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COMMONWEALTH BUREAU OF CENSUS AND STATISTICS,
CANBERRA, AUSTRALIA.

WAGES AND PRICES.

A Short Examination of the Accuracy of the Retail Price
Index-Number, used in the Adjustment of Wages.

(SECOND EDITION—REVISED.)

Prepared under instructions from the Minister of State
for Home Affairs.

BY

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PREFATORY NOTE.

It has been said that the civilization of a country is better measured by its use of index-numbers than by its use of motor-cars. It is not enough, however, to use them extensively for important practical decisions, as we do in Australia; we must use them with understanding and confidence.

These few pages are meant for a help to understanding and confidence. Explanations are given and present-day difficulties are discussed so far as possible in plain and untechnical language; and, I hope, honestly. But the subject is inherently difficult, and the reader must contribute his quota of hard thinking—and honest thinking—if profit is to come of it.

L. F. GIBLIN,

Acting Commonwealth Statistician.

Canberra, F.C.T.

5th November, 1931.

SECOND EDITION.

The opportunity has been taken to revise and expand the original text in the interests of clearness and accuracy. Most of the amendments spring from the criticism of the many friends who have dealt faithfully with the imperfections of the first print, among whom I may thank particularly Mr. E. T. McPhee, the Deputy-Statistician in Hobart.

L. F. G.

4th December, 1932.

WAGES AND PRICES.

SECTION I.

The Measurement of Retail Prices.

1. An index of retail prices was first compiled by the Commonwealth Statistician in 1911, as part of an investigation into the movement of prices generally, wholesale, retail, export and import. The main object was to supply the data for consideration on an international scale of the major economic problems of the relations between money, production, trade and employment, the importance of which has, since the war, recorded very ample recognition. (See Labour Report No. 1, Introduction, paragraph 1). The measurement of retail prices was not expressly undertaken for wage-fixing purposes, though no doubt its probable usefulness as a help in wage adjustments was recognized. The precise and rigid use to which it has been put could not have been foreseen.

2. The principle on which the index of prices was made is as follows. An assortment of goods in common use is made, so many pounds of bread, flour, butter, tea, meat, etc., in proportion to the amounts consumed by the whole of the people of Australia. This assortment is called a "basket" of goods. If the cost of this basket of goods is made out at two different times at the prices obtaining at those times, then the change in the total cost of the "basket" will measure the change in the general level of prices of the goods in the basket. If the basket cost 120s. at one time and 132s. at a later time, then prices would have risen 12s. in 120s. or 10 per cent. The difference between prices at two places is measured in the same way.

3. The "basket" might perhaps contain 10 lb. of bread to 5 lb. of sugar, 8 lb. of meat of various kinds, 1 lb. of butter, 3 quarts of milk and smaller quantities of twenty other foods. These are not the exact quantities used but they give a rough picture of them. Of course, the proportion of quantities would not suit every household. (Theoretically every household should have its own price-index.) The proportions of the various foods, e.g., 5 lb. of sugar to 1 lb. of butter, are the actual averages for all households. It is found by trial that the ordinary differences between households cause very little divergence from the average result, except in a few very special cases, such as vegetarians. Even for these, since it is the change in prices that we are trying to measure the result based on average consumption will not be very far out, and may be either higher or lower than the true index for these special individuals.

4. For any such index to be valid, the basket must always contain the same goods of the same quality or grade and in the same quantity. Therefore, the goods must be such that both quantity and grade can be clearly and definitely described. If any goods cannot be definitely described in this way, they must be left out of the basket.

5. The simple foods best fill these conditions; and after foods, the best are house-rents. All clothing is difficult because the grades and qualities cannot be exactly described and are always changing. Household gear of all kinds—crockery, pots, brushes, furnishings—is nearly as difficult as clothing.

6. Consequently, when the index was first made, only food and groceries and house rents were taken into account. The result should be a good and trustworthy index for food and rent. Let this be assumed for the present. Possible defects will be examined later (Section III.).

SECTION I.

7. Food and rent make about 60 per cent. of all family expenditure on consumption on the average for all wage earners. What about the other 40 per cent.?

8. Prices tend to go up and down together. There will be exceptional movements of individual prices, seasonal and otherwise, but wherever there is any substantial change up or down, most prices will tend the same way. Consequently, if we divided the basket of goods equally into two baskets *at random* each basket would show about the same change of price as the other and as the whole basket. This conclusion comes from our experience of how prices move.

9. It follows that it is not necessary to take into account all goods used to get a true measure of the price level. Any representative sample of the goods would give practically the same result. Hence follows a very important principle. It is much more important to have goods which can be clearly described as to quantity and grade than to cover the whole range of goods consumed. An index covering 40 items about which there is no uncertainty as to grade or quantity is a better and a truer index than one with 20 additional items, about which there is some uncertainty as to grade or quantity. For this reason, certain foods of moderate importance were omitted from the Australian basket, such as cabbages, apples, oranges, and all other fresh vegetables and fruit, and fresh fish of all kinds. None of these things are sold uniformly throughout Australia at so much per pound, and there are considerable variations in grade which cannot be exactly described. A further difficulty is that both consumption and price vary with the season, and during part of the year some of these goods are unobtainable. That difficulty could be got over, though it would make the work more complicated and expensive, but the impossibility of getting uniform prices for a uniform grade is a definite bar to including such goods.

10. It is stated in the last paragraph that a representative sample of the goods consumed is sufficient for a good price-index. But the sample must be representative of all the goods consumed; it must be a fair sample. It may not be a fair sample when only food and housing is included, while clothing and household gear are left out entirely. It follows that it cannot be assumed without inquiry that the food-and-housing index will measure accurately all retail prices. The true index for all prices may be higher or lower than the index for food and housing.

11. We find in fact considerable differences in the three groups of food—meat, dairy produce and groceries. Though on the whole they move together, the variations may be considerable. In the last ten years the index for meat has varied as much as 12 per cent. from the index for all food. (This of course, is not a *random* division of the "basket", such as was spoken of in paragraph 8.) It might be expected that clothing prices would be even more likely to show variation from food prices.

12. The variations in the groups of foods are chiefly the result of good and bad seasons, in Australia and elsewhere. These variations then will tend to cancel out from time to time and the error will not be cumulative. For clothing and household gear, which are manufactured goods, the case is different. There is no doubt that manufactured goods tend to become cheaper relatively to food. That this has happened over the last 100 years is a matter of common knowledge, and there can be little doubt that this tendency will continue and may become stronger as increasing population

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puts greater pressure on the natural resources of the world. But it is a long run effect and may be directly contradicted by the experience of a few years. Food prices are essentially more variable than prices of manufactured goods, because both demand and supply for the basic foods are much more rigid than for manufactured goods, so that over-production and under-production are both more likely with foodstuffs.

13. We may conclude from general reasoning that the prices of clothing and household gear will in the long run tend to fall more or rise less than the prices of food, but that over a few years the opposite effect is quite likely.

14. The matter may be tested by Australian experience. Since 1921, an attempt has been made to make an index of all retail prices, including clothing and household gear, and this index has been carried back to 1914. It has not the accuracy of the food-and-rent index, because it was impossible to specify definite grades and qualities of clothing, etc., and without definite specification of grade and quality, no index of prices can be satisfactory. With this caution, the figures in the different groups can be compared. The group "Miscellaneous" includes household gear and fuel, but also a number of other items, such as lodge dues, tram fares and newspapers which do not fluctuate much and therefore tend to keep the group more stable than any other group. The table gives the index-numbers of prices in each group with 1914 as base for the six capital cities taken together for all the years for which data are available, and for three quarters of 1931. The last column gives the food-and-rent index (all houses) as used by the Arbitration Court, but carried only to three figures. This index may be compared with that in the preceding column for "all-items". The difference between the two is somewhat greater than if rents had been confined to four and five roomed houses in the last column. These houses give a somewhat better and more trustworthy index than all houses (see Section IV. Table I.), but as the "all houses" index is the one in most practical use, it seems desirable to make the comparison with it.

Index-Numbers of Prices, November, 1914=100.

(Six Capital Cities.)

	Food..	Rent (4 and 5 rooms).	Clothing.	Miscellane- ous.	All Items.	Food and rent (all houses.)
Nov. 1920 ..	189	131	181	169	170	162
Nov. 1921 ..	148	135	165	135	147	139
Nov. 1922 ..	147	143	140	133	142	142
1923 ..	157	146	139	133	146	149
1924 ..	151	152	133	134	144	148
1925 ..	156	155	131	132	145	151
1926 ..	160	158	131	133	147	157
1927 ..	156	159	129	135	146	155
1928 ..	154	164	132	135	147	154
1929 ..	163	165	132	135	150	160
1930 ..	147	161	126	133	142	148
1931—						
1st. Qtr.	134	147	116	131	132	136
2nd ..	131	142	114	130	128	132
3rd. ..	125	136	112	129	125	127

SECTION I.

15. When the story begins in November, 1920, prices were at the peak. Food and clothing were almost equally high, but rent lagged behind miscellaneous expenditure. Consequently the food-and-rent index (with 1914 as base) was nearly 5 per cent. below the "all-items" index. It remained above by about the same amount in 1921 but fell in 1922, until at the end of the year both index-numbers were the same. The greater rise of the "all-items" index in this period was a reasonable consequence of conditions during and directly after the war when imports were severely restricted, so that clothing and household gear were relatively higher than other prices.

16. From 1922, the opposite movement began and the food-and-rent index showed more rise since 1914 than the "all-items" index. In 1926, food-and-rent was nearly 7 per cent. above "all-items" and this relative position was maintained substantially until the latter half of 1930.

17. From the middle of 1930, the fall in food-and-rent was faster than the fall in "all-items", so that the divergence between the two gradually narrowed. In the third quarter of 1931, food-and-rent was less than 2 per cent. above "all-items".

18. The conclusion is that the index-number for food and housing in general is rather higher than the index-number for all retail prices, and so slightly exaggerates the "cost of living". The exception is for the abnormal post-war years, 1920 and 1921, and in these the "all-items" index was 5 per cent. above the food-and-rent index. There was probably a similar but smaller difference in the later war years.

19. The prices for clothing and "miscellaneous" from 1914 to 1919 were not collected at the time but retrospectively in 1920 and 1921. To avoid any error on this account, a comparison may be made which does not involve pre-war prices.

It will be noticed that the two index-numbers were exactly the same in November, 1922, so that the same conclusions must be drawn for the following years, whether we take 1914 or 1922 as base. The statements of paragraphs 16 and 17 are equally true when 1922 is substituted for 1914 as base. The food-and-rent index has since 1922 always been above the "all-items" index, but the difference is getting smaller and is now less than 2 per cent.

20. Although the prices for clothing and miscellaneous expenditure are much less satisfactory than for food and rent, and could not safely be used for quarterly variations for single towns, yet the results taken for the six capitals as a whole for the whole year should give a fairly trustworthy picture of the general trend because the averaging over a large population for the whole year will largely eliminate chance irregularities. I think the conclusion may fairly be drawn that for the six capitals the food-and-rent index slightly exaggerates the "cost of living", but not to a serious extent, and that it may be taken as a reasonably satisfactory index of retail prices generally.

SECTION II.

The Basic Wage and Retail Prices.

21. In 1907, the Federal Basic Wage was fixed at 7s. a day in Melbourne by the implication of the "Harvester" judgement of the Federal Arbitration Court. Mr. Justice Higgins, in deciding that 7s. a day in Melbourne was "fair and reasonable remuneration", made some inquiries into household expenditure. But the award was in effect a practical judgement based on the rates actually ruling in Melbourne.

22. Prices at the time were rising very slowly, and in fact imperceptibly to general observation, and it was not for some years that the question of adjusting wages to the cost of living became acute. Evidence as to cost of living was submitted by Unions, but it was not until 1912 that an officer of the Commonwealth Bureau of Statistics gave formal evidence. The Bureau had begun its investigation of retail prices in 1911 and carried them back to 1901. The first Labour Report with prices and a price-index back to 1901 was published in December, 1912; it contained also an elaborate paper by Sir George Knibbs on the theory of Price-Indexes. In the tramways case, earlier in the year, the Court was "interested" in the statistical evidence but did not accept it as conclusive. Mr. Justice Higgins said "I shall watch with attention any further development of Mr. Knibbs's inquiries."

23. In 1913, a further step was made. In the Gas Employees' case, the President of the Court, Mr. Justice Higgins, said, in reference to official evidence about the retail price-index:—"Since that time (1907) I have found many indications that the minimum of 7s. had become too low owing to the increased cost of living, and I have allowed the fact to influence my awards; but I have never had presented to me, before this case, evidence sufficiently specific to show me what the advance in the basic wage should be". In the Engine-drivers' case, and the Building Labourers' case, later in the same year, the procedure was further developed and since that time the Retail Price-Index has been accepted as the basis of all variations of award. It has been modified to meet special cases, e.g., country wages, and there have been two formal deviations from it—in the addition of the "Powers, 3s." in 1921, and in the 10 per cent. all round reduction in February 1931, and subsequent months.

24. It is to be noted that what the Bureau of Statistics offers to the Court is simply a general index of the retail prices of food and of rents, separately and combined, for the principal towns of Australia. It was not designed with special reference to wage-regulation, nor has it been altered at any time with that in view. It has been for the Court to say what use it will make of that index. The responsibility of the Bureau is to make the index as accurate as possible for what it is designed to do, i.e., measure the rise and fall in the cost of food and housing. The fact that the index is used by the Court for the very important practical business of fixing wages does not concern the Bureau, except to re-double the need for care and accuracy in compiling the index.

25. It may be noted that the popular term "cost of living index" is not recognized by the Bureau of Statistics. The term is of doubtful meaning, and might be taken to imply that account should be taken of changing standards to meet altered conditions—a rising standard after the war and a falling standard in the present depression. Measurement of the cost of living would require also that account should be taken of the possibility of substituting one food for another, mutton for beef when beef is high, and beef

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for mutton when mutton is high, and other natural devices of the practical housewife. Nothing of this kind is attempted. What is presented is simply an index of retail prices of the same grades and qualities of certain goods in a constant proportion (*see* Section I., paragraphs 2-6). The same is true of the price-indexes of other countries, which are often described (sometimes officially) as "Cost of Living Indexes". In most countries, the term "Cost of Living" is used to distinguish a price-index, generally very rough, for all household expenditure from one for food only, which is of much higher accuracy.

26. The Commonwealth Statistician and his officers have from time to time expressed opinions in evidence to the Court or in official publications on matters which are of necessity controversial. For example, the opinion has been expressed from time to time :—

- (1) That the index for food and housing makes in general a fairly satisfactory measure of retail prices generally.
- (2) That the index for food and housing, if not always perfectly satisfactory for retail prices generally, is still the best measure of them that can, in practice, be made.
- (3) That the error in using food and housing as a general index of prices will be now one way, now the other, so that it will not accumulate to any serious amount in any moderate period of years.

27. These opinions have been repeatedly expressed by Sir George Knibbs and Mr. Wickens in the past as a result of their thought and experience. I have briefly reviewed the matter from a perfectly independent point of view in Section I. of this Report, and have given reasons for coming to substantially the same conclusions. But these are of necessity only opinions on matters open to argument, and it rests with the Court to give what weight it thinks fit to them.

SECTION III.

The Accuracy of the Retail Price-Index.

28. A large volume of criticism has been directed against the Retail Price-Index, against its accuracy and against the use made of it in the determinations of wages. This criticism has in the past come from both sides in industrial disputes ; but recently, on account of the severe reduction in wages, it has come almost entirely, and naturally with increased force, on behalf of the wage-earner.

29. It is very desirable to maintain confidence on both sides in the methods of wage-determination. The Australian system, though of course far from perfect, can claim great merits. It has shown itself a more effective instrument for adjusting wages up or down in rough accordance with economic conditions than that of any other country where employers and employed are highly organized. It is, therefore, very desirable to examine carefully all such criticism, to supply explanations in case of misunderstanding of the technical procedure of price measurement, and to take action to correct any defects that may appear as a result of the examination. It will appear that some of the criticism refers not so much to the price-index as to the use made of it by Arbitration Courts. These matters must of course be argued out before the Court itself.

30. Much current criticism of the price-index and the use made of it is put together and set out forcibly in a Report by a sub-committee of the Melbourne Trades Hall Council, consisting of Messrs. P. J. Clarey and H. C. Gibson. It will be convenient to take first the conclusions of this sub-committee and examine them.

31.—(1.) *Predominant Prices*—

“ That the use of the predominant price basis in the calculation of information as respects food and groceries results in false conclusions ; the figures not only recording changes of price, but also changes in the community's standard of living.”

32. There is no doubt that the rigid use of the “ predominant price ” might lead to measurement of change of standard rather than change of price. But, in fact, there is no evidence of any change of grade in the goods for which prices are quoted. When the collection of prices was begun, dealers were very properly asked to quote the “ predominant price,” i.e., the price of the grade or quality of tea, cheese, &c., which was most in demand ; and the words “ predominant price ” were put at the head of official tables and have remained there until recently. But it was not intended that the grade or quality should be changed because of a change in the demand. Such a procedure would be contrary to the first principles of making a price-index as laid down by Sir George Knibbs who, as Commonwealth Statistician, devised and carried out for many years the compilation of the retail price-index. In his comprehensive memoir on the subject (*Labour Report 1918*, Appendix) he emphasized—

“ The necessity of seeing that the grade or standard of commodities is kept constant, if they are to be used to measure accurately the purchasing-power of money ” (page 191).

and again—

“ Price variations due to change of grade in commodities nullify comparisons, inasmuch as they introduce the effect of change of standard ” (page 228).

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This principle has, in practice, been carried out, but as in general there was no reason to expect that the predominant grade would be changed and no evidence of change in any returns, the word "predominant" was allowed to stand without the qualification that was strictly necessary.

33. In the present year, a new situation has arisen. With the severe reduction in real wages, due to the Arbitration Court award of January and to taxation, there came a real danger of a change of grade. The price-returns were closely scrutinized for any change of grade—which is easily detected on the tabulated returns—, and a letter was sent to all the dealers making returns warning them against any change of grade in making a return of prices. The State Statisticians who actually collect the prices, co-operated in the watch for possible errors. In official publications dealing with the food-and-rent index, all reference to "predominant" has been cut out so as to avoid any danger of misunderstanding.

34. Scrutiny of past returns shows clearly that no appreciable change of grade has been made by retailers. Occasionally a single return from a country storekeeper shows a possible variation of grade and is sent back for explanation or amendment. Comparison of retail and wholesale prices has supplied a further check. It can be concluded with confidence that no appreciable change of grade has been made by retailers making returns of food and that no such variation will be made in the future.

35. It may be noted that it is only in a few commodities—butter and tea are the most important—that there is danger of an appreciable change of grade. The dominating commodities, bread, sugar, milk and meat are not affected. It is sometimes suggested that the food index will be made lower than it should be because of a greater demand for the cheaper joints. But that is to misunderstand the procedure. All joints are given a constant weight whatever the demand; and as in fact a beast has only the same number of joints whatever the demand for them, the price of the cheaper joints must rise if they are much sought after, and the price of the dearer joints must fall to correspond.

36. It is affirmed with confidence in the preceding paragraphs that no appreciable change of grade has taken place or can take place in future in any of the items of food, and groceries, for which prices are quoted. The same statement cannot be made for clothing and miscellaneous expenditure. For most of the items of these groups, grades and qualities are not definite enough to identify from quarter to quarter over a term of years. There has been no alternative to asking retailers to quote the "predominant price," whenever there is uncertainty as to the grade for which they last quoted. There is, therefore, a possibility of an appreciable change of grade in the course of years with changing fashions, and changing standards, particularly in women's clothing. It is probable that any change that has taken place up to the end of 1930 has been on the whole upward, because up to that time wages had risen more than prices, i.e., "real" wages had risen. From 1921 to 1930, the rate of "real" wages was from 6 per cent. to 12 per cent. higher than in 1911, though there was some fall in the war years. Moreover, 1911 was a peak year for "real" wages, and if the comparison be made with the average of the years 1910 to 1914, the rise in "real" wages would have been 3 per cent. higher than in the comparison with 1911 alone. There is then a possibility that the "all-items" index has been brought out

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a little higher than it should be as a true measure of all retail prices. The reverse effect is probably beginning to operate in the present year, because though the rates of "real" wages are still rising, the average "real" wage received, on account of unemployment, has fallen seriously.

37. It is for this reason, because it is impossible to identify grades and qualities in clothing and "miscellaneous", that the "all-items" index is much inferior to the food-and-rent index in accuracy, and cannot be recommended for practical use in the determination of wages or other payments. It serves a useful purpose in showing a trend, but cannot claim any high degree of accuracy.

38.—(2.) *Rent and home purchasers—*

"That the basis of recording variations in prices of rent is restrictive and inconclusive and does not cover the whole community's shelter charges; the investigations not covering the fixed charges of home purchasers, either by instalments or mortgages and their annual charges of taxation and maintenance."

39. It is quite true that the proportion of houses purchased on instalment or on mortgage is so large that they should be taken into account in measuring rent. The difficulty, however, of getting fair and reliable data is considerable, and if the data are dubious, the general principle is to omit such items from a price-index unless there is reason to think that their omission appreciably affects the index.

40. The question then is whether the omission of the charges on purchased houses seriously affects the rent-index. There does not seem to be any reason to think so. The number of houses that are now being purchased, or have been purchased in recent years is still considerably less than the number of rented houses. On the whole, in the long run, it is to be expected that the charges on purchased houses will be much the same as rents. A man will not purchase a house in preference to renting one, unless he can reasonably expect to get his house about as cheaply as a rented house of the same quality. The two charges in the long run will be much the same, but the purchaser avoids the fluctuations of rents. When trade is booming and rents are high, he will gain by having a time-purchased house with fixed charges. In the depression when rents are low, he will lose by his venture in comparison with the man with a rented house. It seems reasonable that he should take the rough with the smooth. It is his own choice.

41. In any case, it is not the actual amount of the charge on purchased houses that is in question, but only its fluctuations. The index is concerned only with changes of price and for this purpose it does not matter whether the goods in question are high grade or low grade, costly or cheap, so long as the price varies in the same way as other grades of the same goods. As pointed out above, the purchaser's charges are more stable than rents; they do not fall so much as rents, though the rate of interest is liable to fall as it has done at present; nor do they rise so much as rents in prosperous times, though rates of interest will tend to rise in those conditions. The effect of including the charges on purchased houses in rent would have only a very small effect on the whole food-and-rent index and therefore on wage rates based on the index. If these charges varied from 20 per cent. above to 20 per cent. below average rentals—and that is an extreme supposition—then the inclusion of purchased houses would raise or lower the food-and-rent index by 3 per cent. That is to say, wages would be about 4d. per day lower in good times and 4d. per day higher in bad times.

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42. Such greater stability in wages *may* be desirable. It would be a compromise between the interests of the purchaser and of the ordinary tenant. The possibility of getting fair and trustworthy data is being investigated, and if they can be got, a price-index will be computed which takes the charges on purchased houses into account. Whether such an amended index would be taken into account in fixing wages, would be of course a matter in the discretion of the Court.

43.—(3.)

“ That the adoption by the Court of the Statistician’s assumption, that the variation of the 60 per cent. of expenditure recorded and investigated (rent, food and groceries) is an indication of the variation in prices of the 40 per cent. unrecorded, is unsound as between capital cities and country towns and results in a reduction of the standard of living and loss of real wages by provincial and rural workers.”

44. The logic of the last sentence is at fault. If the assumption is “unsound as between capital cities and country towns,” the result might equally be again in “real” wages by city workers. If the assumption is true on the whole, then the result would be some loss by country workers and some gain by city workers, with the total gain and loss balancing.

45. However, the assumption referred to is only in very general terms, and as our best information refers to the cities, let us suppose that it is true only for the cities, and consider how country wages are affected.

46. The argument is briefly as follows :—Food is about the same price in country towns as in the capitals. Rent is much lower. Therefore, food and rent together are lower. On the assumption referred to, clothing and miscellaneous should also be lower. But it is a matter of common knowledge, and borne out by the official record of prices that clothing is on the average at least as high in country towns as in the capitals. Therefore, the food-and-rent index does not fairly measure all retail prices in the country towns as compared with the capitals.

47. This is perfectly sound. But the Commonwealth Statistician has never “assumed” that the food-and-rent index measured satisfactorily differences in all retail prices between different places under different conditions. The opinion expressed (*see* Section I., paragraph 20) has been that the food-and-rent index measured on the whole with moderate accuracy the variation of all retail prices for the same place so long as social habits did not greatly change. Now there is no reason to doubt that the food-and-rent index for Ballarat (say) does very fairly measure the changes in all retail prices in Ballarat, though it does not give a fair comparison for all retail prices between Ballarat and Melbourne. The use of the food-and-rent index to vary wages in Ballarat is therefore fair and reasonable. The only question is on what base the wage should be computed as compared with Melbourne.

48. The question of a base is a matter for argument before the Court and a decision by it. In fact, the Court has not made the assumption attributed to it and determined wages in country towns and districts simply on the food-and-rent index. For example, in the award in the Engineers’ case, 26th March, 1930, in practically all the towns and country districts the wage based on the index-number is increased by a “loading”, rising as high as 9s. a week for country districts in South Australia. These “loadings” were in accordance with past awards, and were merely continued by Mr.

SECTION III.

Justice Beeby. Mr Deputy President Webb, in the Australian Workers' Union (Mining) case of 1924, made a clear statement of the principle involved and concluded: "The Court, therefore, has adopted the custom of making an allowance on the Country figure". Mr. Justice Powers in the same year (Commonwealth Railways' case) enforces the same principle. It is true that the Court has on occasion expressed itself not wholly satisfied with the method by which these discriminations were fixed, and suggested that the whole question should be reviewed by the Full Court. But there is no hint of any crude reversion to the simple index-number. In the Dried Fruits' case of 1929-30, the Chief Judge refused the employers' claim for an award for Mildura and Renmark based on the "four towns", i.e., excluding Melbourne, and made a higher award on the evidence; but he added:—

"I think the basic wage for the Mildura district ought to be adjusted upon the Victorian "four towns" index-numbers, which sufficiently reflect variations in the prices of provisions, clothing and sundries."

49. It is clear from these instances that the alleged "assumption" of the Commonwealth Statistician is not in fact adopted by the Court and consequently cannot result in "loss of real wages by provincial and rural workers".

50.—(4.)

"That the regimen used in the compilation of the index-numbers is inapplicable to the normal needs of the average Australian family, omitting as it does such essentials as vegetables (other than potatoes and onions), fruit and fish."

51. This objection seems to come from some misunderstanding of an index-number and is perhaps sufficiently answered in Section I., paragraph 9. If fish, fruit and vegetables were included, there would be some small difference, but it is impossible to say whether the index-number would be higher or lower than it is at present. The difference in any case would be small on the average, but the index-number would be more variable on account of seasonal fluctuations of price.

52.—(5.)

"That the mass-units used in the compilation of the said index-numbers are not an approximation of the quantities consumed in the average Australian family; a preponderating weight being given to such items as sugar, potatoes, flour and meat, while staple items, such as eggs and butter, are not given their due weight in proportion to their average consumption."

53. It is true that the mass units used in the compilation of the index-number are not all exactly proportional to present Australian consumption. It is desirable that the mass-units should be revised from time to time, and such a revision is now due. Investigation has in fact been going on for the last twelve months into some of the more difficult items of consumption, particularly meat and milk, and sufficient data are now available for revising the mass-units. This revision will be undertaken shortly.

54. Although the mass-units require revision, it is not to be supposed that revision will now make any appreciable change in the price-index. It is a well-known fact that very large variations in the mass-units or weights make very small variations in the index, unless the prices of the different items have varied in a very irregular way—some up and some down, or some

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stationary and some greatly changed. As nearly all individual prices have increased greatly since 1911, the corrections to be made on account of revised mass-units will be very small. (A full statement will be made on this matter, when the revision is complete.) It is desirable, however, to make the revision from time to time to prevent small errors from accumulating to substantial ones.

55. The criticism is made that sugar, potatoes, flour and meat are over-weighted in comparison with eggs and butter, and it appears to be thought that this has the effect of lowering the index and so lowering wages. Even if there were serious over-weighting of the articles specified, it would have precisely the opposite effect and would raise the price-index higher than it should be, because the prices of all the "over-weighted" items have increased since 1911 more than either of the "under-weighted" items. But there will in fact be no substantial change. Because the corrections to be made in the mass-units are not very great, and the movement of nearly all individual prices has been roughly similar, it is certain that the correction to be made in the index-number will be very small.*

56.—(6.)

"These inconsistencies result in a regimen below a normal standard of comfort and also result in drops of wages in excess of the drop in consumers' costs, and thus cause considerable variation between real and nominal wages."

57. This criticism amounts to a summary of the separate objections, and is sufficiently answered under the separate headings. No inconsistencies have been shown. The "regimen" has nothing to do with any standard of comfort; it is simply a choice of goods selected as most suitable for measuring as accurately as possible the movement in retail food prices. There is no evidence at all to show that the price-index so made has worked prejudicially to the wage-earner. It is not, of course, a perfect measure of the variation of consumers' cost for all individual consumers or for all classes of consumers. But where it is against a consumer in one movement of prices, it favours him to an equal extent when prices move the opposite way. We are all naturally sensitive to present ills and forgetful of past benefits.

58. The price-index, then, is not biased, but the question of how accurately it measures changes in the total costs of the wage-earner cannot be finally settled. In Section I. reasons are given for believing it reasonably accurate. If that is so, the index furnishes an effective means of keeping "real" wages at a constant value. Whether "real" wages ought not in the long run to increase with scientific and technical progress is not a question for the statistician. Here it remains only to examine some other current objections to the price-index, not included in the Melbourne Trades Hall Report.

59. *The Sales Tax.*—Anxiety has been expressed in many quarters, lest the prices used for the price-index should not include the sales tax. The assurance can be freely given that wherever the consumer is asked to pay the sales tax, it is included in the price used for the price-index. In a few cases, the trade has been carrying the sales tax—at least while it was only 2½ per cent.—and then of course the sales tax is not included in the quoted price nor in the price charged to the public. The price returned to the Bureau is

* Since this was written, a test has been made with weights based on present consumption. The result indicates that the error on account of using the old weights has not been more than three points in 1,500, which would affect wages by about a farthing a day.

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supposed to be the price charged to the public, and would naturally include the sales tax, wherever it is passed on to the public. Inquiries made by the State Statisticians have shown that this has been so, in fact.

60. The amount at issue is in any case very small. The only items affected are :—Tea, coffee, rice, sago, jam, oatmeal, starch, blue, soap and candles. The tax on all of these raises the price-index only seven points in about 1,500, and if the sales tax was omitted from all prices quoted, the effect would be to lower wages about $\frac{1}{4}$ d. per day.

61. There is however, a further and much more difficult question connected with the effect of such measures as a sales tax. (The general reader is recommended to pass on to paragraph 62.) If a tax is imposed on many commodities but not on the principal items which enter into the food-and-rent index, then it may be argued that the food-and-rent index will no longer measure accurately the rise or fall in retail prices generally. This argument is perfectly sound but its application requires caution. It is never strictly true that the food-and-rent index measures exactly the changes in all retail prices. It is only approximately true on the whole. Every change of price in individual items, a rise in bread or boots, a fall in meat or flannel, to some extent affects the relation between the two index-numbers. On the whole we find these effects cancel out and the two index-numbers remain fairly harmonious. Unequal movements of prices happen daily in the ordinary course of trade. We have also unequal movements due to action of governments. Every measure of taxation, every duty of customs or excise, causes some unequal movement of prices. The sales tax is only one of many such influences. The practical question then is whether the effect of the sales tax is so great that it stands out from the many other factors causing unequal price movement, so that it will appreciably affect the rough harmony which prevails on the average between food-and-rent and all retail prices.

62. The first question to settle is the magnitude of the sales tax effect. The rate of the tax is 6 per cent. and it is levied on (at the most) one-third of all consumption. If spread equally therefore it would raise prices not more than 2 per cent., and the food-and-rent index would be not more than 2 per cent. higher or about 28 points in the present average food-and-rent index of 1,400. But the actual effect of the sales tax is to raise food-and-rent about 7 points (paragraph 60). The effect of the incidence of the tax is therefore to put food-and-rent not more than 21 points out of harmony with all retail prices.

63. Consider on the other hand sugar, which by action of government has been kept from falling in price in harmony with all other commodities. If it had fallen 25 per cent. in price or about 1d. per lb.—wheat has fallen over 50 per cent.—food-and-rent would have fallen 23 points. If sugar fell to the New Zealand price, 3d. per lb., food-and-rent would be down 32 points, while an index for all retail prices would be down only about 19 points. Government action in this case may be said to have put food-and-rent out of harmony with all retail prices by about 13 points in one direction, against 21 points in the other direction by the sales tax. When to the effect of sugar protection is added the similar effect of keeping up butter prices by means of the tariff, the result is just about to balance the effect of the sales tax in the other direction of putting up other prices more than food-and-rent.

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64. There are numerous other disturbances of this kind but those mentioned are the most important. The exact balancing of them would be a long and difficult job, but enough has been said to show that the net effect is unlikely to be more than a few points in the index-number, and might be either way. That is to say, that the effect of legislation, taxation and other government action probably has not put the food-and-rent index out of harmony with all retail prices by more than a few points; or made the adjustment of wages to prices in error by more than 1d. per day—where the error may be either up or down.

65. *Mid-monthly Prices.*—The charge has been made that retailers systematically lowered prices at the middle of the month when their returns were sent in, with the object of depressing wages. The basis of the charge was the daily report of retail prices appearing in the Melbourne *Herald*. No doubt isolated low prices in the middle of a month gave rise to the suspicion but careful examination shows no justification whatever for it. The *Herald* prices have been tabulated systematically day by day for the last sixteen months, and careful scrutiny shows no evidence whatever that prices at the middle of the month tended to be lower than those at other times. In fact, prices were found to be just as often higher as lower.

66. A further suspicion has been privately voiced, though not officially countenanced by any responsible Labour organization, that retailers deliberately and systematically under-state prices. A little common sense should dispel this suspicion, even if all credit for common honesty be refused to Australian retailers. The idea that ten reputable firms in each branch of trade in each city should systematically conspire to make false returns on a matter easily capable of verification, and expose themselves not only to very heavy legal penalties but to a scandal which would inevitably have a most damaging effect on business—surely such an idea only needs to be stated plainly to be dismissed as absurd.

67. *The Accuracy of the Price-data.*—For various reasons, some of which have been examined in previous paragraphs, a great deal of distrust of the accuracy of the recorded prices has been expressed. Occasional errors due to carelessness are found, as must be expected in the hundreds of thousands of prices which are dealt with yearly; but no evidence has been received of any appreciable inaccuracy one way or the other. The question is whether it ought to be possible for critics to supply evidence for charges of inaccuracy.

68. The average mid-monthly prices for every town are available monthly about four weeks after the event. They are printed in the Quarterly Summary of Statistics and are furnished monthly to newspapers which apply for them. They could be supplied, if desired, to the responsible trade union and employers' organizations in each State. This information allows the public to make some check on their accuracy, but only a very rough one. The average prices will not in general be the same as those of any individual retailer. Even if some organization interested kept a record of the prices of ten shops, the average could not be expected to be exactly the same as the official figures, unless the ten shops were the same as those supplying official returns. Both samples of ten shops would be satisfactory for measuring *changes* in price, which is all the price-index is concerned with, and would give the same percentage change. But the actual prices would be higher or lower according to the class of trade. Every effort has been made to keep the official prices continuous from the time that prices were first

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collected ; when a retailer goes out of business, his place is filled by another doing the same class of trade. Any other sample of retailers, however fairly chosen, would give slightly different averages. They might even be a better and more representative sample than the official ones, but it would still be wrong to use their prices instead of the official ones, because they are a different sample and would make the record of prices discontinuous.

69. How then can a check be made which will satisfy those who are vitally affected by the movement of the price-index. The obvious means is to publish the list of retailers supplying prices and of the individual prices quoted by them monthly. To that, however, there are very grave objections. The information is asked of retailers on the authority of the Census and Statistics Act, which guarantees that individual returns shall be treated as confidential and prescribes a penalty for any one disclosing them. In fact, retailers would be very unwilling to make returns if their names and prices were disclosed. They would be exposed to a good deal of worry, and would actually incur odium and lose business, as being in some way responsible for lower wages when prices were falling. Any cut in price in order to get trade in bad times would be represented as an attack on the workers' standard of living. Data unwillingly supplied always make bad statistics. If the law were altered to provide for publicity, the result would undoubtedly be seriously to impair the value of the price-index.

70. Other methods of check have been suggested, but none is simple, effective and inexpensive. The matter is under consideration and it is hoped that some practical means can be found. There is no reason to doubt the accuracy of the information supplied—with the exception of occasional accidents of carelessness—but it is very desirable to be able to show convincing proof to those—whether employers or employed—whose interests are very seriously affected by changes in the price-index, and who cannot therefore always bring a quite unbiased judgement to bear on the subject.

71. *Rent.*—The information about rent is not so good as for food, though better than for clothing and other expenditure. The complaints of inaccuracy have, in general, come from the employers' side. Whenever times are bad and rents obviously falling, the rent-index is found to show little change. Rents are naturally much slower to move than food prices, and this effect is heightened by the choice of houses for the rent-index. The houses taken are normal fairly modern houses in fair situations ; old-fashioned, inconvenient houses, houses out of repair and poorly situated are excluded. These are the houses for which rents fall first, and in fact such houses become almost unlettable in times of depression. But for the more modern convenient house, rent is very slow to move. In particular, rents of four and five-roomed houses may even go up, because people move into smaller houses and the demand on them increases. It has happened repeatedly that the rent-index remains stationary or falls very slowly on the house-agents' returns, though the same house-agents' impressions, from the state of trade and the number of empty houses on their hands, are that rents are falling heavily.

72. The rent-index is, however, more liable to accidental variations than the food-index. The trouble comes from the enormous variety of grade of house and the difficulty of specifying a standard. There is no bias in the variations, which may be up or down. But it is, of course, desirable to eliminate them, and a procedure for getting more accurate data is under consideration.

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Tables.

The following tables provide material for study of the problem of the adjustment of wages to prices. The index-numbers are mostly given to base 100 instead of 1,000 but the "Harvester" equivalents are worked out to the full accuracy of the latter base. It must be understood that it is not in general possible to get an index-number of prices strictly correct to four figures. Most countries are content with three, and for a general survey the movement can more easily be picked up by using three figures.

TABLE I.
Index-Numbers—Rent—Six Capitals.

Period.			All Houses.	Four and five rooms.	Period.			All Houses.	Four and five rooms.
1911	..	..	100	100	1929	..	..	176	175
1920	..	..	133	134	1930	..	..	169	171
1921	..	..	140	141	1930—1st Quarter	..	..	175	178
1922	..	..	148	149	2nd	..	..	172	174
1923	..	..	155	155	3rd	..	..	166	169
1924	..	..	161	162	4th	..	..	160	163
1925	..	..	163	165	1931—1st	..	..	156	156
1926	..	..	173	168	2nd	..	..	151	150
1927	..	..	173	168	3rd	..	..	146	145
1928	..	..	176	174					

The above table shows how rent has varied since 1911 according as "all houses" or "four and five-roomed houses" are taken. The weighted average for the Six Capitals in 1911 was 13s. 5d. for four and five-roomed houses, and 15s. 7d. for all houses. Each of these is taken as 100 in 1911, so that the percentage changes can be readily compared. It will be seen that the variations of rent are very similar whichever of the two groups of houses is considered. The movement may be a little quicker in one than the other, whether up or down, so that sometimes one, sometimes the other, shows a little more total variation since 1911. For the three quarters of 1931, the rise since 1911 has been practically the same in both index-numbers.

Table II. gives—

- (a) The food-and-rent index as used by the Arbitration Court, and alongside the "all-items" index which includes also clothing and miscellaneous expenditure. Both index-numbers are to base November, 1914, the earliest date for which the "all-items" index is available.
- (b) The "Harvester" equivalent on the food-and-rent index and, alongside, what the "Harvester" equivalent would have been, if the "all-items" index had been used from 1914 on, instead of the food-and-rent index. These figures are the strict "Harvester" equivalents, without the "Powers 3s." or the "10 per cent. cut."

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- (c) The index-number of rates of wages, with the same base, November, 1914.

The wages taken account of in this index includes all those which are the result of legal determination or collective agreement. There is a considerable volume of wages paid to unorganized labour, particularly in country occupations, which is not fully covered.

- (d) "Real" wages, i.e., in terms of retail purchasing power, with the same base, November, 1914. In the first column of "real" wages, purchasing power is measured by the food-and-rent index, in the second column by the "all-items" index.

TABLE II.
Retail Prices, Wage Rates and "Real" Wages.
Weighted Averages for the Six Capitals.
Base—November, 1914 = 100.

Period.	Retail Price Index.		Weekly "Harvester" Equivalent based on—		Average Rate of Wage Index.	"Real" Wages* based on—	
	Food and Rent.	"All Items."	Food and Rent.	"All Items."		Food and Rent.	"All Items."
1914 (November) ..	100	100	<i>s. d.</i>	<i>s. d.</i>	100	100	100
1921 (November) ..	139	147	76 3	80 8	169	121	115
1922 (November) ..	142	142	77 6	77 9	167	118	117
1923	149	146	81 8	77 11	167	112	114
1924	148	144	80 9	78 7	170	115	119
1925	151	145	82 9	79 5	172	114	119
1926	157	147	85 9	80 6	177	113	120
1927	155	146	84 10	79 10	180	116	124
1928	154	147	84 6	80 5	182	118	124
1929	160	150	87 6	82 3	182	114	121
1930—1st Quarter	154	147	84 2	80 3	183	119	125
2nd ..	152	145	83 1	79 5	181	119	125
3rd ..	146	141	80 1	77 2	179	123	127
4th ..	139	135	76 0	74 1	175	126	129
1931—1st ..	136	132	74 3	72 1	168	124	128
2nd ..	132	128	72 1	70 4	163	124	127
3rd ..	127	125	69 6	68 4	..	..	..

* Taking no account of unemployment.

From the table it may be noted :—

- (1) The food-and-rent index has risen since 1914 more than the "all-items" index.
- (2) Consequently the "Harvester" equivalent is now greater than if the "all-items" index had been used by the Arbitration Court since 1914.

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- (3) "Real" wages have increased roughly 25 per cent. since 1914, whichever index is used to measure purchasing power. The rise was appreciable and fairly continuous during 1930. In 1931, there is a small decline.

These figures, however, exaggerate a little the upward movement of "real" wages, because in 1914 "real" wages were below the average just as in 1911 they were above the average. If the comparison be made with the whole pre-war period, 1910 to 1914, the index-numbers of "real" wage rates based on food-and-rent (column before the last) would be in each year about three less. The effect on the last column cannot be stated, because we have no information about changes of price for clothing and "miscellaneous" in the period 1910 to 1914.

- (4) The "all-items" index shows a slightly greater rise in "real" wages than the food-and-rent index.

It is at first sight surprising that a greater fall in "real" wages is not shown in 1931, in view of the "10 per cent. cut" in "real" wages by the Federal Arbitration Court in February, 1931. It is probable, however, that only about half of all Australian wages have been subject to these Federal awards or to similar reductions by State awards. Moreover, most wages in New South Wales have not even been adjusted to retail prices so that "real" wages have on the whole risen in that State.

Further, it must be remembered that when wages are regularly adjusted to prices, "real" wages will rise in a period of falling prices (and fall in a period of rising prices) because of the necessary lag of wages behind prices.

When due weight is given to these two considerations, it will be seen that both the fall in wage rates and the fall in "real" wages shown in the table correspond reasonably with what might have been expected.