KEYNESIAN CONTROVERSIES ON WAGES*

John Pencavel

In The General Theory, Keynes advanced two hypotheses about movements in wages and urged their empirical investigation. John Dunlop, Lorie Tarshis and Henry Richardson responded to this call with articles published in the ECONOMIC JOURNAL in the late 1930s. In turn, Keynes replied to their findings. This exchange is described and the subsequent literature on the cyclical movement of real wages and the rigidity of money wages is outlined.

1. Two Linked Hypotheses from The General Theory

1.1. First Hypothesis – Changes in Money Wages and in Real Wages

In his Introduction, Keynes (1936, pp. 9–10) wrote, ‘It would be interesting to see the results of a statistical enquiry into the actual relationship between changes in money-wages and changes in real wages. In the case of a change peculiar to a particular industry one would expect the change in real wages to be in the same direction as the change in money-wages. But in the case of changes in the general level of wages, it will be found, I think, that the change in real wages associated with a change in money-wages, so far from being usually in the same direction, is almost always in the opposite direction. When money-wages are rising, that is to say, it will be found that real wages are falling; and when money-wages are falling, real wages are rising’.

Many pages later in The General Theory, Keynes provided the reasoning behind this hypothesis. Because ‘there is, as a rule, no means of securing a simultaneous and equal reduction of money-wages in all industries, it is in the interest of all workers to resist a reduction in their own particular case. In fact, a movement by employers to revise money-wage bargains downward will be much more strongly resisted than a gradual and automatic lowering of real wages as a result of rising prices’ (p. 264). In other words, in a contraction, because workers will resist wage cuts, money wages will adjust more slowly than prices are adjusting; therefore, when money wages are falling, they are falling less rapidly than prices are falling and hence real wages are rising. Analogously, in an expansion with firms moving up on their output supply curves, there will be a tendency for prices and wages to rise, but wages rise more sluggishly than prices. Thus, although money wages are rising, they are rising more slowly than prices and real wages are falling. Money wages are more sticky or inflexible than prices.

Keynes used money-wage rigidity not only in this descriptive sense but also prescriptively: ‘there is, therefore, no ground for the belief that a flexible wage policy is

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capable of maintaining a state of continuous full employment . . . the money-wage level as a whole should be maintained as stable as possible, at any rate in the short period.’ (1936, pp. 267–70).  

1.2. E.C. Ramsbottom

Although Keynes encouraged others to investigate ‘the actual relationship between changes in money-wages and changes in real wages’, was he aware of an authoritative series on post-War wages and prices in the UK that appeared just a year before *The General Theory*’s publication? These data are contained in a paper read by E.C. Ramsbottom (1935) to the Royal Statistical Society and they are reproduced in Table 1. Ramsbottom drew upon the Ministry of Labour’s information on wages and prices to construct a series on weekly wage rates, on the cost-of-living, and (by dividing the former by the latter) on

| Year | Weekly wage rates | Cost-of-living | Real wages |
|------|------------------|----------------|------------|
| 1920 | 154.8            | 151.4          | 102        |
| 1921 | 120.3            | 109.7          | 109.5      |
| 1922 | 99.2             | 101.7          | 97.5       |
| 1923 | 97.9             | 101.1          | 97         |
| 1924 | 100.8            | 102.9          | 98         |
| 1925 | 101.3            | 100.0          | 101.5      |
| 1926 | 101.7            | 100.0          | 101.5      |
| 1927 | 99.8             | 96.0           | 104        |
| 1928 | 98.9             | 95.4           | 103.5      |
| 1929 | 98.6             | 94.9           | 104        |
| 1930 | 97.9             | 87.4           | 112        |
| 1931 | 95.7             | 84.0           | 114        |
| 1932 | 94.4             | 81.1           | 116.5      |
| 1933 | 94.0             | 81.1           | 116        |
| 1934 | 94.4             | 81.7           | 115.5      |
| 1935 | 95.6             | 84.0           | 114.0      |
| 1936 | 98.6             | 86.5           | 114.0      |
| 1937 | 103.1            | 91.0           | 113.5      |
| 1938 | 104.3            | 88.5           | 118.0      |

Notes. *Values from 1920 to 1934 are from Ramsbottom (1935, Table VIII). Values from 1935 to 1938 are from Richardson (1939, p. 433) based on information provided by Ramsbottom (1938, 1939). The yearly values relate to the end of December. The index of weekly wages equals 100 for the average of 1924. The cost-of-living index is expressed as percentages of the average for 1924. The index of real wages is the index of weekly wages divided by the cost-of-living index with an average value of 100 for the months of 1924.

1 Keynes gave a number of reasons not to attempt money wage cuts to reduce unemployment. The British economy (like the US and French economies but, possibly, unlike the dictatorial economies of Italy, Germany and Russia in the 1930s) could not effect a ‘simultaneous and equal reduction of money-wages’ for all workers and the attempt would result in much strife, discontent and inequity that would have uncertain consequences for effective demand.

2 E.C. Ramsbottom was Director of Statistics at the Ministry of Labour. In 1938, the Royal Statistical Society awarded him the Guy Medal in Silver for his papers presented at the Ordinary Meetings of the Society.
real wages for the years from 1920 to 1934 for the UK.\(^3\) It is a careful piece of scholarship exhibiting detailed knowledge of the data and free of preconception.\(^4\)

The value of Ramsbottom’s index of weekly wages is lower in 1934 and the value of his cost-of-living index is lower in 1934 than their respective values in any years in the 1920s. The fall in the cost-of-living index exceeds the fall in money wages so that real wages are higher in 1934 than in the 1920s. Real wages rose from 1924 to 1934 at a time when money wages were falling. Money wages fell, in part, because, until 1925, a principal goal of economic policy was to restore the Gold Standard at the pre-War parity. The fulfilment and preservation of the return to Gold required downward pressure on domestic prices and wages, pressure that was resisted by workers as revealed in widespread strike activity.

Does this episode affirm Keynes’s hypothesis? A visual impression of Ramsbottom’s data is provided in Figure 1 which, following Tarshis (1939), graphs observations on annual percentage changes in real wages against annual percentage changes in money wages.

![Graph showing annual percentage changes in real wages against annual percentage changes in money wages](image)

**Fig. 1. Annual Percentage Changes in Real Wages Mapped Against Annual Percentage Changes in Money Wage Rates in the UK, 1924–38**

**Notes.** In this Figure, the crosses denote the actual annual observations for the years from 1924 to 1935 of the percentage change in money wages (\(\Delta W\)) and the percentage change in real wages (\(\Delta R\)). The solid circles denote the corresponding pairs of observations for 1936 to 1938, the years of and after the publication of *The General Theory*. The solid line is the least-squares regression of \(\Delta R\) on \(\Delta W\) for the years from 1924 to 1935, namely, \(\Delta R_t = 1.584 - 0.361 \Delta W_t\). The estimated standard error on the slope coefficient is 0.313. The value of the R-squared statistic is 0.0926.

\(^3\) Subsequently, Ramsbottom (1938, 1939) published notes that traced the series up to 1938.

\(^4\) Among other things, Ramsbottom shows that there is only a small difference between the movements in hourly earnings and weekly earnings after 1920. Major reductions in weekly hours were effected in 1919 and 1920 but not after. The index covers 69 industries and he shows (in his Appendix A) distinct differences across industries in money wage rate changes: for example, coal mining experienced a large fall between 1924 and 1934 while workers in English and Welsh agriculture enjoyed a large increase.

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wages for the years from 1923 to 1938. The negative correspondence in Figure 1 is weak and, by conventional criteria, the hypothesis that the two series are independent of one another cannot be rejected. Keynes presented no data on real and money wage changes and it was left to others – John Dunlop, Lorie Tarshis, Henry Richardson – to investigate Keynes’ claims.

1.3. Second Hypothesis – Changes in Real Wages and in Employment

Also in the Introduction to The General Theory, Keynes made clear his agreement with the classical economists that employment is set at that level at which the real (product) wage equals the marginal product of labour. From this he reasoned ‘with a given organization, equipment and technique, real wages and the volume of output (and hence of employment) are uniquely correlated, so that, in general, an increase in employment can only occur to the accompaniment of a decline in the rate of real wages . . . In a given state of organisation, equipment and technique, the real wage earned by a unit of labour has a unique (inverse) correlation with the volume of employment’ Keynes (1936, p. 17). Hence, according to Keynes, holding inputs other than labour constant, movements in output are negatively correlated with movements in real wages. Indeed, the negative association between real wages and employment traces out firms’ labour demand functions.

In the exchange that immediately followed, the focus was on the conjectured negative correlation between changes in real wages and changes in money wages.

2. Examining the Facts

A common concern for those confronting Keynes’s wage hypotheses with evidence arose from the fact that he did not distinguish between real wages as seen by firms (the ‘product wage’) for whom the selling price of their goods is the relevant deflator and real wages as seen by workers (the ‘consumption wage’) for whom the prices of consumer goods provides the appropriate deflator. Keynes finessed this distinction by constructing a closed economy model with no taxation but it was not so easily avoided by the empirical researchers because Britain was hardly a closed economy and taxes were not absent. Hence, one of Dunlop’s real wage series for Britain adjusted the price deflator to allow for changes in export-to-import prices, the terms of trade. Tarshis (1938, p. 373) alludes to the same issue.

There were analogous concerns about wages. Did Keynes mean wage rates or actual wage payments (often known as earnings that would rise in an expansion when

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5 The years of the sharp recession immediately after the First World War are omitted because they represent large (and perhaps unrepresentative) values.

6 This distinction is sometimes ignored yet may be important. For instance, Sargent’s (1978) regressions of employment on lagged real wages that he interprets as an aggregate labour demand function are shown to be a fragile relationship when his use of the consumer price index to deflate money wages is replaced with a wholesale price index that comes closer to the real wage that belongs in an employer’s labour demand function. See Geary and Kennan (1982) who cannot reject the hypothesis that movements in employment and real (product) wages are statistically independent.

7 Subsequently, Keynes (1939, p. 44) made clear that ‘the statisticians should endeavour to calculate wages in terms of the actual product of the labour in question’. © 2015 The Authors. The Economic Journal published by John Wiley & Sons Ltd on behalf of Royal Economic Society.
overtime hours were paid at premium rates)? His model was silent about such distinctions but they frustrated the application of his hypotheses to data.

Another problem arose from Keynes’s distinction between wage changes in ‘a particular industry’ and changes in ‘the general level of wages’. In view of the fact that, according to Keynes, the co-movement of money and real wages in a single industry is quite different from that in the general economy, it is important not to confuse one with the other. However, the wage series available in Britain – including Ramsbottom’s – were collected principally from employers’ organisations, trade unions and statutory bodies such as those established by the Agricultural Wages Act which set minimum rates of pay for covered workers. To what extent did movements in the wages of workers in the non-union and unregulated sectors mimic movements in the wages of organised and regulated workers so that the latter may be used to measure ‘changes in the general level of wages’? We do not know.8

2.1. John Dunlop9

Using well-known annual observations spanning a broad group of British industries, John Dunlop (1938) pieced together a money wage and a real wage series from 1860 to 1913 and then from 1920 to 1937 – a total of 70 annual observations on each wage series – with adjustments for variations in import-export prices, with different weights applied to the cost-of-living index, and before and after removal of a (nine-year moving average) trend in wages. From these, he concluded ‘Increases in wage rates have usually been associated with increased real wage rates, while decreases in wage rates have equally often been associated with a rise or fall in real wage rates’. In short, Keynes’s hypothesis was not corroborated by these data.

In an article published at almost the same time and ‘complementary’ to his Economic Journal article, Dunlop (1939) examined the evidence for wages (money and real) having become more ‘rigid’ since the mid-nineteenth century. Although they are directed to a different purpose, the data used in this complementary paper are those Dunlop used in his commentary on Keynes in the Economic Journal. In this other article, at one point, Dunlop related percentage changes in wages (both for an aggregate of industries and for some individual industries) to the level (and to changes in the level) of unemployment. In other words, Dunlop here organised observations that two decades later formed the basis of the Phillips Curve. He considered different meanings that might be given to changes in ‘wage rigidity’ and concluded that, applying common connotations, there was little to support the notion that rigidity had increased.

8 Indeed, because of the omission of the wages of non-union and other unregulated workers, Ramsbottom (1935, p. 643) discouraged the use of his series ‘as a basis for calculations of the percentage rise or fall in the average level of rates of wages’. At the same time, Ramsbottom noted that the fragmentary information on the wages of workers in the non-union and unregulated sectors seems to co-vary positively with the wages in the covered industries.

9 After graduate training at U.C. Berkeley, Dunlop (1914–2003) took up a fellowship at Cambridge University in 1937. Subsequently, he accepted a position at Harvard University until his retirement in 1984.

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2.2. Lorie Tarshis\textsuperscript{10}

Lorie Tarshis (1939) reported a similar analysis for an aggregation of American industries. Seventy-five monthly observations on the hourly earnings of private sector employees from 1932 to the beginning of 1938 were converted to real wages using a cost-of-living deflator constructed by mixing a series from the US Department of Labor with one published by the National Industrial Conference Board. Monthly percentage changes in real wages were mapped against monthly percentage changes in money wages and the scatter diagram revealed a clear positive association, not the negative correlation that Keynes hypothesised. ‘Mr. Keynes appears to be mistaken’, Tarshis wrote. In addition, changes in real hourly earnings were negatively associated with changes in worker-hours.

2.3. Henry Richardson\textsuperscript{11}

Henry Richardson (1939) focused on ‘the traditional conclusion’ that money wages are stickier than prices. He distinguished between money wage movements that could be traced to changes in the cost-of-living and wage movements over the trade cycle. He wrote, ‘It cannot be assumed, as sometimes seems to be done, that the cost of living invariably falls when trade declines and invariably rises in periods of improving trade’ (p. 429). He also distinguished between wage rates and actual earnings and concluded that changes in money wage rates lag behind movements in the cost-of-living, while real earnings rise in an expansion and fall in times of business contraction.

3. Keynes’ Response

Keynes (1939, p. 35) responded to this empirical research by protesting that his hypothesis about the negative correlation between movements in real wages and movements in money wages was not his primary concern. His principal issue was ‘dealing with the reaction of real wages to changes in output, and [he] had in mind situations where changes in real and money wages were a reflection of changes in the level of employment caused by changes in effective demand’. To emphasise this, Keynes titled his response ‘Relative Movements of Real Wages and Output’ (emphasis added). On this business cycle movement in real wages, Keynes traced the evolution of opinion on this matter from Marshall to Pigou, Rueff and Kahn to The General Theory.

Nevertheless, Keynes returned to his earlier claim that changes in money wages and changes in real wages tended to be negatively correlated by drawing on James Meade’s

\textsuperscript{10} Lorie Tarshis (1911–93) earned undergraduate and graduate degrees from Trinity College, Cambridge, and spent four years at Cambridge University in the mid-1930s after which he took up a position at Tufts University, Boston. Most of his years in academia were spent at Stanford University. Tarshis (1938) has an earlier article using data from both the US and Britain.

\textsuperscript{11} John Henry Richardson (1890–1970) earned undergraduate degrees from the University of London and from Cambridge University and a Ph.D. from London University. In 1939, he became the first Montague Burton Professor in Industrial Relations at Leeds University. I thank the current Montague Burton Professor, Mark Stuart, for providing this information on Richardson.
World Economic Survey 1937–38 to quote instances that supported his generalisation. Furthermore, Keynes interpreted Tarshis’s finding that movements in real wages and in the level of employment were negatively correlated as confirmation of his claim that real wages move in the opposite direction to the level of output ‘as measured by man-hours of employment’.

This allowed Keynes (1939, p. 42) to write, ‘It seems possible, therefore, taking account of Mr. Meade’s results, that I may not, after all, have been seriously wrong’. Keynes noted the frequency with which the absolute values of the changes in wages are small so that there is ample room for errors in measurement to cloud the true relationship. He also suggested that movements in wages in situations of full employment should be separated from those in which employment is far lower. He concluded that, at the time of writing, an appropriate inference would be that, in less than full employment conditions, ‘changes in real wages are usually so small compared with the changes in other factors that we shall not often go far wrong if we treat real wages as substantially constant in the short period’ (Keynes, 1939, p. 43).

In his reply to his critics, (Keynes, (1939, pp. 48–9)) drew particular attention to and reserved his strongest language for ‘the stability of the proportion of the national dividend accruing to labour, irrespective apparently of the level of output as a whole and of the phase of the trade cycle. This is one of the most surprising, yet best-established, facts in the whole range of economic statistics, both for Great Britain and for the US… It is the stability of the ratio for each country which is chiefly remarkable, and this appears to be a long-run, and not merely a short-period phenomenon … [T]he result remains a bit of a miracle’.

Why was Keynes so struck by the relative invariance of labour’s share? The ‘stability’ of labour’s share implies that proportional changes in real (product) wages equal proportional changes in output per worker-hour (labour’s average product). Keynes (1936, p. 5) had affirmed his agreement with the classical system that ‘the wage is equal to the marginal product of labour’ in which case, if changes in labour’s average product are proportional to changes in labour’s marginal product, then the relative constancy of labour’s share is a necessary consequence.

The remainder of Keynes’ response takes up matters such as the shape of firms’ marginal cost curves and cyclical movements in the degree of product monopoly. Although, in their commentaries, both Dunlop and Richardson had introduced issues of wage determination in unionised markets, Keynes did not touch on this topic even though it would have been relevant to the subject. A common view is that Keynes took money wages to be determined outside his system and yet a persuasive claim about the relative movements of money wages and real wages would seem to involve a mechanism by which wages are altered. Dunlop and Richardson took for granted the

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12 Of course, over the relevant range of production, the assumption that proportionate changes in the average product of labour are a constant ratio of proportionate changes in the marginal product of labour is entirely in accordance with the standard theory of production.

13 Keynes' article was published in the March 1939 issue of The Economic Journal, whereas Richardson’s was published in the issue for September 1939, that is, two issues after Keynes’ response. I assume that, as editor, Keynes had already read an earlier, if not a final, draft of Richardson’s contribution.

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need for a mechanism and discussed how trade unions and other bodies reacted to changes in the cost-of-living.

In *The General Theory* (p. 15), Keynes had written that ‘Every trade union will put up a resistance to a cut in money-wages, however small. But ... no trade union would dream of striking on every occasion of a rise in the cost-of-living’. To this, Dunlop explained that this apparent asymmetrical response by unions arose from the fact that money wage cuts, even small ones, often generated the fear that they constituted the thin edge of the wedge and, unless unions resisted them, the employer would follow these reductions with more. Small real wage reductions brought about by a rise in the cost-of-living would not generate the same concern about the employer’s behaviour.

Nevertheless, Dunlop argued that trade unions were sensitive even to small increases in the cost-of-living and he drew attention to the pressure by unions to include cost-of-living sliding scales (or cost-of-living escalator clauses) in bargaining agreements to ensure that increases in the cost-of-living generate automatic money wage increases. Dunlop provided evidence of such schemes and of strikes induced by cost-of-living increases.14

More recently, Feinstein (1990) used Bowley’s (1937) figures on wages and prices to show that, in the years from 1899 to 1913, money wages rose on average 0.76% per year but the cost-of-living rose by 1.23% per year implying a fall in real wages of 0.46% per year. Did this ‘small’ reduction in real wages accompanying positive money wage growth induce a response from unionised labour? Indeed, it did. These years were a time of great industrial conflict with strikes in a wide range of major industries. Feinstein quotes a confidential Cabinet paper prepared by the Board of Trade that identified a cause of this unrest: ‘the prices of the necessities of life have gone up while wages have remained more or less stationary’. Keynes’s suggestion of price illusion on the part of unionised labour seems contrary to experiences in Keynes’ life-time.

This issue is an important factor in Keynes’ system. Not only did he write that trade unions respond differently to a cut in real wages that comes about in the form of a money wage reduction from a cut in real wages that comes about in the form of an increase in consumer prices, he also characterised labour supply functions in the same way. Thus, he wrote in *The General Theory* (pp. 12–13) that ‘A fall in real wages due to a rise in prices, with money-wages unaltered, does not, as a rule, cause the supply of available labour on offer at the current wage to fall below the amount actually employed prior to the rise of prices’. Leontief (1936) called this – the assumption that labour supply functions are not homogeneous of degree zero in all prices and wages – the ‘fundamental assumption of Mr. Keynes’ monetary theory of unemployment’ because this assumption is all that is needed to break the Classical dichotomy between the real and the monetary sectors of the economy.

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14 In his book on trade union wage behaviour a few years later, Dunlop (1944, p. 126) referred to ‘a number of cases’ in which unions sought reopening of wage contracts after a 2–3% increase in the cost-of-living. Dunlop’s book opened up a line of research that brought trade union behaviour within the gamut of conventional optimising models.

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4. Cambridge, Massachusetts

At this juncture, the controversy over changes in wages moved to the US and to the pages of *The Quarterly Journal of Economics* starting with a review by Richard Ruggles (1940). Ruggles went over the statistical methods of the preceding papers and claimed shortcomings in them concluding that the ‘statistical studies to date have not produced any convincing evidence concerning the inter-relations between money wage rates, wage costs, and welfare’.

In replying to Ruggles, Dunlop (1941) took the opportunity to respond to Keynes’s March 1939 *Economic Journal* article that had emphasised the hypothesised link between real wages and output or, as Ruggles had expressed it, whether ‘real wages increase more in prosperity than in depression’. Dunlop drew on his earlier British data and on some Swedish data to show that real wage rates tend to rise in prosperity and fall in depression. He concluded Keynes’s hypothesis of a negative correlation between changes in real wages and changes in output was ‘untenable’.

The outcome of this exchange in the years shortly after the publication of *The General Theory* was that, on the particular issue of the correlation between changes in real wages and changes in money wages at the macroeconomic level, Keynes’ conjecture that this is negative was judged inconsistent with most of the evidence brought to bear. The hypothesis of a negative correlation between real wages and output was also refuted. Nevertheless, this negative correlation between changes in output and in real wages became the Keynesian null hypothesis – even though this feature did not distinguish Keynes’ system from ‘the classical doctrine’. Keynes succeeded in making the issue of the movement of real wages over the business cycle an important identifying feature of macroeconomic models. For decades, in offering their latest version of the macroeconomy, economists of different persuasions rarely failed to mention the presence or absence of cyclical movements in real wages in their model and the nature of this relation, if any.

5. The Post-War Research

5.1. The Cyclical Movement of Real Wages

A large literature has arisen about the movement of real wages over the business cycle. A typical research article on this opens with some reference to Keynes’ claims in *The General Theory* and to the debate that followed in the pages of the *Economic Journal*. This literature has yielded a wide variety of results and, fortunately, thorough reviews of much of this work have been provided by Abraham and Haltiwanger (1995), by Brandolini (1995) and by Michie (1987). They concluded that the sensitivity of real

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15 Richard Ruggles (1916–2001) earned his undergraduate and graduate degrees from Harvard University. After work in the US Office of Strategic Services in London during the Second World War, he joined Yale University’s faculty from 1946 to 1985.

16 Perhaps the first in the long line of post-war publications was that of S.-C. Tsiang (1947) in a Ph.D. thesis written at the LSE under the supervision of Hayek. Tsiang undertook a thorough empirical analysis of real wages and profit margins in British and American industry. In investigating the course of real wages over the cycle and reflecting the growing acceptance of models of imperfect competition, Tsiang emphasised the ambiguous implications of theoretical models and the diversity of empirical results.

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wages to the cycle is not a firm constant but seems to vary across time.\textsuperscript{17} It also differs across economies.\textsuperscript{18} The patterns of wage movements do not suggest a regularity that might form a key ingredient of any satisfactory model.\textsuperscript{19} Indeed, Altonji and Ashenfelter (1980) suggest that a compact and sound statistical description of movements in real wages over time is a random walk with drift.

At the same time, the quality of research on this issue has been advanced by the class of work that exploits observations on the same individual workers over time.\textsuperscript{20} Because the composition of employed workers changes over the business cycle, the economy-wide average wage is formed from data that consist of changing proportions of high and low-wage workers over the cycle. The macroeconomic wage is constructed from the wages of workers with different skills, employed in different industries and regions and, normally, one business cycle affects different workers from the next cycle and a business cycle in one country is not the same as the cycle in another country. Because of these differences, if the movement of real wages over the business cycle followed a regular, recurring, pattern, it might be something of a surprise.

In fact, a common finding with these panel data on individual workers is that real wages tend to be mildly procyclical. The similarity among different studies is somewhat misleading, however, in that, although precise methods vary, the data are similar and they describe approximately the same years.\textsuperscript{21} The degree of cyclical is affected by the composition of the work force; as Rayack (1987, p. 18) expresses it, ‘real wages are fairly acyclical while employment opportunities fluctuate, making the aggregate real wage appear more flexible than it is’. The mild procyclical movement in real wages consists of a clear procyclical component supplied by workers switching jobs and a smaller procyclical component of workers remaining in the same job, the latter constituting a larger fraction of all workers in a given year. The wage changes of job-changing workers who also change their employer tend to be larger than job-changing employees who remain with their same employer.\textsuperscript{22}

The research using the wages of individual workers highlights the difficulties in discriminating among age effects on workers’ wages, cohort effects on wages and macroeconomic (or calendar year) effects on wages without critical identifying restrictions. Indeed, one important study making use of longitudinal observations of individual workers from the Panel Study of Income Dynamics rejects a spot markets model of labour markets on which much macroeconomic research relies because, in

\textsuperscript{17} Evidence of differences over calendar time in the movements of real wages over the cycle is supplied by Bernanke and Powell (1986), Hanes (1996), Basu and Taylor (1999) and Huang et al. (2004).

\textsuperscript{18} Otani (1978), Kennan (1988) and Liu (2003), among others, report differences across countries in the movements of real wages over the cycle.

\textsuperscript{19} Thus, Abraham and Haltiwanger (1995, p. 1262) conclude, ‘To sum up, correcting for all the measurement problems, estimation problems, and composition problems does not lead to a finding of systematically procyclical or countercyclical real wages’. Brandolini (1995, p. 154) concludes ‘no undisputed empirical regularity has emerged so far’. Michie (1987, p. 130) writes ‘there is, similarly, no “stylised fact” or a correlation between wages and cyclical employment to be found’.

\textsuperscript{20} See, \textit{inter alia}, Bils (1985), Keane \textit{et al.} (1988) and Solon \textit{et al.} (1994).

\textsuperscript{21} For instance, Rayack (1987), Blank (1990) and Solon \textit{et al.} (1994) all use observations from the Panel Study of Income Dynamics from the late 1960s to the 1980s. Bils (1985) and Keane \textit{et al.} (1989) use the National Longitudinal Survey of Young Men from 1966 to the early 1980s. All find procyclical movements in real wages, although the degree of cyclical varies across groups of workers.

\textsuperscript{22} See Devereux and Hart (2006) and Hart (2006).
their research, the correlation between wages in one year and a business cycle indicator measured at a prior moment in the worker’s tenure with a firm is higher than that between wages and contemporaneous values of the business cycle indicator. This finding is interpreted as a confirmation of an implicit (or, perhaps, explicit) contracts framework. If this is the case, then the search for business cycle effects on wages using contemporaneous indicators of the cycle may be deeply misdirected.\footnote{Beaudry and DiNardo (1991) used observations on workers from the Current Population Survey and the Panel Study of Income Dynamics to regress the real hourly earnings of approximately 2,000 men between 1976 and 1984 on a number of observed variables and on the unemployment rate measured at different moments in a worker’s tenure with his current employer. The strongest correlation was between wages and the value of the lowest unemployment rate observed since the worker joined his current employer.}

There is other research using panel data on individual workers’ wages in which non-contemporaneous correlations between wages and a business cycle indicator have been found. For instance, there are long-term consequences for wages of entering the labour market in a contraction or, expressed differently, initial conditions matter.\footnote{Grant (2003) builds on the work of Beaudry and DiNardo by using different panel data (those from the National Longitudinal Surveys), both men and women, spanning the years from 1966 to 1998. Those workers who enter labour markets in a contraction experience enduring effects on their wages. Also see Oyer (2006) and Oreopoulos et al. (2012).} Naturally, these links are stronger for some workers than for others, but together these findings pose serious problems for aggregative research that tends to overlook these differences.

5.2. The Disaggregated Unemployment Rate

Another class of research posing problems for the typical macroeconomic investigations of cyclical movements of real wages is that conducted by Blanchflower and Oswald (1994) who offer evidence to the effect that the relevant unemployment rate (business cycle indicator) in a wage equation fitted to individual workers is a disaggregated unemployment rate such as the unemployment rate in each worker’s local labour market.\footnote{The evidence they offer consists principally not of longitudinal observations of the same workers over time, but of cross-sections of individual workers pooled over calendar time.} Moreover, they maintain that the negative relationship between wages and disaggregated unemployment is non-linear (convex from below) which poses problems for its aggregation to a macroeconomic relationship between wages and the economy-wide unemployment rate.

5.3. The Rigidity of Money Wages

For years, a popular research procedure to gauge the presence and quantitative importance of nominal wage rigidity was to relate variations in an aggregate index of money wages (expressed either as wage levels or as wage changes) to an aggregate index of prices (again in levels or changes, \textit{pari passu}) and to draw inferences from the estimated co-efficient on prices. A common finding was that this co-efficient was positive but less than unity (when these variables are expressed in logarithmic units) from which the inference was drawn that a given change in prices induced a smaller change in money wages, a result affirming money wage rigidity. Bernanke and Carey
(1996) provide an example of this. Using annual observations on 14 countries in the 1930s, they relate money wages not only to prices but also to lagged values of money wages. They conclude that ‘the results suggest a substantial degree of stickiness in wage adjustment’.

A different style of research uses observations on individual employees to plot the frequency distribution of wage changes between two years, usually for those who remain with the same employer. These plots show a noticeable spike at no change in nominal wages, a spike that is higher in times of low price inflation.\(^{26}\) The distribution of nominal wage changes is decidedly asymmetrical and skewed to the right. These findings confirm the summary judgment of Albert Rees (1970, p. 234), a keen and close observer of labour markets who eloquently expressed the difficulty faced by managers: ‘every change in wages tends to raise questions of internal equity that can be very troublesome to solve. Even if it is decided to raise all wages uniformly, it must be decided whether this is to be by a uniform percentage or a uniform amount, and whether the increase is going to extend all the way up the structure of wages and salaries or only part way. The problems are not unlike those faced by the US Congress in separating problems of the level of the income tax from issues of tax reform’.

If money wages are rigid as Keynes maintained, what accounts for this? Economists have proposed various explanations and some have gone so far as to ask wage-setters for their reasons for maintaining money wages unchanged at moments when wage reductions might be called for. Many reasons have been offered but one theme has been that managers find wage reductions difficult to implement without offending workers’ sense of equity and that risk reactions by workers in the form of shirking, absenteeism, turnover and lack of cooperation, a medley of consequences that are clustered together in the term ‘employee morale’.\(^{27}\) This is not a new idea; Dunlop (1938, p. 428) had referred to the ‘loss in morale’ and the consequent ‘adverse effect on output’ that would result if an employer imposed wage cuts on disgruntled employees.

6. Conclusion

A recent article opens with the statement, ‘Understanding the behavior of wages over the business cycle is a classic yet still open question in economics’ (Hagedorn and Manovskii, 2013). Certainly, using aggregative data, this is an accurate characterisation of the research: real wages sometimes move procyclically (rising in expansions and falling in recessions) and sometimes move contracyclically (rising in recessions and falling in booms). The relationship is not so reliable as to constitute an essential component of any macroeconomic model. This is not to deny that the ingenious use of data can sometimes give the appearance of a stable relation but the appearance is

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\(^{26}\) Such frequency distributions are drawn in Card and Hyslop (1997), Kahn (1997) and Nickell and Quintini (2003).

\(^{27}\) ‘In the minds of business leaders, morale has to do with workers’ mood and with the willingness to co-operate with company objectives … Business people value good morale because it fosters high productivity, low turnover and ease in recruiting good workers … Employers were reluctant to cut pay mainly because of the adverse impact on morale, productivity, and turnover … Layoffs do less harm than pay cuts to the morale of employees who remain’ (Bewley, 1999; pp. 54, 192). Kaufman (1984) also refers to wage reductions as damaging employee morale.
deceiving. It is a fragile association that is not invariant to modest changes in the definition and measurement of variables and in equation specification.

There is more consistency to the microeconomic research using observations on individual workers where procyclical movements in real wages are a frequent finding. Even here, the degree of procyclicality in real wages differs across workers so that a straightforward aggregation into a macroeconomic connection is difficult to effect.

Looking over the decades of research on the movement in real wages over the business cycle, a lot of effort has been directed to an issue of questionable importance. Keynes regarded his hypothesis of contracyclical changes of real wages as fully consistent with the classical system so that, if there were a resolution of the issue, it would not separate Keynes’ system from the classical.

As for nominal wage rigidity, its presence and extent is indicated by the asymmetrical distribution of changes in money wages with a concentration at zero in periods of high and low price inflation in many places and at many times.\(^{28}\) Indeed, the evidence supporting money wage rigidity holds over the past four decades during which time unionism has shrunk in many economies and payments-by-results methods of compensation have grown—changes that might be expected to increase wage flexibility.\(^{29}\) Whether wage rigidity matters for economic policy or for inferences from economic models will depend, of course, on the particular policy or model and general statements are difficult to make.

If wages are more rigid than prices, why did Keynes’s critics in the late 1930s find weak or no empirical support for his hypothesis that real wages rise when money wages are falling and real wages fall when money wages are rising? Perhaps this was because Keynes’s theorising was focused on movements over the business cycle and he was neglecting the many other influences on wages, whereas in their empirical work, Dunlop and Tarshis did not control adequately for other influences on wages. For instance, Richardson (1939, p. 434) criticised Tarshis for not recognising that the New Deal created an ‘exceptional’ situation from which to draw inferences about cyclical movements in wages. Dunlop certainly accepted the need to account for other factors affecting wages although his methods for doing so may well not have satisfied that need. So perhaps Keynes’s hypothesis needs to be revisited: over the business cycle and holding other factors constant, when money wages are rising, are real wages falling, and when money wages are falling, are real wages rising?\(^{28}\)

Finally, as Mitchell (1986) noted, the investigation of these issues by economists since the Second World War makes use of very much more and very much better data than available to Keynes and his critics in the 1930s. A large part of that increase in fodder for applied economists has come as a consequence of Keynes’s work and of his readiness to express his ideas in a form that made them amenable to empirical investigation.

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\(^{28}\) At many times, see Dunlop (1939) and Hanes (1996). In many places, see Dickens \textit{et al.} (2007).

\(^{29}\) Payments-by-results methods cover piece-rates, profit-sharing, commissions, bonuses and stock options. See Lemieux \textit{et al.} (2009) and Kruse \textit{et al.} (2010). Devereux (2001) suggested that greater use of payments-by-results would increase wage flexibility.

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Appendix A. Dunlop, J.T. (1938). ‘The movement of real and money wage rates’, ECONOMIC JOURNAL, vol. 48(191), pp. 413–34.
THE MOVEMENT OF REAL AND MONEY WAGE RATES

The purpose of this article is twofold: it proposes first to examine qualitatively and statistically several of the notions that have recently been set forth as descriptive of the movement of wage rates and of the conduct of wage-earners. Later an attempt will be made to indicate the effect of the empirical results on wage theory and more general economic "models," with special reference to Mr. Keynes' General Theory. The study is an effort to bring theory and observation closer together.

Two quotations from Mr. Keynes illustrate the raison d'etre for an empirical study of real and money wage-rate movements.

"But in the case of changes in the general level of wages, it will be found, I think, that the change in real wages associated with a change in money wages, so far from being usually in the same direction, is almost always in the opposite direction. When money wages are rising, that is to say, it will be found that real wages are falling; and when money wages are falling real wages are rising."

"A fall in real wages due to a rise in prices, with money wages unaltered, does not, as a rule cause the supply of available labour on offer at the current wage to fall below the amount actually employed prior to the rise of prices."

The first four sections consist of a summary of an empirical study: the first examines the statistical material with special reference to England; the next two sections show trade-union attitude in England towards changes in the cost of living and money wage rates; and the fourth deals with one aspect of the employer's point of view toward wage-rate changes. The final two sections examine the theoretical implications of the first four.

1 I am indebted to the Social Science Research Council for a fellowship which permitted this study to be carried on in England.
2 E. F. M. Durbin, "Methods of Research—A Plea for Co-operation in the Social Sciences," Economic Journal, June 1938, pp. 184-91.
3 General Theory of Employment, Interest and Money, p. 10. J. E. Meade, Economic Analysis and Policy, pp. 66-7 and R. F. Harrod, "Mr. Keynes and Traditional Theory," Econometrica, Vol. 5, 1937, pp. 80-1, apparently accept this position, while Jürgen Kuczynski, New Fashions in Wage Theory, pp. 18-24, rejects it.
4 Ibid., pp. 12-13.
5 The term wage rate will always be used to mean the average money wage rate.
I

The indices of George H. Wood 1 will be used for the period from 1860 to 1880, those of Professor A. L. Bowley 2 for the years 1880 up to the War, and those of the Ministry of Labour 3 for the post-War period. 4 Considering the period 1860–1913 first, there were 25 years in which the average wage-rate index showed an increase over the preceding year. Real wage rates moved as follows:

17 years real wage rates increased,
3 years real wage rates were unchanged,
5 years real wage rates decreased.

There were 13 years of falling wage rates during which real wage rates moved as follows:

5 years real wage rates increased.
2 years real wage rates were unchanged,
6 years real wage rates decreased.

There were 15 years of unchanged wage rates: real wage rates rose 6 years, fell 5, and remained unchanged the other 4 years.

If a minimum movement of 1 per cent. per year be neglected in the movement of wage rates because the data are expressed in whole numbers, the results are essentially similar to those just enumerated. Neglecting movements of 2 or 3 per cent. per year and concentrating attention on marked movements in wage rates does not change the character of these results. Real wage rates and money wage rates tended to increase together, while a reduction in wage rates was equally often associated with a rise or a fall in real wage rates.

But it may be argued that Mr Keynes' statement is only intended to apply to a closed economy. Changes in the "terms

1 "Real Wages and the Standard of Comfort Since 1850," Journal of the Royal Statistical Society, Volume LXXII, 1909, pp. 91–103.
2 Wages and Income in the United Kingdom Since 1860, p. 30
3 Twenty-Second Abstract of Labour Statistics, p. 81 and pp. 122–5. Also see E. C. Ramsbottom, "The Course of Wage Rates in the United Kingdom, 1921–34," Journal of the Royal Statistical Society, Vol. XCVIII, 1935, pp. 639–73; and "The Course of Wage Rates in the United Kingdom, 1935–37," Ibid., Vol. CIV, 1938, pp. 202–4. For a convenient single index for the whole period, Sir Walter T. Layton and Geoffrey Crowther, An Introduction to the Study of Prices, 1935, Appendix E, pp. 263–73.
4 With but one exception, no attempt will be made to examine the limitations of these indices. In general, they are "the results of making what appears to be the best practical use of admittedly imperfect data" (Professor Bowley, op. cit., p. 120).
of trade" 1 may affect the relative movements of real and money wage rates in two ways. (a) A change in export prices may influence money wage rates through employer or trade-union pressure. Thus increased export prices may induce trade unions to push up wage rates. (b) A change in import prices affects the cost of living, and thereby real wage rates. One would expect this factor to be important in Great Britain. If the terms of trade turn against England, the cost of living is higher and real wage rates are lower than would have been the case with the terms of trade unchanged.

It has seemed impossible to correct the money wage-rate index for the first of the above influences of a change in the commodity terms of trade. But for the period 1880-1913 the cost-of-living index was corrected for changes in the terms of trade. Table I indicates the detailed results of this correction, and the accompanying footnotes show the sources of information and the methods used in calculating the results. Increased real wage rates are again most commonly associated with increased wage rates, though reductions in wage rates still present no definite uniformity.

To meet a further possible objection, the trend in real wage rates was eliminated by a nine-year moving average for the period up to 1900. In the thirteen years before the War real wage rates show almost no trend—if any were calculated it would be slightly negative in slope. 2 In the period 1860-80 wage rates increased in 11 years during which real wage rates with trend eliminated increased during 7 years,
decreased during 4 years.

During the same period wage rates fell during 7 years and real wage rates with trend eliminated decreased during 5 years,
increased during 2 years.

It is significant to note that the four years of decreased real wage rates with increased money wage rates included 1865, 1866 and 1872, which were peaks or near peaks of booms. In the period 1880 up to the War money wage rates rose during 14 years, and real wage rates, corrected for changes in the terms of trade and for trend, increased during 9 years and fell during 5.

1 Jacob Viner, *Studies in the Theory of International Trade*, suggests the less ambiguous phrase, "commodity terms of trade," p. 319.

2 J. H. Clapham, *An Economic History of Modern Britain*, Vol. III, Epilogue, pp. 464-8.

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### Table I

| Year    | Money Wage Rate Link. | Real Wage Rate Link. | Real Wage Rate Link : Trend Eliminated. | Deviation from Moving Average. | Deviation from Average Moving Average Link. |
|---------|-----------------------|----------------------|----------------------------------------|-------------------------------|---------------------------------------------|
|         |                       |                      |                                        |                               |                                             |
| 1860-61 | 0.0                   | -2.9                 | -5.2                                   | -4.1                          |                                             |
| 1861-62 | +1.8                  | +5.0                 | +2.9                                   | +3.8                          |                                             |
| 1862-63 | +0.9                  | +3.8                 | +3.1                                   | +2.6                          |                                             |
| 1863-64 | +6.0                  | +7.3                 | +6.7                                   | +6.1                          |                                             |
| 1864-65 | +1.6                  | 0.0                  | -1.3                                   | -1.2                          |                                             |
| 1865-66 | +4.8                  | -0.9                 | -2.7                                   | -2.1                          |                                             |
| 1866-67 | -0.8                  | -0.9                 | -2.6                                   | -2.0                          |                                             |
| 1867-68 | +0.9                  | +2.6                 | +1.1                                   | +1.4                          |                                             |
| 1868-69 | +2.3                  | +2.6                 | +1.1                                   | +1.4                          |                                             |
| 1869-70 | +3.8                  | +2.5                 | +0.7                                   | +1.3                          |                                             |
| 1870-71 | +5.8                  | +0.8                 | -1.8                                   | -0.4                          |                                             |
| 1871-72 | +6.2                  | +4.9                 | +2.9                                   | +3.7                          |                                             |
| 1872-73 | +0.6                  | +3.9                 | +2.4                                   | +3.7                          |                                             |
| 1873-74 | -1.3                  | +1.5                 | -0.1                                   | +0.3                          |                                             |
| 1874-75 | -1.3                  | +1.5                 | +0.4                                   | +0.3                          |                                             |
| 1875-76 | -2.9                  | -4.1                 | -4.1                                   | -4.1                          |                                             |
| 1876-77 | +0.7                  | +3.7                 | +3.0                                   | +3.0                          |                                             |
| 1877-78 | -2.0                  | -1.4                 | -1.4                                   | -2.0                          |                                             |
| 1878-79 | -1.4                  | +3.8                 | +3.4                                   | +2.6                          |                                             |
| 1879-80 | +0.7                  | -2.2                 | -2.9                                   | -3.4                          |                                             |

**B**

| Year    | Terms of Trade, and Trend. |
|---------|----------------------------|
|         |                            |
| 1880-81 | +3.6                      | +1.9                   |
| 1881-82 | +2.8                      | +0.5                   |
| 1882-83 | 0.0                       | 0.1                    |
| 1883-84 | +5.4                      | +2.9                   |
| 1884-85 | +5.2                      | +3.2                   |
| 1885-86 | 0.0                       | +0.8                   |
| 1886-87 | +3.7                      | +3.7                   |
| 1887-88 | +2.4                      | +3.0                   |
| 1888-89 | +4.7                      | +2.6                   |
| 1889-90 | +3.3                      | +0.7                   |
| 1890-91 | 0.0                       | 0.7                    |
| 1891-92 | 0.0                       | 0.0                    |
| 1892-93 | +2.2                      | +2.3                   |
| 1893-94 | +4.3                      | +0.6                   |
| 1894-95 | +2.0                      | +2.0                   |
| 1895-96 | 0.0                       | +0.3                   |
| 1896-97 | +1.2                      | -1.8                   |
| 1897-98 | +3.6                      | +1.0                   |
| 1898-99 | +5.1                      | +4.1                   |
| 1899-1900 | +5.6             | +2.4                 |

1 Since the original series for the pre-War period are expressed only in whole numbers, the above figures are subject to limitations in addition to those inherent in the original series. No more can be claimed for the above series and the data.
### Table I—continued.

| Year   | Money Wage Rate Link | Real Wage Rate Link | Real Wage Rate Link Corrected for: Terms of Trade. |
|--------|----------------------|---------------------|---------------------------------------------------|
| 1900-01 | -1·1                 | -1·0                | -0·3                                              |
| 1901-02 | -2·2                 | -1·0                | -0·2                                              |
| 1902-03 | 0·0                  | -2·0                | -2·1                                              |
| 1903-04 | -2·2                 | -2·0                | -1·8                                              |
| 1904-05 | 0·0                  | 0·0                 | +0·5                                              |
| 1905-06 | +2·2                 | +1·0                | +0·1                                              |
| 1906-07 | +5·5                 | +3·1                | +3·1                                              |
| 1907-08 | -2·1                 | 0·0                 | +1·0                                              |
| 1908-09 | 0·0                  | -1·0                | 0·0                                               |
| 1909-10 | 0·0                  | -2·0                | -2·5                                              |
| 1910-11 | +1·1                 | -1·0                | -1·5                                              |
| 1911-12 | +3·2                 | 0·0                 | +0·5                                              |
| 1912-13 | +1·1                 | 0·0                 | -0·7                                              |

### C

| Year   | Reweighted Cost of Living | Terms of Trade. |
|--------|---------------------------|-----------------|
| 1920-21 | -3·4                      | +5·5 +5·3       |
| 1921-22 | -25·3                     | -10·2 -7·9      |
| 1922-23 | -8·2                      | -3·3 -2·7       |
| 1923-24 | +1·5                      | +1·5 +2·4       |
| 1924-25 | +1·7                      | +1·4 +2·4       |
| 1925-26 | -0·4                      | +0·6 -0·2       |
| 1926-27 | -0·6                      | +1·9 +1·8       |
| 1927-28 | -0·8                      | -0·6 -0·1       |
| 1928-29 | +1·0                      | +0·5 +0·4       |
| 1929-30 | +0·4                      | +2·7 +1·1       |
| 1930-31 | -1·9                      | +3·4 +0·4       |
| 1931-32 | +1·9                      | +0·3 +0·8       |
| 1932-33 | +0·7                      | +0·3 +0·3       |
| 1933-34 | +0·4 (+1·2)               | -0·3 (+0·9)     |
| 1934-35 | +1·2 (+3·3)               | -0·1 (+1·9)     |
| 1935-36 | +2·8 (+3·2)               | +0·5 (+2·6)     |
| 1936-37 | +3·3                      | 0·0 (+0·3)      |

on which corrections were based than that they present a very rough approximation to the course of events. But since the present task is to examine possible summaries of the movements of real and money wage rates, rather than indicate precise magnitudes in the amplitudes of fluctuation, the above data are certainly relevant.

The first two columns of the table are the year-to-year percentage changes in the series of Wood, Bowley, and the Ministry of Labour (sections A, B, and C of the table respectively).

For the period 1880–1900 an index of A. K. Cairncross (Home and Foreign Investment in Great Britain 1870–1914—Cambridge Thesis—Appendix, Table 19) for the terms of trade from "unpublished calculations of P. K. Debenham, corrected for imported materials used in export" was used to correct the cost-of-living index. Professor Bowley’s cost-of-living index was used (op. cit., p. 121), so that the correction for terms of trade could be applied to the food and clothing series separately, rather than to the whole index; for obviously it would be improper to correct "rent" for changes in the terms of trade. In the cost-of-living index corrected for changes in the terms of trade, the food and clothing...
These 5 years included 1900 and 1913, which were peaks of booms.\(^4\) On the other hand, wage rates fell in 6 years during which real wage rates fell 4 years and rose 2.

Essentially similar results are obtained if instead of year-to-year comparisons the upswing and downswing of cycles are used as units. Table II shows the percentage change in wage rates, real wage rates, and real wage rates corrected for trend for the period 1860–1913.

The English post-War picture is complicated by at least two factors: \((a)\) The period 1926–33 was one of gradually falling wage rates, and hence if 1929 be considered a boom year, unlike preceding cycles, there was no period of rising wage rates. Wage reductions in this period are therefore not comparable with reduced wage rates in a more "normal" cyclical setting. \((b)\) The period 1929–33 is usually represented as one of rapidly increasing real wage rates—\textit{e.g.} the Ministry of Labour index shows a rise from 105.4 to 117.5 (1924 base).\(^5\) But it can be shown that a series are so weighted as to permit changes in the terms of trade to influence each series to the extent of one fourth. Thus in the corrected cost-of-living index the original (uncorrected) food series is weighted 45 per cent. and the corrected food series 15 per cent., making a total of 60 per cent., the weight Professor Bowley assigned to the food series. The clothing series was similarly treated. The proportion of the food index to be influenced by changes in the terms of trade \((1/4)\) was in part based upon the ratio of "wholesale value of food sales" and "retained imports, less exports valued at works" for 1930. (Colin Clark, \textit{National Income and Outlay}, p. 153). As a check this proportion was changed to 1/2 and the indices were recalculated without substantial change in the results.

An index of the terms of trade similar to that of A. K. Cairncross was constructed from \textit{Statistical Tables and Charts relating to British and Foreign Trade and Industry 1854–1908}, Cd. 4954, 1909, pp. 53 ff. For the period 1900–13 it was possible to construct an index of the ratio of all export prices to the price of "net imports of food, drink and tobacco" from Cd. 6782, 1913. \textit{(Tables showing for each of the years 1900–12 the Estimated Value of the Imports and Exports of the United Kingdom at the Prices prevailing in 1900), p. 34.}

For the period 1920–9 I am indebted to Mr. D. H. Robertson for a "rough" index of the commodity terms of trade, calculated from data in the \textit{Board of Trade Journal}. For the years since 1929 it has been possible to correct the food series for changes in the ratio of all export prices to the prices of all food imports on the basis of data in the \textit{Economist (Trade Supplement, New Series, No. 16, April 30, 1938)}. These corrections were weighted in the same way as the pre-War corrections described above.

The correction for trend in the period 1880–1900 is made by the average moving average link in the period 1880–1900 calculated from a moving average for the period 1860–1900. The average link was thus not calculated after the correction for the terms of trade had been made.

\(^2\) The "re-weighted cost-of-living" correction and the figures in brackets in section C of the table are explained in the text.

\(^3\) The money-wage-rate link from Professor Bowley's index was used for the year 1936–7 (\textit{Royal Economic Society Memorandum}, No. 72, p. 19).

\(^4\) The significance of this fact, also noted for the period 1860–80, will be examined in Sections V and VI.

\(^5\) J. H. Richardson, \textit{Industrial Relations in Great Britain}, Second Edition, 1938, p. 23 (International Labour Office, Series A, No. 36).
large part of this rise in real wage rates arises from a fall in the cost-of-living index which does not correctly show the change in the "effective" cost of living. Inaccurate weighting of the cost-of-living index results in an undue rise in real wage rates from 1929 to 1933, and, further, in the period after 1933 an undue fall, though of a much smaller magnitude. If the cost-of-living index were more accurately weighted, the rise in money wage rates after 1933 would be more closely correlated with comparable movements in earlier cycles (see Table I C).

From 1929 to 1933 the five main groupings in the Ministry of Labour cost-of-living index moved as follows: ³

| Item       | 1929 | 1933 | Change |
|------------|------|------|--------|
| Food       | 154  | 120  | -22%   |
| Rent       | 152.5| 156  | 2%     |
| Clothing   | 218  | 184  | -16%   |
| Fuel, light| 171  | 170  | -0.6%  |
| Other items| 180  | 172.5| -4%    |
| All Items  | 164  | 140  | -15%   |

¹ The table is based on the data of George H. Wood, op. cit., and the trend was eliminated by a nine-year moving average. For a convenient source see Layton and Crowther, op. cit., Appendix E. It is to be noted that only the period 1879–86 shows any marked disagreement with the notion of a correspondence in movement of real and money wage rates in the cyclical setting. The scheme of years is in large part based on Dorothy S. Thomas, "An Index of British Business Cycles," Journal of the American Statistical Association, March 1926.

² The Economist, May 14, 1938, p. 343, shows a rise of real wage rates from 104 to 116 between 1929 and 1933 and a fall to 113.5 in 1937 (1924 base). Not only is no account taken of a possible correction in the cost of living, but, more seriously, the index of Mr. Ramsbottom (op. cit.) is used, which gives real wage rates as of January 1st of each year. These figures are then assumed to be valid for the whole period (comparable to yearly averages), which is certainly not permissible, as Table I C indicates.

³ Twenty-Second Abstract of Labour Statistics of the United Kingdom (1922–36) pp. 124–5, July 1914, equals 100.
As is well known, the weighting attached to food is 60 per cent. of the total. There is considerable evidence to show that this figure is much too high, certainly for the post-War period under consideration. Thus Professor Bowley suggests in effect a figure of 44.5 per cent., while data based on the Merseyside study varies between 42 per cent. and 44 per cent., depending, of course, on the amount of income. These figures applied to working-class families with incomes between £2 11s. and £3 17s. per week. In correcting the cost-of-living index a rough estimate of 45 per cent. was taken as a more proper weight for food, and the remaining 55 per cent. allocated as follows: rent 16 per cent., clothing 12 per cent., fuel and light 8 per cent., and other items 19 per cent. Weighting food but 40 per cent. results in a rise in real wage rates in both 1935 and 1936.

The figures in brackets in Table I C represent results from introducing "effective" wage rates which take into consideration the rise in piece-rate earnings due to improved technical conditions in industry. The estimates are those of Professor Bowley based on the Wage Census of 1935, and include the increase in overtime in this period, which properly should not be included for changes in wage rates. This exaggeration, however, may be largely compensated by the shift to higher-paid jobs in industry as a whole or in particular industries (which has been excluded from the estimates).

Taking the post-War period as a unit and correcting the cost of living for changes in the terms of trade, and re-weighting the food series, indicates that of 6 years of rising wage rates real wage rates rose all 6. Of the 11 years of falling wage rates...

1 Ministry of Labour, The Cost-of-Living Index Number, Method of Compilation, 1932.
2 Op. cit., p. 38.
3 G. Harrison and F. C. Mitchell, The Home Market, p. 95; Survey of Merseyside, Vol. I, pp. 296–8.
4 For further reference on this point: John Boyd Orr, Food, Health and Income, Report on a Survey of Adequacy of Diet in Relation to Income, 1936, pp. 20–2 and Appendix V; R. G. D. Allen and A. L. Bowley, Family Expenditure, A Study of its Variation, 1935, pp. 31–58; C. C. Zimmerman, Consumption and Standards of Living, Chapter IV; and Bulletin de L’Institut International de Statistique, 1937, Tome XXIX, 3ème Livraison, pp. 226–7.
5 H. W. Singer, “Income and Rent: A Study of Family Expenditure,” The Review of Economic Studies, Feb. 1937.
6 Op. cit., pp. 18 and 30; Appendix B.
7 If one could ascertain the extent of under-cutting, demotion, postponed promotion, substitution of lower-paid workers for higher-paid, etc., real wage rates would probably not have risen (after considering the other corrections) between 1931 and 1933. The converse of these practices would have resulted in a greater increase in real wage rates after 1933.
7 were years of rising real wage rates and 4 of falling real wage rates. It should, however, be remembered that 3 of these 7 years were in the period 1926–30, and all but 1 in the period 1926–33, when on the average wage rates fell by less than 1 per cent. per year.1

The English experience may, then, be summarised: Increases in wage rates have usually been associated with increased real wage rates, while decreases in wage rates have equally often been associated with a rise or fall in real wage rates.2,3 This central tendency holds true when corrections have been made for changes in the terms of trade4 and trend eliminated.

II

Since a qualitative examination inevitably places a premium on personal interest, it is well to indicate briefly the scope of the material covered in arriving at the conclusions of these sections dealing with trade-union policy. The main types of sources were: monthly or quarterly and annual reports of trade unions and federations of unions, newspapers recognised as organs of particular groups of workers or wage-earners in general (Cotton Factory Times and the Daily Herald), files of trade-union agreements, arguments and evidence submitted to employers during wage negotiations or to arbitrators, minutes of such negotiation proceedings, and evidence taken at Government inquiries dealing with trade unions, such as that of 1867. The period since 1900 was regarded as especially important, though the earlier period was not neglected. A series of interviews with the General Secretaries and lesser officials of some thirty trade unions and federations provided an opportunity to discuss specific issues of

1 Colin Clark, op. cit., p. 208, shows that "real income per person in work home produced" increased each year—except 1926—from 1924 to 1930 and fell in 1931. During 1932 the index remained practically unchanged, and has since risen. His corrections for the terms of trade yield essentially similar results.

2 These results do not deny the usually assumed lag in real wage rates at the start of an upswing movement, but they do indicate that, with notable exceptions, when the data are expressed in yearly averages the lag is not usually apparent.

3 Similar calculations have been made for New Zealand, Australia, Sweden, France, and Germany—without corrections for the terms of trade—and these results seem to be confirmed. Further inquiry along these lines would be enlightening.

What is known of the movements of real and money wage rates during pre- and early capitalist times seems to indicate that their relative movements have not greatly changed. For instance, Earl J. Hamilton, Money, Prices and Wages in Valencia, Aragon and Navarre, 1315–1500, pp. 74–6.

4 Only one of two possible effects of changes in the terms of trade was considered.

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wage-rate policy. The aim was to discover, if possible, certain central tendencies in trade-union wage policy and some indication of the deviation from these tendencies.\(^1\) The thesis of this section, which examines trade-union attitude towards wage-rate changes, is that the statistical results observed in Section I *would have been expected* in view of trade-union attitudes. The term "trade union" is apt to be ambiguous, for it combines the viewpoints of the rank and file and the offici ald. It is therefore a step in direction of clarity to remember that the leadership must constantly consider a dual effect: the effect of any action on the membership and on the employers, and to some extent on the Government, press, and on public opinion.

It can be affirmed without much qualification that the trade-union leadership resists money-wage reductions—to the point of strike—"whenever possible." There seem to be two fundamental reasons for this policy:

1. *Money-wage reductions have the tendency to spread.* The "infection" is feared, for it may spread from individual to individual, from women workers to men, from plant to plant, district to district, industry to industry, or even from country to country. It may also spread in another sense. Once a cut has been imposed, the employer may find it easier to impose another. Thus, when a proposal was made by a company to reduce wage rates 2d. per cut, the men replied:

"If we accepted the twopenny reduction, the masters would no doubt say, 'Oh, they accepted a twopenny reduction as quietly as possible, and they fetched it up in production by weaving all the more in a week, and we will go in for threepence.'" \(^2\)

2. *There is great difficulty in securing the restoration of cuts when trade has improved.* Increases are never voluntarily offered in

\(^1\) Such quotations as are used in these sections are not to be regarded as proof of the argument, but rather as illustrations of central tendencies.

\(^2\) Cotton Factory Times, April 3, 1885, page 6, col. 3. The following varied references stress the "spreading" character of wage reductions. *A Report of the Proceedings of a Delegate Meeting of the Operative Spinners of England, Ireland and Scotland, Assembled at Ramsey, Isle of Man, etc., 1829.* "What was the object they hoped to attain? Simply to prevent any further depreciation of the value of their only property, their labour," p. 6; Testimony of the Secretary of the Amalgamated Society of Engineers, Mr. Allen, *First Report of the Commissioners appointed to inquire into the organisation and rules of Trades Unions and Other Associations, Minutes of Evidence, British Parliamentary Papers, Vol. XXXII, 1867*, p. 39, No. 912; *National Society of Painters, Monthly Journal*, Vol. 2, No. 3, Nov. 1922, p. 7; Letter on behalf of the Parliamentary Committee to "the officers and members of affiliated organisations," *Fifty-Third Annual Report, Trades Union Congress*, 1921, p. 176; Wages and the Hours of Labour, Labour’s Reply to the Attack on Labour Standards, Dec. 12, 1921, *Fifty-Fourth Annual Report, Trades Union Congress*, 1922, p. 137.
the trade-union point of view, and pressure must therefore be continually exerted to prevent all reductions. A strong position against wage reductions during a depression may eliminate what would otherwise be two conflicts: an unsuccessful opposition to the reduction—for some resistance is demanded by the “politics” of trade-union organisation—and a later struggle for the restoration. Better one fight than two.

In addition to these two “fundamental” reasons, there are certain common attempts at argumentative demonstration designed to impress the employers, the general public and to rouse the membership of the unions. Of course any argument that supports the case is used, but these three are most commonly employed. (a) It is most frequently argued that a cut in wage rates reduces “purchasing power,” and therefore leaves the employer and the community (shopkeepers are frequently mentioned) in just as bad, if not a worse situation. The purchasing-power argument may be found in many degrees of refinement, and is of very long standing. The following argument and “refutation” one finds in a letter written by an employer to a Member of Parliament in 1739.

"Another argument against lowering wages is, that the poor hereby would be uncapable to make such great consumption of Provisions, and the Necessaries of Life; whereby Lands would sink in their value, Farmers break, and the landed Gentlemen be reduced.

It will be very evident, from the following arguments, that these objections are the objections of Theorists only in trade, who were never concerned’d in Manufacturers; or at least never closely examin’d the internal Springs, wheels and Movement of Trade."

(b) It is argued that wage reductions have never been of any benefit to either the employer or working men, for they have not increased the volume of employment. The appeal is to the history of reductions of wage rates in the industry.\(^1\)

\(^1\) Philalethes, *The Case as it Now Stands, between the Clothiers, Weavers, and other Manufacturers, with Regard to the Late Riot, in the County of Wilt*, 1739, p. 41.

\(^2\) From a very large number of possible references the following are especially interesting: Mr. Pugh, summarising a deputation to the Government, *Fifty-Eighth Annual Report, Trades Union Congress*, 1926, p. 122; Joint Internationals Resolution on Unemployment and the Economic Crisis, *International Federation of Trade Union Executive Committee co-operating with the Labour and Socialist International*, Jan. 21, 22, 1931; Speech of Cobden in the House of Commons, 1843, quoted in *Amalgamated Engineers Monthly Journal*, No. 44, Aug. 1908; etc.

\(^3\) Twenty-Seventh Annual Report, *Shipconstructive and Shipwrights’ Association*, for the year ending Dec. 1908, p. vii; *The Operative Builder* Vol. 2, No. 3, June 1923, p. 50; *Cotton Factory Times*, April 8, 1910, col. 1, p. 1.

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(c) Finally, it is argued that other costs should be reduced rather than wage rates. Sometimes this argument takes the form of insisting upon "wide-sweeping changes" in industry which would obviate any necessity for wage reductions.

"Even if employers could prove that reduced wages and increased hours would lead to industrial prosperity, we would still be opposed to the suggestion that the worker's standard of life should be lowered as the only way to secure this objective."  

Reference is then made to the detrimental influence on prosperity of inflated profits, land monopoly, lack of co-ordination, etc.  

To turn to the wage-rate advance side of the story, the most general proposition would be something like this: Trade-union leaders have asked for advances as soon as and for as much as they have felt they had a reasonable chance of success, or in some few instances before this as a matter of tactics. The arguments most frequently advanced, in addition to the practically important one that wages were "temporarily" cut, and should therefore be restored, include: (a) The cost of living has gone up and an advance in wage rates is therefore justified. The precise amount of the advance requested is considerably more than the cost of living, and is justified on other grounds, such as those to follow. If the cost of living has shown no significant change, the argument may be modified to the effect that the "standard of life" of the wage-earner is too low, and this in turn may be supported by the "purchasing power" argument. The importance of the cost of living in wage-rate negotiations is the subject-matter of Section III. (b) The advance requested can be paid—from the existing state of profits, or from that which can be reasonably expected in the near future. The argument usually takes the form of indicating that "things are better," and therefore the wage-earners should share in the improved position of the industry. (c) Technical changes have imposed increased responsibilities and an increased nervous strain.

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1 "Labour's Reply to the Attack on Labour Standards," op. cit., p. 141; National Union of Boot and Shoe Operatives, Monthly Report, Feb. 1931, p. 80; Mr. Marchbank in evidence to the National Wages Board, Jan.-Feb. 1931, Minutes of Proceedings, Vol. I, pp. 16 ff.; "Réservation by Sir T. Allen and Mr. Bevin," Report, Committee on Finance and Industry, 1931. Cmd. 3897; Report by a Court of Inquiry concerning the Matters in Dispute regarding Wages in the Northern Counties Wool Textile Industry, Cmd. 3505, 1930, pp. 19 ff.

2 For instances where trade unions have advocated the restriction of output: Sidney and Beatrice Webb, Industrial Democracy, p. 443–51.

3 Compare the small rise in the wage rate index for 1934 with the large number of applications for advances filed.
upon the employees. This justifies the demand for increased compensation. The widespread use of this argument is not usually appreciated. (d) Finally it is argued that advances have been secured in other occupations requiring about the same degree of skill.

This asymmetry in wage-rate policy is of importance in interpreting the statistical results of Section I. In so far as the policy of "no reductions" was successful, one would expect a rise in real wage rates with a fall in the cost of living at the outset of the depression. This policy seems to have been successful until a phase of the depression is reached when great pressure is characteristically brought to bear by employers against wage rates. Then real wage rates might be expected to fall. In addition to trade-union resistance to wage reductions, certain institutional factors inherent in the act of bargaining are important in accounting for the rise in the real wage rates, particularly during the first years of the downswing. Four seem of special importance: the existence of agreements which must expire—where agreements have no fixed date of expiration a certain period of "notice" is required; the requirement that some time must elapse to demonstrate that the downturn is not temporary; the fact that negotiation proceedings, especially if followed by arbitration, take considerable time; and finally, as a result of bargaining, the decrease in wage rates may be made effective at some date in the future (rather than at once), or several small reductions may be staggered over as much as six months. The converse of these factors would seem adequate to explain the cases of fall in real wage rates at the start of the upswing.

III

It has sometimes been thought that trade-union policy was relatively unconcerned with changes in the cost of living, as attention was exclusively devoted to the money wage rate. Thus Mr. Keynes has extolled the wisdom of trade unionists resisting

1 As a matter of historical interest this asymmetry is to be noted in the articles of the Grand National Consolidated Trades' Union 1834. "That no strike or turn out for an advance of wages shall be made by any Lodge in the Consolidated Union without the consent of the Executive Council; but in all cases of a reduction of wages, the Central Committee of the District shall have the power of deciding whether a strike shall or shall not take place. . . ." Abstract of the proceedings of a Special Meeting of Trades' Union Delegates, held in London on 13th-19th of February 1834, to which is added the Preliminary Articles of the Grand National Consolidated Trades' Union, etc., p. 18-19. This policy was formulated in part to prevent indiscriminate calling of strikes and use of strike benefit. For a discussion of this point see the 1829 meeting of the Operative Spinners, op. cit.
reductions in money wage rates, though submitting to cuts in real wage rates through a rise in the price of wage goods.\(^1\) For this policy they are adjudged “instinctively more reasonable economists than the classical school.” Against this point of view two objections are here raised: \((a)\) A fair test of trade-union sentiment would arise only once a year, or more accurately only during the period in which the wage agreement was under discussion. If during the rest of the year wage-earners seem only concerned that the prescribed wage rate is paid, it does not follow that they regard the money wage rate as the more “important” element, or even that they “stipulate (within limits) for a money rather than a real wage.” \(^2\) \((b)\) Concentrating attention on such periods of negotiation, it can be shown as a matter of fact that trade unions have attached very much importance to changes in the cost of living in their argument. The argument is human: it finds favour with the press,\(^3\) it is useful and effective in generating the support of the membership and those in the trade outside the union, and the basic data are supplied by the Government (as contrasted to profits-data furnished by the employers).

A detailed study of negotiations indicates that, with but one qualification,\(^4\) trade unions have been as willing to strike for advances in wage rates when the cost of living has risen by more than a “small” amount as to strike for the maintainance of a wage rate when threatened with a reduction. This “central tendency” of an empirical survey of wage negotiations has been

\(^1\) Op. cit. p. 14. Professor Pigou, *Industrial Fluctuations*, 2nd ed., p. 308, had stressed the fact that wage-earners tend to “think in gold.”

\(^2\) Op. cit. p. 14. Whenever Mr. Keynes suggests the possibility of a “choice” between real wage rates and money rates, he is always careful to qualify this as “within a certain range.” To talk of such a “choice” is of course elliptical, for the issue is the limits within which changes in the cost of living are significant” for wage-rate negotiations. The difference with Mr. Keynes is over the width of such limits. As indicated in the text and note 3, the limits seem to me “narrow.” Mr. Keynes seems to regard them as “wide,” for the classical assumption that “no significant change” results from “a demand of labour for a minimum money wage and not a minimum real wage” is dismissed as simply “not so.”

\(^3\) A comparison of the minutes of negotiation with press reports indicates the importance of this “human” element.

\(^4\) “Small” changes in the cost of living are neglected in the process of bargaining. To more realistically interpret the term “small” substitute a 5 per cent change. Thus most cost-of-living sliding-scales called for changes of wage rates with even a smaller change. Such “small” changes may be thought to be temporary, or indistinguishable from seasonal fluctuations.

Mr. Keynes has correctly argued that trade unions will resist the slightest variation of money wage rates. But money-wage reductions, even extremely small ones, are regarded as the thin edge of the wedge which may lead to further reductions. Such is certainly not the character of a small reduction in real wage rates brought about by the rise in the price of wage goods.
strengthened in the post-War period. The War focused attention on the cost of living at the very start, for in the first eight days of August 1914 the price of foods rose "between 15 and 16 per cent."1 The concern with the cost of living during the war, coupled with the publication of a complete "cost-of-living" index, resulted in the adoption of cost-of-living sliding scales which at one time covered as many as three million wage-earners. While most of these have been abandoned under "stop" provisions,2 this conditioning is a vital force in negotiations to-day. It is especially important in setting minimum advances that will be accepted.

It should not be inferred, however, that prior to the War cost-of-living changes were unimportant in wage-rate negotiations. A cost-of-living sliding-scale was in operation among the Post-Office workers, and such scales had been talked of even before the appearance of the Board of Trade series of food prices. Marshall described in detail how such a scheme should work.3 In the Minutes of Evidence of the Inquiry of 1867 there is considerable evidence of the importance of changes in the "cost of provisions." Thus the Secretary of the Friendly Society of Operative Masons testified:

Q. "Why did they ask for an increase of wages?"
A. "They thought that through the advance in the price of provisions, cottage rent, and so on, to which they had been liable, they were entitled to it; that was the reason for the strike."4

But this central tendency is not without its dispersion. The most important exceptions seem to be the case of the cotton industry (especially the spinning section),5 the iron and steel industry, which operates under selling-price sliding-scales, to some extent coal, and in general some of the most highly paid wage-earners,6 or those on salaries.

1 Board of Trade Labour Gazette, Sept. 1914, p. 323.
2 It may be logically objected that if trade unions argue for further advances on the grounds that the cost of living has increased, then real wage rates must have fallen in contradiction to the statistical results. But this is not valid when wage rates increase more than the cost of living from year to year and real wage rates are measured in yearly averages instead of at the two dates of bargaining.
3 Preface to Industrial Peace, 1887, by L. L. Price, pp. xx–xxi.
4 Minutes of Evidence, op. cit., p. 48, No. 1192. Similar views are expressed by others : p. 87, No. 2429, and p. 57, No. 1427.
5 Cotton Factory Times, April 4, 1890. Reports always showed the variation in "margins" in one column and the variation in wage rates, from list prices, in the next. Thomas Ashton's 1906 report contains a record of the preceding forty years.
6 In the Wool Industry higher-paid workers were given a lower percentage increase with a given rise in the cost-of-living index under a sliding-scale agreement. Ministry of Labour, Report by a Board of Inquiry, op. cit., p. 7.
An examination of wage negotiations shows that changes in the cost of living have been an important argument in advocating for wage advances. But how important have these changes "really" been in determining trade-union policy? If to such an exceedingly complex problem in social motivation each person were entitled to one guess, mine would be that the cost of living has been less important than a survey of wage negotiations would indicate, but considerably more important than Mr. Keynes' position would admit.

IV

In addition to trade-union policy there are certain factors from the employer's point of view which make for a rise in real wage rates with an initial fall in the cost of living. They may be conveniently divided into two groups: (a) those in which the employer's decision is predominately influenced by the attitude of his working-men towards a proposed cut, (b) those in which the wage-earners attitudes are relatively unimportant. If wage-earners have shown, or are apt to show, violent dissatisfaction with a cut in wage rates, the employer may decide to maintain rates—or reduce them only slightly—in order to maintain or gain the goodwill of particular wage-earners or a reputation among competing firms. Thus a part of the wage bill is chargeable to a sort of advertising or investment. (1) The "extra wages" may be strictly advertising. If a considerable proportion of sales are to working-class people, an employer may further advertise that he is a "good" employer, and thereby actually shift his individual demand curve to the right, at the expense of competitors. (2) The employer may judge the decrease in wage rates possible—in view of trade-union strength—to be not worth the loss in "morale" which would have an adverse effect on output. Wage-earners may be less careful, or may even curtail their rate of effort deliberately.

"Employers have to realise that workmen are human beings, and when these unjustified attacks are made for the wholesale cutting down of wages, their attention is directed to some form of retaliation, and 'ca' canny' is the first one that appeals to the workmen as the most effective instrument to his hand." 1

The opposite effect is possible under piece-rate schemes. (3) The extra wages may be regarded as an investment in a more efficient

1 National Society of Painters, Monthly Journal, No. 6, Feb. 1922.
working force for the future, by preserving a group of working-
men intact in the present. (4) The wage-earners may be so deter-
minded against a reduction that the employer regards a strike in-
evitable if he reduces wage rates. The strike might well result in
greater "loss" than the maintenance of the present wage scales.
At other times employers may feel that a complete shut down
would be "cheaper" than maintaining output at a low level even
at reduced wage scales.

There are other factors, apart from trade-union and employee
attitudes, which may lead employers to adopt a policy of "more
stable" wage rates. (1) The organisation of the industry may
be a determining factor. A reduction of wages in one firm may
tend to make easier a reduction of prices elsewhere in the in-
dustry, as the wage reductions spread. Dr. J. K. Galbraith ¹ and
others have shown that there are many reasons why a manu-
facturer, especially in an industry with a few firms, may prefer
a policy of stable prices; and to the extent that wage reductions
tend to spread and exert a downward pressure on price, these
wage reductions may be forgone. ² Reduced wage rates need not,
of course, lead to price-cutting, but such reductions will exert a
pressure in that direction on price. (2) With falling employ-
ment the least efficient workmen may be thrown out of work and thus
reduce the per-unit cost of output. ³ This may be effective in
industries where overhead charges are a small proportion of
total costs. In so far as plants are working above the "optimum
output" per unit of prime factor, a fall in output will similarly
reduce the slope of the marginal cost curve. Such reductions in
cost may relieve the downward pressure on wage rates, at least
temporarily. (3) The existence of wage contracts and agree-
ments which run for a period of years have a tendency to reduce
the frequency and amplitude of wage-rate changes. For instance,
the famous Brooklands agreement of 1893 in the cotton industry

¹ "Monopoly Power and Price Rigidities," Quarterly Journal of Economics,
Vol. L, May 1936; Robert F. Burns, The Decline of Competition; Refus S. Tucker,
"Reasons for Price Rigidity," American Economic Review, March 1938; T. H.
Silcock, "Some Problems of Price Maintenance," Economic Journal, March
1938.

² "... the forces which impel producers to raise prices are more effective
than those which impel them to reduce them; and this not merely owing to the
fear which every seller has of spoiling his market, but mainly because an in-
crease of profits secured by means of a cut in price is obtained at the cost of the
competing firms, and consequently it impels them to take such defensive action
as to jeopardise the greater profits secured..." P. Sraffa, "The Laws of
Returns under Competitive Conditions," p. 548, Economic Journal, 1926.

³ National Industrial Conference Board, Salary and Wage Policy in the De-
pression, 1932, pp. 4–5.
provided that wage rates were subject to revision only once a year, but at that time for no more than 5 per cent. from list prices.

Two other factors are of some importance, though on a slightly different plane. (1) Employers may actually fail to reduce wage rates in the conviction that a “high-wage” philosophy is most appropriate to their own best interests. Professor Ohlin has indicated the importance of this factor in America. A Government may lend moral authority to such a doctrine and exert pressure on employers to maintain wage rates. (2) Since almost every depression in business is regarded at the outset as temporary, the pressure against wage rates is not normally great at the outset. The notion that “prosperity is just around the corner” dies hard; it will then take time for the view to spread that the depression is apt to continue for some time and “wage rates must come down.” A serious reduction in wage rates may thus be postponed for a long time after the peak of the cycle.

In Section I real wage rates were found to increase with wage rates, with certain exceptions. These tended to be, though not always, the peak years of booms. This brief section is concerned with one implication of these exceptions.

The cost-of-living index can be divided into three groups of items, depending on how fast and far they move during the course of the cycle. First there are those which move very little, or not at all: tobacco, transportation, movies, newspapers, beer, postage, etc. The remaining items can be divided into a flexible and a semi-rigid grouping. Foods in general are typical of the first, while fuel and luxury items, as well as clothing, would be typical of the latter. Any such system of classification can of course only be roughly applied. There are undoubtedly many “branded” foods which would be more appropriately classified as semi-rigid.

Soon after an upswing in business activity, the flexible items in the cost of living start to rise, or such a rise may be associated with the upswing. Very shortly wage rates rise fast enough to more than offset the weighted effect of this rise in the flexible items. As the peak is approached, not only do the flexible items rise with an accelerating rate, but the semi-rigid items also increase. A race develops, as it were, between the cost of living and wage rates. On most occasions, though not always, the cost-of-living index outran wage rates just at the top of the boom.

1 Index, Supplement, Oct. 1937.
2 Every boom period does not show this phenomenon.
But the fact that real wage rates rise with increased wage rates does not mean, as might be implied, that wage rates are therefore less "rigid" than prices. It is important to distinguish between the various types of prices which make up the cost-of-living index.1

VI

Thus far no attempt has been made to examine the formal argument that lies behind Mr. Keynes' conclusion to the effect that real and money wage rates move in opposite direction. The argument seems to run in terms of three factors: (a) Money wage rates are regarded as a function of trade-union strength, which in turn is a function of employment, so that an increase in employment leads to an increase in wage rates. (b) With given equipment and technique an increase in employment must result in a fall in the real output per unit of labour, for industry is normally working subject to increasing cost. (c) An increase in output is associated not only with increased profits, but also a shift to profits. Putting these factors together, Mr. Keynes' picture of the upswing would be something like this: employment increases, and therefore money wage rates rise, while real wage rates must fall due to rising cost curves and the shift to profits.

In the light of the results of previous sections, it would seem that this "model" cannot be directly applied to the interpretation of the movement of real and money wage rates. Either certain or all of the factors which make up the argument are of little importance, or other factors working in a direction opposite to the effect of the assumptions result in a rise in real wage rates with increased wage rates. In my view both possibilities are significant: i.e. two of the three factors have important qualifications and two ad-

1 On the upswing $\frac{1}{w_p} \cdot \frac{d w_p}{d t}$ is usually greater than $\frac{1}{w_p} \cdot \frac{d w_p}{d t}$ where $w_p$ and $w_p$ are money wage rates and price of wage goods, respectively. But $w_p$ is not all prices, but only that weighted group of prices which is called the "cost of living."

2 The model assumes conditions of perfect competition, given technology, and the frame of reference is the "short period."

3 Mr. Keynes often suggests that an increase in wage rates (with employment unchanged) results in a corresponding rise in price, leaving real wage rates unchanged (p. 12). It should be pointed out that this is impossible in the same analytical system in which wage rates are an increasing function of employment, for a rise in wage rates (with increased employment and rising cost curves) must be associated with a fall in real wage rates.

4 Of course no "model" can be directly applied. Professor Parsons has well said, "in the social field most available statistical information is on a level which cannot be made to fit directly into the categories of analytical theory." The Structure of Social Action, p. 328 n. But there are better and worse fits.

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ditional factors need emphasis. (1) The relation between wage rates and employment is sometimes stated in terms of a critical level of employment at which wage rates rise. A detailed statistical study of wage-rate changes and levels of employment in industry as a whole or specific industries shows that this version cannot be accepted. In the post-War English experience, for instance, wage rates have risen or fallen (almost equally often) at relatively low levels of unemployment. While changes in employment are more closely associated with changes in wage rates, important deviations remain. There seems to be no simple relation—and especially of a causal nature—adequate to summarise the two movements without very wide margins of error.

(b) The extent to which cost curves are rising, except at the very peak of the boom, has probably been over-emphasised in view of the presence of excess capacity in many industries. Mr. Kalecki has recently taken a similar position: “The short-period marginal cost curve does not differ considerably in the majority of enterprises from the short-period average cost curve of manual labour and raw materials—up to a certain point (where full employment . . . is reached).” The fact of falling real wage rates at the peak of a number of booms, observed earlier, can be partially explained in terms of rising cost curves and bottle-necks. Mr. Kalecki’s point of view here is part of a thesis about the “degree of monopoly,” which is the first of the additional factors to be considered. (c) Removing Mr. Keynes’ assumption of perfect competition is more significant than either of the previous two factors in accounting for the observed results. A number of factors combine to make for an increase in the “degree of monopoly” during the depression and a decrease during the boom. With “rigid prices” in many sectors of the economy, a rise in wage rates during the upswing tends to reduce the “degree of monopoly.” It is argued that the liquidation of cartel organisations and the disappearance of fear of retaliation for not

1 Joan Robinson, Essays in the Theory of Employment, pp. 7–9, and J. W. F. Rowe, Wages in Theory and Practice, p. 10.
2 When bottle-necks are reached fairly early in the upswing, a small rise in wage rates may be sufficient to “break through” the bottle-neck and shift the cost curves to the right. As the boom develops the shift to the right with each increase in wage rates may be regarded as smaller, until a stationary point is approximated and the curves tend to be vertical.
3 M. Kalecki, “The Determinants of Distribution of the National Income,” Econometrica, April 1938, p. 102.
4 A. P. Lerner, “The Concept of Monopoly and the Measurement of Monopoly Power,” Review of Economic Studies, June 1934.
5 M. Kalecki, ibid., pp. 110–12.
following a price leader makes for similar results. This fall in the "degree of monopoly" results in a shift of income to wage earners and a higher average propensity to consume for the community, which results in an increased output (as compared to a situation where the degree of monopoly was unchanged) and a rise in real wage rates. A second factor is a cyclical swing in productivity which is not eliminated by removing the trend from the movement of real wage rates. This arises from (1) The introduction of new equipment and the decisions to build new plant in the early phase of the upswing will not result in increased output from these plants and new equipment until later in the upswing movement. (2) Both existing plant and new plant completed during the early phases of the upswing may require conditions of relatively full utilisation of capacity to provide maximum real returns per unit of prime factor.

These two additional factors introduced to explain the statistical results and the statistical results themselves have a far wider frame of reference than the General Theory. In fact, the notion that real and money wage rates move in opposite directions on the upswing is "an important point of agreement" between Mr. Keynes and the "classical economists." Both argue that under perfect competition "with a given organisation, equipment and technique, real wages and the volume of output—and hence of employment—are uniquely correlated, so that in general an increase in employment can only occur to the accompaniment of a decline in the rate of real wages" (p. 17). With the argument so qualified there is no formal disagreement, for this is "simply the obverse of the familiar proposition that industry is normally working subject to decreasing returns in the short period. . . ." The disagreement arises in directly assuming the statement valid for the actual economic system regardless of the qualifications ("given organisation, equipment and technique," "perfect competition," and no excess capacity). Precisely because of changes in organisation, equipment, and technique and changes in the degree of monopoly, real and money wage rates have apparently moved together on the upswing. Practically this implies, as contrasted to the implication of both "classical economics" and the General Theory, that wage rates may rise without a fall, and with a rise in real wage rates.

This analysis does not deny the importance of increased profits during the upswing. Such profits are largely accounted for

1 Moses Abramovitz, "Monopolistic Selling in a Changing Economy," Quarterly Journal of Economics, Feb. 1938, pp. 203–7.
by an increased volume of output. But even an increase in the proportion of the national income going to profits does not necessarily imply that the proportion going to wage-earners must fall. Fixed-income groups\(^1\) (salaried workers and rentiers) may bear the brunt of both increases in so far as the increases are not accounted for by a fall in the degree of monopoly and cyclical changes in productivity.

The results of this paper may now be summarised in a series of three propositions:

(1) Statistically, real wage rates generally rise with an increase in wage rates, rise during a first period after the peak, and then fall under the pressure of severe wage reductions.\(^2\) Correcting for changes in the terms of trade\(^3\) or for trend does not materially alter these results.

(2) On an institutional level of analysis, trade-union wage-rate policy and certain aspects of employer policy tend to make for the statistical results just observed.

(3) The rise in real wage rates with increased wage rates suggests a "model" which includes changes in the "degree of monopoly" and in the effective utilisation of plant and equipment. Such a model would minimise the importance of rising cost curves, except at the very peak of the boom, and the simple direct relation between wage rates and employment.

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\(^1\) Colin Clark, *op. cit.*, p. 94, and Simon Kuznets, *National Income and Capital Formation, 1919–36*, p. 25, would seem to confirm the view here developed.

\(^2\) Every slump does not show this order of wage changes.

\(^3\) Only one of two possible effects of the terms of trade was considered.

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**Appendix B.** Keynes, J.M. (1939). ‘Relative movements of real wages and output’, *Economic Journal*, vol. 49(193), pp. 34–51.
RELATIVE MOVEMENTS OF REAL WAGES AND OUTPUT

An article by Mr. J. G. Dunlop in this Journal (Sept. 1938, Vol. XLVIII, p. 413) on “The Movement of Real and Money Wage Rates,” and the note by Mr. L. Tarshis printed below (p. 150),1 clearly indicate that a common belief to which I acceded in my “General Theory of Employment” (p. 10) needs to be reconsidered. I there said:

“It would be interesting to see the results of a statistical enquiry into the actual relationship between changes in money wages and changes in real wages. In the case of a change peculiar to a particular industry one would expect the change in real wages to be in the same direction as the change in money wages. But in the case of changes in the general level of wages, it will be found, I think, that the change in real wages associated with a change in money wages, so far from being usually in the same direction, is almost always in the opposite direction.... This is because, in the short period, falling money wages and rising real wages are each, for independent reasons, likely to accompany decreasing employment; labour being readier to accept wage-cuts when employment is falling off, yet real wages inevitably rising in the same circumstances on account of the increasing marginal return to a given capital equipment when output is diminished.”

But Mr. Dunlop’s investigations into the British statistics appear to show that, when money wages are rising, real wages have usually risen also; whilst, when money wages are falling, real wages are no more likely to rise than to fall. And Mr. Tarshis has reached broadly similar results in respect of recent years in the United States.

In the passage quoted above from my “General Theory” I was accepting, without taking care to check the facts for myself, a belief which has been widely held by British economists up to the last year or two. Since the material on which Mr. Dunlop mainly depends—namely, the indices of real and money wages prepared by Mr. G. H. Wood and Prof. Bowley—have been available to all of us for many years, it is strange that the correction has not been made before.2 But the underlying

1 Cf. also his article on “Real Wages in the United States and Great Britain,” published in The Canadian Journal of Economics for August 1938.
2 Cf., however, the reference given below (p. 38) to Prof. Pigou’s “Industrial Fluctuations.”
problem is not simple, and is not completely disposed of by the statistical studies in question.

First of all it is necessary to distinguish between two different problems. In the passage quoted above I was dealing with the reaction of real wages to changes in output, and had in mind situations where changes in real and money wages were a reflection of changes in the level of employment caused by changes in effective demand. This is, in fact, the case which, if I understand them rightly, Mr. Dunlop and Mr. Tarshis have primarily in view. But there is also the case where changes in wages reflect changes in prices or in the conditions governing the wage bargain which do not correspond to, or are not primarily the result of, changes in the level of output and employment and are not caused by (though they may cause) changes in effective demand. This question I discussed in a different part of my "General Theory" (namely Chapter 19, "Changes in Money Wages"), where I reached the conclusion that wage changes, which are not in the first instance due to changes in output, have complex reactions on output which may be in either direction according to circumstances and about which it is difficult to generalise. It is with the first problem only that I am concerned in what follows.

The question of the influence on real wages of periods of boom and depression has a long history. But we need not go farther back than the period of the 'eighties and 'nineties of the last century, when it was the subject of investigation by various official bodies before which Marshall gave evidence or in the work of which he took part. I was myself brought up upon the evidence he gave before the Gold and Silver Commission in 1887 and the Indian Currency Committee in 1899. It is not always clear whether Marshall has in mind a rise in money wages associated with a rise in output, or one which merely reflects a change in prices (due, for example, to a change in the standard which was

1 See, however, the post-scriptum to Mr. Tarshis's note to which I refer further below.

2 In his "Essays in the Theory of Economic Fluctuations," to which I shall have occasion to refer below, Dr. Kalecki deals with the relation between real wages and output in the essay entitled "The Distribution of the National Income." But it is with the other problem that he is primarily concerned in the essay entitled "Money and Real Wages."

3 Marshall's contributions to official inquiries from 1886 to 1903 we used to regard as constituting, together with the "Principles," his most important and valuable work. Re-reading his "Official Papers" to-day, I find this confirmed. Yet his "Official Papers," published by the Royal Economic Society in 1926 (still obtainable by members at 5s.), has had a negligible circulation compared with any of his other works.
the particular subject on which he was giving evidence); but in
some passages it is evident that he is dealing with changes in real
wages at times when output is expanding. It is clear, however,
that his conclusion is based, not like some later arguments on a
priori grounds arising out of increasing marginal cost in the
short period, but on statistical grounds which showed—so he
thought—that in the short period wages were stickier than
prices. In his preliminary memorandum for the Gold and Silver
Commission ("Official Papers," p. 19) he wrote: "(During a
slow and gradual fall of prices) a powerful friction tends to prevent
money wages in most trades from falling as fast as prices; and
this tends almost imperceptibly to establish a higher standard
of living among the working classes, and to diminish the
inequalities of wealth. These benefits are often ignored; but
in my opinion they are often nearly as important as the evils
which result from that gradual fall of prices which is sometimes
called a depression of trade." And when Mr. Chaplin asked
him (op. cit., p. 99), "You think that during a period of depression
the employed working classes have been getting more than they
did before?" he replied, "More than they did before, on the
average."

Subsequently, as appears from an important letter of April
1897 (hitherto unpublished) to Foxwell,1 who held somewhat
strongly the opposite opinion, Marshall's opinion became rather
more tentative; though the following extract refers more to his
general attitude towards rising prices than to their particular
effect on real wages:

"You know, my views on this matter are (a) not very
confident, (b) not very warmly advocated by me, (c) not very
old, (d) based entirely on non-academic arguments &
observeration.

In the years 68 to 77 I was strongly on the side you now
advocate. The observation of events in Bristol made me
doubt. In 85, or 86 I wrote a Mem for the Com on
Depression showing a slight preference for rising prices.
But in the following two years I studied the matter closely,
I read and analysed the evidence of business men before that
Commission; & by the time the Gold & Silver Commission
came, I had just turned the corner.

Since then I have read a great deal, but almost exclusively
of a non-academic order on the subject: & was thinking
about it during a great part of the evidence given by business
men & working men before the Labour Commission. I

1 Endorsed by Foxwell—"Marshall, a very characteristic letter on the
question of rising and falling prices, among other matters."

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have found a good deal that is new to strengthen my new conviction, nothing to shake it. I am far from certain I am right. I am absolutely certain that the evidence brought forward in print to the contrary in England and America (I have not read largely for other countries) does not prove what it claims to, & does not meet or anticipate my arguments, in the simple way you seem to imagine."

Shortly afterwards he began to work at his evidence for the Indian Currency Committee which seems to have had the effect of confirming him in his previous opinion. His final considered opinion is given in Question 11,781:—

"I will confess that, for ten or fifteen years after I began to study political economy, I held the common doctrine, that a rise of prices was generally beneficial to business men directly, and indirectly to the working classes. But, after that time, I changed my views, and I have been confirmed in my new opinions by finding that they are largely held in America, which has recently passed through experiences somewhat similar to those of England early in the century. The reasons for the change in my opinion are rather long, and I gave them at some length before the Gold and Silver Commission. I think, perhaps, I had better content myself now with calling your attention to the fact that the statistical aspect of the matter is in a different position now. The assertions that a rise in prices increased the real wages of the worker were so consonant with the common opinion of people who had not specially studied the matter, that it was accepted almost as an axiom; but, within the last ten years, the statistics of wages have been carried so far in certain countries, and especially in England and America, that we are able to bring it to the test. I have accumulated a great number of facts, but nearly everything I have accumulated is implied in this table. It is copied from the article by Mr. Bowley in the Economic Journal for last December. It is the result of work that has been going on for a number of years, and seems to me to be practically decisive. It collects the average wages in England from the year 1844 to the year 1891, and then calculates what purchasing power the wages would give at the different times, and it shows that the rise of real wages after 1873 when prices were falling was greater than before 1873 when prices were rising."

Here follows a table from Prof. Bowley's article in this Journal for Dec. 1898. Marshall's final conclusion was crystallised in a passage in the "Principles" (Bk. VI, Ch. viii, § 6):—

(When prices rise the employer) "will therefore be more able and more willing to pay the high wages; and wages will tend upwards. But experience shows that (whether they

1 "Official Papers," pp. 284–288.
are governed by sliding scales or not) they seldom rise as much in proportion as prices; and therefore they do not rise nearly as much in proportion as profits.”

Although Marshall’s evidence before the Indian Currency Committee was given in 1899, Prof. Bowley’s statistics on which he was relying do not relate effectively to a date later than 1891 (or 1893 at latest). It is clear, I think, that Marshall’s generalisation was based on experience from 1880 to 1886 which did in fact bear it out. If we divide the years from 1880 to 1914 into successive periods of recovery and depression, the broad result, allowing for trend, appears to be as follows:

| Period          | Real Wages |
|-----------------|------------|
| 1880–1884       | Recovery   |
| 1884–1886       | Depression |
| 1886–1890       | Recovery   |
| 1890–1896       | Depression |
| 1896–1899       | Recovery   |
| 1899–1905       | Depression |
| 1905–1907       | Recovery   |
| 1907–1910       | Depression |
| 1910–1914       | Recovery   |

According to this, Marshall’s generalisation holds for the periods from 1880 to 1884 and from 1884 to 1886, but for no subsequent periods. It seems that we have been living all these years on a generalisation which held good, by exception, in the years 1880–86, which was the formative period in Marshall’s thought in this matter, but has never once held good in the fifty years since he crystallised it! For Marshall’s view mainly prevailed, and Foxwell’s contrary opinion was discarded as the heresy of an inflationist. It is to be observed that Marshall offered his generalisation merely as an observed statistical fact, and, beyond explaining it as probably due to wages being stickier than prices, he did not attempt to support it by a priori reasoning. The fact that it has survived as a dogma confidently accepted by my generation must be explained, I think, by the more theoretical support which it has subsequently received.

To my statement that Marshall’s generalisation has remained uncorrected until recently there is, however, an important exception. In his “Industrial Fluctuations,” published in 1927, Professor Pigou pointed out (p. 217) that “the upper halves of trade cycles have, on the whole, been associated with higher rates of real wages than the lower halves,” and he printed in

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I compiled this table, as a check, independently of Mr. Dunlop’s table, loc. cit., p. 419. But it only serves to confirm his more accurate version. According to him, trend eliminated, real wages fell 3 per cent. in the recovery culminating in 1883 or 1884 and rose 2.7 per cent. in the depression from 1884 to 1886.
support of this a large scale chart for the period from 1850 to 1910. Subsequently, however, he seems to have reverted to the Marshallian tradition, and in his "Theory of Unemployment," published in 1933, he writes (p. 296):

“In general, the translation of inertia from real wage-rates to money wage-rates causes real rates to move in a manner not compensatory, but complementary, to movements in the real demand function. Real wage-rates not merely fail to fall when the real demand for labour is falling, but actually rise; and, in like manner, when the real demand for labour is expanding, real wage-rates fall.”

About that time M. Rueff had attracted much attention by the publication of statistics which purported to show that a rise in real wages tended to go with an increase in unemployment. Prof. Pigou points out that these statistics are vitiated by the fact that M. Rueff divided money wages by the wholesale index instead of by the cost-of-living index, and he does not agree with M. Rueff that the observed rise in real wages was the main cause of the increased unemployment with which it was associated. But he concludes, nevertheless (p. 300), on a balance of considerations, that “there can be little doubt that in modern industrial communities this latter tendency (i.e., for shifts in real demand to be associated with shifts in the opposite sense in the rate of real wages for which work people stipulate) is predominant.”

Like Marshall, Prof. Pigou based his conclusion primarily on the stickiness of money wages relatively to prices. But my own readiness to accept the prevailing generalisation, at the time when I was writing my “General Theory,” was much influenced by an à priori argument, which had recently won wide acceptance, to be found in Mr. R. F. Kahn’s article on “The Relation of Home Investment to Employment,” published in the Economic Journal for June, 1931. The supposed empirical fact, that in the short period real wages tend to move in the opposite direction to the level of output, appeared, that is to say, to be in conformity with the more fundamental generalisations that industry is subject to increasing marginal cost in the short period, that for a closed system as a whole marginal cost in the short period is substantially the same thing as marginal wage cost, and that in competitive conditions prices

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1 Passim; see particularly pp. 178, 182. It was Mr. Kahn who first attacked the relation of the general level of prices to wages in the same way as that in which that of particular prices has always been handled, namely as a problem of demand and supply in the short period rather than as a result to be derived from monetary factors.

2 The qualifications required, if the system is not closed, are dealt with below.
are governed by marginal cost; all this being subject, of course, to various qualifications in particular cases, but remaining a reliable generalisation by and large.

I now recognise that the conclusion is too simple, and does not allow sufficiently for the complexity of the facts. But I still hold to the main structure of the argument, and believe that it needs to be amended rather than discarded. That I was an easy victim of the traditional conclusion because it fitted my theory is the opposite of the truth. For my own theory this conclusion was inconvenient, since it had a tendency to offset the influence of the main forces which I was discussing and made it necessary for me to introduce qualifications, which I need not have troubled with if I could have adopted the contrary generalisation favoured by Foxwell, Mr. Dunlop and Mr. Tarshis. In particular, the traditional conclusion played an important part, it will be remembered, in the discussions, some ten years ago, as to the effect of expansionist policies on employment, at a time when I had not developed my own argument in as complete a form as I did subsequently. I was already arguing at that time that the good effect of an expansionist investment policy on employment, the fact of which no one denied, was due to the stimulant which it gave to effective demand. Prof. Pigou, on the other hand, and many other economists explained the observed result by the reduction in real wages covertly effected by the rise in prices which ensued on the increase in effective demand. It was held that public investment policies (and also an improvement in the trade balance through tariffs) produced their effect by deceiving, so to speak, the working classes into accepting a lower real wage, effecting by this means the same favourable influence on employment which, according to these economists, would have resulted from a more direct attack on real wages (e.g., by reducing money wages whilst enforcing a credit policy calculated to leave prices unchanged). If the falling tendency of real wages in periods of rising demand is denied, this alternative explanation must, of course, fall to the ground. Since I shared at the time the prevailing belief as to the facts, I was not in a position to make this denial. If, however, it proves right to adopt the contrary generalisation, it would be possible to simplify considerably the more complicated version of my fundamental explanation which I have expounded in my "General Theory." ¹ My practical conclusions would have, in that case,

¹ Particularly in Chapter 2, which is the portion of my book which most needs to be revised.
à fortiori force. If we can advance farther on the road towards full employment than I had previously supposed without seriously affecting real hourly wages or the rate of profits per unit of output, the warnings of the anti-expansionists need cause us less anxiety.

Nevertheless, we should, I submit, hesitate somewhat and carry our inquiries further before we discard too much of our former conclusions which, subject to the right qualifications, have à priori support and have survived for many years the scrutiny of experience and common sense. I offer,¹ therefore, for further statistical investigation an analysis of the elements of the problem with a view to discovering at what points the weaknesses of the former argument emerge. There are five heads which deserve separate consideration.

I

First of all, are the statistics on which Mr. Dunlop and Mr. Tarshis are relying sufficiently accurate and sufficiently uniform in their indications to form the basis of a reliable induction?

For example, in so recent a compilation as the League of Nations “World Economic Survey 1937–38,” prepared by Mr. J. E. Meade, the traditional conclusion receives support, not on à priori grounds, but on the basis of the most recently available statistics. I quote the following from pp. 54–55:

During the great depression after 1929, the demand for goods and services diminished, and in consequence the price of commodities fell rapidly. In most countries, as can be seen from the graph on page 52, hourly money wages were reduced as the demand for labour fell; but in every case there was a greater fall in prices, so that hourly real wages rose. . . . (It is then explained that the same was not true of weekly wages.) . . . Since the recovery, the opposite movements may be observed. In most countries, increased demand for goods and services has caused commodity prices to rise more rapidly than hourly money wages, and the hourly real wage has fallen. . . . In the United States ² and France,³ however, the rise in money wages was so rapid between 1936 and 1937 that the hourly real wage continued to rise. . . . When real hourly wages are raised—i.e., when the margin between commodity prices and the money-wage cost becomes less favourable—employers are likely to diminish the amount of employment which they offer to labour. While there were, no doubt, other influences

¹ In amplification of Mr. Dunlop’s useful summary at the end of his article (loc. cit., pp. 431–3).
² [Probably as a result of the New Deal.]
³ Explained as being due to the forty-hour week.
affecting the demand for labour, the importance of this factor is well illustrated by the graph on page 53. In the case of all the countries represented for which information is available, the fall in commodity prices between 1929 and 1932 caused a rise in the hourly real wage, and this was accompanied by a diminution in employment . . . (it is shown that on the recovery there has been a greater variety of experience). . . .

This authoritative study having international scope indicates that the new generalisations must be accepted with reserve. In any case Mr. Tarshis's scatter diagram printed below (p. 150), whilst it shows a definite preponderance in the south-west and north-east compartments and a high coefficient of association, includes a considerable number of divergent cases, and the absolute range of most of the scatter is extremely small, with a marked clustering in the neighbourhood of the zero line for changes in real wages; and much the same is true of Mr. Dunlop's results. The great majority of Mr. Tarshis's observations relate to changes of less than 1.5 per cent. In the introduction to his "Wages and Income in the United Kingdom since 1860," Prof. Bowley indicates that this is probably less than the margin of error for statistics of this kind. This general conclusion is reinforced by the fact that it is hourly wages which are relevant in the present context, for which accurate statistics are not available. Moreover, in the postscriptum to his note, Mr. Tarshis explains that whilst real wages tend to move in the same direction as money wages, they move in the opposite direction, though only slightly, to the level of output as measured by man-hours of employment; from which it appears that Mr. Tarshis's final result is in conformity with my original assumption, which is, of course, concerned with hourly wages. It seems possible, therefore, taking account of Mr. Meade's results, that I may not, after all, have been seriously wrong.

Furthermore, for reasons given below, it is important to separate the observations according as the absolute level of employment is distinctly good or only mediocre. It may be that we can analyse our results so as to give two distinct generalisations according to the absolute level reached by employment. If, at the present stage of the inquiry, we are to make any single statistical generalisation, I should prefer one to the effect that, for fluctuations within the range which has been usual in the periods investigated which seldom approach conditions of full employment, short-period

1 It is possible that Mr. Meade has been more successful than Mr. Dunlop in using hourly wages, and that this explains some discrepancies in their conclusions.
changes in real wages are usually so small compared with the changes in other factors that we shall not often go far wrong if we treat real wages as substantially constant in the short period (a very helpful simplification if it is justified). The conclusion, that changes in real wages are not usually an important factor in short-period fluctuations until the point of full employment is approaching, is one which has been already reached by Dr. Kalecki on the basis of his own investigations.¹

II

It may be that we have under-estimated the quantitative effect of a factor of which we have always been aware. Our argument assumed that, broadly speaking, labour is remunerated in terms of its own composite product, or at least that the price of wage-goods moves in the same way as the price of output as a whole. But no one has supposed that this was strictly the case or was better than an approximation; and it may be that the proportion of wage-goods, which are not the current product of the labour in question and the prices of which are not governed by the marginal cost of such product, is so great as to interfere with the reliability of our approximation. House-rent and goods imported on changing terms of trade are leading examples of this factor. If in the short period rents are constant and the terms of trade tend to improve when money wages rise and to deteriorate when money wages fall, our conclusion will be upset in practice in spite of the rest of our premisses holding good.

In the case of this country one has been in the habit of supposing that these two factors have in fact tended to offset one another, though the opposite might be the case in the raw-material countries. For whereas rents, being largely fixed, rise and fall less than money wages, the price of imported foodstuffs tends to rise more than money wages in periods of activity and to fall more in periods of depression. At any rate both Mr. Dunlop and Mr. Tarshis claim to show that fluctuations in the terms of trade (terms of foreign trade in Mr. Dunlop's British inquiry and terms of trade between industry and agriculture in Mr. Tarshis's American inquiry) are not sufficient to affect the general tendency of their results, though they clearly modify them quantitatively to a considerable extent.² Nevertheless, the effect

¹ "The Determinants of Distribution of the National Income" Econometrica, April 1938, p. 102, now reprinted in his "Essays in the Theory of Economic Fluctuations."
² Cf. Dunlop, loc. cit., p. 417.
of expenditure on items such as rent, gas, electricity, water, transport, etc., of which the prices do not change materially in the short period, needs to be separately calculated before we can be clear. If it should emerge that it is this factor which explains the results, the rest of our fundamental generalisations would remain undisturbed. It is important, therefore, if we are to understand the situation, that the statisticians should endeavour to calculate wages in terms of the actual product of the labour in question.

III

Has the identification of marginal cost with marginal wage cost introduced a relevant error? In my "General Theory of Employment," chapter 6 (appendix), I have argued that this identification is dangerous in that it ignores a factor which I have called "marginal user cost." It is unlikely, however, that this can help us in the present context. For marginal user cost is likely to increase when output is increasing, so that this factor would work in the opposite direction from that required to explain our present problem, and would be an additional reason for expecting prices to rise more than wages. Indeed, one would, on general grounds, expect marginal total cost to increase more, and not less, than marginal wage cost.

IV

Is it the assumption of increasing marginal real cost in the short period which we ought to suspect? Mr. Tarshis finds part of the explanation here; and Dr. Kalecki is inclined to infer approximately constant marginal real cost. But there is an important distinction which we have to make. We should all agree that if we start from a level of output very greatly below capacity, so that even the most efficient plant and labour are only partially employed, marginal real cost may be expected to decline with increasing output, or, at the worst, remain constant. But a point must surely come, long before plant and labour are fully employed, when less efficient plant and labour have to be brought into commission or the efficient organisation employed beyond the optimum degree of intensiveness. Even if one concedes that the course of the short-period marginal cost curve is downwards in its early reaches, Mr. Kahn's assumption that it eventually turns upwards is, on general common-sense grounds, surely beyond reasonable question; and that this happens, moreover, on a part of the curve which is highly relevant for practical

1 Loc. cit.
purposes. Certainly it would require more convincing evidence than yet exists to persuade me to give up this presumption.

Nevertheless, it is of great practical importance that the statisticians should endeavour to determine at what level of employment and output the short-period marginal-cost curve for the composite product as a whole begins to turn upward and how sharply it rises after the turning-point has been reached. This knowledge is essential for the interpretation of the trade cycle. It is for this reason that I suggested above that the observations of the relative movement of real and money wages should be separately classified according to the average level of employment which had been reached.

It may prove, indeed, at any rate in the case of statistics relating to recent years, that the level of employment has been preponderantly so low that we have been living more often than not on the reaches of the curve before the critical point of upturn has been attained. It should be noticed that Mr. Tarshis's American figures relate only to the period from 1932 to 1938, during the whole of which period there has been such intense unemployment in the United States, both of labour and of plant, that it would be quite plausible to suppose that the critical point of the marginal cost curve had never been reached. If this has been the case, it is important that we should know it. But such an experience must not mislead us into supposing that this must necessarily be the case, or into forgetting the sharply different theory which becomes applicable after the turning-point has been reached.

If, indeed, the shape of the marginal-cost curve proves to be such that we tend to be living, with conditions as they are at present, more often to the left than to the right of its critical point, the practical case for a planned expansionist policy is considerably reinforced; for many caveats to which we must attend after this point has been reached can be, in that case, frequently neglected. In taking it as my general assumption that we are often on the right of the critical point, I have been taking the case in which the practical policy which I have advocated needs the most careful handling. In particular the warnings given, quite rightly, by Mr. D. H. Robertson of the dangers which may arise when we encourage or allow the activity of the system to advance too rapidly along the upward slopes of the marginal-cost curve towards the goal of full employment, can be more often neglected, for the time being at least, when the assumption which I have previously admitted as normal and reasonable is abandoned.
V

There remains the question whether the mistake lies in the approximate identification of marginal cost with price, or rather in the assumption that for output as a whole they bear a more or less proportionate relationship to one another irrespective of the intensity of output. For it may be the case that the practical workings of the laws of imperfect competition in the modern quasi-competitive system are such that, when output increases and money wages rise, prices rise less than in proportion to the increase in marginal money cost. It is scarcely likely, perhaps, that the narrowing gap could be sufficient to prevent a decline in real wages in a phase in which marginal real cost was increasing rapidly. But it might be sufficient to offset the effect on real wages of a modest rise in marginal real cost, and even to dominate the situation in the event of the marginal real cost curve proving to be almost horizontal over a substantial portion of its relevant length.

It is evidently possible that some such factor should exist. It might be, in a sense, merely an extension of the stickiness of prices of which we have already taken account in II above. Apart from those prices which are virtually constant in the short period, there are obviously many others which are, for various reasons, more or less sticky. But this factor would be particularly likely to emerge when output increases, in so far as producers are influenced in their practical price policies and in their exploitation of the opportunities given them by the imperfections of competition, by their long-period average cost, and are less attentive than economists to their short-period marginal cost. Indeed, it is rare for anyone but an economist to suppose that price is predominantly governed by marginal cost. Most businessmen are surprised by the suggestion that it is a close calculation of short-period marginal cost or of marginal revenue which should dominate their price policies. They maintain that such a policy would rapidly land in bankruptcy anyone who practised it. And if it is true that they are producing more often than not on a scale at which marginal cost is falling with an increase in output, they would clearly be right; for it would be only on rare occasions that they would be collecting anything whatever towards their overhead. It is, beyond doubt, the practical assumption of the producer that his price policy ought to be influenced by the fact that he is normally operating subject to decreasing average cost, even if in the short-period his marginal cost is rising. His effort is to maintain prices when output falls and, when output increases, he may raise them by less than the full amount required to offset
higher costs including higher wages. He would admit that this, regarded by him as the reasonable, prudent and far-sighted policy, goes by the board when, at the height of the boom, he is overwhelmed by more orders than he can supply; but even so he is filled with foreboding as to the ultimate consequences of his being forced so far from the right and reasonable policy of fixing his prices by reference to his long-period overhead as well as his current costs. Rightly ordered competition consists, in his opinion, in a proper pressure to secure an adjustment of prices to changes in long-period average cost; and the suggestion that he is becoming a dangerous and anti-social monopolist whenever, by open or tacit agreement with his competitors, he endeavours to prevent prices from following short-period marginal cost, however much this may fall away from long-period average cost, strikes him as disastrous. (It is the failure of the latest phase of the New Deal in the United States, in contrast to the earliest phase, of which the opposite is true, to distinguish between price agreements for maintaining prices in right relation to average long-period cost and those which aim at obtaining a monopolistic profit in excess of average long-period cost which strikes him as particularly unfair.)

Thus, since it is the avowed policy of industrialists to be content with a smaller gross profit per unit of output when output increases than when it declines, it is not unlikely that this policy may be, at least partially, operative. It would be of great interest if the statisticians could show in detail in what way gross profit per unit of output changes in different industries with a changing ratio between actual and capacity output. Such an investigation should distinguish, if possible, between the effect of increasing output on unit-profit and that of higher costs in the shape of higher money wages and other expenses. If it should appear that increasing output as such has a tendency to decrease unit-profit, it would follow that the policy suggested above is actual as well as professed. If, however, the decline in unit-profit appears to be mainly the result of a tendency of prices to offset higher costs incompletely, irrespective of changes in the level of output, then we have merely an example of the stickiness of prices arising out of the imperfection of competition intrinsic to the market conditions. Unfortunately it is often difficult or impossible to distinguish clearly between the effects of the two influences, since higher money costs and increasing output will generally go together.

A well-known statistical phenomenon which ought to have
put me on my guard confirms the probability of constant or diminishing, rather than increasing, profit per unit of output when output increases. I mean the stability of the proportion of the national dividend accruing to labour, irrespective apparently of the level of output as a whole and of the phase of the trade cycle. This is one of the most surprising, yet best-established, facts in the whole range of economic statistics, both for Great Britain and for the United States. The following figures summarise briefly what are, I believe, the undisputed facts:

**Relative Share of Manual Labour in the National Income of Great Britain.**

| Year | Share |
|------|-------|
| 1911 | 40.7  |
| 1924 | 43.0  |
| 1928 | 43.0  |
| 1932 | 43.0  |
| 1925 | 40.8  |
| 1929 | 42.4  |
| 1933 | 42.7  |
| 1926 | 42.0  |
| 1930 | 41.1  |
| 1934 | 42.0  |
| 1927 | 43.0  |
| 1931 | 43.7  |
| 1935 | 41.8  |

**Relative Share of Manual Labour in the National Income of U.S.A.**

| Year | Share |
|------|-------|
| 1919 | 34.9  |
| 1923 | 39.3  |
| 1927 | 37.0  |
| 1931 | 34.9  |
| 1920 | 37.4  |
| 1924 | 37.6  |
| 1928 | 35.8  |
| 1932 | 36.0  |
| 1921 | 35.0  |
| 1925 | 37.1  |
| 1929 | 36.1  |
| 1933 | 37.2  |
| 1922 | 37.0  |
| 1926 | 36.7  |
| 1930 | 35.0  |
| 1934 | 35.8  |

The fluctuations in these figures from year to year appear to be of a random character, and certainly give no significant indications of any tendency to move against labour in years of increasing output. It is the stability of the ratio for each country which is chiefly remarkable, and this appears to be a long-run, and not merely a short-period, phenomenon. Moreover, it would be interesting to discover whether the difference between the British and the American ratio is due to a discrepancy in the basis of reckoning adopted in the two sets of statistics or to a significant difference in the degrees of monopoly prevalent in the two countries or to technical conditions.

In any case, these facts do not support the recently prevailing assumptions as to the relative movements of real wages and

1 The British figures are based on Mr. Colin Clark's "National Income and Outlay," and the American figures on Dr. King's "The National Income and its Purchasing Power, 1909-1928," and Dr. Kuznet's "National Income and Capital Formation, 1919-1935." But in both cases I have used the slightly adjusted version of the figures prepared by Dr. Kalecki and given by him in his "Essays in the Theory of Economic Fluctuations" pp. 16, 17.

2 Shop assistants excluded.

3 Shop assistants included.

4 Dr. Bowley has given a figure of 41.4 for Great Britain in 1880. Dr. Kalecki tells me that, if this was adjusted so as to be comparable with the figures given above, it would be about 42.7—which would show an extraordinary stability for the ratio over a period of no less than fifty-five years during which almost everything else changed out of knowledge.
output, and are inconsistent with the idea of there being any marked tendency to increasing unit-profit with increasing output. Indeed, even in the light of the above considerations, the result remains a bit of a miracle. For even if price policies are such as to cause unit-profit to decrease in the same circumstances as those in which marginal real cost is increasing, why should the two quantities be so related that, regardless of other conditions, the movement of the one almost exactly offsets the movement of the other? I recently offered the problem of explaining this âpópía, as Edgeworth would have called it, to the research students at Cambridge. The only solution was offered by Dr. Kalecki in the brilliant article which has been published in *Econometrica*. Dr. Kalecki here employs a highly original technique of analysis into the distributional problem between the factors of production in conditions of imperfect competition, which may prove to be an important piece of pioneer work. But the main upshot is what I have indicated above, and Dr. Kalecki makes, to the best of my understanding, no definite progress towards explaining why, when there is a change in the ratio of actual to capacity output, the corresponding changes in the degree of the imperfection of competition should so exactly offset other changes. Nor does he explain why the distribution of the product between capital and labour should be stable in the long run, beyond suggesting that changes of one kind always just serve to offset changes of another; yet it is very surprising that on balance there should have been a constant degree of monopoly over the last twenty years or longer. His own explanation is based on the assumptions that marginal real costs are constant, that the degree of the imperfection of the market changes in the opposite direction to output, but that this change is precisely offset by the fact that the prices of basic raw materials (purchased by the system from outside) relatively to money wages increase and decrease with output. Yet there is no obvious reason why these changes should so nearly offset one another; and it would seem safer not to assume that marginal real costs are constant, but to conclude that in actual fact, when output changes, the change in the degree of the imperfection of the market is such as to offset the combined effect of changes in marginal costs and of changes in the prices of materials bought from outside the system relatively to money wages. It may be noticed that Dr. Kalecki’s argument assumes the existence of an opposite change in the degree of the imperfection of

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1 April, 1938, “The Determinants of Distribution of the National Income,” and now reprinted in his book referred to above.
competition (or in the degree in which producers take advantage of it) when output increases from that expected by Mr. R. F. Harrod in his study on "The Trade Cycle." There Mr. Harrod expects an increase; here constancy or a decrease seems to be indicated. Since Mr. Harrod gives grounds for his conclusions which are \emph{prima facie} plausible, this is a further reason for an attempt to put the issue to a more decisive statistical test.\footnote{Dr. Kalecki's conclusion is in conformity with Prof. Pigou's argument in "Industrial Fluctuations," Bk I, chap. xviii, where reasons are given for expecting more imperfection of competition in depressions.}

To state the case more exactly, we have five factors which fluctuate in the short period with the level of output:—

1. The price of wage-goods relatively to the price of the product;
2. The price of goods bought from outside the system relatively to money wages;
3. The marginal wage cost;
4. The marginal user cost (I attach importance to including this factor because it helps to bridge the discontinuity between an increase of output up to short-period capacity and an increase of output involving an increase beyond the capacity assumed in short-period conditions); and
5. The degree of the imperfection of competition.

And it appears that, for reasons which are not yet clear, these factors taken in conjunction have no significant influence on the distribution between labour and capital of the income resulting from the output. Whatever a more complete inquiry into the problem may bring forth, it is evident that Mr. Dunlop, Mr. Tarshis and Dr. Kalecki have given us much to think about, and have seriously shaken the fundamental assumptions on which the short-period theory of distribution has been based hitherto;—it seems that for practical purposes a different set of simplifications from those adopted hitherto are preferable. Meanwhile I am comforted by the fact that their conclusions tend to confirm the idea that the causes of short-period fluctuation are to be found in changes in the demand for labour, and not in changes in its real-supply price; though I complain a little that I in particular should be criticised for conceding a little to the other view by admitting that, when the changes in effective demand to which I myself attach importance have brought about a change in the level of output, the real-supply price for labour would in fact change in the direction assumed by the theory I am opposing—as if I was the
first to have entertained the fifty-year-old generalisation that, trend eliminated, increasing output is usually associated with a falling 'real wage.

I urge, nevertheless, that we should not be too hasty in our revisions, and that further statistical enquiry is necessary before we have a firm foundation of fact on which to reconstruct our theory of the short period. In particular we need to know:

(i) How the real hourly wage changes in the short period, not merely in relation to the money wage, but in relation to the percentage which actual output bears to capacity output;
(ii) How the purchasing power of the industrial money wage in terms of its own product changes when output changes; and
(iii) How gross profit per unit of output changes (a) when money costs change and (b) when output changes.

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