputed, since it was not found possible to equate the quality of coal (the predominant item of fuel in the United Kingdom) with the quality of wood (the predominant item of other fuel in Australia) and the imputed price was derived as an average of the prices of electricity and gas. The relative levels of expenditure (using United Kingdom price weights) are shown in Table 17.

Table 17—EXPENDITURE PER HEAD ON
FUEL AND LIGHT

(U.K. price weights; Aust. relative to U.K. = 1)

Electricity	1.1
Gas	1.1
Other fuel	0.2

Matches and soap

This item includes polishes and disinfectants and these products account almost entirely for the lower expenditure per head in Australia;

consumption of matches and soap is similar in the two countries. Six types of cleaning material (other than soap) were compared, covering boot and shoe polish, floor polish, other polish, disinfectant, ammonia, and blue, and for each item the United Kingdom consumption per head was of the order of 50 per cent above the comparable Australian figure.

Prices of matches are lower in Australia but there is not much difference in prices of other items after allowing for the rate of exchange.

Chemists' goods

Australian expenditure per head on chemists' goods is slightly less than the United Kingdom expenditure but prices are substantially higher. For a few items, such as razor blades and toothpaste, Australian prices (after converting by the rate of exchange) are roughly comparable with those in the United Kingdom, but for the majority of items of toilet requirements and medical products Australian prices are much higher than in the United Kingdom.

Books and newspapers

Australian consumption per head of books and newspapers is slightly lower than in the United Kingdom. This difference is due entirely to lower expenditure on newspapers and magazines as the Australian expenditure on books per head is above that of the United Kingdom.

The consumption of newspapers was based on the volume of circulation and no allowance was made for differences in size, news coverage, etc. of newspapers. One way of allowing for differences in contents would be, perhaps, to base the comparison on the quantity of newsprint used. However, while Australian newspapers are larger in size much of the extra space is used for classified advertisements and expenditure on advertising is counted already in other components of national expenditure. Thus, allowing for differences in the size of newspapers could lead to some double-counting.

Electrical goods

Australian expenditure per head is about 45 per cent above the United Kingdom figure (in United Kingdom market prices). Apart from radio and TV sets, where Australian expenditure is only slightly higher (the accuracy of this figure is affected by the difficulty of comparing the quality of these items in the two countries), the Australian expenditure is between one-third higher and double that in the United Kingdom for the main products of refrigerators, washing machines, and vacuum cleaners.

No allowance was made for the effect of trade-in allowances, which appeared to be more important in Australia than in the United Kingdom, and this would tend to overstate Australian prices and to understate the Australian real expenditure which was derived by deflating expenditure

by the quoted prices. As calculated, the Australian prices are much higher on radios and miscellaneous items, such as irons, but there is not much difference in the relative prices, after allowing for the rate of exchange, of refrigerators, washing machines, and vacuum cleaners. A higher proportion of TV services in the United Kingdom is obtained by rediffusion or from hired sets, and the expenditure on these items is included in expenditure on services.

Running costs of vehicles

Australian expenditure per head on motor spirit is nearly three times that in the United Kingdom (the figures are in equivalent octane rating). Repair and maintenance expenditure is estimated at about double the United Kingdom figure.

As a result of higher indirect taxes on petrol in the United Kingdom Australian prices are relatively much higher at factor costs than at market prices. Market prices are lower in Australia on petrol, oil, and registration fees but higher on repairs and are about the same (after exchange rate conversion) on tyres and batteries.

Travel

There are significant differences in expenditure on different forms of purchased transport services. Although there is a problem in deflating the expenditure to equivalent prices this is not likely to lead to much error in the comparative figures. Ideally, one would like to make the comparison in terms of numbers of passengers carried one mile, with allowance for comfort, convenience, speed, etc., but in fact the comparison is partly passenger miles, partly passengers carried, partly numbers of vehicles and, for a small residual item, is obtained by deflating expenditure by an implied price index derived from prices of other travel. The relative levels of real expenditure per head are shown in Table 18. Australian prices are lower, after allowing for the rate of exchange, on air and train travel and higher on tram and bus.

Table 18—EXPENDITURE PER HEAD
ON TRAVEL
(U.K. price weights; Aust. relative to U.K. = 1)

Train	1.4
Tram and bus	0.4
Air	3.9
Taxi	3.2

Entertainment

The main part of this item is admissions to entertainments and here the Australian expenditure per head is only slightly lower than in the

United Kingdom. The remaining expenditure includes radio and TV licences and rental of TV and radio sets and rediffusion. The number of licences compares fairly well with the quantity relative of admissions. The United Kingdom expenditure on rental of TV and radio sets and rediffusion is much greater than the estimated Australian expenditure on TV and radio rental, and this is the main reason why overall the Australian expenditure per head on entertainment is only 53 per cent of the United Kingdom figure.

Education

The comparison of expenditure on education per head was made in terms of numbers of pupils enrolled or registered, with expenditure on university and other students being weighted by numbers of enrolment. Thus, the 33 per cent higher expenditure in Australia simply reflects the different age distribution and the proportions of persons in the relevant ages attending universities and schools. This makes no allowance (other than between universities and other educational establishments) for numbers of students in different grades, for numbers of teachers, or other aspects of the quality of teaching, and other amenities. Because of the difficulty of obtaining comparable estimates, the numbers of pupils exclude those in technical training, evening classes, and other special categories. Comparison in terms of pupils is the conventional method of measuring education services, and is used in the official Australian estimates of national product at constant prices. Number of pupils is an indicator of output and, while it does raise a problem in defining the output, it does not lead to any actual or implied assumption of productivity difference per teacher or other unit of input. However, according to statistics published in the United Nations *Statistical Yearbook*, in 1959 the staff/student ratio for primary and secondary schools was about 10 per cent higher in the United Kingdom than Australia. The official United Kingdom estimates of real expenditure on education are obtained by deflating the value of expenditure by a price series.

Expenditure on education includes the total of private and public current expenditure.

Medical and health

This item includes the public as well as private expenditure in both countries but it excludes medical costs borne by business firms.

The main components are the expenditure on professional services—doctors, dentists—and for hospital treatment. The quantity of professional services was compared in terms of relative numbers of doctors and dentists, and hospital service by revaluing current expenditure by the average cost per bed. As with the procedure used in dealing with education, this is a fairly arbitrary method, and a better comparison would be in terms of attention given to patients; the numbers of beds, etc., needed

is not a direct indication of services provided for medical attention and there could be, in fact, an inverse relation between attention and number of beds. This treatment is similar to that used to prepare constant price estimates of expenditure on this item in the Australian official estimates of national product at constant prices; in the United Kingdom national income estimates of medical and health expenditure at constant prices are based on a deflated series of expenditure on health services and various output indicators for medical, dental, and ophthalmic services and the dispensing cost of prescriptions. The Australian figure is lower mainly because of relatively fewer hospital beds per head, and the numbers of medical practitioners per head outside hospitals are higher.

Other household and personal services

This item covers mainly repair work (other than on motor vehicles), hairdressing and manicure services, and laundry and dry-cleaning. The United Kingdom per capita expenditure is above the Australian figure for each component of this item. These items are subject to a large margin of error at current prices and this would affect the comparison at constant prices.

Miscellaneous services

There is little difference in expenditure per head on this item, and Australian expenditure is slightly lower almost entirely because of fewer domestic servants per head of the population.

Fixed Investment Expenditure

Expenditure on investment goods was divided into that on roads (including maintenance of roads), other building and construction, motor vehicles, agricultural machinery and equipment, and other capital equipment, and separate price and quantity comparisons were made for each component. Expenditure on road building and other building and construction was deflated by a price index of the cost of labour and materials used, and this assumes that final prices are proportional to input costs. Expenditure on other items was estimated by deflating the value of output, although there are difficulties in comparing the relative productive efficiency of products which lead to a margin of error. The calculated quantity comparisons are given in Table 19.

Total investment expenditure is one and a half times higher per head of the population in Australia than in the United Kingdom. This is mainly due to higher expenditure on roads, buildings and motor vehicles; other capital equipment, which is mainly industrial equipment plus government expenditure on equipment, is about the same in the two countries. Expenditure on other capital equipment is lower relative to total national product in Australia than in the United Kingdom. As previously shown, the price of total investment goods in Australia is between about 43 and

52 per cent higher than in the United Kingdom, and while this is partly due to higher prices of motor vehicles and agricultural equipment (estimated to be between about 60 and 70 per cent higher in Australia), prices of other capital equipment are also higher than that of all national product. The higher expenditure on roads and motor vehicles is comparable with that on personal motor cars and running cost of motor vehicles where expenditure is about twice that in the United Kingdom. The relative expenditure on building and construction may reflect in part the higher investment expenditure required in Australia on basic services, such as communication, as a result of the more rapid increase in population. The higher expenditure on agricultural machinery in Australia is only partly explainable by the greater proportion of national product originating in this industry.

In compiling estimates of expenditure on roads by revaluing money values by input costs, some allowance is automatically made for differences in the quality of roads (but not for the efficiency of road-making). To some extent, however, the quality differences do not lead to comparable differences in the utility of roads under similar conditions of use. From information made available by road-making authorities in the two countries it would appear that United Kingdom roads are generally of a higher quality than Australian roads, partly because the more severe climate in the United Kingdom and greater traffic congestion lead to a need for a more solid type of road, and partly as a result of different local attitudes towards road construction (United Kingdom roads, for example, are more often equipped with extensive guttering and curbing than Australian roads). If these differences are ignored the real expenditure on Australian roads would be about 2.8 times higher per head than in the United Kingdom. It may be that the quality of expenditure on building and construction is also higher in the United Kingdom than in Australia, as a result of geographic differences, but it was not possible to make even a rough estimate of the likely consequence of this on the comparative figures.

Table 19—EXPENDITURE PER HEAD ON
FIXED INVESTMENT

(U.K. price weights; Aust. relative to U.K. = 1)

Roads	1.9
Other building and construction	1.7
Motor vehicles	1.5
Agricultural machinery and equipment	3.6
Other capital equipment	1.0
TOTAL	1.5

4

REAL INCOME IN AUSTRALIA AND THE UNITED KINGDOM

The details of real product and expenditure set out in the previous chapter can be used to compare real income or living standards in Australia and the United Kingdom in terms of the relative consumption or other use of goods and services. This comparison, however, raises special difficulties which are not encountered in the use of the data for comparisons of real output or economic production, and the figures accordingly are subject to a greater number of qualifications. The quantities of goods and services used for consumption or other purposes are obviously an important element in real income but there are other factors involved which may show the opposite comparison and there are also theoretical problems in drawing conclusions about the satisfactions derived from the use of goods and services. These problems have led to a good deal of scepticism by economists as to the validity of real income comparisons. In the 1930s, for example, J. M. Keynes proposed that a more useful comparison could be obtained by 'direct' or subjective assessment of living conditions. 'When . . . an Englishman is offered [an appointment] in Australia . . . and is wondering what the money-income he will get is going to be "worth" . . . he does not usually consult any of the official index-numbers. . . . He asks a friend who is acquainted with the conditions of life in the two places.'¹ And a Committee of Experts appointed by the United Nations to inquire into methods of measuring living standards reported in 1954 that 'there is no single index of the level of living as a whole that can be applied internationally. In this connection, the Committee advised against the use of per capita national income as an international index of the level of living.'²

To some extent these objections derive from the quality and range of the statistical data often presented as indicators of real income. In many instances the information is not much improvement over the casual impressions of travellers, and is often set out in one index number

¹ *A Treatise on Money*, Vol. I (London, 1930), p. 100.

² *Report on International Definition and Measurement of Standards and Levels of Living*, p. vi.

comparison.³ In the present study these limitations are, it is hoped, largely avoided. Not only has it been possible to use a vastly wider range of information compared with that available for pre-war, or even early post-war, comparisons, but also this is presented in a way which allows different comparisons to be made depending on the interpretation of the meaning of real income. Instead of providing one statistical comparison of real income, an attempt is made to spell out in detail the various components of expenditure.

This is not to say that the figures presented in this chapter are free of error. Discussion of the details of expenditure in the previous chapter and in Appendix II listing the sources and methods used will have indicated the varying reliability of individual figures. It was pointed out in the previous chapter that the comparisons involve assumptions as to the meaning of quantities of items. Nevertheless, it seems reasonable to propose that these imperfections in the data are not of overriding significance in limiting the usefulness of the figures for comparisons of real income.

Similarly, of course, improvements in statistical estimates do not imply that related information which cannot be put into numerical estimates are any less important in interpreting the results. The results still need to be related to the non-material aspects of living, and qualitative impressions are just as valid in qualifying the meaning of the estimates. It may be true, as argued by Pigou,⁴ that material aspects of economic welfare (broadly equivalent to real income as used in this study) may serve as an approximation to comparisons of total welfare or well-being, and that because material aspects are now such a large part of total living conditions the comparison of these alone are useful, but non-material factors still need to be considered in any particular use of real income comparisons.

As a measure of material satisfactions, also, there are major limitations in figures of relative quantities of goods and services consumed or used for other purposes. These can be discussed under three main headings: (1) the assumption that similar products meet identical wants, (2) the use of prices to compare the utilities of goods and services, and (3) the varying relevance of individual products to provide positive satisfactions.

How these factors will affect the meaning of real income comparisons will obviously vary between countries and in different circumstances. Comparisons between the real income of Australian States, for example, may be affected by differences in the climate and other geographic conditions, but are not likely to be seriously distorted by differences in

³ This was the case, for example, with comparison of real wages of countries compiled by the International Labour Office during the 1920s. Publication of these figures was abandoned following criticism at a meeting of labour statisticians in 1931 that the data and methods used did not produce reliable results. See *International Labour Review*, Vol. XXIV, July-December 1931.

⁴ *The Economics of Welfare* (4th ed., 1932), p. 20.

wants or in non-material conditions of living. On the other hand, it is unlikely that even approximately reliable comparisons are possible for Australia and New Guinea, due to differences in economic and social conditions under which goods and services are used and in the range of items comprising national product of the two countries. In the case of the present comparison between Australia and the United Kingdom there are reasons why comparison based on the quantities of goods and services consumed in the two countries may in fact provide a quite sensible measure of the comparative level of their real income.

1. Comparison of real income involves the assumption that goods and services provide the same utilities or satisfactions in the two countries. This implies that tastes of individuals of the countries are comparable, that there is no major difference in the distribution of incomes, and that the usefulness of the products is not affected by conditions under which goods and services are used in the two countries.

Of fundamental importance is the assumption that tastes are comparable. If the same products do not provide much the same satisfaction in different countries there is no way of drawing any comparison of real income from data of the quantities of goods and services.⁵ And while economists disagree as to the extent to which tastes are likely to vary between different individuals and in different circumstances they are unanimously agreed that identity of tastes cannot be assumed in comparisons between countries.⁶ As a result it is not possible in theory to draw precise conclusions about the comparative real income of countries. But there are some reasons for believing that tastes do not differ greatly between Australia and the United Kingdom and that this is not likely to be an important limitation in basing the comparison of real income on relative quantities of goods and services.

The comparability of tastes can only be argued on general grounds, and the fact that real income comparisons have been usefully applied is one argument that differences in tastes between countries are not significant.⁷ This study also shows that the great bulk of the items of national product and expenditure are comparable products, thus supporting the contention that tastes are likely to be similar in the two countries. Finally, the only quantitative evidence that is available shows that tastes do appear to be remarkably constant between countries.⁸

⁵ As expressed by J. R. Hicks: 'if this assumption [of constant wants] cannot be granted, the question whether [a consumer] is better off in one situation or in the other loses all economic meaning'. 'The Valuation of Social Income', *Economica*, N.S., Vol. 7, May 1940, p. 107.

⁶ H. Staehle, 'International Comparison of Real National Incomes: A Note on Methods'. *Conference on Research in Income and Wealth*, Vol. 11 (National Bureau of Economic Research, New York, 1949), p. 224.

⁷ *Ibid.*, p. 225.

⁸ See the discussion on this point in W. Beckerman, *International Comparisons of Real Incomes* (Organisation for European Co-operation and Development, 1966), p. 9.

In the second of the OEEC studies, for example, an attempt was made to explain how far differences in the pattern of personal consumption expenditure could be explained by differences in relative levels of income and prices. Multiple correlations were calculated between quantities of items consumed, their relative prices, and the level of incomes of countries, and it was found that a large part of the differences in quantities of items could be explained as due to differences in incomes and prices leading to only a small variation to be accounted for by other factors, of which differences in tastes are likely to be the most important.

Even if tastes can be assumed to be broadly comparable in Australia and the United Kingdom, however, the utilities derived from the same products will be affected by climatic or other geographic differences. The colder climate of the United Kingdom may, for example, lead to higher expenditure on some goods and services simply to offset disabilities of living; at the same time, of course, the warmer Australian climate may also require additional outlay on some products. The problem in allowing for these factors is to calculate how expenditure would be altered in one or the other country if geographic conditions were identical. It is obvious that this would require subjective assessment, and while it would be possible to attempt some alterations to the expenditure figures the difference in the conditions under which goods and services are used remains one of the major qualifications which limit precise conclusions being drawn from the relative quantities of goods and services about the level of real income consumed in the two countries.

As in the case of real product estimates set out in the previous chapter, alternative comparisons of real income are obtained by valuing the quantities of goods and services used in Australia and the United Kingdom by the market prices in one or the other country. It may be thought that the difference in prices reflects different wants and thus that the alternative comparisons of real income may be used to show how the quantities of goods and services meet the needs of the people in each country. But prices are also affected by the comparative efficiency of producing goods and services and by institutional and geographic factors—the costs of distribution which are a part of market price of goods will vary, for example, according to the dispersion of the population, and these costs may affect the price of some items more than that of others. Thus it does not seem correct to argue, as is sometimes done, that the differences in relative prices of countries leads to different comparisons which reflect differences in tastes or wants of the inhabitants of the countries being compared.⁹

⁹ A. Bergson, for example, argues that differences in tastes are reflected by differences in relative prices between countries. 'I am not sure that I can agree . . . that the "conventional" method of calculating the change in the cost of living is inapplicable when tastes differ. I am referring to the method whereby A's collection of goods is valued at the prices confronting B, and vice versa, to establish how much each would have to pay for his collection if he had to pay the other's prices. The difference in the cost of living in the two price

Corrections to national product and expenditure figures for the effect of differences in geographic factors have been proposed and made in some international comparisons.¹⁰ There are several ways in which this could be done, each involving a different degree of subjective assessment. Items of expenditure could be completely excluded from the comparisons as being more or less unnecessary in either one or another country, or imputations of output could be made in proportion to the level of real per capita products. In the present study adjustments are made to estimates of real consumption expenditure on fuel and light and clothing and footwear in the United Kingdom in one variant of the comparison of real income in order to equate their per capita expenditure in Australia. In other words, it is assumed that the surplus product in the United Kingdom over the Australia expenditure per head on these two items does not add to the real income of the United Kingdom but is an additional cost of living as a result of the harder climate. This is only one adjustment and conceivably many other items of expenditure could be altered or given imputed values to reflect the difference in conditions under which products are used.

The opposite view about the validity of altering national product estimates to take account of differences in needs was taken by Gilbert and Kravis in the comparisons of real product of OEEC countries. It was argued that 'real national product cannot reflect differences in the desirability or undesirability of physical conditions in the two countries', 'regardless of whether or not a welfare approach is used and the result labelled a comparison of "economic welfare"'.¹¹ There is no certain basis for making the adjustments and they are therefore 'irrelevant to the quantitative measurement of relative national product'.¹² The same view has been put by W. Beckerman who argues that 'a lower need in some countries for certain items is often highly correlated with a greater need for others'¹³ and thus it does not necessarily improve the comparison simply to alter one item of expenditure without making a corresponding adjustment to another item, and that 'the whole notion of comparing a nation's wealth according to how much they need different goods and services is very elusive when one considers its application to individuals'.¹⁴

situations is measured by comparing what each consumer would have to pay in the other's price situation with what he actually pays in his own. If tastes differ, this method inevitably leads to two measures of the difference in living costs, one from the viewpoint of A's tastes, the other from the viewpoint of B's tastes.' Comments by Bergson H. Staehle, *op. cit.*, p. 253.

¹⁰ Cf., for example, D. Usher, 'The Thai National Income at United Kingdom Prices', *Bulletin of the Oxford University Institute of Economics and Statistics*, Vol. 25, No. 3, August 1963.

¹¹ *An International Comparison of National Products*, p. 72.

¹² *Ibid.*, p. 73.

¹³ *Op. cit.*, p. 15.

¹⁴ *Ibid.*

According to this view, therefore, the economic statistician simply measures output according to stated conventions to describe 'economic welfare', and it is up to someone else to adopt the figures to meet particular purposes.¹⁵

There is little information available about the relative distribution of incomes or, of more relevance for the present purpose, of expenditure per head of the population in Australia and the United Kingdom. Data of the dispersion of employment income (after tax) indicate that in 1959-60 the Australian income distribution was probably less unequal than that in the United Kingdom, although these figures relate only to a part of total incomes—that of wage and salary earners and to individual employees rather than households.¹⁶ It is suggested that the figures 'may give some indirect guide to the degree of inequality of income in the community as a whole',¹⁷ but there are no figures available about the distribution of savings in Australia needed to convert the estimates from an income distribution to a distribution of expenditure per head of the population.

2. In comparison of real national product or expenditure, market values are used to combine the relative quantities of individual products. Thus the real expenditure on food is obtained by multiplying the relative quantities of different items of food consumed in two countries by the market prices in one or the other country. Prices are assumed to reflect satisfied wants, and hence to measure the utilities derived from the consumption of goods and services.¹⁸ In fact, however, prices measure the utility derived from the last (or marginal) unit consumed and they understate the total satisfaction obtained from the consumption of all of one product by the 'consumers' surplus' or additional utility derived from the items which would still be purchased at a higher price. Since there is no reason to assume that the 'consumers' surplus' is proportional to the price of products, market prices have only a vague relevance to the relative total satisfactions obtained. It is unlikely, for example, that the total utility obtained from the consumption of salt and motor cars is proportional to the expenditure on these items.

It is sometimes proposed that different quantity units, such as food calories or heat factors, should be substituted for the relative prices.¹⁹ In this case the relative quantities of food are combined, not by their

¹⁵ Since the adjustments made in this study have a small effect on the results, the question as to whether the adjustment should or should not be made is of no great importance in connection with the present study.

¹⁶ H. Lydall, 'The Dispersion of Employment Incomes in Australia', *Economic Record*, December 1965, pp. 549-69.

¹⁷ *Ibid.*, p. 549.

¹⁸ R. Wilson, 'Facts and Fancies of Productivity', paper delivered to Victorian Branch of the Economic Society of Australia and New Zealand, 1947, p. 7.

¹⁹ *Report on International Definition and Measurement of Standards and Levels of Living*, p. 8.

market prices in one or the other country, but by their calorific content.²⁰ Apart from the limitation that this method can only be used to combine quantities of similar products it leads to a rather different type of comparison to that based on data of price and quantity. It involves, in effect, setting standards of living based on particular attributes of products and measuring how countries compare in terms of these standards. In the comparison based on prices and quantities the intention is simply to compare relative real income in terms of the expressed preferences of consumers which are reflected by market prices. Market prices are an imperfect measure for this purpose but they do have some basis as a measure of satisfied wants.

3. The final important limitation to the use of data of national product and expenditure to compare real income is that some of the items in national product do not provide positive satisfaction but are rather costs of living, and should therefore not be counted in comparisons of real income. Thus, for example, the cost of travelling to work and expenditure on certain types of clothing required for business purposes may not add to real income, and other expenditure, such as on medical and health services, may provide no positive satisfaction. To analyse national product and expenditure details along these lines would lead to problems beyond the scope of this study. But it does seem important that details of national product and expenditure should set out the main purpose of the expenditure to facilitate adjustments of the totals according to various criteria about the utilities derived from the expenditure. For this reason, several versions of real income are set out in the following tables, based on different combinations and classifications of the items of national product and expenditure.

Domestic Product

The total real income of residents in Australia and the United Kingdom is shown by the gross domestic product measured at equivalent prices. This is equal to national product, as defined in the previous chapter, plus net income from abroad. It can be interpreted either as a measure of the total value of goods and services produced by factors of production owned by residents and available to meet various purposes, or of the real income of residents in terms of these goods and services. The derivation of the comparative figures is shown in Table 20.

Because United Kingdom residents receive net income from abroad and Australian residents pay net income overseas, the Australian relative domestic product is less than national product. At Australian market prices the Australian domestic product per head of the population is only 2 per cent above the United Kingdom domestic product and 9 per cent higher at United Kingdom market prices.

²⁰ Consumption of food by countries in terms of calorific values is shown in the United Nations *Compendium of Social Statistics*, p. 163.

Table 20—DOMESTIC PRODUCT PER HEAD
(£A and £Stg)

<i>Market prices</i>	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K. = 100</i>
U.K. price weights (£Stg)			
Gross national product	410.8	464.3	113
plus net income from abroad	5.8	— 10.1	
Gross domestic product	416.6	454.2	109
Australian price weights (£A)			
Gross national product	581.2	614.5	106
plus net income from abroad	7.3	— 12.6	
Gross domestic product	588.5	601.9	102

In a sense the use made of domestic product—for personal consumption, government expenditure, private investment, and net exports—will reflect national preferences for these products and thus the total is relevant as a measure of the utility (or real income) obtainable from this production. The output used for investment could, for example, be assumed to reflect the preference of inhabitants of countries for future output at the expense of present consumption. But a more straightforward interpretation of real income is based on the satisfactions derived from the consumption of goods and services, having regard to the particular needs which individual items of consumption expenditure meet. This requires breaking the total national product down into expenditure on items of consumption goods and services.

Expenditure on Consumption Goods

In attempting to improve on the previous estimates to obtain a measure of actual real incomes, an obvious starting point is to compare the aggregates obtained by combining items of expenditure on goods and services which may be thought to have a direct relevance to final consumption. Using the details set out in the previous chapter, the relative figures of real expenditure on total personal consumption goods and goods bought by public authorities on current account (which excludes expenditure on roads but includes most of the expenditure on war and defence) are £463 per head for Australia and £499 per head for the United Kingdom in Australian market prices (a ratio of 100 to 108) and £359 per head for Australia compared with £360 per head for the United Kingdom in United Kingdom market prices (100 to 100).

These results need, however, to be qualified in two ways. First, some

of the expenditure may have little direct relevance to real income and may simply be a cost of living, or of earning an income. Certainly, part of the expenditure in the United Kingdom on clothing and fuel is simply required to offset the effects of a more severe climate, but other items also have components which provide little benefit to consumers. Expenditure on travelling to work could from some points of view be treated as a cost of earning an income and offset against the real value of other expenditure, and part (or perhaps all) of the expenditure on medical and hospital services makes little positive contribution to the real income of individuals. Adjustment for these items (and others) could lead to a considerable difference in the results; if, for example, the expenditure per head in the United Kingdom on fuel and light and clothing is reduced to the Australian figures, the Australian consumption per head is improved by about three percentage points relative to the United Kingdom level.

The second main qualification would be to allow for the direct benefit of government current expenditure on goods and services to personal real income. While much of this expenditure is undertaken to regulate economic activities, some of it does lead to higher real incomes, such as the expenditure undertaken for welfare purposes. On the other hand, however, difficulties exist in separating out that part of public authority outlay which is a net product from that which is more properly a cost of community living. Public authority current expenditure also includes all of the expenditure on war and defence (apart from a small proportion representing expenditure on buildings) and there would appear to be some grounds for excluding this expenditure in comparison of real income.²¹ Whether or not defence expenditure is properly a part of real product in overall comparisons, it seems difficult to justify including the expenditure in a detailed list of items which have a direct, and present, bearing on real income. Adding in all of current government expenditure (other than on war and defence) to personal consumption outlay (as adjusted for the reasons set out in the previous paragraph), the figures of Australian real expenditure per head are £447 compared with £448 for the United Kingdom, in Australian market prices (a ratio of 100 to 100), and £348 and £326 in United Kingdom market prices (100 to 94).

Obviously these figures represent only one way of looking at the significance of items of expenditure for the measurement of real income, and there is considerable scope for other arrangements of the figures. For this reason it is useful to set out as far as can be done with the available figures an indication as to how the expenditure is distributed over the

²¹ 'The sub-total of national income (combining both public and private expenditure for "personal consumption") would exclude expenditures for military establishment and like expenditures which are not interpreted as adding to the level of living of a population. (If military expenditures are interpreted to contribute to security, they should in any case be shown separately.)' *Report on International Definition and Measurement of Standards and Levels of Living*, p. 40.

main functional categories. The starting point in doing this is the information given in Table 10 of the previous chapter which shows an analysis of personal consumption expenditure by type of good and service. It is necessary, however, to rearrange these items into different groupings in order to obtain a classification of expenditure by function. A similar problem exists in the case of personal and public authority current expenditure; some functions are common to both these items and should therefore also be combined. Differences in the classification of public authority expenditure in the two countries make this difficult, and in Table 21 a breakdown of expenditure by function is shown only for personal consumption expenditure (which includes, however, the public authority expenditure on medical and health services and education).²² The remaining public authority expenditure, after deducting expenditure on war and defence and medical and health services and education, is only about 5 per cent of personal consumption outlay and the omission of this expenditure from the functional details of personal consumption expenditure is unlikely to lead to any significant error in the figures.

The classification shown in Table 21 is based on that recommended by the Statistical Office of the United Nations to show 'type of commodity and service purchased' which may be broadly interpreted as a classification 'by purpose'. The figures shown are derived largely from those in Table 10, but additional details have also been included from the working sheets underlying the estimates given in that table.²³ No adjustment has been made to equate the expenditure on fuel and light and clothing and footwear in the two countries.

A large part of the dissimilarity in the relative consumption of goods and services by purpose would appear to be explainable in terms of climatic and geographic differences in the two countries. The effect of the climate on the relative expenditure on clothing and footwear, fuel and light has already been referred to. Household operation is predominantly cleaning and cleaning materials and laundry and for each of these components the Australian real expenditure per head is lower than in the United Kingdom by approximately the same difference as for expenditure on clothing. This item also includes domestic servants, where the United Kingdom expenditure is much higher.

The Australian expenditure on food per head of the population is slightly less than that of the United Kingdom and is also a smaller pro-

²² See p. 25.

²³ The main composition of items, where they differ from those shown in Table 10, is as follows. *Furniture, furnishing and household equipment*—furniture and floor coverings, household textiles, electrical goods, hardware; *household operation*—domestic service, matches and soap, general insurance, repairs, cleaning, dyeing and laundry; *personal care and health expenses*—chemists' goods, medical and health; *transportation and communication*—motor vehicles, running cost of motor vehicles, travel, communication services; *recreation and entertainment*—entertainment, books and newspapers, other miscellaneous goods (part of 'other goods') and other recreation and entertainment (part of 'miscellaneous services'). *Beverages* includes both alcoholic and non-alcoholic drink.

Table 21—CONSUMPTION EXPENDITURE PER HEAD
CLASSIFIED BY PURPOSE
(£A and £Stg)

	<i>U.K. price weights</i>			<i>Aust. price weights</i>		
	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100*</i>	<i>U.K.</i>	<i>Aust.</i>	<i>Aust. relative to U.K.=100*</i>
Food	83.3	82.0	99	104.8	94.9	91
Beverages	21.9	27.4	125	26.5	33.0	124
Tobacco	20.0	19.7	99	15.7	14.6	93
Clothing and footwear	28.3	23.6	84	46.5	38.3	82
Housing	26.0	31.3	121	29.2	35.2	121
Fuel and light	13.3	9.0	67	16.6	11.2	67
Furniture, furnishings, and household equipment	20.6	24.9	121	36.1	40.0	111
Household operation	10.1	6.4	64	15.5	9.4	61
Personal care and health expenses	20.2	18.7	93	30.3	27.3	90
Transportation and communication	26.7	43.3	162	36.9	50.7	137
Recreation and entertainment	25.6	21.4	83	44.3	36.7	83
Miscellaneous services	21.5	24.9	115	25.6	28.4	111
TOTAL PERSONAL CONSUMPTION	317.5	332.7	105	428.1	419.9	98
Public authority current expenditure (other than on war and defence)	17.8	15.5	87	33.5	27.3	82
ALL	335.3	348.2	104	461.6	447.2	97

* Relatives and totals are derived from unrounded data and totals may not add.

portion of personal consumption and total national product. While this supports the proposition often put forward that the percentage of expenditure can serve as an approximate indication of real per capita income, there are also other factors involved in the present comparison.

There is little difference in the relative market price of total expenditure on food (after allowing for exchange rate conversion), as a result of higher net indirect taxes on Australian expenditure and support price schemes offsetting natural advantages, but there are significant differences in relative prices as well as in the quantities of items consumed. For five of the eight items of food is there a negative correlation (as described in

the previous chapter) between relative prices and quantities, as compared with thirteen out of the twenty remaining items of personal consumption expenditure. There is a strong negative correlation between relative prices and quantities of meat and fish (Australian relative prices are less than for all consumption but relative quantities are above average), oils and fats, and sugar and confectionery, but it seems likely that overall relative prices have a less than average effect on quantities of foodstuffs consumed. This could be due partly to the climate. The higher consumption of non-alcoholic beverages in the United Kingdom (which is due predominantly to tea), even though prices are also relatively higher, could be a result of the colder climate. This may also be a factor leading to the higher expenditure in the United Kingdom on sugar, preserves, and confectionery.

Australian standards of housing seem to be some 20 per cent higher than in the United Kingdom. However, the total expenditure on household goods and services (comprising housing, furniture, furnishings and household equipment, fuel and light, and household operation) is similar in the two countries in United Kingdom prices and Australian prices. The relatively higher expenditure in Australia on transport and communication services is clearly shown in Table 21. This item is the second major category of expenditure in Australia (after food) and the expenditure is between one-third and two-thirds higher than in the United Kingdom.

There is not a great deal of significance in the differences in expenditure on recreation and entertainment and other services. The lower figure for Australian expenditure on recreation and entertainment would be partly balanced by higher expenditure on durable household goods and the remaining difference could be largely the result of differences in climate leading to a higher proportion of relatively highly priced entertainment services indoors in the United Kingdom. Expenditure on miscellaneous services is higher in Australia mainly due to the higher expenditure per head on education.

Public authority current expenditure, other than on war and defence, is about 15 per cent lower per head of the population. To a large extent this item comprises administrative expenses of government departments. It includes, also, some expenditure for social or welfare purposes which would add to real income, but it is not possible with available information to distinguish these components.

A comparison of the percentage distribution of the items of personal consumption expenditure outlay is shown in Table 22. The proportions of expenditure on the major items of food are broadly comparable, and the major differences are for expenditure on clothing and footwear, household operation, transport and communication, and recreation and entertainment.

Table 22—DISTRIBUTION OF PERSONAL CONSUMPTION
EXPENDITURE PER HEAD BY PURPOSE

	<i>U.K. price weights</i>		<i>Aust. price weights</i>	
	<i>U.K.</i>	<i>Aust.</i>	<i>U.K.</i>	<i>Aust.</i>
Food	26	25	24	23
Beverages	7	8	6	8
Tobacco	6	6	4	3
Clothing and footwear	9	7	11	9
Housing	8	9	7	8
Fuel and light	4	3	4	3
Furniture, furnishings, and household equipment	7	7	8	10
Household operation	3	2	4	2
Personal care and health expenses	6	6	7	6
Transportation and communication	9	13	9	12
Recreation and entertainment	8	6	10	9
Miscellaneous services	7	8	6	7
TOTAL	100	100	100	100

Real Wages

The previous figures of real income have been based on the quantities of goods and services used for consumption or other purposes per head of the population in the two countries. A slightly different comparison is obtained by revaluing the average wage and salary earnings by the prices of consumer goods. This comparison is similar in many ways to those made before the war by governments and by the International Labour Office during the 1920s. Most of these early comparisons of relative real wages, however, were based on the prices of only a few major items of household consumption. Using the details of prices set out in Chapter 3 it is possible to measure the comparative earnings of average wages over all, or any combination of items of consumption expenditure.

In the present comparison, the relative prices of items are combined by the expenditure weights used in compiling internal index numbers of retail or consumer price changes. The Australian weights were taken from the official Consumer Price Index and the United Kingdom weights from the official Index of Retail Prices. The weights, as well as the actual distribution of all consumption expenditure in Australia and the United Kingdom over comparable items, are shown in Table 23. As far as possible the same products are included in each item category. In weighting the prices, however, no attempt was made to use all the detailed

information about products set out in the description of the official price index. Thus, for example, the weighting of prices of all food is based on the expenditure weights used in compiling price indexes but the prices of individual food products are weighted by the actual expenditure in the two countries.

Table 23—COMPARISON OF EXPENDITURE WEIGHTS
USED IN PRICE INDEXES

	<i>Actual consumption expenditure</i>		<i>Weights used in Aust. Consumer Price Index (March 1960)</i>	<i>Weights used in U.K. Index of Retail Prices (1958)</i>
	<i>Aust.</i>	<i>U.K.</i>		
Food	24	28	32.1	34.6
Clothing	9	9	17.9	10.1
Housing	8	8	10.7	9.3
Fuel and light	3	4	4.2	5.7
Alcoholic drink	7	5	4.1	6.9
Tobacco	3	6	3.9	8.0
Durable household goods	10	7	7.1	6.1
Transport and vehicles	11	8	11.3	7.1
Other goods	7	7	4.0	6.1
Other services	18	18	4.7	6.1
TOTAL	100	100	100.0	100.0

Australian prices are 32 per cent higher than prices in the United Kingdom (£A compared with £Stg) using the weights of the United Kingdom price index and 29 per cent higher using the weights of the Australian price index. These compare with comparable figures of 35 per cent and 26 per cent based on the actual pattern of expenditure in the United Kingdom and Australia. Average earnings (in male equivalent) are estimated to be £1,084 in Australia and £730 in the United Kingdom.²⁴ Applying the price comparisons to the figures of money earnings gives the comparative real average earnings shown in Table 24.

²⁴ The estimates of average earnings were obtained by dividing estimated numbers of civilian employees (in male equivalents) into the total wages and salaries plus employers' contributions for national insurance and superannuation as shown in the annual national income publications. Australian figures of employment are as published in *Wage and Salary Earners in Employment* (Commonwealth Bureau of Census and Statistics) with an estimate of employees in rural industry and private domestic service. The United Kingdom figures are based on employment and earnings published in the *Annual Abstract of Statistics* (H.M.S.O.). The average earnings include overtime earnings and over-award and bonus payments.

Table 24—COMPARISON OF REAL AVERAGE EARNINGS

	<i>Aust.</i>	<i>U.K.</i>
Australian expenditure weights (Aust. = 100)	100	87
United Kingdom expenditure weights (U.K. = 100)	112	100

These results show a higher level of real income in Australia than the comparison based on the quantities of goods and services in consumption expenditure. Probably the main reason for this is that the comparison of average earnings relates to earnings per employed person while the comparison of consumption expenditure relates to the average expenditure per head of the population. Thus differences in the size of the family unit, or the number of dependants to wage and salary earners, could affect the comparison. There is no way of comparing the size of wage and salary earner families in the two countries but a comparison of the age distribution of the population in the two countries would suggest that the family unit in Australia is larger than that in the United Kingdom.²⁵

²⁵ See p. 41.

Appendix I

REARRANGEMENT OF NATIONAL PRODUCT ESTIMATES

Although the national product estimates of Australia and the United Kingdom shown in official publications are broadly consistent, a number of adjustments were needed in order to allow for some differences in the estimates, and the total figures had to be divided up to obtain the item detail set out in this study. This was done largely by using unpublished details of the national income calculations of the two countries provided by the national statistical offices. In a number of cases, however, new estimates had to be made from other information about expenditure or production. The detailed sources and methods used for each item are set out in Appendix II, while this appendix shows the reconciliation between the categories of expenditure used and that shown in the official national income estimates.

The basic data of national product and expenditure were obtained from *Australian National Accounts, National Income and Expenditure, 1948-49 to 1961-62* and, for the United Kingdom, *National Income and Expenditure, 1963*.

Table 25—SOURCES OF DETAIL OF EXPENDITURE ON
NATIONAL PRODUCT
Personal consumption expenditure (U.K. Table 18, Aust. Table 49)

	U.K.	Aust.
Food	Food Income in kind n.e.i. (part)	Food Addition for valuation of food consumed by self-suppliers
Alcoholic drink	Alcoholic drink (part)	Alcoholic drink (part)
Tobacco	Tobacco	Cigarettes and tobacco
Housing	Housing (part)	Rent
Fuel and light	Fuel and light	Gas, electricity, fuel

Table 25—*continued*

	<i>U.K.</i>	<i>Aust.</i>
Clothing and footwear	Clothing	Clothing, etc. (part)
	Income in kind n.e.i. (part)	
Matches, soap	Matches, soap and other cleaning material	Chemists' goods (part) Other goods (part)
Chemists' goods	Chemists' goods Other services (part) National Health Service (part) (Table 44)	Chemists' goods (part) Other goods (part)
Books and newspapers	Books, newspapers and magazines	Newspapers, books, etc. (part)
Electrical goods	Radio, electrical and other durable goods Household textiles, soft furnishings and hardware (part)	Electrical goods (part) Hardware and other (part)
Hardware	Household textiles, soft furnishings and hardware (part)	Hardware and other (part)
Motor vehicles	Motor cars and motor cycles, new and second-hand	Purchase of motor vehicles
Other goods	Furniture and floor coverings Household textiles, soft furnishings and hardware (part) Miscellaneous recreational goods Other miscellaneous goods	Clothing, etc. (part) Chemists' goods (part) Furniture, floor coverings Hardware and other (part) Newspapers, books, etc. (part) Toys, sporting and travel goods Other goods (part) Other services (part)
Running costs of motor vehicles	Running costs of vehicles	Operation of motor vehicles (part)
Travel	Travel	Rail, tram and bus Other fares
Communication services	Communication services	Postal and telephone services
Entertainment	Entertainments	Entertainment (part) Other services (part)

Table 25—*continued*

	<i>U.K.</i>	<i>Aust.</i>
Education	Other services (part) Education (part) (Table 44)	Education services Education (Table 65)
Medical and health	Other services (part) National Health Service (part) (Table 44) Health services, other than the National Health Service (Table 44)	Medical, hospital and funeral expenses (part) Public health (part) (Table 65)
Other household and personal services	Other services (part)	Medical, hospital and funeral expenses (part) Other services (part)
Miscellaneous services	Alcoholic drink (part) Domestic service Insurance Other services (part) Consumers' expenditure abroad Less expenditure by foreign tourists, etc., in the United Kingdom	Life assurance Operation of motor vehicles (part) Alcoholic drink (part) Entertainment (part) Expenditure overseas less expenditure of non- residents in Australia Net current expenditure on goods and services by public authorities (part) (Table 2)
Fixed investment expenditure	Gross fixed capital expenditure at home (Table 1) Roads and public lighting (Table 42 and Table 58) Housing (part)	Gross fixed capital expenditure (Table 2)
Current expenditure of public authorities	Public authorities current expenditure on goods and services (part) (Table 1) Less imputed rent on government buildings	Net current expenditure on goods and services by public authorities (part) (Table 2)
Investment in stocks	Value of physical increase in stocks and work in progress (Table 1)	Increase in value of stocks (part) (Table 2)
Net exports	Exports of goods and services (Table 11) less imports of goods and services (Table 11)	Exports of goods and services (Table 2) less imports of goods and services (Table 2) less customs duties (Table 62)

Appendix II

SOURCES AND METHODS

The estimated expenditure, in the prices of each country, on the main items of national product is set out in Table 26.

Table 26—EXPENDITURE ON NATIONAL PRODUCT

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Food	4,594	997
Alcoholic drink	842	276
Tobacco	1,031	145
Housing	1,343	350
Fuel and light	686	112
Clothing and footwear	1,461	381
Matches and soap	173	35
Chemists' goods	295	93
Books and newspapers	238	60
Electrical goods	414	172
Hardware	143	44
Motor vehicles	401	183
Other goods	963	304
Running costs of motor vehicles	332	148
Travel	520	147
Communication services	128	27
Entertainment	253	46
Education	640	148
Medical and health	672	161
Other household and personal services	361	64
Miscellaneous services	920	285
TOTAL PERSONAL CONSUMPTION EXPENDITURE	16,410	4,178
Fixed investment expenditure	3,659	1,487
Current expenditure of public authorities	2,211	428
Investment in stocks	100	142
Net exports	-1,149	-122
GROSS NATIONAL PRODUCT	21,231	6,113

Personal Consumption Expenditure

Food

This is the largest single item of personal consumption expenditure. Separate price and quantity relatives were prepared for about seventy different products, which were then combined into the eight categories shown in the tables in Chapter 3. The least reliable figures are for meat and fish, and fruit and vegetables, which make up some 40 per cent of expenditure on food. These items were compared largely by compiling unit value relatives for major products, and the weakness in the estimates is due to the substitution of unit value for proper price indexes, and the fact that the items were divided into only a few broad categories of expenditure. Although some individual price quotations could be obtained, which provided a check on these unit values, these are affected by seasonal influences. These items account for the chief source of error in the estimate of price and quantity relatives for food, and the comparison for the other items is probably reasonably reliable.

Expenditure

Expenditure on food is divided into several categories in both the Australian and United Kingdom national income publications, but the classifications are inconsistent and they could not be used as a starting point for the detailed comparison. In addition, there were some differences in the overall definition of food and in the methods used to measure individual items which had to be eliminated.

The starting point of the comparison was the published detail in the United Kingdom national income accounts, which classifies expenditure on food into ten categories. Adjustments were made to distribute the food in purchased meals, which is a separate item in the national income figures, to the other components, and to add in the food included in the consumption item of 'income in kind, n.e.i.'. The latter figure was distributed simply on a *pro rata* basis, but in distributing caterers' purchases an attempt was made to vary the proportionate distribution using rough guesses about the composition of food in purchased meals. This could not be done satisfactorily and the adjustment was made only for a few major items; all of the expenditure on confectionery, for example, was assumed to be made directly by households.

The detail was divided further, from the ten items to seventy categories, mainly using the detail of expenditure by households on food published in the 1958 report of the National Food Survey Committee. Some special calculations were needed, however, to estimate expenditure on items omitted from the survey, including soft drinks and confectionery, and these were based on statistics of production, imports, and exports. An adjustment was also made to exclude service charges where they were a large proportion of the expenditure on individual items. The National

Food Survey covers only Great Britain and excludes food consumed in catering establishments and institutions and by H.M. Forces based in the United Kingdom, and included in ships' stores. It was assumed that the distribution of these purchases of food were as shown by the expenditure covered by the National Survey for each of the ten categories of expenditure shown in the official national income publication. The adjustments to the Australian published detail were relatively straightforward. The Australian figures are built up from the sum of direct estimates of expenditure on individual commodities, and the classification needed could be obtained simply by rearranging the individual detail. A small alteration was made to the Australian values for a difference in the method of valuing farm produce consumed in kind—the United Kingdom estimates value this product at farm selling prices while the Australian estimates record the value at farm cost. In the case of egg consumption, the Australian practice is to include an estimate for backyard production, including the production by persons not in a rural occupation. This is inconsistent with the treatment adopted in the United Kingdom, where only backyard production by rural producers is included. However, it was not possible to adjust the figures to a comparable basis, and the Australian expenditure on eggs is therefore relatively overstated. A small allowance was made for this overstatement by omitting the adjustment for the higher valuation of farm produce consumed on the farm and this would tend to bring the two estimates slightly more into line.

Expenditure on the main items in food consumption is shown in Table 27.

Table 27—EXPENDITURE ON FOOD

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Bread and cereals	627	155
Meat and bacon	1,215	254
Fish	160	21
Oils and fats	233	65
Sugar, preserves and confectionery	432	91
Dairy products	712	154
Fruit	284	84
Potatoes and vegetables	503	79
Beverages	288	53
Other food	140	41
TOTAL	4,594	997

Prices

Prices were obtained from three main sources. First, the national statistical offices provided details of prices for about fifty items, including most of the basic food products of butter, milk, sugar, tea, etc. These were for the last quarter of 1958, or for a month towards the end of 1958, and approximate seasonal correction factors were also given, which enabled a correction to be made for the different seasons in Australia and the United Kingdom.

The second source was trade journals, and a good deal of use was made of the detailed price lists published regularly in the *Grocer* in the United Kingdom and the *Australasian Grocer*. It is difficult, of course, to be certain that quoted prices are for equivalent qualities, but for a number of items brands could be identified, and for other items price quotations were averaged in the belief that the average quality of the products at least would tend to be comparable.

Thirdly, average unit values, derived from estimates of expenditure and quantities, were used as an approximation to prices. They were less suitable than prices because of the difficulty of allowing for differences in quality and they were used only where price data could not be obtained and where the products in the item were considered to be comparable in quality.

For a number of minor items, prices were imputed from those of similar products. The main sources of price data for each item are summarised in the following paragraphs.

(a) *Bread and cereals*. Bread and flour account for about half the expenditure on this item, and these prices were obtained from the national statistical offices. Prices of biscuits and breakfast foods were obtained from trade lists of prices, and the prices of the remaining items, including cakes, buns, and puddings, were imputed from the average of prices of other items in this group.

(b) *Meat and bacon*. Somewhat more than two-thirds of the expenditure on this item is on carcass meat and simply-prepared products from carcass meat, including sausages and offal. The prices used for these products were unit values of household expenditure on beef and veal, lamb and mutton, and pork. The United Kingdom unit values were derived from the quantity and value of household consumption, shown in the 1958 Report of the National Food Survey, and the Australian figures were calculated from estimated retail value of expenditure and the volume of meat available for personal consumption. Because of the difficulty of obtaining reliable quantity and value data of consumption of lamb for Australia and the United Kingdom, expenditure on lamb was included with mutton. The unit value figures did compare tolerably, if not perfectly, well with price quotations available from the national statistical offices.

Prices of canned meat were taken from grocers' trade lists. Bacon

prices were supplied by the national statistical offices and the prices of poultry, rabbits, and game were based on unit value figures derived from estimated consumption and value of household expenditure.

(c) *Fish.* Expenditure on fresh fish, which comprises about one-half the total value of this item, was compared using unit value data of household consumption. The United Kingdom estimates of unit value were derived from statistics of quantities and values published in the 1958 Report of the National Food Survey, and the Australian estimates from data of the quantity and value of the local catch, published in the Commonwealth Statistician's *Primary Production Bulletin*, with quantities converted to equivalent edible weight and values adjusted to an estimated retail price. Canned fish was divided between herrings and sardines (which are imported into Australia from Europe) and salmon, tuna, and other fish (which are imported mainly from Japan or caught locally). Retail prices supplied by the national statistical offices were used for the comparison of the former items, and prices of the latter item were based on data of unit values. Prices of smoked and other processed fish were based on unit values, and, for other fish products, of small importance in terms of value of expenditure, on the overall relative prices of other products in this item.

(d) *Fruit and vegetables.* Fresh tomatoes, onions, and potatoes were compared at the retail prices supplied by national statistical offices, and other items of fresh fruit and vegetables at estimated unit retail values derived, for the United Kingdom, from data of household quantities and value of consumption and, for Australia, from unit gross values of production plus the estimated mark-up to retail prices. In total, fresh fruit and vegetables account for about three-quarters of the expenditure on this group. For the remaining items of expenditure—canned fruit and vegetables, dried fruits and vegetables, nuts and fruit, vegetable and nut products—relative prices were based largely on retail prices in grocers' trade lists supplemented by prices supplied by the national statistical offices.

(e) *Dairy products.* Relative prices of milk, eggs, and cheese, which together make up about 90 per cent of total expenditure on dairy products, were calculated from prices data supplied by national statistical offices, the prices of condensed milk products were obtained from grocers' trade lists, and prices of the remaining small expenditure were derived as implied prices for other items.

(f) *Oils and fats.* Butter and margarine together make up nearly all of the expenditure on this item, and prices for these items were supplied by the national statistical offices. Relative prices of the remaining products—lard, suet, dripping, and other fats—were taken from grocers' lists.

(g) *Beverages.* Tea, coffee essence, and aerated water prices were supplied by the national statistical offices. Price relatives for the remaining items were calculated from prices given in the grocers' trade lists.

(h) *Sugar, preserves, and confectionery.* The main item of this group is confectionery. Although some data of price could be obtained from the national statistical offices, trade journals, and from information supplied by a major producer in the industry with manufacturing and sales establishments in both countries, the data were difficult to use because of the varied nature of the products and the use of 'nominal' pound weights in the United Kingdom. An estimate was made of the consumption of quantities of chocolate and sugar-based confectionery and this was used as a direct quantity relative and to derive relative prices. The implied price relatives did, however, compare reasonably well with the available information about actual prices. Sugar prices were supplied by the national statistical offices, and prices of other products of this group, mainly jams, conserves, and table jellies, were based on quotations in the grocers' trade lists.

(i) *Other food.* The main items in this group are ice-cream and soup; the price relative for the former was based on data supplied by the national statistical offices and for the latter on prices quotations in the grocers' trade lists. The remaining products of this group account for only a small part of the expenditure and the prices were taken mainly from the grocers' lists.

Alcoholic drink

Expenditure

Both the United Kingdom and Australian expenditures on alcoholic beverages were taken from the published figures of national expenditure, and divided into main products using unpublished data supplied by the national statistical offices. The figures were adjusted to exclude the estimated service charge on the sale of drinks in dining rooms of hotels and restaurants. Expenditure on beer was divided between draught and bottled beer, and separate price and quantity relatives were used for Scotch whisky, gin, rum, other spirits, and wine and other drink (mainly United Kingdom cider and perry).

The approximate figures of expenditure on the main products are given in Table 28.

Table 28—EXPENDITURE ON ALCOHOLIC DRINK

	U.K. (£ Sig m.)	Aust. (£ A m.)
Beer	567	225
Spirits	191	29
Wine and other alcoholic beverages	84	22
TOTAL	842	276

The comparison was made primarily in terms of unit values, derived from data of retail expenditure and the apparent consumption of each product. No allowance was made for differences in quality, apart from treating Australian whisky as a different product from Scotch. It could be argued that Australian beer, because of the higher specific gravity and alcoholic quantity, is superior to English beer, but, on the other hand, the wine and brandy in the United Kingdom is possibly superior to the local Australian product. There is no apparent objective way of making the comparison and it was assumed that the qualities are similar or, put another way, that the locally consumed products in each country meet the needs and tastes of the people in the country.

Tobacco

Expenditure

The expenditure on tobacco and cigarettes published in the national accounts of the United Kingdom and Australia was divided into expenditure on cigarettes, tobacco and cigars, using unpublished data in the preparation of these estimates.

Prices

Unit values, calculated from data of expenditure and quantity, were used to obtain relative prices. For both countries data were available of imports, exports, and clearances through customs bond which provided the estimates of quantities available for consumption. The quantities were simply the weight of tobacco, and hence the figures do not include any allowance for quality difference, or for differences in the proportion of types of cigarettes consumed. However, a check on the price relatives was made by pricing similar brands of plain and cork-tipped cigarettes available in the United Kingdom and Australia.

Housing

Expenditure

The published United Kingdom consumers' expenditure on housing includes the total value of repairs and improvements to private houses, other than grant-aided improvements, and the improvements which were not grant-aided have been deducted and included in fixed investment expenditure on buildings. This amount was obtained from a published estimate by G. Dean.¹ In the United Kingdom estimates the value of repairs and maintenance are shown separately, but are included in the Australian estimate and are assumed to be fully carried out by landlords.

Prices

The sources for the data of prices were, for Australia, the average weekly rent per private dwelling as shown in results of population

¹ 'Fixed Investment in Britain and Norway. An Experiment in International Comparison', *Journal of the Royal Statistical Society*, Vol. 127, Part 1, 1964, p. 95.

censuses and, for the United Kingdom, the results of family budget inquiries for 1958 and 1959. The Australian data from the 1954 and 1961 censuses were interpolated to 1958-9 using the movement in the rent component of the Consumer Price Index, and the United Kingdom data were averaged for 1958 and 1959. The rents relate to tenanted unfurnished dwellings, including flats, houses, and share of house, and both privately-owned and public-authority-owned dwellings.

The figures are unit values, instead of the preferable properly compiled price relatives. There is no information readily available of prices of dwellings of comparable quality, and because of the wide differences in rents by area and by social levels, there are some advantages in compiling an overall average figure. At the same time, however, the meaning of the figures, in terms of a standard of quality, is somewhat obscure.

The question of allowing for differences in qualities of the dwellings in the two countries raises difficult problems, both in measuring the attributes of the dwellings and in weighting these in importance. There are three main types of characteristics which could be taken into account: (1) the facilities, cooking facilities, running water, and so on; (2) the size of dwellings taking account both of space and room numbers; and (3) the age and location of dwellings. The latter type may cover elements of quality not included in (1) and (2), such as the need for a higher maintenance expenditure or the insulation of the materials, but it would also be a convenient, but not perfect, way of making an overall comparison of the facilities and size. In the comparison of United Kingdom and U.S.A., made by the OEEC, differences in the standard of dwellings were assumed to be due mainly to the age of dwellings. But this seems an unjustifiable assumption to make in the present comparison; there has been an extensive program on the modernisation of old houses in the United Kingdom through local authority grants, and the structure of these houses is often more solid than houses built recently. A more valid distinction might be between houses in rural and urban areas, and Table 31, for Australia, does indicate that there are sizeable differences in the facilities of dwellings in these two areas. But the difference in the rent of dwellings in these areas, as shown in Table 29, would seem to be too large to be accounted for only by variation in quality, leaving some possible price difference. In any case, data of rents and facilities of dwellings in the United Kingdom corresponding to the areas of the Australian figures are not available, and it was decided to make the comparison of rents simply in terms of an overall average of all rents.

Leaving aside differences due to age and location, is there any need to adjust, or method for adjusting, the unit value figures for differences in size and facilities? There are some data available from the population census, but these are hardly very conclusive in any overall sense. There is little difference in the average dwelling room per person, but the fraction of persons per room in United Kingdom, at 0.74 (in 1951) is slightly

Table 29—RENTS BY DIVISION, AUSTRALIA

	<i>Census 1954</i>	<i>Census 1961</i>
Metropolitan urban	38s. 3d.	75s. 5d.
Other urban	32s. 8d.	56s. 11d.
Rural	22s. 2d.	35s.
TOTAL AUSTRALIA	35s.	66s. 4d.

Source: *Statistician's Report on Census*, 1954; *C.B.C.S. Bulletin*, 22 October, 1962.
below the comparable Australian figure of 0.76 (in 1947).

Some information about the facilities in the dwellings is given in Tables 30, 31, and 32.

Table 30—DWELLING FACILITIES, GREAT BRITAIN, 1951

Percentage of households with exclusive use of:	%
Piped water	83
Cooking stove	92
Kitchen sink	87
Water closet	77
Fixed bath	55

Source: 1951 Population Census one per cent sample tables.

Table 31—DWELLING FACILITIES, AUSTRALIA, 1947

Percentage of dwellings with:	<i>Urban</i> %	<i>Rural</i> %	<i>All</i> %
Running water	98	43	79
Cooking stove	100	100	100
Water closet	75	11	54
Bathroom	96	77	89

Source: *Statistician's Report on Census*, 1947.

Table 32—DWELLING FACILITIES, AUSTRALIA, 1961

Percentage of dwellings:	%
with electricity only	51
with gas and electricity	46
without gas or electricity	3

Source: *C.B.C.S. Bulletin*, 22 October 1962.

The proportion of dwellings with running water is fairly similar, and while relatively more Australian dwellings seem to have a cooking stove, probably a larger proportion of these are of a more primitive type than in the United Kingdom. At least 3 per cent would be fuel stoves, which are likely to be quite uncommon in the United Kingdom classification of cooking stove. The proportion of houses with a water closet is much greater in the United Kingdom, but comparable with the proportion in urban areas in Australia. On the other hand, it seems likely, from the proportions of dwellings in Australia with a bathroom and in the United Kingdom with a fixed bath, that baths are less common in the United Kingdom. It has been proposed in making international comparisons of dwelling rent that baths should figure in the assessment of quality,² but this would seem to exaggerate the importance of one type of facility, and one for which the proportional use is at least as much a question of national taste as of standards of quality. In the upshot, there did not seem to be any real basis for allowing for differences in qualities of dwellings.

Fuel and light

Details of expenditure and the quantities of the principal types of fuel were supplied by the national statistical offices. But the composition of the fuel bill in the two countries is quite different, as is shown in Table 33, and this leads to a problem in comparison. The main difficulty is how to deal with coal, which is a major fuel in the United Kingdom but is of negligible importance in Australia. The importance of coal in the United Kingdom may be due partly to the relatively large proportion of the expenditure on this item compared with electricity for fuel, but it reflects also the traditional use of coal in the United Kingdom for heating. To the extent that the former is the main reason for the difference, the problem of comparing coal with other means of heating and lighting appears to be intractable, but to the extent that it is possible to equate electricity in Australia with coal in the United Kingdom for heating purposes only, a possibility would be to convert each to the equivalent of an effective heat measurement. This was attempted using trade information about the B.T.U. of the different fuels and their relative efficiency. The result was to give a lower relative price for coal, which seemed anomalous. The difficulties are that this sort of comparison ignores factors other than the heat content, such as the handling qualities, the storage and so on, and that there are big margins for error in the efficiency factors.

The comparison was limited, therefore, to the relative prices and quantities of gas and electricity, and the remaining fuels were compared

² See, for example, *International Comparisons of Cost of Living* (I.L.O. Studies and Reports, Series N, No. 20, Geneva, 1934).

using the average of these prices.

The estimated values of expenditure are given in Table 33.

Table 33—EXPENDITURE ON FUEL AND LIGHT

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Coal	271	*
Electricity	197	65
Gas	138	27
Coke	33	1
Kerosene and other oil fuels	30	3
Other, including wood	17	15
TOTAL	686	112†

* Less than £1 million.

† Does not add because of rounding.

Clothing and footwear

Expenditure

The expenditure on clothing in the United Kingdom is the figure published in the national accounts plus an estimate of the clothing included in 'income in kind, n.e.i.' The estimate for Australia was derived by deducting the value of the expenditure on drapery and piece goods from the published figure of expenditure on 'clothing, etc.' This deduction was based on the results of the retail sales censuses in 1956-7 and 1961-2, interpolated using data of production, imports and exports.

The division into expenditure on groups of clothing was made from the value weights of the retail and consumer price indexes in the United Kingdom and Australia. The classification differs in the two countries, but the United Kingdom detail was used, as it appeared to give a more homogeneous product grouping for the purpose of comparing prices, and the Australian weights were then converted to this classification.

The estimated values of expenditure used to weight the individual price quotations are shown in Table 34. These are based on the weights in the computation of retail and consumer price indexes. The values are approximate and are affected by possible inconsistencies both in the total figures, which are derived for each country from census collections of retail trade, and in the estimation of the weights of expenditure for each item.

Prices

The prices of items of clothing were obtained solely from the national statistical offices, and specifications were matched as closely as possible, either by comparing products with similar attributes or by allowing for

Table 34—EXPENDITURE ON CLOTHING AND FOOTWEAR

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Men's outer wear	279	58
Men's underwear	98	26
Women's outer wear	307	102
Women's underwear	84	35
Hosiery, etc.	125	28
Gloves, etc.	125	21
Clothing material	42	17
Children's clothing	153	29
Footwear	248	65
TOTAL	1,461	381

the effects of any differences. For most items reasonably comparable products were available, but a number of the available price quotations were later discarded as they appeared to be too far from the average to be reasonable. The United Kingdom products appeared in general to be of a slightly lower quality, reflecting the fact that the quotations collected for the retail price indexes are of a more popular, or common, brand than the equivalent Australian quotations. For this reason there may be a slight downward bias in the representative United Kingdom prices. Prices of about four or five products in each of the expenditure categories were used to obtain an average quotation for the categories.

The comparison of footwear prices was more difficult. Several items of shoes and boots were priced, but because of the apparent differences in quality the results were difficult to use; trade sources were also approached for details of relative prices. Neither of these sources appeared to provide reliable estimates and the figure finally used was derived from relative prices of items of clothing.

Matches and soap

Expenditure

This item is as shown in the United Kingdom national income accounts. It includes matches, soap, cleaning materials other than soap, and polishes. A comparable Australian figure was obtained from data of production, imports, and exports. An allocation of the United Kingdom figure between matches, soap (including detergents), and other cleaning material was available from national income estimates. Soap was divided between toilet and household soap, and other cleaning materials into six groups of items using Australian weights from the Consumer Price Index. These comprised boot and shoe polish, floor polish, other polish, disinfectant, ammonia, and blue.

Prices

The prices of matches per box were obtained from the national statistical offices. Prices of some items of soap and cleaning materials were available from the statistical offices, and these were supplemented by quotations from retail price lists of grocers and chemists' goods, published by trade associations in the two countries.

Chemists' goods

Expenditure

The classification adopted was the United Kingdom item of expenditure on chemists' goods, to which was added the estimated National Health Service payments on chemists' goods. The comparable Australian figure was derived through adjusting the item of chemists' goods by subtracting expenditure on soaps and disinfectants. The basis for these adjustments was data of production and assumptions about the proportions of those items included in retail sales of chemists' goods. These adjustments reduced the Australian total of expenditure on chemists' goods by about 5 per cent.

The figures were divided into more detail: first into toilet requirements and medical and surgical goods using the weights of the retail and consumer price indexes in Australia and United Kingdom; they were then subdivided into some twenty groups on the basis of Australian weights used in the preparation of the Consumer Price Index and an analysis of Australian production, import, and export data. The Australian weights were applied also to the United Kingdom expenditure.

Prices

Two main sources were used. A comparison was made firstly using only price quotations supplied by the national statistical offices for comparable items. There were only a few items represented by this source, however, and it was thought desirable to obtain a more comprehensive collection of prices. This was done by supplementing these data by price quotations in the United Kingdom *The Chemist and Druggist*, and in the retail trade price lists prepared by the Federated Pharmaceutical Service Guild of Australia. These lists could not be obtained for 1958, and the comparison was made of December quarter, 1963 prices, which were related to 1958 using the movements of the component groups of the retail and consumer price indexes.

About ninety items were priced, and different sizes of some products. In a number of instances comparison could be made of the prices of identical brands. However, it was not possible to compare the prescription charges, and these were assumed to be proportional to the average price of chemists' goods.

The following items were priced and separately weighted.

Medicine and surgical goods

Bandages
Cough mixtures
Tonic
Aspirin

Cascara
Ointment
Indigestion powder
Pills

Toilet requirements

Toothpaste
Razor blades
Hair fixatives
Hair tonic
Face powder
Talcum powder

Lipstick
Make-up cream
Other beauty cream
Other facial lotion
Composite make-up

Books and newspapers

Expenditure

The published Australian figure of expenditure on 'newspapers, books, etc.' was adjusted by deducting the estimated expenditure on stationery which was added to expenditure on 'other goods'. The resulting Australian total and the published United Kingdom figure of expenditure on books, newspapers, and magazines were then divided into books, newspapers, and magazines, using unpublished data of the national income of the two countries.

Prices

Over 70 per cent of the Australian expenditure on books (other than paperbacks) was estimated to be on books imported from the United Kingdom. The relative price of books was derived by calculating an estimated equivalent retail selling price of the imported books allowing for freight, handling charges, and the discounts allowed by suppliers and retail booksellers. Most of the information needed for this calculation was obtained from a trade association, and the results were later checked with large retail booksellers in Australia. There are difficulties in this approach because of the different treatment needed for types of books; both discounts allowed and profit margins are different, for example, for educational books and general fiction. The results of the overall comparison did, however, appear to be reasonable and were in line with the impressions of booksellers.

The price of newspapers for Australia is the average price of the daily morning and evening papers, obtained from the national statistical office, and for the United Kingdom the weighted average of morning and evening and national and provincial papers. The Australian prices were averaged using the weights for morning and evening papers in the Consumer Price Index, and the United Kingdom prices were weighted by the estimated sales.

The price relative of magazines, which account for about 15 per cent of expenditure on books, newspapers and magazines, was taken as the average of the price relatives for books and newspapers.

Electrical goods

Expenditure

Published figures of expenditure on electrical goods shown in the national accounts were adjusted to a comparable basis, mainly by adding in items which were included in both countries in expenditure on hardware. These covered, for the United Kingdom, wires, plugs, batteries, and other small items and, for Australia, sewing machines, lawnmowers, and bicycles; expenditure on records and sheet music was deducted also from the Australian figure. The adjustments to the United Kingdom figures were made from published information and the Australian estimates were prepared from production, import, and export statistics.

The total expenditure was divided into seven categories using a combination of production data for Australia and the United Kingdom and the weights of the Australian Consumer Price Index. The expenditure of both countries was divided up in the same proportions, as it did not appear possible to produce genuinely different weights for the two countries; it is likely that the proportion of expenditure accounted for by TV and radio sets is understated in the United Kingdom.

The categories of expenditure used are as follows: radio and TV, refrigerators, washing machines, vacuum cleaners, globes and similar electrical goods, irons, etc., and other.

Prices

Prices of globes were obtained from the national statistical offices, but it was not possible to compare the prices of other electrical equipment in terms of the standards adopted for the retail and consumer price indexes of the statistical offices because of variations in specifications. Instead, eight or nine of the major producers and distributors who operate in both the United Kingdom and Australia were asked to provide details of prices of similar or comparable models in both countries. Although only four replies could be used, they seemed to give a good coverage of the major items, particularly of refrigerators and washing machines. But there were difficulties in dealing with television sets because of the differences in technical specifications in the sets sold in the United Kingdom and Australia. It was decided, on the basis of information supplied by manufacturers, to use a price relative of 2 to 1 between Australia and the United Kingdom and no attempt was made to evaluate the relative quality of the sets available in the two countries.

Hardware

Expenditure

The published figure of expenditure on hardware in the United Kingdom was adjusted for minor electrical goods included. Australian expenditure excludes items included in electrical goods, photographic equipment, some gardening equipment, and umbrellas and walking sticks. It was divided into three categories—kitchen utensils, brooms and brushes, and miscellaneous gardening equipment (excluding items such as lawnmowers) using the weights of the Australian Consumer Price Index.

Prices

The prices obtained from national statistical offices were for cup and saucer, table knife, tea spoon, scrubbing brush and garden fork.

Motor vehicles

Expenditure

The total expenditure on motor cars and cycles is shown in the official national income publications. This was divided into expenditure on new cars and other, including the dealers' margin on the purchase of second-hand cars from other persons and expenditure on other motor vehicles, using unpublished detail of the national income calculations. The expenditure on new cars and second-hand cars bought from businesses and public authorities was then further divided into three categories of engine size—1000 c.c. and under, over 1000 c.c. to 1600 c.c., and over 1600 c.c., using details of total registrations of new motor cars in Australia and the United Kingdom. Australian registrations are published in horsepower categories, while United Kingdom registrations are compiled in terms of cubic capacity, and it was necessary to compare these two classifications. The classification adopted was the United Kingdom one and the Australian registrations were converted from horsepower to cubic capacity, using the approximate equivalence of 1 R.A.C. horsepower to 100 cubic centimetre engine capacity.

The values of expenditure on motor vehicles in these categories were approximately as shown in Table 35. Individual models within each category of expenditure were weighted simply by the numbers of vehicles on Australian registration.

Prices

Prices were obtained from the United Kingdom magazine *Autocar* and the *Australian Motor Manual*. They could be compared reasonably well for similar models, except for the Holden, which accounted for the largest proportion of Australian registrations in the over 1600 c.c. category and which is not represented in the United Kingdom registration figures. For the purpose of obtaining a comparative price, the Vauxhall

Table 35—EXPENDITURE ON NEW AND SECOND-HAND
MOTOR CARS

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
1000 c.c. and under	77	12
Over 1000 c.c. to 1600 c.c.	156	38
Over 1600 c.c.	115	119
TOTAL	348	169

Velox was assumed to be equivalent to the Holden, and an Australian price relative for the Velox in the United Kingdom was obtained from a weighted average of the Australian prices of the Velox and Holden. There is very little difference in each category between the unweighted and weighted average price, which would suggest that price relatives are reasonably uniform for the models, except in the highest price category, where the Holden price reduces the weighted average.

Other goods

Other goods include furniture and floor coverings, household textiles, and miscellaneous other goods, and comparisons of expenditure and prices were made for these groups separately.

The values of these expenditure categories are given in Table 36.

Table 36—EXPENDITURE ON OTHER GOODS

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Furniture and floor coverings	362	99
Household textiles	147	83
Other miscellaneous goods	454	122
TOTAL	963	304

(a) Furniture and floor coverings

Expenditure

The expenditure estimates are as published in the national accounts. An approximate dissection was made between furniture and bedding (including mattresses and divans, but excluding soft bedding, such as blankets and sheets), and floor coverings, using detailed results of the United Kingdom *Census of Distribution* and, for Australia, data of

production, imports, and exports. These were further divided into six categories, using Australian estimates of expenditure based on production data. Furniture was divided into expenditure on wood furniture, mattresses, and other, and floor coverings into linoleum, carpets, and other.

Prices

Prices of linoleum and carpets were obtained from the national statistical offices. The prices of mattresses were factory wholesale prices of a small inner-spring mattress, and a price relative was estimated for wood furniture using data of wood prices, average earnings of furniture, etc., manufacturing workers. The remaining items, which accounted for between 15 and 20 per cent of the expenditure on this group, were compared using the average price for other items of the group.

(b) Household textiles

Expenditure

This item covers drapery, manchester, and soft furnishings. The expenditure in the United Kingdom is the figure published in the national accounts, and the Australian estimate was derived by interpolating the results of censuses of retail trade using production data. The total for each country was divided into five categories of textiles using the weights from the Australian Consumer Price Index.

Prices

Prices were obtained from the national statistical offices and relate to cotton double-bed and single-bed sheets, blankets, tea towels, and bath towels. Specifications could be matched closely, except that there were small differences in the sizes of the single-bed sheets and bath towels, which were related on the basis of square feet.

(c) Other miscellaneous goods

These cover a variety of items, mainly toys, sporting and travel goods, clocks, watches and jewellery, gramophone records and sheet music, and stationery and writing equipment. Both the United Kingdom and Australian expenditure include a large component of residual sales of other goods in retail censuses and it was not possible to break this item down to show the expenditure on individual products. And it was difficult, also, to obtain representative prices. It was decided to use as an overall price relative the average of the relative for the following other groups of personal consumption expenditure on goods—clothing, furniture and floor coverings, electrical goods, hardware, household textiles, matches and soap, books, newspapers and magazines, and chemists' goods.

Running Cost of Motor Vehicles

Expenditure

The total expenditure is the figure published in the national income accounts except that in the Australian estimate a deduction was made for net third party insurance premiums which was added to insurance services. This expenditure was divided into the following seven categories, on the basis of the unpublished detail of the national income calculations: motor spirit, oil, tyres, batteries, repairs and maintenance, registration fees, and other expenditure.

Prices

The price data used were supplied mainly by the national statistical offices. Price of other expenditure is the weighted average of the price relatives of the other item.

Motor spirit is the premium grade (octane rating 97) for the United Kingdom and the regular (79 octane rating) for Australia. These were compared in the ratio of 97:79. Both prices are for metropolitan areas.

Engine oil, tyres, and batteries were matched in the two countries. The price relative for repair work, which accounts for nearly a third of expenditure on this group, is the charge for a decarbonisation and valve grind. The price of registration is the average fee in Australia, and the standard charge in the United Kingdom.

Travel

Expenditure

The total expenditure on travel was divided into six categories, corresponding to the major forms of transport, based on unpublished national income data. The separate expenditure detail covered train, taxi, air, tram and omnibus, other bus, and all other (chiefly shipping).

Prices

The appropriate unit for price comparison would be the passenger mile with allowance for difference in quality, for example, between first and second class train and air travel. But the necessary information was not available for each item of travel, and various substitute methods were used. Expenditure on rail travel was compared in terms of average revenue per passenger mile, and Australian figures were estimated from figures for New South Wales and Queensland. An overall average of revenue was taken, which means that main line and London Transport journeys were averaged in the United Kingdom and country and suburban travel in Australia. No allowance was made for quality difference (speed, convenience, comfort, etc.) or for the varying proportion of charges at concession rates.

The taxi fares are the tariff rates for the first mile (including the flag fall

in Australia) for the average of Australian capital cities and in London. The rate of air fare is the average passenger revenue per mile for all internal Australian air lines, and for B.E.A. for the United Kingdom. The unit of price comparison for trams and trolley buses, and other buses, is the passenger journey. Expenditure on other travel, which makes up about 10 per cent of total travel expenditure, was compared using the average of prices of other forms of travel.

Communication services

Expenditure on postal, telephone, and telegraph services was derived from national income details.

The prices used were one ounce letter rate, inland newspaper and parcel postage rates and, for telephone services, a subscriber's local call charge and rental per quarter. The price relative for expenditure on telegraph services was derived as the average of prices of postal and telephone services.

Entertainment

This includes admissions to entertainment, expenditure on radio and TV licences, and a fairly sizeable amount, for the United Kingdom, for rental of TV and radio sets and for rediffusion. The price of admissions is the estimated average price of cinema takings. This information was available for the United Kingdom and was estimated for Australia from data of admissions and takings compiled from statistics of entertainment tax brought up to 1958-9, using the variation in prices of cinema admission collected for the Consumer Price Index.

The price relatives for expenditure on radio and TV licences were compiled from the registration fees. The remainder of expenditure was compared using the average of prices for other items.

Education

Expenditure

This includes public authority as well as personal expenditure on education. The United Kingdom figure is the sum of personal expenditure on private school fees, the working expenses of non-profit-making bodies, which are included in the item of other services, and the total current expenditure by the local authorities and the central government less imputed rent on buildings. The Australian figure is the sum of the published figures of consumers' expenditure on education services and public authority net current expenditure on education.

This item was divided into current expenditure on universities and on all other educational establishments.

Prices

Since most education services are supplied without direct charge it was necessary to impute prices from the relative cost of providing education services in the two countries. This was done by dividing the current expenditure on universities and other establishments by the number of pupils. The relative prices show, therefore, simply the cost per pupil of providing education services. The limitations of this method of comparison were discussed in Chapter 3.

Medical and health

Expenditure

This item covers the total current expenditure by persons and public authorities on medical and health services. The expenditure includes hospital and medical, dental and ophthalmic services, as well as the administrative costs of the health services provided by local and central governments. It excludes expenditure on child welfare and on the care of the aged, handicapped, etc.

The United Kingdom expenditure is the sum of personal consumption expenditure on medical services to private patients and National Health Service payments other than for chemists' goods (these are part expenditure on 'other services' in the national accounts), and the current expenditure on goods and services by combined public authorities on the National Health Service and other health services, less imputed rent on buildings. An adjustment was made to deduct the cost of pharmaceutical benefits which are included in the item of personal expenditure on chemists' goods.

The Australian estimate is the sum of the published estimates of personal consumption expenditure on medical, health, and funeral expenses and the public authority current expenditure on health, adjusted to obtain comparability with the United Kingdom figure. The main adjustments made were to exclude funeral expenses from personal consumption expenditure and to deduct from the published figure of public authority expenditure an estimate of the cost of supplying free milk to schoolchildren and the expenditure on sanitary and garbage services by local authorities.

The total figures were divided into hospital expenditure, and payments to doctors, to dentists, and for other professional medical services. The Australian estimates of payments for professional services were derived from unpublished national income estimates, and were obtained by multiplying estimated numbers of medical practitioners by the estimated average gross earnings. The United Kingdom figures are the payments made to doctors and dentists 'on list' and supplementary ophthalmic services under the National Health Service plus the estimated fees paid by persons.

Prices

The comparison of expenditure on doctors and dentists was made by using as quantity indicators numbers not attached to hospitals (consistent with the figures of expenditure) and on other professional medical services by using an average price of the services of doctors and dentists. Real expenditure on hospital services was obtained by revaluing current expenditure by price relative based on the average cost per hospital bed in Australia and for hospital beds covered by the National Health Service in the United Kingdom.

Other household and personal services

Expenditure

This item covers expenditure on repairs (other than to motor vehicles), laundry, dry-cleaning, sweeps, window cleaners, hairdressing and manicure, and funeral expenses. The estimates were obtained from unpublished figures on national income.

Prices

The prices of all components, other than funeral expenses, were obtained from the national statistical offices, and cover shoe repair—half sole and heel for men's and women's shoes—dry-cleaning of men's suits and women's overcoats, and men's haircut and women's shampoo and set. Funeral expenses were compared by using as a quantity indicator the numbers of burials. A small proportion of expenditure was not covered by these indicators, and an overall average price for the other items in the group was used to revalue this amount.

Miscellaneous services

This group covers all other services, and estimates were made separately for expenditure on domestic service, insurance, other recreation and entertainment, and the balance. The estimated expenditure on these items and the total is given in Table 37.

Table 37—EXPENDITURE ON MISCELLANEOUS SERVICES

	<i>U.K.</i> (£Stg m.)	<i>Aust.</i> (£A m.)
Domestic service	92	20
Insurance	145	22
Other recreation and entertainment	379	138
Other miscellaneous services	304	105
TOTAL	920	285

(a) Domestic service

This expenditure was revalued by average earnings of domestic servants.

(b) Insurance

Expenditure

The expenditure figures are published in the national accounts. The item excludes insurance on motor vehicles, which is included in the running cost of motor vehicles, and the main component is the administrative expenditure of life assurance plus, for the United Kingdom, the shareholders' surplus.

Prices

A price comparison was made by dividing the expenses of management by an average of the value of total sums insured and sums insured under new policies in the year—converted to equivalent prices using exchange rates. This method assumes that an identical unit of output is obtained by the revaluation using exchange rates and that the expenses are applicable to an average of the total sums insured and the sums insured under new business. The former assumption is based on the notion that since money capital can be readily transferred it is appropriate to use the exchange rate conversion for comparing the quantities. There is no basis for dividing the expenses proportionately between the two sums, and this is an arbitrary assumption.

(c) Other recreation and entertainment

Expenditure

Expenditure on other recreation and entertainment is largely meal service and accommodation charges, overheads on school meals in the United Kingdom, the cost of milk supplied to schoolchildren in Australia, and the service charge on served drinks. The figures were obtained from details of the national income estimates.

Prices

Prices are based on average earnings of employees in hotels and catering establishments. The Australian figures relate to a broader group of hotels, restaurants, and some other miscellaneous services.

(d) Other miscellaneous services

This item is the balance of personal services, and covers a variety of miscellaneous items, of which the most important is the heterogeneous group of working expenses of non-profit-making bodies, n.e.i. It also includes the item of net overseas expenditure on consumers' goods and services by residents of Australia and the United Kingdom. The price

relative for this group was obtained as the weighted average of the prices of expenditure on other household and personal services, domestic services, and other recreation and entertainment.

Fixed Investment Expenditure Expenditure

This includes the expenditure by private enterprises, public enterprises, and public authorities on items of fixed capital equipment. The sources of data were the published estimates of fixed capital expenditure. The estimate for the United Kingdom includes the value of alterations to dwellings, which in the official estimates is included in personal consumption expenditure, and the current expenditure on roads.

The total estimate was divided into the following components, using published information, national income estimates, and results of special calculations made for this purpose—roads, other building and construction, motor vehicles, agricultural machinery and equipment, and other plant and equipment, which for Australia was further divided into imported and local equipment. There are some differences in the definitions of these components, but it is not thought that this greatly affects the consistency of the figures. The estimates of United Kingdom expenditure on roads include, for example, the local authority car parks and street lighting, which are excluded from the Australian figures but, on the other hand, the Australian figures include some expenditure on plant and equipment. There is also quite likely to be some inconsistency in the methods used in the United Kingdom and in Australia to separate expenditure on other building and construction from plant and machinery.

The estimated proportions of these categories of expenditure to total fixed investment is shown in Table 38.

Table 38—DISTRIBUTION OF FIXED INVESTMENT
EXPENDITURE
(%)

	<i>U.K.</i>	<i>Aust.</i>
Roads	6	8
Other buildings and construction	43	48
Motor vehicles	7	9
Agricultural machinery and equipment	2	5
Other plant and equipment	42	30
TOTAL	100	100

Prices

Expenditure on roads was compared by using a price relative, derived

from data of average earnings and the relative prices of certain types of construction materials—cement concrete, asphalt concrete, and screenings. These were weighted roughly using proportions suggested by Australian road making authorities. An alternative comparison was made also on the basis of the cost of completing similar road types, predominantly of the type of surface common in the United Kingdom. This allows for different productiveness in the use of inputs, and also for the effect of differences in climate and the finish of the roads. The cost of road building is higher in the United Kingdom because of the need for a heavier type of construction to withstand the effects of the climate and the greater density of traffic; and there appears to be a higher quality also in curbing, guttering, etc.

Expenditure on other building and construction was revalued by the prices of items of cost and average earnings in the building industry in each country. Thirteen items were priced, including bricks, cement, asbestos cement products, glass, paint, mineral oil, softwood, hardwood, and five metal products, and these were grouped into five industry categories. Industry weights were derived from data of inputs into the building and construction industry in the official Australian 1958-9 and the United Kingdom 1954 input-output tables. The weights are similar in each country except for the lower consumption of timber, and of hardwood within the timber item, in the United Kingdom. The average earnings in the building and construction industry in Australia were supplied by the Commonwealth Bureau of Census and Statistics, and the United Kingdom figures were obtained from the report on the 1958 census of production.

The prices of items of materials were obtained from builders' trade lists, and some data of wholesale factory prices were also supplied by the national statistical offices.

This method of comparison ignores differences in productiveness of the building industry in the two countries, and differences in the length of the working week. It is similar to the approach used in the comparison of intertemporal changes in real product of this industry.

Motor vehicle prices were compared using the price relative of motor vehicles in personal consumption expenditure, with an allowance for the differences in tax rates on purchases for private and business use.

A detailed comparison was made of prices of twelve items of farm machinery and four tractors, and several products were priced in each item. Some items are imported, and the price comparison could be made for these items fairly straightforwardly, although some adjustment is made to the imported product for local needs, and this involved a judgment as to the effect on the usefulness of the machinery of the changes. But the bulk of the equipment used in Australia is manufactured locally, and for those items the comparison had to be confined to products which were fairly comparable with the United Kingdom product. The

United Kingdom prices were obtained from trade journals, and the comparable Australian prices were obtained from a major importer and home producer, who also supplied information about the comparability of the products. They were weighted using Australian expenditure weights for each item.

The products priced were: disc plough, other plough, cultivator, harrow, drill, baler, combine harvester, distributor, mower, rake, and tractor.

About 40 per cent of the Australian expenditure on other plant and equipment was on imported goods, and relative prices were obtained for these items by combining price relatives for imported agricultural machinery, motor vehicles, and other producers' and transport equipment. A comparison of fifteen items of agricultural machinery gave an Australian price about 160 to 170 per cent of the price in the United Kingdom of the same machines, and Australian motor car prices of United Kingdom makes, after allowing for differences in purchase and sales tax rates, were about 155 per cent of the prices of similar models in the United Kingdom. For imported producers' and transport equipment, estimates were made of the duty, freight, and primage, which amounted to about 11 per cent of import valuation. There was an estimated further local transport cost and distributive mark-up of 40 per cent which gave a total price in Australia of about 155 per cent of the price in the United Kingdom. An overall figure of 155 per cent was used as the relative price in Australia and the United Kingdom of machinery imported into Australia.

Locally produced machinery prices were compared similarly by further assembling several price relatives. Prices of locally made items of agricultural machinery were compared with the prices in the United Kingdom of comparable products and, while there is some dispersion in the prices of these items, and some difficulty was encountered in allowing for altered specifications of the Australian products, it appeared that the locally-manufactured products were about 130 to 140 per cent above their prices in the United Kingdom. The prices of consumers' durable electrical goods (other than radio and TV sets), after allowing for differences in the rates of purchase and sales tax, were about 50 per cent or more higher in Australia than in the United Kingdom, and the price of the Australian model Holden was about 135 per cent of the English model Velox, again after allowing for different rates of purchase and sales tax.

Finally, prices of metal products used in building and construction were 30 to 35 per cent higher in Australia compared with prices in the United Kingdom. A direct comparison was made also by matching grades and standards of items collected for indexes of wholesale prices of factory products, but the information available did not cover a very wide or representative group of items. It appeared that on the basis of the

above price relatives, the average Australian prices of domestically produced machinery may have been about 135 per cent of the United Kingdom prices, and this was used in the comparison.

Current Expenditure of Public Authorities

This excludes the public authority expenditure on education and medical health services, which is included in personal consumption and expenditure on roads. The remainder was divided between wages and salaries and other expenditure.

Wages and salaries were revalued using the average earnings. The pay and allowances of the defence forces were treated separately from civilian payments, and the comparison was derived from published information of numbers in the defence forces and their pay and allowances. The Australian figure of average earnings for civilian employees was obtained by dividing the relevant public authority wage and salary bill by estimated numbers in employment, which means that the quantity and price data were quite consistent. For the United Kingdom the wages and salaries was the published figure in the national accounts, which is consistent with the relevant public authority expenditure, but the average earnings was the published figure of average weekly earnings in national and local government service. The coverage of this figure may be different from that of wages and salaries, which means that the price data are not consistent with the quantity data. Both figures of average earnings are in equivalent male units.

The remaining expenditure on goods and services was revalued using a selection of price relatives for items of personal consumption expenditure. These were weighted by purchases of industries using data in the official 1958-9 input-output table and the published United Kingdom table for 1954.

Investment in Stocks

The investment in stocks was revalued using an overall average of the prices of consumption and investment goods.

Net Exports

This item was revalued using the official exchange rate applied to imports and exports of goods and services.

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