Some Reflections on the 'Pigou-Robinson' Theory of Exploitation

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1 Introduction

Neoclassical exploitation theory is typically dated to Pigou's 1920 work, *The Economics of Welfare* (*EW*), the last edition of which was published in 1932. Joan Robinson's *The Economics of Imperfect Competition* (*EIC*), published in 1933, is recognised as the key subsequent reference.[1] Rather than being presented as separate models of exploitation within a broad neoclassical tradition, the *EW* and *EIC* treatments of exploitation are often meshed together in such a way that Robinson's work appears as a linear extension of Pigou's analysis or is indistinguishable from it. The term 'Pigovian exploitation', for example, is utilised to describe an amalgam composed of Pigou's definition of exploitation and Robinson's discussion of the distinction between monopolistic exploitation and monopsonistic exploitation.

In certain respects it is not difficult to understand the reasons why the two works have been linked together. In her retrospective of her life's work, Robinson indicates that although *EIC* was 'inspired by a hint from Sraffa, [it] was mainly influenced by Professor Pigou' (Robinson 1978, p.ix). In terms of her discussion of exploitation itself in *EIC*, Robinson adopts Pigou's definition of exploitation — exploitation results when workers are 'paid less than the value which their marginal net product has to the firms which employ them' — and maintains the Pigovian position that exploitation is incompatible with long-period competitive equilibrium.[2]

Notwithstanding these obvious points of connection, the view that the Robinson treatment of exploitation represents some sort of linear extension of Pigou's work fails to recognise that the *EW* and *EIC* treatments are a generation apart and represent quite different ways of modelling exploitation. Despite the fact that the much referred to fourth edition of *EW* was published in 1932, a year prior to *EIC*, Pigou's treatment of exploitation reads best as a recounting of his first major work, *Principles and Methods of Industrial Peace,* published in 1905, supplemented by updated institutional material relating to the introduction of minimum wage legislation. *Principles and Methods of Industrial Peace* reflects Marshallian wage theory but includes an extended discussion of a bargaining model of wage outcomes influenced strongly by Edgeworth. The key feature of Pigou's model is that, other than in the case of free competition, wages fall within a band and are indeterminate in that band. Robinson's work, in contrast, is an altogether different kind of treatment, reflecting the application of her deterministic marginalist theory of firm behaviour to the issue of exploitation.

This paper contains four sets of reflections connected to the 'Pigou-Robinson' theory of exploitation. The first, covered in section 2, is concerned with highlighting the important theoretical differences between the *EW* and *EIC* analyses of exploitation.[3] The second theme of the paper relates to methodological differences between Pigou and Robinson in their respective treatments of exploitation. Robinson's mode of presentation deviates markedly from the Pigovian ideal, a point Pigou was keen to emphasise in his correspondence with Robinson leading up to the publication of *EIC*. Pigou's discussion of exploitation in *EW* combines analysis with realism and a discussion of current and possible policy regimes and follows Marshall's dictum of 'hiding the machinery'.[4] Robinson's *EIC* is within the modern 'analytical' neoclassical tradition where conclusions are derived in a deductive fashion from a set of prior assumptions and where technique is brought to the forefront.[5] These methodological and stylistic issues are covered in section 3 of the paper.

In addition to a comparative critique of the two halves of the 'Pigou-Robinson' theory of exploitation, this paper also considers, as a third reflection, an interesting question in Robinsonian biography. Feiwel (1987, p.54) argues that 'in later years ... [Robinson] was fond of stressing how delighted she was to have shown that wages do not equal the marginal productivity of labour. Whether or not this was one of her chief objectives at the time is not now easily disentangled from time-distorted perspectives'. Harcourt (1995, p.1230) suggests that Robinson's subsequent claim that the principal result of *EIC* was to 'throw doubt on the marginal productivity theory of distribution, destroying the equality of the real wage with the marginal product .... is hindsight history'.

What light do the published evidence — including *EIC* and her other publications of the period — and the archival sources shed on these questions? The best conclusion that can be drawn from the archival sources (principally the Joan Robinson and Richard Kahn collections at King's College and the Austin Robinson collection at the Marshall Library), and from the structure of *EIC* itself, is that *EIC* began as an adventure in pure theory. Put simply, Robinson was initially concerned with writing a *marginalist* theory of market imperfection. Armed with Charles Gifford's (a student of Austin Robinson) marginal revenue curve, Joan Robinson and Richard Kahn set about developing the box of tools that became the basis for standard neoclassical imperfect market theory for generations to come. The archival sources do not suggest that Robinson was motivated by a concern for exploitation theory in the early stages of writing *EIC* nor that she was concerned with throwing doubt on first-generation marginal productivity results (of the Clark and Wicksteed variety). (Of course, we cannot go from the absence of clear archival or other evidence of motivation of this kind to a strong conclusion that such a motivation did not in fact exist. We do not keep records of everything that sways us and, even if we do, there is no guarantee that these records will survive to the public archive point.)

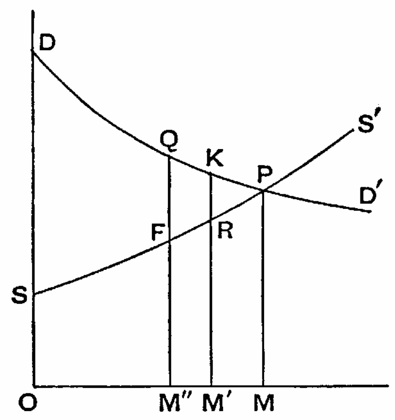
Whatever the nature of the archival evidence, the evidence from *EIC* and other published sources is very clear. It cannot be a coincidence that the area in which she chose to apply her box of tools most decisively was that of the exploitation of *labour* (accounting for three chapters of *EIC*). Nor can it be a coincidence that Robinson arrives, with little qualification, at the damning conclusion that an absence of perfect elasticity of firm-specific commodity demand or the supply of labour leads necessarily to the exploitation of labour. There are numerous references in *EIC*, in the three chapters specifically on exploitation and elsewhere, to the fact that wages will not equate to the value of marginal net products other than in the case of perfectly competitive input and output markets. Not content with setting out the arguments concerning the prevalence and importance of exploitation in *EIC*, Robinson utilised her *EIC* analysis in an important concurrent critique of Wicksteed's (1894) marginal productivity theory of distribution (Robinson 1933b, 1934a, 1934b). And, while the archival sources tell us little about the specific development of the theory of exploitation in *EIC*, they do provide tantalising allusions to the fact that Robinson, at the final stages of writing the book, recognised that she not only had re-set the theory of value but also had used that theory to make strong welfare judgements. Section 4 of the paper, therefore, considers the question of whether or not Robinson, in later life, over-emphasised the importance of the results on exploitation for the development of the *EIC* project.

The paper closes with a final reflection, a postscript: whatever happened to the neoclassical theory of exploitation?

2 Pigou and Robinson on exploitation

The first edition of *EW* was published in 1920; the fourth in 1932. Though substantial revisions were made to other parts of *EW* over this period, those sections which related to the theory of exploitation were left largely intact. But to appreciate where the foundations of the Pigovian analysis of exploitation lie, we need to go further back in time; namely, to Pigou's pre-war writings. Indeed, a close inspection of Pigou's first major work, *Principles and Methods of Industrial Peace,* published in 1905, suggests that Pigou's 1920 *EW* analysis of exploitation is framed within a theoretical apparatus developed in *Principles and Methods of Industrial Peace* and referred to in the precursor to *EW*, *Wealth and Welfare,* published in 1912. This means that the Pigovian tool box used to examine exploitation in *EW* is largely to be found in his earliest major work, published a generation prior to the appearance of *EIC*. A comparative analysis of the two halves of the so-called 'Pigou-Robinson' theory of exploitation is, therefore, largely an inter-generational one.

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). To clarify the meaning of Pigovian exploitation, consider the figure below reproduced from *EW*. DD′ is the employers' demand curve for labour. SS′ is the workers' supply curve. Under free competition, the equilibrium wage is given by PM. Exploitation is defined by Pigou as the payment to workers of a wage less than the value of their marginal net products. If, say, the wage paid by employers is RM′ (at OM′ units of labour), then workers are being exploited, since RM′ falls below KM′. The degree of exploitation is then KM′ less RM′, i.e., KR. Pigou's 'degree of exploitation' measure should be distinguished from Pigou's related concept of 'unfairness', which measures the difference between the free competition wage (PM) and the wage paid (RM′). (The wage difference PM *less* RM′ could conceivably be denoted as an alternative measure of the degree of exploitation if we wished to treat the free competition equilibrium wage as the yardstick rather than the demand price.)



It is natural to ask what determines the degree of exploitation. Pigou answers this question in *EW* by reference to his 1905 model of wage outcomes set out in precise form in an appendix to *Principles and Methods of Industrial Peace* (to which a young Keynes contributed). That model contained two key constituent elements. The first was the 'settlement locus', which gives the range of wage rates that workers and employers wish to bargain over. The second was the 'range of practicable bargains' which adjusts the settlement locus to account for the costs of the bargaining process itself.

Consider a market in which free competition does not prevail. In this sort of market, for Pigou as for many of his contemporaries, the wage is *indeterminate*. Pigou suggests that the highest possible wage that workers (*acting as a group*) wish to be paid is given by that point on the employers' demand curve for labour which provides the highest utility to workers (taken as a group). This provides the highest wage rate on the settlement locus. Workers would not push the wage too high because this would result in too high a loss in employment. Correspondingly, the lower limit to the settlement locus is given by the point on the workers' supply curve of labour that gives the highest utility to employers. To the settlement locus, Pigou, in *Principles and Methods of Industrial Peace*, adds a role for the costs of using industrial action to achieve a desired wage outcome together with expectations concerning the likely result from industrial action. These costs and expectations determine the minimum wages that workers would accept rather than undertake industrial action; employers have similar 'sticking points'. The range of practicable bargains (or the arbitration locus) is then given by employers' and workers' sticking points. These sticking points lie within the settlement locus. Bargaining strength is both affected by the elasticities of demand and supply and affects the perceived costs of undertaking industrial action. It also acts as an additional force on final wage outcomes.

To return to Pigou's *EW* treatment of exploitation, the range of practicable bargains may be given by the wage range between QM′′ and RM′. If, as suggested above, RM′ is actually paid, then workers are receiving a wage at the lowest point in the range of practicable bargains. It is apparent that, since exploitation is linked to the underlying demand and supply curves for labour, the degree of exploitation must depend on the size of the demand and supply elasticities. This fact is fully understood by Pigou in both *EW* and his earlier *Principles and Methods of Industrial Peace* treatment. Given the underlying bargaining framework adopted, the degree of exploitation will also depend on the perceived costs of industrial disputation, anticipated wage outcomes and bargaining strength.

The range of indeterminateness framework adopted in *Principles and Methods of Industrial Peace* and again in his discussion of exploitation in *EW* relies heavily on Edgeworth, but the role of the free competition wage in thinking about unfairness also reflects a Marshallian 'normal' wage influence. For Marshall, the normal wage acted as a yardstick for a 'fair' wage. The normal wage is determined by the free workings of supply and demand. It provides one benchmark against which actual wage outcomes should be judged and, therefore, the basis for interference in the labour market. If workers receive a wage less than the free competition wage (both an unfair wage and an exploitative wage, according to Pigou's criteria), wages should be increased. Such a move would, for Pigou, raise the National Dividend. On the other hand, when workers receive low but fair wages, interference in the market reduces the National Dividend. Pigou was, therefore, opposed to proposals to implement 'living wages' which had been prominent in the immediate pre-war period (e.g. Snowden 1912). Instead, Pigou accepted, in *Wealth and Welfare* (and later in *EW*), a broader 'Minimum Conditions' program.[6] Minimum conditions were to be achieved largely via government expenditure programs. Pigou's support for poverty alleviation programs left him less exposed to charges of a lack of proper concern for the position of the working poor when making his attacks on the living wage.

One final significant component of Pigou's *EW* discussion of exploitation, which again had its antecedents in *Principles and Methods of Industrial Peace* and was heavily influenced by Marshall, is the link between wages and efficiency (Marshall's 'biological analogies'). When workers receive high wages, this produces positive efficiency effects and hence, all other things being equal, increases the value of the marginal net product. Correspondingly, workers who are exploited and thereby receive lower wages will be less productive than if they received fair wages. This fall in productivity then lowers their marginal net product to the firm. As a result, wages will fall even further. What Pigou introduces into his analysis of exploitation by the insertion of these efficiency wage considerations are the Marshallian forces of cumulative causation. Last period's exploitative wage outcome affects this period's productivity, which then lowers the base for next period's exploitation and what will be observed as next period's 'fair wage'.

What is evident in this overview of the *EW* framework is not only the extent to which it relied on tools developed a generation previously (which themselves find their heritage in Edgeworth and Marshall) but also the multiplicity of tools employed. This gives the *EW* treatment of exploitation a certain richness and texture. In hindsight, of course, the most remarkable feature of the Pigovian exploitation analysis does not relate to the tools he used but to those he did not. The 1920s had seen a series of major controversies focussing on the theory of firm and market processes to which Pigou himself contributed (e.g., 'empty economic boxes', marginal supply relations, and the *Economic Journal* representative firm symposium). Yet Pigou's *EW* treatment of exploitation ignored these debates. It was Robinson who recast the theory of the firm and then decisively centred the theory of exploitation within that new framework.

As is well known, Robinson, in *EIC*, extended the theory of the firm to account for imperfection across both input and output markets. In particular, Robinson used her new marginalist toolbox to determine and evaluate (in terms of the degree of exploitation) wage outcomes when either firms in the product market face less than perfectly elastic demand for their product or firms face less than perfectly elastic supply of labour, or both.

Three chapters of *EIC* (25 - 27) are devoted to the theory of exploitation. The first two (25 and 26) refer to exploitation when a single industry is considered, while chapter 27 is concerned with the case of exploitation in a 'world of monopolies' (all commodities are produced by monopolies). Although Robinson at times refers to the exploitation of 'factors', the only specific factor mentioned is labour. For example, the definition of exploitation adopted is: 'a group of workers are being exploited when their wage is less than the marginal physical product that they are producing, valued at the price at which it is being sold' (Robinson 1933, p.283). The possibility of reverse exploitation (workers exploiting employers) is not mentioned, which is consistent with Pigou's emphasis on the exploitation of labour in *EW* (although in Pigou's case he does refer, in passing, to the possibility of reverse exploitation).

In *EIC,* Robinson moves quickly to make the distinction between her approach to exploitation and that of her predecessors (namely, Pigou). She suggests:

> It is commonly said that exploitation (the payment to labour of less than its proper wage) arises from the unequal bargaining strength of employers and employed, and it can be remedied by the action of trade unions, or of the State which places the workers upon an equality in bargaining with the employers. Bargaining strength, as we shall find, is important in many cases, but the fundamental cause of exploitation will be found to be the lack of perfect elasticity in the supply of labour or in the demand for commodities (Robinson 1933, p.281).

While Robinson is clearly wrong in thinking that extant exploitation theory revolved only around a bargaining strength model, it is certainly true that Robinson provided a sharp alternative perspective on exploitation. Most importantly, Robinson significantly expanded the domain over which exploitation may apply by allowing for the possibility of exploitation as a result of imperfect competition in either the product market or the factor market. This generalisation of the theory of exploitation compares with the Pigovian model, which applies to a specific structure; namely, that of workers acting in combination in the input market against employers. Moreover, Robinson's model provides clearly deterministic solutions to wage outcomes in other than perfectly competitive markets, as against the Pigovian model, which is of a range of indeterminateness in wages when free competition does not prevail. This means that Robinson provides a unique solution to the determination of the degree of exploitation in imperfect markets, which Pigou does not. In addition, Robinson's theory of price discrimination provides a richer discussion of exploitation outcomes so that the degree of exploitation can be examined for both price-discriminating firms and non-discriminating firms.

Robinson's model of the labour market is well known. Firms determine the employment of labour by setting employment at the point where the marginal revenue product of labour (or marginal physical productivity multiplied by marginal revenue) is just equal to the marginal cost of employing the next unit of labour. This formula applies regardless of whether the product or factor markets are perfect or imperfect. As such the wage is deterministic and so too the degree of exploitation.

In the case of imperfection in the output market (but no imperfection in the input market), the marginal revenue product of labour may be set equal to the wage but marginal revenue is less than price. Hence exploitation exists because the wage paid is less than the value of the marginal product (or price times the marginal product). Increasing wages is not the solution to the problem of exploitation. It would result in unemployment and exploitation at the higher wage. The only remedy available is the control of prices or removing the source of market imperfection. Hence Robinson attaches some importance to the intervention of the State to affect exploitative outcomes. (Robinson argues that the removal of imperfections in the output market may eliminate exploitation but actually reduce the wage paid to workers, as the price of output will have fallen and marginal physical product may fall. Workers will be paid the value of their marginal product, but that wage may be lower than the former exploitative wage.)

In the case of an imperfectly competitive input market, the supply of labour is not perfectly elastic; the extreme case is that of monopsony. Again, the employment of labour will occur at a point where the marginal cost of labour is equal to marginal revenue product. But the wage set will equal the (lower) supply price of the amount of labour employed, as the marginal cost curve will deviate from the average cost curve. Again, eliminating the imperfection in the input market may remove the exploitation of labour. An imposed minimum wage or the application of trade union power may also eliminate this cause of exploitative wages.

As part of a more general critique of the neoclassical method, Robinson later highlighted perceived weaknesses in the framework adopted in *EIC*. However, she remained committed to the negative strong points of the book (Robinson 1964, 1969). These were that, *within* the orthodox framework, she had shown that the exploitation of labour is endemic within modern economies as a result of the prevalence of monopolistic and monopsonistic elements (Robinson 1969, p.xii); and there is an important role in cases of monopsonistic exploitation for trade unions to raise wages to bring the labour market more closely into line with the competitive ideal (Robinson 1964, p.243).

To summarise: the analyses of Pigou and Robinson with regard to exploitation are a generation apart. That of Pigou reflects a pre-war analytical framework heavily reliant on Edgeworth and Marshall in which a range of different tools are applied to examine the causes and consequences of exploitation. Despite the adoption of Pigou's definition of exploitation and the explicit application of her new set of tools to Pigovian welfare issues, Robinson's treatment of exploitation is radically different from Pigou's. First, it is centred in a single self-contained profit-maximising firm model applied in a variety of market contexts. Second, Robinson's model provides deterministic solutions to the degree of exploitation. Third, as market imperfections in *either* the product *or* the factor market can lead to exploitation, Robinson expanded significantly the domain within which exploitation could occur.

3 Style

Robinson derives her major propositions on the basis of strict deduction from the underlying assumptions used. This is the analytical style, and *EIC* is to be seen as an important early example of this style. The machinery (or at least the geometry) is not hidden but is made available for all to see.

Pigou's text is more difficult to characterise. We have alluded to the key analytical devices which Pigou utilises to develop truths concerning exploitation. Clearly, the machinery is not completely hidden. But in accordance with the Marshallian style guide the analytics, and particularly the mathematical grounding of these analytics, are partially suppressed. Diagrams and mathematical analyses are invariably presented in footnotes and appendixes. Indeed, the detailed mathematical appendix on the settlement and arbitration loci set out in the appendix to *Principles and Method of Industrial Peace* is presented in *EW* in a very much abridged form, with only one relevant diagram (itself included in the appendix in later editions of *EW*) and none of the relevant mathematics.

Interestingly, in his correspondence with Robinson in the lead-up to the publication of *EIC*, Pigou makes pointed reference to the style of *EI*C.[7]

> 'Suggestions for next opus. This one having been all about machinery, opus II should be about more substantial real problems, in your handling of which the machinery, while kept in the background, should prove its worth in doing the job!'[8]

He also makes reference to the over-use of geometry. He suggests at one point, for example, in a letter to Richard Kahn, that it would have been more helpful if the 'main propositions [of *EIC*] had been set out in an appendix in algebra, which would have been very much shorter. But that's a matter of taste.'[9]

However, the question of a divergence of style (or method?) goes beyond an emphasis or otherwise on machinery. What we see in Pigou is constant allusion to the emerging empirical literature on wage outcomes and standards of living undertaken by Bowley, Tawney, Rowntree and others. It is, of course, difficult to know whether the cited empirical literature actually informed the views that Pigou arrived at concerning exploitation or whether it was used to buttress positions previously arrived at, but it does provide some institutional and historical context for the reader to understand better those views. Moreover, *EW* contains detailed discussion of the relevant legislative environment both in Britain and elsewhere (Australia, New Zealand). In particular, Pigou displays a comprehensive knowledge of the application of both the 1909 Trades Boards Act and of minimum wage legislation which came later. While *EIC* also makes frequent reference to policy, these references are very much of the 'policy implications' form rather than detailed presentation of specific policy proposals or critical analysis of existing policy regimes.

4 The Importance of Exploitation to 'The Economics of Imperfect Competition'

Looking back on her life's work, Robinson was very critical of the static neoclassical framework adopted in *EIC*. However, she remained attached to her results concerning exploitation. In the preface to the second edition of *EIC*, Robinson indicated that:

> what was for me the main point, I succeeded in proving within the framework of the orthodox theory, that it is not true that wages are normally equal to the value of the marginal product of labour (Robinson 1969, p.xii).

She is even more forthright in her 1977 'Reminiscences' when contrasting hers and Chamberlin's work :

> I had been very well pleased to refute the orthodox theory of wages, which had stuck in my gizzard as a student, while Chamberlin refused to admit that his argument damaged the image of the market producing the optimum allocation of given resources between alternative uses. This ideological difference underlay an otherwise unnecessary controversy (Robinson 1978, p.x).

As noted in the introduction to this paper, both Feiwel and Harcourt suggest that these much later views on the relative importance of exploitation to the *EIC* project were mildly time-distorted. How important, then, was the theory of exploitation to Robinson *at the time* she was engaged in developing her ideas and writing and publishing *EIC*?

An answer to this question requires the examination of both archival sources and published material. The three key archival collections are those of Joan Robinson and Richard Kahn held at the Archive Centre, King's College, Cambridge, and the Austin Robinson papers at the Faculty of Economics and Politics, University of Cambridge.[10] These sources provide no grounds for believing that Robinson was led to start the *EIC* project and develop the box of tools found there because she wanted to refute the orthodox theory of wages. Rather, the strong impression gained from reading the relevant papers is that, in the early period of the development of *EIC*, she was entirely engrossed in the new monopoly-based theory of the firm and the related set of marginalist techniques.

Included in an envelope inscribed by Robinson 'Early Stages of Imperfect Competition' is an undated manuscript entitled 'Analysis of Monopoly' and annotated by Richard Kahn and Austin Robinson.[11] The manuscript contains a detailed analysis of the four cost curves (marginal and average cost, including and excluding rent), the marginal and average revenue curves, monopoly value, the monopoly buyer case, and optimal output in the presence of externalities. The analysis is largely geometric and mirrors corresponding treatments provided in *EIC*. For our purposes, what is important is the absence of any reference to exploitation. A comparison of this manuscript with *EIC* suggests that the order of material presented in *EIC* probably corresponds roughly to the actual development of ideas — recall in this context that Robinson's analysis of exploitation is located at the end of the text.

Subsequent references to exploitation in the archival papers are limited. A letter from Gerald Shove to Robinson (JVR vii/Shove) dated 19 December 1931 includes a brief discussion of Shove's views on exploitation, which are offered in response to a query from Robinson. (The original note from Robinson was presumably destroyed by Shove.)[12] In what appears as the first definitive outline of *EIC*, Robinson indicates, in an undated letter to Dennis Robertson (Kahn Papers (hereafter RFK), The Archive Centre, King's College, Cambridge, 16/1), that she is planning to write a chapter on 'Buyers Monopoly and Exploitation of Labour' (Chapter 8 in a list of 15 chapters).[13] The letter from Robinson indicates that chapters on marginal and average curves, rent, and monopoly under increasing and decreasing returns, were well progressed. Subsequent outlines reveal an increasing interest in exploitation. An undated outline in Robinson's handwriting held in Kahn's papers lists a separate chapter for 'Exploitation' (chapter 17) immediately following a chapter on 'Socially Desirable Output' (RFK, 16/1). In a letter to Kahn dated 31 March (1932?) Robinson notes that she had 'understood tho' not written exploitation due to market imperfection'.[14]

While archival sources suggest that it was interest in the development of the tool box which dominated the early stages of the writing of *EIC*, the question of the importance of the issue of exploitation to the *final* stages of the project remains open. We have already seen that early outlines of the contents of *EIC* did not provide a prominent role for the discussion of exploitation. However, the published version of *EIC* contains three chapters on exploitation. By implication, Robinson's examination of exploitation must have formed a critical component of the final stages of writing. In a remarkable letter from Joan Robinson to Austin Robinson (held in the Austin Robinson collection at the Marshall Library) dated 11 October (1932), Robinson says:

> I have found out what my book is about. It was quite a sudden revelation which I only had yesterday. What I have been and gone and done is what Piero said must be done, in his famous article. I have rewritten the whole theory of value beginning with the firm as a monopolist. I used to think I was providing tools for some genius in the future to use and all this time I have done the job myself. It's all there already, but there's a great deal of rearrangement and change of emphasis which may take time.[15]

No direct reference is made to the issue of exploitation in the letter. What is clear, however, is that in the final stages of *EIC*, Robinson moved well away from her earlier interest in the development of tools and towards a view that she had not only developed a comprehensive coherent analytical framework but that she had also applied that framework herself to important policy questions. As the exploitation of labour represents perhaps the key application of the framework in the final published form of *EIC,* we are probably safe in assuming that her work on exploitation was seen by her at the time of the publication of the book as of fundamental importance.

Further support for the view that the *EIC* results on exploitation were of considerable contemporaneous importance to Robinson is provided by her concurrent interest in Wicksteed's marginal productivity theory of distribution.[16] Robinson published a review in the June 1933 number of the *Economic Journal* of the London School of Economics' reprint of Wicksteed's *The Co-ordination of the Laws of Distribution* (Wicksteed 1932). In this paper she used her analysis of imperfect competition not only to criticise Wicksteed's model but also to severely attack Hicks' discussion in his *Theory of Wages* on the exhaustion of the product. She suggests in regard to Wicksteed that he 'was feeling his way towards a proof that unless competition is perfect the factors do not receive the value of their marginal product as wages. It was to avoid this difficulty that he took refuge in the assumption of perfect competition' (Robinson 1933, p.304). Robinson goes on to remark that 'however clumsy his attempt to solve the problem of distribution under imperfect competition may be, the fact that he realised its importance makes his point of view more sympathetic to a modern reader than that of Mr Hicks, who contents himself with remarking that the "further consideration of this point would lead us too far into the more arid regions of higher general theory; its relevance to the theory of distribution is remote"'.

Robinson followed up her review of Wicksteed with a full paper published in the *Economic Journal* in 1934 entitled 'Euler's Theorem and the Problem of Distribution'. Here she provided a detailed discussion of the ways in which a marginal productivity theory of distribution must be altered in conditions of imperfect competition and monopoly. It seems implausible to think, therefore, that, without a recognition of the importance of her *EIC* results on exploitation nor a driving interest in dispensing with a perfect competition-based marginal productivity theory of distribution, Robinson would have considered writing her two Wicksteed papers. In short, we should simply accept Robinson's reminiscences of the importance of the *EIC* exploitation results at face value.

5 Postscript

Kaldor (1934), in his review of *EIC,* suggested that 'of all Mrs. Robinson's results, unquestionably the most valuable are to be found in Books VII-IX, which deal with the extension of the marginal-productivity theory of distribution to monopoloid situations.'[17] Kaldor was not the only contemporary reader to recognise the importance of Robinson's exploitation analysis. In a letter to Robinson dated 10 July 1933, Hicks indicates that *EIC* had cleared up for him a confusion about the nature of exploitation (JVR vii/Hicks). He suggests that he is now much clearer on the distinction between an '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'. In a letter to Robinson on 6 October 1933, Harrod (JVR vii/Harrod) refers to the fact that he had withdrawn a note about collective bargaining from the *Economic Journal* on the grounds that 'it was superseded or made unnecessary' by *EIC*.[18] Paul Douglas, in his correspondence with Robinson in early 1935 (JVR vii/Douglas), suggests that the introduction of the marginal revenue curve greatly alters the discussion of the problem of distribution. Douglas goes on to add that if he were re-writing his *The Theory of Wages* he would need to add a chapter, based on *EIC,* on the effect of monopoly and of imperfect competition on the shares of the factors.

While Robinson's exploitation analysis was met with considerable contemporaneous interest, it received a negative reception from Chamberlin (1934, 1936, 1937), who argued that under monopolistic competition *all* factors are exploited by profit-maximising firms. If this is so then the particular emphasis on the exploitation of labour is unjustified: 'the search for an exploiter appears as a misdirected effort arising out of the extension of a competitive criterion of exploitation into a field where it is rendered inappropriate by the presence of monopoly' (Chamberlin 1937, p.580).[19] As she had done previously, when Chamberlin's book, *Monopolistic Competition*, was published, Robinson took a keen private interest in Chamberlin's work (as the letters between her and Kahn reveal) but did not engage publicly in debate. A copy of Chamberlin's 1937 article 'Monopolistic or Imperfect Competition?' was sent to Kaldor, who responded that he would write a reply.[20] Robinson suggests in a letter to Kaldor (held in the Kaldor collection at the Archive Centre, King's College), dated 17 November 1937, that:

> I think Chamberlin's trouble (apart from the pique which is so painfully obvious) is that he is alarmed at finding the anti-laissez-faire implications of his own analysis (Kaldor (NK) 3/30/177).

Her comments in her letter to Kaldor about the *laissez-faire* implications of imperfect competition analysis simply reflect her published views on the matter, as set out in the 1933-4 series of papers on distribution reviewed above. Whatever the formative influences on *EIC*, there can be no doubt that Robinson emphasised the anti-*laissez-faire* message of her work in the immediate post-*EIC* period. Her concurrent involvement in the development of the *General Theory* simply re-enforced this message: 'Modern developments in academic theory, forced by modern developments in economic life — the analysis of monopoly and the analysis of unemployment — have shattered the structure of orthodox doctrine and destroyed the complacency with which economists were wont to view the workings of *laissez-faire* capitalism' (Robinson 1942, p.xxii).

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Notes

1 Any complete review of neoclassical exploitation theory would also make reference to the analysis of exploitation contained in Dobb's (1928) *Wages* and Hicks' (1932) *The Theory of Wages*.

2 The presumption that under perfect competition workers cannot be exploited is a central tenet of neoclassical thought on the issue. Lange (1934-1935), in referring to the Pigou and Robinson analyses of exploitation, was quick to point out that 'for the Socialist the worker is exploited even if he gets the full value of the marginal product'. This is because there still remains, in the competitive market, a flow of income to the owners of capital. As Lange puts it : 'The Marxian definition of exploitation is derived from contrasting the personal distribution of income in a capitalist economy (irrespective of whether monopolistic or competitive) with that in an "*einfache Warenproduktion*" in which the worker owns his means of production'. See Elster (1978) for a more detailed discussion of the distinction between the (classical) Marxian approach to exploitation and the neoclassical.

3 Despite the continued relevance of the Pigou and Robinson exploitation analyses to applied labour research (see Persky and Tsang 1974; Medoff 1976; Jones and Walsh 1978; and Machin, Manning and Wood 1993) and the attention given by historians of economic thought to both Pigovian welfare analysis and to the imperfect competition revolution, a detailed exploration of the origins of neoclassical exploitation theory has yet to be undertaken. The aim of this paper is to help fill this gap in our knowledge. Elsewhere, I have examined the important links between 'first-generation' neoclassical wage theory and Pigou's treatment of exploitation, focussing on the links between Pigou's theory of exploitation and Marshall's fair wages analysis; see Flatau (1997).

4 So much so that Pigou's diagrammatic presentation of exploitation — which most clearly illustrates the demand and supply 'machinery' lying behind the textual analysis — is included in a footnote in the first edition of *EW* and then removed to an appendix in later editions. Interestingly, Pigou himself markedly and purposefully deviated from the 'Pigovian ideal' style in his *Theory of Unemployment*, published in 1933.

5 On Robinson, *EIC* and method see Shackle (1967), Bishop (1989), Feiwel (1987), Harcourt (1986, 1990a, 1990b, 1995), Loasby (1991), Marcuzzo (1994) and Pasinetti (1987).

6 The key difference between Pigou and the Fabians on the minimum conditions program was that Pigou did not accept that a uniform national minimum wage should be part of a minimum conditions package.

7 This correspondence is held at the Archive Centre, King's College, Cambridge (see Joan Robinson collection, hereafter JVR, vii/Pigou). Pigou provided detailed notes on a draft of *EIC* but these notes refer to the underlying structure of Robinson's model rather than her treatment of exploitation.

8 JVR vii / Pigou leaf 7.

9 JVR vii / Pigou leaf 30a. It is clear from the archival sources that these remarks are directed only to stylistic concerns and not the content of *EIC,* for Pigou prefaces them by suggesting that 'I think Mrs R's [Robinson's] book's a very fine concentrated intellectual effort' (JVR vii/Pigou leaf 30a).

10 The Austin Robinson collection at the Marshall Library is currently in the process of being catalogued. Marcuzzo (1996) utilises the Joan Robinson and Kahn papers to good effect to compare *EIC* with Kahn's King's College Fellowship dissertation on the economics of the short period.

11 JVR, i/3/2, Archive Centre, King's College, Cambridge.

12 The letters between Shove and Robinson leading up to the publication of *EIC* are sometimes acrimonious. The tension between Shove and Robinson resulted in part from Shove's suggestion that Robinson's treatment of diminishing returns was similar to his own (e.g. Shove to Robinson, 17 June 1932, JVR vii/Shove leaf 17). In the foreword to *EIC*, Robinson provides a fulsome acknowledgement: 'Mr. Shove's articles form the basis of my treatment of rent and of the four cost curves' (*EIC*, p.xiii).
13 The book outline contains a reference to a Mathematical Appendix to be written by Richard Kahn. Robinson also asks Robertson whether he might write a preface for the book. She suggests that a preface from Robertson might increase the chances of the book finding a publisher (clearly nothing came of this).
14 RFK 13/90/I: letter of 31 March.
15 In a subsequent letter to Austin Robinson dated 16 October (1932) she suggests that 'you and Kahn and I have been teaching each other economics intensively these two years but it was I who saw the great light and it is my book.'
16 The interest in Wicksteed was probably due to Keynes who, Robinson notes in a letter to Kahn dated 8 March 1933, had been reading Wicksteed and Clark and no doubt passed on a copy of Wicksteed's *The Co-ordination of the Laws of Distribution* to Robinson to review for the *Economic Journal* (RFK 13/90/I).
17 Kaldor points out in his 1934 review that monopsonistic exploitation leads to inefficiency in the use of resources, while monopolistic exploitation does not. The letters from Kaldor to Robinson held in the Archive Centre at King's College Cambridge reveal a difference of view between Robinson and Kaldor regarding Kaldor's treatment of the difference between the two forms of exploitation, which led Kaldor to provide a detailed proof of the thesis (see JVR vii/Kaldor: letter dated 17 August 1934; the proof, to my knowledge, remains unpublished).
18 Harrod's paper 'A Note on Collective Bargaining', is included in a forthcoming book on Harrod's papers and correspondence to be edited by Daniele Besomi (see Harrod [1932] forthcoming). I wish to thank Daniele Besomi for drawing Harrod's work to my attention and providing notification of the copyright owners for unpublished Harrod and Hicks material.
19 See Bloom (1940) and Bloom and Belfer (1948) for further developments of the Chamberlin critique.
20 See JVR vii/Kaldor and Kaldor 3/30/177. Kaldor's response to Chamberlin's 1937 article is set out in Kaldor (1938).

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