

Hicks's *The Theory of Wages*: Its Place in the History of Neoclassical Distribution Theory

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Abstract: Argues that J.R. Hicks's 1932 book, *The Theory of Wages*, foreshadows a number of important later developments in Hicks's theory, including some significant contributions to neoclassical distribution theory. These developments include a reformulation of marginal productivity theory; the introduction of the elasticity of substitution as an analytical tool; contributions to the product exhaustion theorem; an economic analysis of strikes; and a macroeconomic theory of relative factor shares. Concludes that Hicks's own subsequent rejection of the book was unduly self-critical.

1 Introduction

Hicks's *The Theory of Wages* was published some 70 years ago now, in 1932. At the time of publication, Hicks believed that there had been little development, over the preceding thirty years, in neoclassical distribution theory. He was also clear in his view of the place of *The Theory of Wages* in the history of wages theory: 'The task which is attempted in this book is a restatement of the theory of wages' (Hicks 1932a, p. v). He goes on to suggest that the 'most recent comprehensive statements of a positive theory of wages in English—of anything more than an elementary character—are now thirty or forty years old' (Hicks 1932a, p. v). He cites Marshall's *Principles of Economics* (1890 [1961]) and Clark's *The Distribution of Wealth* (1899) as his key reference points.¹

In contrast with this bullish contemporaneous assessment of *The Theory of Wages*, Hicks turned against his work, first in his paper 'Wages and interest: the dynamic problem' (Hicks 1935b), and then again some thirty years later in his commentary on his book (Hicks 1963). As he suggested in the 1963 reprinting of *The Theory of Wages*: 'I let it go out of print because my own views upon its subject had changed so much that I no longer desired to be represented by it' (Hicks 1963, p. v). He refers to the book as a 'juvenile work, which (almost at once) I felt myself to have outgrown' (Hicks 1963, pp. 310-11). In his 1963 commentary, he dates his own revolution in thinking about wages and distributional questions (and more besides) to 1933, the year after *The Theory of Wages* was published, marking off the work as one that could safely be left to one side. His revolution relates to his movement to a dynamic framework structured around the 'Monday week' model. As Samuels (1993) points out, however, Hicks consistently displayed considerable modesty about his past contributions and was continually reassessing his past work in line with his current beliefs and interests. Unfortunately, too many commentators have taken Hicks at his word and tend to pass too quickly over the Hicks of *The Theory of Wages*.

In this paper we return once again to Hicks's *The Theory of Wages*. Its aim is to provide an assessment of its importance to the development of neoclassical wages and distribution theory. We pose two sets of questions. First, did *The Theory of Wages* add significantly to extant neoclassical distribution theory? Did *The*

Theory of Wages provide an important restatement of wages theory as claimed by Hicks at the time of its publication in 1932, or did it represent a minor work? How important was *The Theory of Wages* to the subsequent trajectory of neoclassical distribution theory? Second, what was the importance of *The Theory of Wages* to the future development of Hicks as an economic theorist, and, in particular, to the later development of *Value and Capital*? Can we largely ignore it, accepting a conclusion that the revolution in Hicks's thinking occurred in 1933?

This paper argues that Hicks's *The Theory of Wages* provides important precursors for developments in Hicksian theory, which were soon to follow in *Value and Capital* (Hicks 1939a), and developed a number of significant contributions to neoclassical distribution theory. These contributions included a resetting of marginal productivity theory, the introduction of the elasticity of substitution tool, contributions to the product exhaustion theorem, the development of a theory of wages in the context of strike action, and the provision of a macroeconomic determination of relative factor shares. Mention should also be made of his study of the workings of the labour market, which were, sadly, largely ignored (both by Hicks himself and other neoclassical theorists) in the continued push to formalism and abstraction until the New Keynesian developments in the 1980s. These contributions need to be highlighted so as to balance the ledger, given Hicks's own largely negative assessment of the work; a view, as suggested, that is too often accepted uncritically by modern readers.²

Section 2 of the paper considers Hicks's treatment of marginal productivity theory in *The Theory of Wages*. There is, perhaps, as much interest in what Hicks brings to neoclassical distribution theory as in what he did not in the early chapters of the book. Hicks, perhaps more than any other theorist within a broad neoclassical tradition, emphasised the role of the substitution between methods of production (and thus between factors of production) and the distinction between scale of output and variations in proportions of factor use for a given scale. This led to the design of the elasticity of substitution tool. Hamouda (1993), Kennedy (1994) and Rothschild (1994) all provide excellent reviews of this development, and we shall have less to say than otherwise as a result. What Hicks left out was a presentation of the marginal productivity doctrine in a generalised form, one which allowed for imperfect competition. It was Shove ([1933] 1989) who took Hicks to task for not presenting a general marginal productivity theory of distribution, but it is the subtext of Shove's critique which interests us as much as anything else. Was imperfect competition theory all there in Marshall? What exactly was Joan Robinson's contribution to imperfect competition theory?

Section 3 considers Hicks's contributions to labour supply theory, while his analysis of the workings of the labour market is discussed in section 4. There are three crucial features of Hicks on the workings of the labour market in *The Theory of Wages*. First, his emphasis on the role of adjustment processes, time and foresight, which provides an early precursor to the dynamic analysis that followed in arguably Hicks's most famous work, the 1939 *Value and Capital*. Second, the importance Hicks attaches to the social nature of the labour market, a theme Hicks returned to but much later in his life. Third, the role Hicks assigns, in the determination of wage outcomes, to organisational and legal structures in the labour market. The linkages between Hicks's early work on themes and subsequent developments in New Keynesian theory are given some attention in these two sections.

Section 5 considers the question of the importance of Hicks's contribution to the theory of wage determination in the presence of collective bargaining and the threat of strikes. His theory of bargaining had a significant impact on the evolution of bargaining theory in the 1950s and 1960s.³ We review this connection in section 5 and also assess Hicks's contribution against previous studies on wages and strike activity, in particular, Zeuthen's (now) well-known 1930 book, *Problems of Monopoly and Economic Warfare*, and a rarely cited earlier work by Pigou (1905) on wage bargaining in the presence of strike activity.

In section 6, we examine Hicks on the relationship between technical change and the distribution of income. This was an area of very clear importance for the future direction of neoclassical theory: first in terms of his 'macro' distribution theory, where Hicks introduces the concept of the elasticity of substitution to explain relative shares; and, second, in terms of his introduction of the labour-saving capital-saving invention classification and the role of relative factor prices in inducing inventions of these two types (as compared with autonomous inventions).

While the emphasis in this review is on the place of *The Theory of Wages* in neoclassical distribution theory, we briefly consider in section 7 Hicks's contribution to pre-Keynesian macroeconomic theory. Here we argue that his macroeconomic model, applied in the context of wages policy in chapters 9 and 10 of *The Theory of Wages*, should receive more emphasis than it has hitherto been given both in treatments of pre-Keynesian macroeconomics and in studies of the historical roots of real business cycle theory and new classical macroeconomics. The discussion picks up on Hahn's (1994, p. 22) insight that 'Hicks in 1932 (*Theory of Wages*) started more or less where the "new" macroeconomics is now'.

The conclusion provides an overall assessment of the importance of Hicks's *The Theory of Wages* to both neoclassical theory and to Hicks's development as an economic theorist.

2 Marginal Productivity Theory and Imperfect Competition

Hicks begins *The Theory of Wages* in what would apparently be calm waters with a discussion of the marginal productivity doctrine that wages tend to equal the value of the marginal product of labour. This doctrine had, of course, been worked over in the first generation of neoclassical distribution theory and may otherwise not have been expected to create difficulties. But, like others before him, Hicks's discussion of the meaning of the 'value of the marginal product of labour' creates the interest. And it is Shove's (1933) review of *The Theory of Wages* that is the immediate point of interest, rather than Hicks's discussion itself.⁴ Hicks's precise rendition of the marginal productivity doctrine is that:

At any given wage it will pay employers best to take on that number of labourers which makes their marginal product—that is to say, the difference between the total physical product which is actually secured and that which would have been secured from the same quantity of other resources if the number of labourers had been increased or diminished by one—equal in value to the wage. (Hicks 1932a, p. 8).

Hicks adopts an explanation of this marginal productivity dictum that is perfectly traditional: wages will be set equal to the price of the product multiplied by the marginal product of labour. The reason for our interest here is that Shove, in his review of *The Theory of Wages*, suggests that Hicks's specification of the

marginalist equation is at odds with Marshall in a decisive way. The crux of the point is whether or not Hicks recognised the implications of non-competitive markets for marginal productivity theory. Marshall, Shove suggests, did fully account for the impact of a non-competitive market, even though he spelt out his version of marginal productivity doctrine in the context of a competitive market. Hicks did not.

It is the manner of Shove's presentation and its timing that is of most interest here. Shove is claiming for Marshall a place in the *imperfect competition* account of the marginal productivity theory of distribution. Shove suggests that Marshall's presentation of the marginal productivity doctrine was that employers would employ labour up to the point where the marginal outlay on labour (i.e., the addition to outlays from a small increment to labour) was equal to the additional receipts from employing it. He interprets this to mean that Marshall had in mind, to use modern terminology, a 'marginal factor cost' equals 'marginal revenue product' construction and was well aware that differences between price and marginal revenue (in the product market) and the wage and marginal factor cost (in the factor market) could be significant in a single-price market. This has, as is well known, enormous implications for the way in which we see factor rewards and Shove spells out these implications in some detail. He suggests that if the product market is non-competitive, prices are higher than 'marginal revenue' (Shove uses the term) and workers, consequently, will be paid less than the value of their marginal product.⁵ As a result they will be exploited (from product market influences). Likewise, if the factor market is non-competitive, marginal factor cost will be greater than the wage and workers will be exploited in the sense that the profit-maximising wage under these conditions will be less than the competitive wage.

What Shove was perhaps doing in his review at this point was not only attacking Hicks and bolstering Marshall's position but also indicating that the essence of the distribution theory in Joan Robinson's *Economics of Imperfect Competition*, which had just appeared in print, was already there in the Marshallian canon. Shove was claiming that a marginal revenue product/marginal factor cost interpretation of the traditional neo-classical statement of factor returns was part of the Marshallian tradition. This, of course, reduces the contribution Robinson (1933) was making. An interesting feature of Shove's 1933 review is that he acknowledges that Robinson had indeed just published the *Economics of Imperfect Competition* but that his review was written *before* its publication. He goes on to suggest that she 'analyses the tendency to exploitation along lines similar to those followed here. Her treatment is more elaborate than is possible in a notice such as this, but it also presents certain differences of detail. It has therefore seemed worth while to let the above paragraphs stand' (Shove [1933] 1989, p. 11). In short, Shove suggests that he had no reason to amend what he has written on the Marshall versus Hicks interpretation of marginal productivity now that Robinson had published her book. Letters in the Joan Robinson archives held at Kings College reveal that Shove had been involved in a heated exchange with Robinson on elements of Robinson's imperfect competition work prior to the publication of *Economics of Imperfect Competition*⁶, and this snipe at Robinson was the public face of this exchange.

Hicks himself remained a little ambivalent on the relative importance of the imperfect competition revolution. On the other hand, he wrote to Robinson following the publication of her book (and their 'recent rather surly correspondence') to say how much he admired it. He indicated that he had recently been lecturing on monopoly (see his survey on monopoly theory for *Econometrica*

in 1935 — Hicks 1935a) and had arrived at many of the same conclusions, but suggested that Robinson had taken the matter much further than he had been able to take it.⁷ He goes on to indicate that Robinson's book had cleared up for him the distinction between the 'entrepreneur-monopolist who can exploit others by restricting his demand for their services, and a factor-of-production-monopolist, who can only exploit by restricting the supply of his own.' As for the role of imperfect competition analysis generally, however, Hicks suggests that 'for long-period analysis, it is fair to assume that the elasticity of demand to the individual seller is very high (apart from the cases of "bilateral monopolies"), and consequently the competitive analysis, (which, as you agree, is so much easier to handle in problems of production and distribution) is a fair approximation'.⁸ This was a point Hicks was continually to return to in later published work.

The main contribution that Hicks makes to the demand side of neoclassical distribution theory is quite clearly not in the area of imperfect competition doctrine but in terms of the role to be played in neoclassical distribution theory by the substitutability of factors of production. The emphasis on substitutability is omnipresent in *The Theory of Wages* and is a clear hallmark of the Hicksian method at this point. What is 'helpful' for Hicks in emphasising substitutability at this stage of his theory development is the assumed pure malleability of capital. In *The Theory of Wages*, it is if anything labour that is problematic, as a result of differences between individual workers. Capital appears as a homogenous malleable factor of production. Even more than this, Hicks drifts at will between a 'realist', or as he later preferred to call it, a 'materialist' conception of capital (see Hicks 1974) and a funds-based approach to capital as the conditions suit and the problem at hand requires. Rothschild (1994, p. 67) has previously commented that Hicks's treatment of capital 'deliberately excludes a special consideration of capital problems' and is 'completely flat', while Hamouda (1993) provides a detailed history of Hicks's attempt to grapple with capital after his inauspicious beginning in *The Theory of Wages*.⁹

The key assumptions of the Hicksian approach to marginal productivity theory are that firms adopt a minimum-cost method of production, input prices are given, marginal products are known and continuous, and firms may vary factors when minimum cost is not achieved. Firms are assumed to adopt that method of production (i.e., that combination of factors) that ensures minimum costs of production. For given marginal products of the factors and input prices, the minimum cost of production is given by the now familiar formula as:

$$MP_a/P_a = MP_b/P_b.$$

When input prices change, firms alter factor proportions so as to maintain the minimum-cost formula. Hicks shows that his minimum cost of production approach, in equilibrium, is consistent with the traditional marginal productivity doctrine that factors are paid according to their marginal products.

Hicks utilises the minimum cost equilibrium tool in the context of the Wicksteed product exhaustion debate, making an important contribution to this ongoing controversy within the neoclassical tradition (Wicksteed 1894, Jaffé ([1964] 1992), Flux 1894, Walras [1926] 1954, Wicksell 1893, 1900, 1901, 1902). Here he follows Wicksell's insights, and proves in a mathematical appendix that, on the basis of cost-minimisation, total product will be exhausted without recourse to a constant returns to scale assumption. The discussion reflects Hicks's clear early awareness of the work of both Walras and Wicksell (introduced to him by Robbins

at the LSE).¹⁰ Hicks does make brief reference to the problems of monopoly revealed in the famous note by Sraffa (1926), but, in the main, ignores the difficulty presented by his minimum cost equilibrium condition that minimum-cost is not a necessary condition for profit maximisation.

One further use of the Hicksian substitution method should be mentioned. That is in terms of his analysis of wage indeterminateness, which represented a follow-up to his earlier paper on the subject (Hicks 1930b). The principal argument concerning wage indeterminateness was based on the indivisibility of labour (we must often employ a 'whole' worker than a part of one) and the likely distance between the 'internal' and the 'external' marginal product of labour in the event of indivisibility. The internal marginal product of labour is the additional product generated by the last worker employed, the external marginal product is the additional product generated by the next worker that the firm could employ. Wages must lie between these points but are indeterminate within this range. Hicks suggests, however, that the degree of indeterminateness falls significantly when we take seriously the options for substitutability available to firms, with which it may be possible for them to add on different types of labour (labour is heterogeneous in Hicks), switching from labour of one type to labour of another. Likewise, firms may switch from employing an additional unit of labour to employing capital instead. Both of these points of substitution may mean that the gap between the internal and external marginal product may be relatively large for a given set of wage-earners but not be relevant when options exist across different types of workers or between capital and labour. Hence, with the 'external' margin becoming ever more pliable, the gap between it and the existing internal margin becomes smaller. Hicks returns to the theme of *determinateness* in wage outcomes when he considers the determination of wages in the context of strike activity and bargaining, where he again pushes against prevailing orthodoxy in pressing for a determinate wage rather than a range of possible wage outcomes.

3 Labour Supply Theory

We now turn from Hicks's discussion of labour demand to that of labour supply. His treatment of labour supply theory is relatively standard for the time. He has yet to build the standard choice framework of *Value and Capital*, which allowed for the analysis of labour supply in terms of income and substitution effects. The arguments on labour supply are, therefore, presented in very general terms. However, the interesting part of Hicks's labour supply presentation is that of the emphasis, both in his labour supply chapter and throughout the work as a whole (including the macroeconomic model of the final chapters of *The Theory of Wages*), on efficiency wage effects.¹¹

The incorporation of efficiency wage effects in modern labour economics and macroeconomics can be traced to a series of works by Akerlof and Yellen (among many others) in the 1980s.¹² As Hicks himself observed in *The Theory of Wages*, however, the 'Gospel of High Wages' had been around for some time. Allusions to efficiency wage effects can be discerned in the work of Marshall, Walker, Hobson, Pigou and Wicksteed, and Hicks's discussion of efficiency wage can be characterised as lying squarely within this older tradition.¹³ Our interest in his discussion of efficiency wage effects lies, therefore, not in their absolute novelty. Rather, it lies primarily in the fact that, as with so many other components of *The Theory of Wages* written in an *informal* style, the efficiency wage material is

left to lapse as Hicks further develops his formalist structure in the 1930s (of which *Value and Capital* is the prime standard bearer). Interestingly, efficiency wage effects returned to the canon in the 1980s only when they were given a more formal mathematical treatment.

One interesting feature of Hicks's efficiency wage arguments, which is not reflected in the modern efficiency wage theories (nor the older 'Gospel of High Wages' tradition), concerns the impact of high wages on the internal structure of the household of the employee. For Hicks, higher wage rates feed through to better opportunities for recreation and self-improvement and for the specialisation of labour in the household. This gives to the (mainly male) worker (for Hicks) greater opportunities for genuine leisure, thus providing an improved platform for enhanced work effort. As with the earlier neoclassical authors, Hicks refers to the cumulative causation processes involved. High wages increase efficiency, which then promote high wages. Another feature of the cycle is the diminishing returns to efficiency of high wages. In other words, at low wage levels an increase in wages has greater positive efficiency effects than an increase in wages at a higher wage level. More generally, the efficiency effects may provide a floor to wages in a downturn. Employers may be reluctant to allow wages to fall too far because the adverse efficiency effects that may result.

4 The Workings of the Labour Market

Hicks's chapter on the workings of competition and the labour market (chapter IV) goes well beyond a simple rendition of how changes in labour demand or supply feed through into new labour market equilibrium outcomes. Rather it emphasises a multiplicity of forces and reflects his recent past interest in labour history and applied labour issues (see Hicks 1928, 1930a). There is a strong role for the importance of social custom, particularly in relation to attitudes towards fairness, in affecting labour market outcomes. This is an area of his work in the early 1930s which, like that of efficiency wage effects, he lets lapse in his formalist developments later in the decade. There is also considerable discussion of labour market questions in light of real-world firm and labour market institutional arrangements (e.g., his emphasis on the regular and casual employment distinction) and adjustment costs. A final important facet of the working of the labour market that Hicks refers to, but which he certainly did extend in the 1930s and then returned to in a different form much later in his life, was that of the role of *time*, *expectations*, and *uncertainty*.

In his 1963 commentary, Hicks referred to the fact that *The Theory of Wages* adopted an essentially static equilibrium framework. That might be true in terms of a *structured* model involving capital and time (*Value and Capital* provides such a framework). However, *The Theory of Wages* provides a good 'unstructured' discussion of dynamics (in the sense of adjustment, time, expectations, and uncertainty) that can be viewed as a precursor either to *Value and Capital* or to a much later Hicks, whom Collard (1993) refers to as 'Deep Hicks', where equilibrium and change are dealt with in terms of a 'true dynamics in historical time'.

Hicks pays special attention to the adjustment process in labour markets. This is, of course, not the first time that economists had touched on this question. Treatments of the adjustment process are available in Marshall's discussion of earnings and labour markets in the *Principles* (Marshall, 1890 [1961]), which are

extended in Pigou's early works, including *Wealth and Welfare*, his pre-war *Unemployment* and, most importantly, *The Economics of Welfare*. Both Marshall and Pigou consider the process by which the labour market adjusts to the movements of labour from 'trade to trade and from place to place' (Marshall 1890 [1961], p. 573) and both made much of the fact that the labour market was quite different from the market for commodities (see, for example, Marshall 1890 [1961], p. 336). However, Hicks's treatment is certainly more developed than that of his predecessors in combining adjustment costs, expectations and uncertainty in a fluid dynamic environment.

He begins with a discussion of how shocks feed through the labour market. From a given equilibrium, an event shocks the system so that it is necessary for workers to consider a possible move from one employment position to another and for employers to consider a change to their methods of production. These changes take time and are accompanied by costs. The time and cost taken in the adjustment process may have important implications for the trajectory of the labour market. If adjustment costs are relatively large, moves to alternative methods of production, which would otherwise be profitable, are suspended. In other words, adjustment costs may generate a wedge between the existing structure and some alternative structure.

Adjustment costs *per se* for Hicks are not necessarily the most important problem facing labour market participants. Adjustment costs can potentially be defrayed over a relatively long time period if change is of a 'once-and-for-all' form or follows some set (e.g., seasonal) pattern, with a relatively clear understanding of its effects. It becomes more of a problem, however, if there is no strong expectation that change will be maintained. In conditions of flux, adjustment costs can be a critical determinant of the path the labour market can take. To provide a concrete context to potential difficulties, Hicks gives the example of new orders that a firm receives. What does this mean for the firm? It might mean that ordinary orders have been brought forward, or that a special order has taken place, or that demand has risen to a new level at which it will stabilise or that demand is on a growth path. Which of these possibilities actually holds cannot, of course, be known for certain in advance.

Hicks continues to stress the role of expectations and uncertainty in his discussion of unemployment. In this discussion, he compares the case of an anticipated temporary downturn to that where there is genuine uncertainty as to the length of the downturn. In the former case, wages and employment may be kept relatively constant. Employers, who take advantage of an anticipated temporary downturn by cutting wages, may find that it comes at a significant cost in terms of labour relations in the firm and its future ability to attract good workers. This cost is likely to deter many firms from cutting wages during a period of anticipated temporary decline. Hence there can be some rigidity in the downward movement of wages, but this rigidity comes from employers and not from workers or unions (at least in the early parts of *The Theory of Wages*). There may be some upward rigidity in wages as well. Firms may be reluctant to raise wages when there is an anticipated temporary upturn, as the shortage pressures they face in the labour market are likely to be short-lived. As Hicks puts it, 'although each firm's demand for labour fluctuates continually, a change in wage-rates would affect, not the present, but the future supply of labour' (Hicks 1932a, p. 67).

It is a somewhat different matter when either the downturn is expected to last a long time or there is uncertainty as to the length of the downturn. In the

former case, the movement to an immediate generalised cut in wages may be fairly quick. In the latter case, the movement to lower wages may be a relatively long one. Firms may initially assume that the downturn is relatively short and so maintain wages for a period. As the duration of the downturn increases, some firms will begin cutting wages. Those firms that do not cut wages will find it increasingly more difficult to maintain a higher wage. As a greater proportion of firms cut wages, the 'bad employer' effect of immediately taking action to reduce wages becomes less important in the market and 'good employer' firms believe that they will no longer have signalling problems when the labour market improves.

The distinction Hicks makes between anticipated and unanticipated events and temporary and permanent events has, of course, strong parallels in modern macroeconomics and in labour economics. We see evidence of this type of thinking early on in Friedman's consumption function and in the Friedman-Phelps inflation-unemployment models of the late 1960s.¹⁴ Hicks's discussion also provides an important link in his own work to the developments in dynamic analysis that were soon to take place in his later work in the 1930s, influenced by the Swedish School (first Wicksell and then Myrdal and Lindahl), culminating in *Value and Capital* (see Hicks 1991a).¹⁵

In addition to his analysis of time, expectations, and uncertainty, Hicks makes an important distinction between the role of casual and regular labour in the workings of the labour market. Casual labour is characterised by the absence of a long-standing continuous relationship between a given employer and a given employee.¹⁶ Costs of adjustment for both employees and employers are low. Regular labour, in contrast, is characterised by a continuing relationship between a given employer and an employee, in which employer-specific skills and knowledge develop. This leads to a mutually advantageous position for both employees and employers. (The modern parallel to internal labour market theory is obvious, particularly to those that emphasise transaction cost foundations.)¹⁷ The breaking of such a relationship means that costs are incurred by both sides. On the employee's side, there may be significant locational adjustment costs should a worker move to an employer located in a different region. These costs are exacerbated by a loss of the wage benefits that accrued at the previous firm from the specific human capital built up in that firm. On the employer's side, a new employee requires considerable investment in terms of employer-specific knowledge and skill training.

Hicks concludes that, in the case of casual labour, wages are more likely to move quicker than for regular trades. There is also likely to be a greater tendency for wages to fall rather than to rise. The reason for the latter effect is that the flow of labour into the casual labour market is much greater than the outward flow. As Hicks suggests, 'the gate into casual employment stands wide open, and can always be entered by the unemployed of other trades' (Hicks 1932a, p. 69). In regular trades, wages tend to be more rigid. This is because the transaction or adjustment costs of introducing labour from outside can be considerable in the case of regular trades. Hence the incentives to reduce wages are blunted, unless the forces moving in the direction of a reduction in wages are particularly strong. Wage rigidity results.

As with much of his chapter on 'the working of competition' chapter, Hicks's analysis of regular and casual labour, when combined with his emphasis on expectations, imperfect information and uncertainty has a modern resonance to those elements of (post-1970) labour economics that emphasise employer-employee attachments, firm-specific human capital, the role of the internal labour

market and the importance of transaction and adjustment costs. One example of a clear influence is in Arthur Okun's posthumous classic, *Prices and Quantities* which brings many of these elements together in his analysis of implicit contract theory, career labour markets (and the *invisible handshake*), and the toll model. Indeed, Hicks's *The Theory of Wages* is cited by Okun (1981, p. 79) as a crucial early work that focussed on the importance of employee-employer attachments to an understanding of the workings of the labour market. (The next cited in line is Walter Oi's classic 1962 paper on quasi-fixed labour.)

The final element of Hicks's discussion of the workings of the market is an emphasis on the role of fairness. For Hicks fairness in labour market outcomes can be analysed both against an 'objective' criterion (the competitive market equilibrium) and in terms of the perceptions of individual actors and how these perceptions affect the workings of the market and the productivity of individual workers.¹⁸ He suggests, with regard to the latter, that demands for wage rises are made by employees because the proposed rise is seen to be 'fair' in the eyes of employees. Likewise, employers will be concerned to ensure that wage reductions are not perceived to be 'unfair'. However, these perceptions, together with their impact on the behaviour of participants, are seen as being ultimately constrained by the forces of demand and supply. In terms of the 'objective' criterion of fairness, Hicks adopts the Pigovian exploitation framework. Exploitation of labour, according to Pigou, exists when workers are paid less than the value of their marginal net products to employers (Pigou 1920, p. 512).¹⁹ There is nothing new in Hicks's analytical framework on the exploitation of labour that does not appear in Pigou's earlier analysis. There is no inkling, for example, of the deep analysis of both product and labour market imperfections that Robinson was to bring to exploitation theory. What is interesting, however, is that Hicks suggests that exploitation is not a major problem for employees. And here he stands apart from both Pigou and, of course, Joan Robinson.

5 Strike Activity and Wages

In *The Theory of Wages* Hicks presents a model of wages in the presence of strike activity. In Hicks's strike model wages are based on two forces. The first reflects the wage concessions employers are prepared to make in response to strike activity. The longer the strike, the higher are the costs to the firm. Setting wages on the vertical axis and the expected length of strike on the horizontal axis, the employer's concession curve begins with the wage that they would be prepared to concede in the absence of trade union action (the 'no-strike wage'). As the expected duration of an industrial stoppage increases, the highest wage the employer is prepared to concede to avoid the strike also rises. The employer's concession curve rises as the expected duration of the strike increases, and is bounded above by that wage at which the employer would no longer wish to remain in operation (the zero economic profit position).

The second component to the model is the union's resistance curve. This curve sets out the lowest wage that unions are prepared to accept. The union's resistance wage, at a given expected strike length, again represents a balance between two forces. The first is the possibility of low wages in the future, and the second is the possibility of unemployment resulting from a wage offer that is too high. The union's resistance curve starts at some unspecified level. The longer the expected duration of the strike, the greater is both the loss of income and the

likelihood of job loss. In an imperfect capital market, it pays workers to reduce their minimum accepted wage as the expected length of the strike increases. There will come a point where the union's resistance curve hits the wage level that wages would have been at had there been no trade union action at all.

The highest wage that the union can achieve *when both sides have equal expectations* of the duration of the strike activity is the point of intersection of the employer's concession curve and the union's resistance curve. Hicks's model therefore specifies a *deterministic* wage solution. On the basis of the expected duration of the strike (and each side's knowledge of the other side's relevant curve), employers and unions may negotiate a settlement. If they do not, then a strike will occur. At this point, dynamic factors come into play. The curves shift according to how long the action has gone on for. The 'expected length of the strike' now reads as the 'expected remaining length of the strike'. The union's resistance curve starts to shift inwards.

The importance of Hicks's contribution to the theory of wage determination in the presence of union strike activity lies in the specification of a model that accounts for the various forces that may affect wage offers in the presence of strike activity. However, it is not the first major treatment of the issue and it appears appropriate to list it in concert with two other early models: Pigou's 1905 model of wage outcomes developed in *Principles and Methods of Industrial Peace* and Zeuthen's 1930 *Problems of Monopoly and Economic Warfare*. Shove ([1933] 1989) was quick to point to these models in his review of *The Theory of Wages* and to suggest that Hicks adds little or nothing to the existing literature. There is some truth in this remark. This is one area where Hicks's contributions have perhaps been given a little too much emphasis (and Pigou's 1905 model, perhaps, not enough).

Pigou develops an Edgeworth-type model of wage determination in a world of non-competitive markets (Edgeworth [1881] 1961). As with Edgeworth the wage is indeterminate, but the contribution of Pigou is to specify the locus of possible wage bargains, which is derived from the elasticities of labour demand and supply, the costs of using industrial action to achieve a desired wage outcome, and the expectations concerning the likely result from industrial action.²⁰ While Pigou's models provide the basis for specifying the factors that influence the size of the wedge between employers' wage concessions and workers' wage demands, they do not produce a final deterministic solution. Zeuthen's model does. Taking Pigou's wage limits (in the absence of industrial activity) as a starting point, Zeuthen determines a path that wage outcomes could take, based on the probabilities that unions and employers set on the likelihood of conflict resulting from a wage offer and the expectation of firm resolve on the part of the other party. Starting from a point of a high wage offer from the union side and a low wage offer from the employer side, the probability of conflict occurring if both sides continue with their offers is very high. Each side makes concessions, thus successively reducing the probability of strike action, until a commonly agreed point is reached.

In spite of the fact that Hicks's model of wage outcomes in the presence of union strike activity is one of four major relevant models (in chronological order: Edgeworth, Pigou, and Hicks/Zeuthen) and has no particular claim to pre-eminence among them, it was particularly influential in the development of wage bargaining and strike activity models into the 1970s. Both Kennan (1986) and Farber (1986) in their reviews of union behaviour and strike activity point to the importance of the Hicksian and Zeuthen traditions in this field. For example, Shackle's (1957) model

of the bargaining process represented a conscious and direct off-shoot of Hicks's work, which is also evident in the influential Ashenfelter and Johnson (1969) bargaining model (see also Bishop 1964 and other relevant work cited in Wood and Woods 1989). Other early contributions to bargaining theory follow Zeuthen in the main (Pen 1952, Harsanyi 1956) but again the relevant alternative reference point is Hicks (together with Nash in Harsanyi's case).

6 Technical Change, Growth and Distribution

The clearest advances in what might be called the pure theory element of Hicks's *The Theory of Wages* occur in chapter 6, in which Hicks introduces the concept of the elasticity of substitution, utilises it in the context of determining the effect of a rise in the supply of a factor on the relative shares of income, and considers the impact of inventions on the distribution of income. Each of these three areas was to form the basis for continuing debate in neoclassical theory.

As is well known, Hicks makes a distinction between economic progress resulting from an increase in the supply of a factor (labour and capital) and economic progress resulting from inventions and improvements. In respect of the first source of economic progress, Hicks asks: what is the effect on the real incomes ('absolute shares' in his terminology) and relative shares of an increase in the supply of a given factor? It is in the context of his discussion of relative shares that Hicks introduces the concept of the elasticity of substitution. As he suggests, 'an increase in the supply of any factor will increase its relative share ... if its "elasticity of substitution" is greater than unity' (Hicks 1932a, p. 117). The elasticity of substitution measures the ease with which one factor can be substituted for another. Hicks goes on to provide a mathematical derivation of the elasticity of substitution and reinterprets Marshall's four principles in light of the elasticity of substitution.

The introduction of the elasticity of substitution concept was fundamental to the whole Hicksian neoclassical framework and as such provides clear grounds for connecting *The Theory of Wages* to the more celebrated *Value and Capital*. The framework is grounded entirely on economic actors reacting to relative price signals, relative marginal product movements, and the malleability of capital (and labour). As price signals are emitted, the supply of a factor is affected. The elasticity of substitution then measures the degree to which one factor will be substituted for another. As is well known, Hicks's elasticity of substitution concept was immediately seized upon in the literature, with a major debate in the 1930s as to its measurement and its role in predicting relative shares (see Hicks 1963 for a review).

Hicks goes on to consider the second main form of an increase in economic progress, namely, the case of inventions. Here we see the introduction of another famous conceptual tool. Hicks distinguishes between three categories of inventions depending on their effect on the ratio of the marginal product of capital to that of labour (Hicks 1932a, pp.121-2). First, inventions may be 'labour-saving' (they increase the marginal product of capital more than that of labour), 'capital-saving' (they increase the marginal product of labour more than capital), or 'neutral' (the invention does not affect the ratio of the marginal products). What type of invention do we see, and why? Hicks distinguishes two forces. The first is changes in relative prices and factor substitution. These are 'induced' inventions. The second are 'autonomous' inventions in influencing the preponderance of labour-saving inventions.

As with the elasticity of substitution concept, the introduction of the distinction between induced and autonomous inventions and that between labour-saving and capital-saving inventions was novel and proved fundamental in the future development of the neoclassical theory of technical progress and economic growth in the later 1930s and into the Cambridge Controversies (Harcourt 1972).²¹ As Blaug (1971) points out, the history of the economics of technical change go back to Ricardo, Marx, Mill, Wicksell, and Schumpeter. Pigou (1920) had previously distinguished between various forms of technical progress, but these distinctions were not linked, as in Hicks, to a structured neoclassical substitution framework.

7 Macroeconomics (just) before Keynes

When *The Theory of Wages* was published, Hicks regarded the two chapters on wage regulation as the culmination of his work. The titles of the two chapters ('Wage-regulation and unemployment' and 'Further consequences of wage-regulation') are a little misleading, suggesting a more microeconomic orientation. However, as the analysis progresses, it is clear that what Hicks was concerned with is the macroeconomic consequences of a policy to achieve a real wage outcome above the equilibrium point across all industries. The macro model utilised by Hicks has an interesting place in the history of economic thought, given that it represents perhaps the last comprehensive macroeconomic statement made in a decidedly neoclassical vein prior to Keynes's *General Theory*. Looking much further forward, however, the importance of the model is that it provides a clear precursor of real business cycle and New Classical macroeconomics, with its emphasis on substitution possibilities in reaction to relative price changes as the driver of the macroeconomy.²² Hicks was soon to disown the chapter in one of his first clearly dynamic papers, 'Wages and interest: the dynamic problem', not at that stage (1935) on the grounds of its being superseded by Keynes but more so for what he saw were instances of faulty logic and the lack of a clearly specified dynamic framework.²³ Despite his repudiation of these two chapters it remains odd that reviews of business cycle theory and macroeconomic theory prior to Keynes do not cite Hicks's *The Theory of Wages*²⁴, but rather emphasise his well-known reactions to Keynes in the 1930s and the development of the IS-LM model (see Hicks 1936b, 1937).

The starting point for Hicks's model is that of a trade union attempt to attain a real wage outcome for the economy *as a whole* above the equilibrium wage. What sort of model does Hicks develop to examine this state, and what are the consequences of the trade union action? Hicks's model is an amalgam of various elements, but at its core is the central model of substitution of factors that lies behind much of *The Theory of Wages*. To this should be added a strict quantity theory of money structure that determines the price level. There is only a hint in the concluding stages of the two chapters that such a strict quantity theory approach is not appropriate.

Hicks's analysis of a policy to sustain a real wage above its equilibrium is divided into two stages. The first stage is a 'short-run' analysis assuming 'stationarity', i.e., no change in secular forces, which are referred to as inventions, the accumulation of capital and foreign trade. The second stage allows these forces to change. We shall examine the short-run model first, but even here we must be careful, as Hicks provides for a large number of channels through which the rise in

wages affects the economy. There are three main channels (each taking a considerable period of time to work their way through), which we will concentrate on. For Hicks the first is the most innocuous. We can refer to it as the consumption effect. The second is the method of production effect. The final impact is the supply of capital effect. The latter two effects serve to increase unemployment.²⁵

Hicks makes a bold assumption to begin with. He assumes that the rise in wages does not directly increase the community's spending power. Instead, there is a redistribution of spending power. Wage earners spend more, the receivers of profit spend less, but the two balance out. The fact that the two income groups will have different spending patterns means, however, that a disturbance of relative rates of profit occurs within the economy. This will result in a transfer of resources to those industries with a relatively high demand from the wage-earner class and away from those industries more influenced by the spending behaviour of the profit-receiving class. This represents the first major substitution impact of the overall real wage policy. Hicks, however, assumes that the labour shifts induced by the relative profit effects will balance each other out and so not result in any net impact on unemployment. (There is an assumption here that the methods of production in the two sectors are equivalent.)

The second major impact comes not from relative consumption changes but from the impact of a rise in real wages on methods of production. Industries that have higher labour-capital ratios will face higher relative cost pressures than industries with low labour-intensity. Profit rates will decline in labour-intensive industries relative to capital-intensive industries. The relative price signal is for resources to move from industries (and methods of production) with a relatively high labour-capital ratio to those industries (and methods of production) with a relatively high capital to labour ratio. This shift does increase unemployment in net terms, as the more capital-intensive industries will require less labour. Employment will rise in the capital-intensive industries, but this rise will not be sufficient to absorb the movement of labour from the labour-intensive industries. As compared with the consumption effect set out previously, this relative price impact affects the choice of methods of production. The movement in capital and labour resulting from this relative price effect has its own consequences. It suggests a weak position for labour in those areas of production with a relatively high pre-existing labour-capital ratio.

There is a third effect to consider. This is the impact of the real wage increase on the supply of 'capital' (the term being used by Hicks in a funds sense). The increase in real wages will reduce the stock of capital in a number of ways. First, by throwing some firms into liquidation. Second, by inducing firms to provide for higher dividends than would be expected given a profit rate decline, so reducing the stock of capital available for investment purposes. Third, capitalists save less (and this decline in saving is greater than the rise in saving by wage-earners).

This last effect provides the starting point for Hicks's long-run analysis. The decline in the funds available for investment will further reduce the ability of firms to employ labour. Hicks claims that it is possible that this reduction in investment resulting from the decline in funds could be cumulative. The contraction of industry may induce firms to further consume their capital funds, which in turn contracts industry. To short-circuit this process, a significant claw-back in terms of dividends and/or wages must take place. However, this may not be possible. One reason given for this is that unemployment benefits may need to be funded in part

from industry and private saving, so reducing further the available capital funds. Hicks suggests that ‘if a high level of unemployment benefit is maintained, the cessation of contraction becomes nearly impossible’ (Hicks 1932a, p. 201). A second reason why the outlook is bleak is faulty anticipation. To begin with, firms anticipate that good times will soon return. They therefore undertake policies on that basis, including continuing to pay out high dividends. This policy will only serve to reduce the available funds further.

Is there any good news in Hicks’s story for the unemployment rate? Hicks mentions two possible ways out (other than, of course, a change to wages policy itself). First, there may well be an increase in inventions (but these are likely to be labour-saving in nature). Second, there may be important labour supply effects. Here the efficiency wage argument is used. The rise in real wages results in efficiency gains, but Hicks does not put much store in the ability of these efficiency wage effects to fully offset the negative outcomes. In essence, he argues that a policy of setting real wages above the competitive level is likely in net terms to produce harm.

8 Conclusion

We may now return to the key theme of this retrospective. How significant was *The Theory of Wages* in the history of neoclassical distribution theory and in Hicks’s own development as an economic theorist? I would argue that the work deserves to receive major attention for four main reasons.

First, a significant number of important contributions to neoclassical theory are scattered throughout the work. In *The Theory of Wages* Hicks resets marginal productivity theory, invents the elasticity of substitution tool, provides a macro determination of relative factor shares, introduces a typology of inventions and growth, and develops a model of strike activity which, though post-dating the contributions of Pigou and Zeuthen, has been influential in the development of labour market and trade union theory.

Second, elements of the book provide important precursors to developments in Hicksian theory, which were soon to follow in *Value and Capital*. The static equilibrium analysis of the first half of *Value and Capital* builds on concepts developed first in *The Theory of Wages*, while the 1932 book also provides a starting point for discussion of the role of expectations in a more developed dynamic analysis.

Third, there is a modern resonance (New Keynesian efficiency wage theory, the role of custom and fairness, internal labour market theory and transaction cost economics) to much of Hicks’s discussion of the workings of the labour market. Interestingly, it is this part of *The Theory of Wages* which Hicks was to let go immediately the work was published, only to return to it much later in life.

Fourth, the timing of the work (1932) provides for some fascinating interludes. As Hicks pointed out in his 1963 retrospective, *The Theory of Wages* missed both the imperfect competition revolution (Robinson’s *The Economics of Imperfect Competition*) and the Keynesian revolution, and was published just on the cusp of the Great Depression, which made Hicks’s discussion of unemployment, demand management and monetary forces look decidedly shaky. However, this ‘poor timing’ provides the platform for us to view a specimen of the last (perhaps first!) *pre-Keynesian* macroeconomic model in action (the last three chapters of the work) on the one hand, and lets us into an interesting side-debate on

the imperfect competition theory on the other (we allude here to Shove's 1933 critique).

The Theory of Wages represented for Hicks the end of phase one of his theoretical developments in neoclassical theory and the beginnings of the next phase. On the workings of the labour market and on trade unions there was to be little more from Hicks for some time while, of course, in 'pure' theory much more was soon to follow.

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Notes

1 Wicksteed's *An Essay on the Co-ordination of the Laws of Distribution*, published in 1894, could be added to this list, as could Wicksell's *Value Capital and Rent*, published in 1893 (though not published in English). Hicks gave a more detailed overview of the development of neoclassical distribution theory in his paper 'Marginal productivity and the principle of variation' (Hicks 1932b) published just prior to *The Theory of Wages*. In that work he mentions an extended array of contributors to distribution theory including, in addition to Marshall and Clark, Wicksteed, Wicksell, Walras, Pareto, and Cassell.

2 In undertaking a review of *The Theory of Wages*, I follow in the path of Rothschild (1994) in his recent review of *The Theory of Wages* and Hamouda in his 1993 book *John R. Hicks. The Economist's Economist*. My review places less weight on elements that are given a full treatment in Rothschild's and Hamouda's assessments and more weight on aspects of *The Theory of Wages* that need further attention. Rothschild's and Hamouda's treatments are particularly strong on marginal productivity theory, Hicks's treatment of the production function and the concept of capital, and the importance of the development of the elasticity of substitution tool. In addition to Rothschild and Hamouda there are numerous references (albeit relatively short ones) to Hicks's book in the many assessments of his contributions to economic theory (see, for example, Wood and Wood 1989). Particular mention should be made of reviews by Kennedy and Hahn in Hagemann and Hamouda (1994).

3 Recognition of the role that Hicks's work on theory of wages and strike activity had on the subsequent development of that theory is apparent in several recent reviews of the theory by labour economists, but is not given sufficient attention in general reviews of Hicks's contributions. I am thinking here primarily of Farber (1986) and Kennan (1986) – see below.

4 Shove ([1933] 1989), for good measure, makes a number of further criticisms of Hicks's work, including, most importantly, the question of how one defines and measures capital (see the following paragraphs), and the macroeconomic importance of monetary factors, but it is his attack on the imperfect competition issue that most

interests us here. See also Kennedy (1994). On the question of the absence of a detailed discussion of monetary factors, see Hamouda (1993).

5 Shove ([1933] 1989) refers to the term ‘marginal revenue’ having first been used by Viner ([1931] 1952). For a further discussion of the development of the imperfect competition revolution, see Flatau (2001).

6 This correspondence is held at the Archive Centre, Kings College, Cambridge (see Joan Robinson collection, hereafter JVR, vii/Shove).

7 Kings College Archives, Joan Robinson Collection, JVR, vii/Hicks 10/7/33.

8 Kings College Archives, Joan Robinson Collection, JVR, vii/Hicks 10/7/33.

9 By the time Hicks came to write his paper ‘Capital controversies: ancient and modern’ in 1974 he displayed an acute awareness of the issues involved in the measurement of capital, devoting the entire paper to distinguishing between materialist and fundist measures of capital. Interestingly, Hicks chose in this paper to focus on the work of Pigou, Hayek and Keynes (rather than on the Robinson-Solow *et al.* Cambridge controversies). The question of the measurement of capital has been a recurring theme in economics, from the ‘first’ capital controversies of Böhm-Bawerk and Clark to the famous Robinson-Solow *et al.* debates of the 1950s and 1960s (see Harcourt, 1972).

10 Robbins’s English translation of Wicksell’s *Lectures on Political Economy* was not published until 1934, a year after the publication of Hicks’s *The Theory of Wages*.

11 Reviews of efficiency wage theory generally do not cite Hicks’s efficiency wage models (see, for example, Rotheim 1998 and Mankiw and Romer 1994).

12 See Rotheim (1998) and Mankiw and Romer (1994) for general reviews.

13 As Petridis (1996) ably documents, the ‘Gospel of High Wages’ reflects the impact of ‘amateur economists’ from the business world, such as Brassey, on academic economic work.

14 We are perhaps moving ahead of ourselves in emphasising works in the Friedman-Phelps tradition of modern macroeconomics. Some of the best early work dedicated to the role of expectations occurred much earlier in the piece and include, of course, Keynes, the Swedish School, and Shackle’s (1952) classic, *Expectations in Economics*.

15 See Hamouda (1993) for a discussion of the development of Hicks’s dynamic analysis from the point of *The Theory of Wages* through to *Value and Capital* and beyond.

16 Needless to say we are using Hicks’s definitions of casual labour here and not a definition utilised in modern treatments or by official statistical agencies. Hicks, furthermore, was more interested in specifying those ‘trades’ that are more casual in nature and those which are more ‘regular’ in nature than in classifying an individual employee as casual or non-casual.

17 Doeringer and Piore (1971, p. 22) cite Hicks’s *The Theory of Wages* as an important early source dealing with internal labour market structures, but how influential Hicks’s work was in their development of internal labour market theory is unclear.

18 Witness again modern parallels, particularly in Akerlof’s and Yellen’s models of social custom and fair wages (see Akerlof 1984, Akerlof and Yellen 1988, 1990).

19 See Flatau (2001).

20 It is also worth mentioning Pigou’s (1908) analysis of equilibrium outcomes under bilateral monopoly.

21 In his review of the Cambridge Controversies, Harcourt (1971) consistently cites Hicks’s *The Theory of Wages* as a pivotal work within the neoclassical marginal productivity tradition. First place in terms of citation of neoclassical theorists goes, however, to Wicksell, whose work Joan Robinson focusses on in her seminal 1950s contributions. See Hamouda (1993) for subsequent developments in Hicks’s analysis of

the relationship between technological change and the distribution of income, particularly in his 1973 work *Capital and Time*.

22 See Bhaduri and Marglin (1990, 1991) for both a critical review of neoclassical real wage models of the type set out by Hicks and an alternative formulation.

23 By dynamic, Hicks is referring to a requirement that economic variables are dated, and that the time path of their evolution is specified and expectations fully incorporated. This he was doing in his 1935b article by using his weekly model. He had an essential difficulty with *The Theory of Wages* in that there is no clearly developed theory of capital.

24 The most comprehensive (other than its failure to mention Hicks's *The Theory of Wages*) of these reviews of business cycle theory is O'Brien's (1997) three-volume set. The same omission is evident when one examines how various authors treat Hicks's role in the Keynesian revolution. See, for example, the classic works of Klein (1950) and Hansen (1953), or more modern treatments which consider the Keynes and the Classics link, where references to Hicks's macroeconomic model of *The Theory of Wages* should be found, such as Ahiakpor (1998). An exception to the general indifference to Hicks's macroeconomics of *The Theory of Wages* is Hamouda (1993).

25 Hicks also mentions an international competitiveness effect. The rise in real wages will result in a decline in the competitiveness of the export and import-competing industries. This will have immediate negative effects on employment.

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