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Hicks’ *The Theory of Wages*: Its place in the history of neo-classical
distribution theory

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I. Introduction

Hicks’ *The theory of wages* was published in 1932. At the time of publication, Hicks believed that there had been little development, over the preceding thirty years, in neo-classical 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) 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 Hicks 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, p. 310-311). 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 a work 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.

This paper returns to Hicks’ *The theory of wages*. Its aim is to provide an assessment of its importance to the history of economic thought.² We pose two questions. First, did *The theory of wages* add significantly to extant neo-classical distribution theory? Did *The theory of wages* provide an important restatement of wages theory as claimed by Hicks at the time of publication of *The theory of wages* in 1932 or did it represent a relatively minor work? 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 safely leave *The theory of wages* to one side accepting a conclusion that the revolution in Hicks’ thinking occurred in 1933?

In terms of extant neo-classical distribution theory, the paper argues that Hicks’ *The theory of wages* provided for a number of important contributions including a resetting of marginal productivity theory, the introduction of the elasticity of substitution tool, contributions to the product exhaustion theorem, and the provision of a macro determination of relative factor shares. I also argue that the book does provide important precursors for developments in Hicksian theory, which were soon to follow in *Value and Capital* (Hicks 1939a). Moreover, the timing of the work (1932 missing by months both the imperfect competition revolution and the Keynesian revolution) provides for some fascinating interludes.

Section 2 of the paper considers Hicks’ treatment of marginal productivity theory in *The theory of wages*. There is, perhaps, as much interest in what Hicks brings to neo-classical distribution theory as what he didn’t in the early chapters of the book. Hicks, perhaps more than any other theorist within a broad neo-classical 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 (see also Hamouda 1993, Kennedy 1994, and Rothschild 1994). This led to the design of the elasticity of substitution tool. What he 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 brought Hicks to task for not presenting a general marginal productivity theory of distribution but it is the subtext of Shove’s critique (was imperfect competition theory all there in Marshall? What exactly was Joan Robinson’s contribution to imperfect competition theory?), which interests us as much as anything else.

Section 3 considers Hicks’ contributions to labour supply theory while Hicks’ 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 time and foresight, which provides an early precursor to the dynamic analysis that followed in arguably Hicks’ 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 working through wage effects, to organisational and legal structures in the labour market.

Section 5 considers Hicks’ contribution to the theory of trade unions, collective bargaining and strikes (see Pigou 1905, Zeuthen 1930, Shove [1933] 1989, Harsanyi 1956, Hicks 1963, Bishop 1964, Hamouda 1993, Rothschild 1994). In section 6, I examine Hicks’ work on technical change and the distribution of income. This was an area of very clear importance for the future direction of neo-classical theory. First in terms of Hicks’ ‘macro’ distribution theory where Hicks introduces the concept of the elasticity of substitution to explain relative shares and second in terms of Hicks introduction of the labour-saving capital-saving invention classification and the role of relative factor prices in affecting induced inventions of these two types as compared with that for autonomous inventions.

While the emphasis in this review is on the place of The theory of wages in neo-classical distribution theory, I briefly consider in section 7 Hicks’ contribution to pre-keynesian macroeconomic theory. Here I argue that Hicks 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 in treatments of pre-keynesian macroeconomics and in studies of the historical roots of real business cycle theory.

The conclusion provides an overall assessment of the importance of Hicks’ The theory of wages to both neo-classical theory and to Hicks’ development as an economic theorist.

II. 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 neo-classical distribution theory and may otherwise not have been expected to create difficulties. But like others before him, the discussion of the meaning of the ‘value of the marginal product of labour’ creates the interest. And it is Shove’s review of Hicks’ The theory of wages published in 1933 that is the immediate point of interest rather than Hicks’ discussion itself. Hicks’ 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’ 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. 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 indicating that the essence of the distribution theory in Joan Robinson’s *Economics of imperfect competition*, which had just come out in print, was already there in the canon. There are, therefore, several points to come out of this detour. 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 review of 1933 is that he indicates 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 the 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*’.5

Hicks himself was a little ambivalent on the relative importance of the imperfect competition gap in his book. He wrote to Robinson following the publication of her book (and their ‘recent rather surly correspondence’) to say how much he admired the book. 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.5 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 though of imperfect competition analysis generally, 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’.5 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 neo-classical distribution theory is quite clearly not in the area of imperfect competition doctrine but in terms of the role to be played in neo-classical distribution theory by the substitutability of factors of production. The emphasis on substitutability is omnipresent in *The theory of wages* and is a clear signature mark 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 labour that is, if anything, problematic as a result of individual differences. Capital appears as a homogenous malleable factor. Even more than this, Hicks drifts at will between a ‘realist’ capital concept and a funds-based approach to capital as the conditions suit and the problem at hand requires. As Rothschild (1994, p.67) comments, Hicks’ treatment of capital ‘deliberately excludes a special consideration of capital problems’.

The key assumptions of the Hicksian approach to marginal productivity theory is 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:

$$\frac{MP}{P_a} = \frac{MP}{P_b}$$

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 a traditional marginal productivity doctrine that factors are paid according to their marginal products.

Hicks also utilises the minimum cost equilibrium tool in the context of the Wicksteed product exhaustion debate (Wicksteed 1894, Jaffé ([1964]1992), Flux 1894, Walras [1926]1954, Wicksell 1893, 1900, 1901, 1902). Here he follows on from Wicksell’s insights (see Wicksell 1893, 1900, 1901, 1902) and proves, in a mathematical appendix that, on the basis of minimum costs, total product will be exhausted without recourse to a constant returns to scale assumption. The discussion reflects Hicks clear early
awareness of the work of both Walras and Wicksell (introduced to him by Robbins at the LSE).\(^8\) 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 principle 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 is indeterminate in this range. Hicks suggests, however, that the degree of indeterminateness falls significantly when we take seriously the options for substitutability available to firms. With substitution options available to firms 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.

III. Labour supply theory

We now turn from Hicks’ discussion of labour demand to that of labour supply. Hicks’ 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’ labour supply presentation is that of the emphasis, both in his labour supply chapter and throughout the work as a whole (including in the macroeconomic model of the final chapters of *The theory of wages*), on efficiency wage effects.\(^9\)

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 others) in the 1980s.\(^10\) 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’ discussion of efficiency wage is best characterised as lying squarely within this older tradition.\(^11\) Our interest in Hicks’ discussion of efficiency wage effects lies, therefore, not in their absolute novelty. Rather, it lies primarily in the fact that, like 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* represents the prime standard bearer). Interestingly, efficiency wage effects return to the cannon in the 1980s only when they were given a more formal mathematical treatment.

One interesting feature of Hicks’ efficiency wage arguments, which is not reflected in the modern efficiency wage theories (nor I think 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 neo-classical 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. At a more general level, 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.
IV. The workings of the labour market

Hicks’ 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 is a chapter, which emphasises a multiplicity of forces and reflected 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 through the 1930s. There is also an emphasis on discussing labour market questions in light of real-world firm and labour market institutional arrangements (e.g., his emphasis on regular and casual employment distinction). 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 adjustment costs and time, expectations, and uncertainty. Hicks, in his 1963 commentary, 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 time, expectations, and uncertainty) that can be viewed either as a precursor to Value and capital or as a precursor to a much later Hicks; what Collard (1993) refers to as Deep Hicks where equilibrium and change is dealt with in terms of a ‘true dynamics in historical time’.

Time is explicitly incorporated into Hicks’ theory of wages in terms of the adjustment process in labour markets. 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, or moves to alternative methods of production, which would otherwise be profitable, are suspended. In other words, adjustment costs (or transaction costs in modern parlance) 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 pattern (e.g. seasonal patterns) with 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 on unemployment. In this discussion, Hicks 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 the firm’s 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 is coming 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 when 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 (e.g., developed early on in Friedman’s consumption function) and provides an important link in his own work to the developments in dynamic analysis that were soon to take place.

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. 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 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 move by a worker to an employer located in a different region. These locational 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 employers’ 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. Again, as with much of his ‘the working of competition’ chapter, Hicks’ theories have a modern resonance to those elements of modern labour economics that emphasise firm-specific human capital, the role of the internal labour market, and the importance of transaction and adjustment costs.

Finally, in terms of social custom, Hicks places emphasis on a role for fairness. Fairness in labour market outcomes for Hicks 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 impact on the workings of the market and the productivity of individual workers. He suggests, in 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. There is nothing new in Hicks’ analytical framework in this area that does not appear in Pigou’s earlier analysis. What is interesting, however, is that Hicks suggests that exploitation is not a major problem experienced by employees in the labour market. And here he stands apart from both Pigou and, of course, Joan Robinson.

V. Trade Unions, strike activity and wages

In The theory of wages Hicks presents a model of wages that takes into account strike activity. He cites no references and we must presume that the development of the model is original. Hicks’ model of wage outcomes in the presence of unions, who are prepared to take strike action, is based on two forces. The first force is reflected in the ‘employer’s concession curve’. 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 employers would be prepared to concede in the absence of trade union action. It then rises as the expected duration of the strike increases. To determine a point on the employers’ concession curve, take a point on the horizontal axis (the duration of the industrial stoppage) and find the expected cost of the stoppage to the employer. Then for this cost, determine that wage at which the expected labour cost of the concession and the expected cost of the stoppage to the employer are just equalised. The concession curve is bounded 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, 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 unions’ resistance curve starts at some unspecified level. The longer the expected duration of the strike, the greater is both the loss of income and 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 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. On the basis of the expected duration of the strike (and each sides’ knowledge of the other side’s relevant curve), employers and unions may negotiate a settlement. If they do not, then a strike may proceed. At this point, the dynamics 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’ 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 impact on wage offers in the presence of strike activity and which specifies a deterministic wage solution. 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; namely 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 a deal of truth in this remark. This is certainly one area where Hicks’ contributions have perhaps been given a little too much emphasis (and Pigou’s 1905 model, perhaps not enough).

Pigou’s model 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 between the employer and the union. The locus of wage bargains 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. Pigou’s analysis of equilibrium outcomes under bilateral monopoly is also relevant to this model (Pigou 1908). 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, it does not produce a final deterministic solution. This is a function that Zeuthen’s model performs. 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.

VI. Technical change, growth and distribution

The clearest advances in what might be called the pure theory element of Hicks The theory of wages occurs 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 neo-classical 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 the question: what is the effect on the real incomes (‘absolute shares’ in the terminology adopted by Hicks) 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’ (p117). 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* to follow. The framework is grounded entirely on economic actors reacting to relative price signals and to relative marginal product movements. 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’ 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).

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. First, inventions may be ‘labour-saving’ (they increase the marginal product of capital more than they do labour), ‘capital-saving’ (they increase the marginal product of labour more than capital), or ‘neutral’ (the invention does not impact on the ratio of the marginal products).

What type of invention do we see and why? Hicks distinguishes between 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 provided the basis for much future work in the economic growth literature. While Pigou (1920) had previously made distinctions between various forms of technical progress these distinctions were not linked, as in Hicks, to a structured neoclassical substitution framework.

**VII. 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 microeconomics 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 its 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 the general theory. Looking much further forward, however, the importance of the model is that it provides a clear precursor to real business cycle with its total, absolute emphasis on substitution possibilities in reaction to relative price changes as the driver of the macroeconomy. Hicks was soon to disown the chapter in one of his first clearly dynamic papers ‘Wages and interest: the dynamic problem’ but not at that stage (1935) on the grounds of being superseded by Keynes but more so for what he saw was instances of faulty logic and its lack of a clearly specified dynamic framework. Despite this withdrawal of these two chapters by Hicks it remains odd that reviews of business cycle theory and macroeconomic theory prior to Keynes do not reference Hicks’ *The theory of wages*. Rather the emphasis is on Hicks 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’ 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’ 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 price. There is only a hint in the concluding stages of the two chapters that a strict quantity theory approach is not appropriate.

Hicks’ analysis of a policy to sustain a real wage above its equilibrium is broken into two stages. The first stage is a ‘short-run’ analysis assuming ‘stationarity’ i.e., no change in secular forces referred to as inventions, the accumulation of capital, and foreign trade influences. 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 impacts on the economy. There are three main channels (each taking a considerable period of time to work their way through), which we will concentrate on. The first is the most innocuous for Hicks. 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 are damaging for unemployment.

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 to capital ratios will face higher relative cost pressures than industries with low labour intensity. Profit rates will decline in labour intensive industries relative to labour intensive industries. The relative price signal is for resources to move from industries (and methods of production) with a relatively high labour to 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 effects the choice made in terms 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 production areas with a relatively high pre-existing labour to 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’ long-run analysis. The decline in the funds available for investment will further reduce the ability of firms to employ labour. Hicks takes the view that there are possibilities 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’. A second reason why the outlook is bleak for a return to good outcomes is that of the impact of faulty anticipation. To begin with firms anticipate the 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’ story for unemployment outcomes? Hicks mentions two possible ways out (other than, of course, a change to wages policy itself). First, there may well be a rise in inventions (but these are likely to be labour-saving inventions). Second, there may be important labour supply effects. The efficiency wage argument is used. The rise in real wages results in efficiency gains but Hicks does not put full store in these efficiency wage effects to fully offset the negative outcomes. In essence, Hicks argues that a policy of setting real wages above the competitive level is likely in net terms to produce harm.
VII. Conclusion

We may now return to the theme of this brief retrospective. How significant was *The theory of wages* in the history of neo-classical distribution theory and in Hicks’ 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 neo-classical theory are scattered throughout the work. In *The theory of wages*, Hicks resets marginal productivity theory, introduces 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 still been influential in the development of labour market and trade union theory.

Second, elements of the book provide important precursors for developments in Hicksian theory, which were soon to follow in *Value and capital* (Hicks 1939a). 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 transaction cost economics), to much of Hicks’ discussion of the workings of the labour market. Interestingly, it is this part of *The theory of wages* which Hicks was to let go of 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’ 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 neo-classical 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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1 Wicksteed’s An essay in 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 neo-classical 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 The major contemporaneous review of Hicks’ The theory of wages was that of Shove ([1933]1989) who largely dismissed the work. More recent (and neutral) presentations of the work are given in Rothschild (1994) and Hamouda (1993).

3 Shove ([1933]1989), for good measure, makes a number of further criticisms of Hicks’ work, including, most importantly, the question of how does one define and measure capital, and the macroeconomic importance of monetary factors, but it is his attack on the imperfect competition issue that most interests us here. On Hicks’ The Theory of Wages and capital see Hamouda (1993) and Kennedy (1994). On the latter issue see Hamouda (1993) and Rothschild (1994).


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

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

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

8 Robbins’ English translation of Wicksell’s Lectures on political economy was not published until 1934, a year after the publication of Hicks’ The theory of wages.

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

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.


By dynamic, Hicks is referring to a requirement that economic variables are dated, 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.

The most comprehensive (other than its failure to mention Hick’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’ 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’ macroeconomic model of *The theory of wages* should be found, such as Ahlakpor (1998). An exception to the general indifference to Hicks’ macroeconomics of *The theory of wages* is Hamouda (1993).

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 which will be exacerbated by interest rate responses to an exchange rate reaction to follow.