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Bread and steel: Harcourt on the economic surplus, employment and distribution in two-sector economies

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Abstract. The present paper is set out to examine the place of Geoff Harcourt's 1965 "Two-sector model of the distribution of income and the level of employment in the short run " in his research agenda, as well as its original historical context and fate. That pioneer model articulated how the production of the potential economic surplus in the consumption goods sector, and its realization as actual surplus through aggregate demand coming from investment in the capital goods sector decided, together with the mark-up in the consumption sector, the level of employment and the distribution of income. The connections between Harcourt's model and M. Kalecki's similar approach are also tackled in the paper, together with the reasons for the relative little impact of that model in the literature despite its initial success at a Cambridge seminar at the time.

Key words. Harcourt, two-sector, economic surplus, mark-up, employment

JEL classification. B22, E11, E12

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… [T]he significance of organizing things around the notion of a surplus so that you look at the sphere of production on the one hand and the sphere of distribution and exchange on the other. You get the potential surplus out of the sphere of production, and then whether you realize it or not depends upon the Kaleckian-Keynesian forces of effective demand and on the distribution of income; so you have to take a position on pricing. That's my approach precisely. (G.C Harcourt in Mongiovi 2001: 515)

1. An ambitious project

In the academic year 1963-64, while in Cambridge on study leave from the University of Adelaide, the Australian economist Geoff Harcourt wrote and presented a paper at the Piero Sraffa's and Robin Marris's research student's seminar, attended by Joan Robinson, Robert Solow, Kenneth Arrow, James Meade, Piero Sraffa and Richard Kahn, among others. Entitled "A two-sector model of the distribution of income and the level of employment in the short run", the paper presentation "made a splash" and prompted positive immediate reactions, which led soon after to J. Robinson asking Harcourt to apply for a lecturing post then offered in the Faculty of Economics and Politics – which he took until 1966 when he returned to Adelaide – and R. Kahn inviting him to join the famous Cambridge "secret seminar" (Harcourt 1992: 4; 2019: 101; Mongiovi 2001: 507).

A revised version of the "Two-sector model" came out shortly after in the leading Australian journal *Economic Record* (Harcourt 1965).[1] Harcourt (2001a: 13; [1999] 2012: 42) would describe it as his "most ambitious" and also his "favourite" theoretical paper. He claimed that his model showed how the traditional Keynesian short-period equilibrium analysis could be adapted to include price-making and choice of technique decisions, so that both the distribution of income and the level of employment could be simultaneously determined (Harcourt 1965: 97). However, he would also express his disappointment that – in contrast with the immediate success of the paper Cambridge presentation – it apparently "vanished, virtually without

[1] Reprinted in Harcourt (1982), Sardoni (1992) – from which page citations are made in the present paper – and in Kerr and Harcourt (2002), volume IV, part 6 ("Joan Robinson and capital theory"), chapter 111.

trace" after its 1965 publication, contrary to Harcourt's high expectations (Harcourt 1992:4; 2019: 102; see also Boianovsky 2022a).

The present paper is set out to examine the place of the 1965 "Two-sector model" in Harcourt's research agenda, as well as its original historical context and fate. As Harcourt (2001a: 13) recalled, the 1965 article "made explicit the structure of my approach to understanding the processes at work in modern economics from then on." His "Two-sector model" articulated how the production of the potential economic surplus in the consumption goods sector, and its realization as actual surplus (profits) through aggregate demand coming from investment in the capital goods sector decided, together with the mark-up in the consumption sector, the level of employment and the distribution of income. It combined elements from both the classical and the Keynesian (and, as Harcourt would later realize, Kaleckian) frameworks, as expressed in the epigraph above.

Spurred by Robert Solow's 1963 Marshall Lectures (see Harcourt 2001a: 13) on "Effective demand and capital theory" – organized around the Cambridge theories of distribution and growth associated to Robinson and Kaldor – Harcourt wrote his "Two-sector" paper, in many respects a veritable challenge to then prevailing economic growth models of both Cambridge and neo-classical persuasions. Harcourt (1965: 83) charged current growth models for overlooking or treating lightly some key features of modern industrial economies. Those included: (i) the fact that industrial firms are usually price-makers rather than price-takers; (ii) the non-malleability of capital goods once installed; (iii) the endogenous determination of money-wages through collective bargaining as influenced by effective demand and inflation; and (iv) the view of the economic process as a "succession of short periods" affected by what happened in the past and by expectations about future short periods.

Harcourt's 1965 short-run two-sector economy consisted of a consumption good sector producing a homogeneous commodity ("bread"), and an investment goods sector producing another homogeneous commodity ("steel"), both measured in physical units.[2] Moreover, Harcourt (1965: 84), along Cambridge-classical lines, assumed that workers spend all their incomes and capitalists save all theirs. The model grew out of his formal criticism of the full-employment assumption of

[2] As he would recollect, the 1965 model attempted to "avoid the obstacles surrounding the theory of accumulation and capital emanating from Joan Robinson's and Piero Sraffa's writings" (Harcourt 2019: 101)

Nicholas Kaldor's (1955-56, 1957) theory of distribution and growth, when Harcourt (1963a: 72-78) introduced his two-sector setup for the first time. Harcourt (1963a) deployed his new "bread and steel" short-run model to argue that the working of Kaldor's distributive mechanism overtime under full employment equilibrium growth required peculiar specific kinds of pricing behaviour by (oligopolistic) firms in each of the two sectors which were unlikely to happen – even more so under Kaldor's assumption of a single representative firm.[3]

As put by Harcourt (1998: 10), his 1965 model turned the 1963 negative criticism into a positive formulation of the *simultaneous* determination of income distribution and employment, with no full-employment requirement. In Harcourt's 1965 setting, there was no place for Kaldor's (1955-56) distinction between the short-period Keynesian multiplier of income changes on one side and another multiplier applied to the distribution of long-period full employment income on the other, operating via price changes. Indeed, Harcourt's "bread and steel" model derived expressions for the multiplier that took into account changes in both prices and output. He showed formally that, under the model assumptions, a lower mark-up in the bread sector brings down the *share* of profits in output, but does not affect the *total* flow of profits, which is decided by the level of investment (Harcourt 1965: 95). Harcourt was apparently unaware that Michal Kalecki had obtained a similar result in his 1943 *Studies in Economic Dynamics*, although in a less formal background (see section 3 below).

The 1965 two-sector model "brought together the influences of Keynes, Joan Robinson, Nicky Kaldor, Piero Sraffa, Wilf Salter, Eric Russell and, *as I now realize, most of all, Michal Kalecki,* on the structure of my thought" (Harcourt 2019: 101; italics added; see also Harcourt 2018: 4). It was only a decade or so after publishing his 1965 article that Harcourt became fully aware of similar ideas in Kalecki, especially concerning price-setting and the focus on the succession of short periods as the proper domain of economic dynamics. Apart from the 1963 critique of Kaldor, Harcourt wrote two other pieces that played significant roles in the elaboration of his "Two-sector model", both in connection with the notion of the economic surplus (see section 2 below). Harcourt's (1963b) formal treatment of Robinson's (1956, chapter 8

[3] See also Harcourt (2006: 6-11, 115-118) on Kaldor's model of growth and distribution, and Harcourt (2002) on his "battle" with Kaldor in Cambridge in the early 1960s.

on "Accumulation with constant technique") approach to the determination of the surplus – prompted by Johnson (1962) – came out around the same time as his two joint pieces with Vincent Massaro on Sraffa (1960), with emphasis on Sraffa's analytical restatement of the classical notion of surplus and its associated concept of "subsystems" (Harcourt and Massaro 1964a, b).

Harcourt (2001a: 13) listed "Sraffa's emphasis on production interdependence" as one of the backbones of his 1965 two-sector model. Such interdependence may be captured by the division of the economy into two sectors, the simplest macroeconomic model able to preserve essential features of the production system such as the heterogeneity of commodities and circular interdependence in the production "of commodities by commodities". Both commodities produced in Harcourt's model (bread and steel) are "basic" in Sraffa's sense, that is, they enter directly or indirectly – as in the case of "bread" consumed by workers – in the production of every other commodity in the economy.

Historically, Marx's reproduction schemes have been regarded as the first division of the structure of production into aggregative sectors (see e.g. Harris 1978, chapter 10). Despite its influence on Kalecki and a few others, it was only after Evsey Domar's (1957) rediscovered and formally restated G. Feldman's 1920s Russian model of Marx's reproduction scheme, with corrections of some of its analytical problems, that it became more popular among economists (see Robinson 1966: 60; Boianovsky 2022b), especially in connection with the burgeoning economic planning and optimal growth literature of the 1960s. One of the main assumptions of the Feldman-Domar mathematical formulation – shared by Harcourt – was that capital goods are specific to their own sectors, in the sense that they cannot be shifted to other sectors once installed. That implied, as Harcourt (1965: 83, 85) observed, that substitution between labour and capital could only take place as marginal additions to the existing capital stocks, which fitted well Harcourt's (e.g. 2001a: 13) adoption of Salter's (1960) approach to the choice of technique.

Has Harcourt's 1965 "Two-sector model" vanished from the economic literature landscape, as he regretted a few times? And, if so, why and in what extent? Those questions are tackled in section 4, which documents how that article has been on occasion acknowledged as the first post-Keynesian (or rather post-Kaleckian, with mark-up pricing) two-sector model ever. It is shown that, despite Harcourt's (1965) early contribution, it was only after the late 1980s and the 1990s that two-sector

models of distribution and growth became part and parcel of the post-Kaleckian and post-Keynesian research agendas – featuring a distinct modelling strategy, though, as compared to Harcourt's original focus on the short-run dynamics of the actual path of the economy.

Although Harcourt referred to his "Two-sector model" and highlighted its relevance in recollections and interviews, he seldom mentioned it in his own published articles and books. His 2006 *Structure of Post-Keynesian Economics* is a case in point. It may be regarded as his definitive book exposing his long-time contributions to post-Keynesian economics and his account of the "core contributions of the [mostly Cambridge] pioneers" – as reflected in his Cambridge lectures from 1982-1998, when he retired. However, Harcourt (2006) made no reference to his 1965 "bread and steel" model. As discussed below, this may be in part explained by the increasing influence on Harcourt, after the 1970s, of Kalecki's two-sector formulation – especially as expressed through Robinson's (1977) diagrammatic illustration. This apparently led Harcourt to "replace", in his 2006 book and in his surveys of post-Keynesian economics, his relatively complex model of 1965 for Kalecki's simpler straightforward approach to the short-run determination of income and its distribution (see Harcourt 2006: 11-15; [1982] 1985: 134-36; Harcourt 1987: 926; Hamouda and Harcourt 1988: 223-25).

2. Determining the surplus and its absorption

Whereas the role of consumer goods in Keynes's *General Theory* and in much of economics is only as final demand, in the tradition of classical political economy, von Neumann and Arthur Lewis (and to some extent Sraffa) consumption goods are also fed back into the productive process as inputs in the shape of wage goods and by that affect the size of the labour force.[4] That provided the starting-point for Harcourt's (1965) investigation of the determination of the surplus of consumption goods per unit of labour for use in the investment goods sector as wages of workers employed

[4] See Findlay's (1966) distinction between "open" and "closed" models respectively. The distinction was brought to the fore during the 1920s debates about Soviet industrialization, when Preobrazhensky assumed a "closed" model with wage goods (food) treated as inputs, and Feldman an "open" one (see also Boianovsky 2022b).

there. Given employment in the steel sector (determined by the demand for investment and the productivity of labour in that sector), the real wages in the two sectors and the productivity of labour in the production of bread, "employment in the bread sector must be sufficient to feed both the wage-earners in the steel sector and those in the bread sector itself" (Harcourt 1965: 88). By solving the model, Harcourt (1965: 91, equation 5.15) further derived the expression for employment in the bread sector as equal to the real wage bill in the steel sector divided by the difference between bread production per worker and the real wage in the bread sector.

Although Harcourt (2006) did not reference his 1965 "Two-sector model", that framework is implicit in much of his extended discussion of Robinson's (1977: 13-14) brief account of Kalecki's short period theory of distribution (Harcourt 2006: 11-15). It is noteworthy that Harcourt (2006: 15) deployed the same expression "feed" he had used in 1965 to describe aspects of the interaction between the consumption and investment sectors. The aggregate level of employment and output levels resulted from both the expenditure and production sides of capitalist interrelationships. Hence – upon pointing out that employment and output are determined by aggregate demand together with the economic surplus decided by the productivity of labour in the two sectors, the prices of consumption goods and the money-wage rate – Harcourt remarked that

> Given employment in the investment goods trade, enough units of labour must be employed in the consumption sector to 'feed', as it were, themselves and to provide enough consumption goods from the surpluses simultaneously created to 'feed' the investment goods wage-earners as well (Harcourt 2006: 15; cf. Harcourt [1998] 2001b: 319 for a similar passage).[5]

The surplus of bread per worker in the bread sector was equal to the profit margin times the productivity per worker in that sector (Harcourt 1965: 95). Harcourt's analysis of the role and determination of the economic surplus in the accumulation process built on Robinson's (1956, chapter 8) verbal discussion of the matter in one of the main chapters of her *magnum opus*. Upon discussing the

[5] From Harcourt's standpoint, the disregard of the surplus approach by leading American post-Keynesians (P. Davidson, S. Weintraub, H. Minsky) separated them from other strands of post-Keynesianism (see Harcourt 1987; Mongiovi 2001). See also Davis (1997: 450-51) on the role of the surplus concept in Harcourt's post-Keynesian framework.

determinants of the surplus, Robinson (1956: 76) stressed the two-sided relation between profits and accumulation: profits can only come about if there is a technical potential surplus in the consumption sector, but their realization depends on investment demand. The 1956 chapter elicited an attempted formalization of Robinson's treatment of the surplus determination by Johnson (1962), from the point of view of the saving aspect of accumulation. Harcourt (1963b) approached the issue from the perspective of investment (production of machines), reaching the same formula of surplus per worker put forward by Johnson. The formula indicated that the economic surplus was positively related to labour productivity in both sectors and to the productivity of machines in the consumption sector, and negatively related to the real wage rate. Harcourt (1963b) was entirely reproduced in Harcourt (2006: 16-19), without providing a reference though.

Harcourt's (1963b) results were consistent with the 1965 "bread and steel" model, but without the short-run dynamic framing of the latter. Real wages resulted from the determination of money wages in the bread and steel sectors, and of the price of bread. The money wage in the bread sector was set once a period by collective bargaining, as a function of the previous period's money wage and price of bread, changes in productivity and unemployment. That function was supposed to capture the main factors that influenced money-wages in the "real world" (Harcourt 1965: 86, 91; see equations 5.10 and 5.12 on pp. 90-91).[6] Money wage in the steel sector was also set at the beginning of the period, momentarily after the money wage in the bread sector, as a function of the current money wage of bread workers and the current demand for labour in the steel sector.

The prices of bread and steel were decided by a mark-up over their money-wage costs per unit. The mark-up in each sector varied positively with the respective past expenditures on those commodities and negatively with existing capacities (Harcourt 1965: 88-91; see equations 5.11 and 5.13 on pp. 90-91). Harcourt (1965: 86) noted the "longer-run dependence of investment demands on retained profits", a connection fully worked out later in Harcourt and Kenyon (1976). The demand for steel was a sum of the two separate demands from each sector as functions of the previous period's profits in real terms (deflated by the price of steel) (Harcourt 1965,

[6] Harcourt (1965) followed upon Champernowne's (1936) analysis that while wage-bargaining must be made in money terms, it is meant to procure a given level (and rate of increase) of *real* wages (see Harcourt 2006: 78; Boianovsky 2005).

equations 5.3 and 5.4). The choice of what machine to build for each sector – and of the labour input coefficients – depended upon Salterian "best-practice" techniques, the expected rate of profit (as a function of the realized gross rate of profit of the preceding period) and the expected money-wage in each sector (Harcourt 1965: 86 and 90; equations 5.6 to 5.8). The demand for bread was equal to the total money-wage bill in the two sectors (91, equation 5.14).

The surplus of bread per worker varied positively with the mark-up in the bread sector, whereas the demand for bread varied negatively – in both cases because of the adverse effect of a higher mark-up on real wages. Despite the increase in the surplus, the final impact of a higher mark-up on total employment, expenditure and the output of bread were negative, as Harcourt (1965: 95) showed in his discussion of the "multipliers" and as discussed further in section 4. For any given level of employment in the steel sector – as determined by the real demand for steel and the input of labour per unit of output in that sector – aggregate employment was smaller the higher was the mark-up on bread price.

Moreover, the share of total profits in national income in any short-period *t* was decided entirely by the size of the mark-ups in the two sectors, which were themselves functions of other variables from current and past periods. Writing *A* and *B* for the sizes of the mark-ups in the bread and steel sectors respectively, Harcourt (1965: 93, equation 5.23) showed, by substituting into the model equations, that the share of profits was given by the expression

$$\frac{A\,[1+B]}{1+A\,[2+B]}$$

which has positive partial derivatives in relation to the mark-ups *A* and *B*. The equation for the share of wages was therefore

$$\frac{1+A}{1+A\,[2+B]}$$

which has negative partial derivatives. The mark-ups, as mentioned above, were themselves functions of what happened in preceding periods, such as the amount of real profits, money expenditure on bread and inherited capital stocks. Technical

microeconomic conditions affected the income distribution between profits and wages only indirectly through the impact of the average productivity of labour on wages and prices. Hence, claimed Harcourt (1965: 93) regarding income distribution in his two-sector economy, "both macroeconomic and microeconomic forces are involved, but the influence of the former is predominant."

Harcourt (1983: 378) would endorse "the truth that Marx, Kalecki, Arthur Lewis and Joan Robinson, for example, have stressed, that the real wages of the investment goods workers have to be found from the surplus created by the consumption goods workers." Indeed, he appreciated Lewis's contributions to the understanding of the economic dynamics of dual economies, advanced in the 1950s, which proved to be seminal (see Boianovsky 2022a). Lewis's (1954) essay on development with "unlimited supplies of labour" also featured a two-sector model, but of a different sort. Lewis's distinction between a traditional sector and a modern capitalist one was designed to illuminate the process of capital accumulation under perfectly elastic labour supply with a given real wage determined by the average productivity of labour in the traditional sector. That was quite distinct from the working of the labour market and wage setting in Harcourt's (1965) study of a developed capitalist economy facing effective demand problems. Hence, although both Lewis's and Harcourt's two-sector models shared elements of the classical surplus concept[7] – such as the notion of consumption goods as indirect inputs – their purposes clearly differed.

3. The Kalecki puzzle

The climax of Harcourt's "Two-sector model" consisted of his discussion of the "multipliers" effects of changes in some key variables such as the mark-up or the expenditure on steel. Those differed from the usual Keynesian multiplier, as Harcourt (1965: 84, 95) pointed out, as they captured as well the effect of price changes on income distribution and demand. Moreover, Harcourt's multipliers went beyond Kaldor's separation between the income and distribution (full employment)

[7] Lewis built on that to an even larger extent, as he stressed the surplus coming from the larger productivity of the modern sector as compared to the traditional one (see Boianovsky 2019).

multipliers. If the new mark-up in the bread sector was less than that implied in the model equation, then $A_t^* < A_t$, with the following consequences:

> Real wages will be higher in both sectors, which will lead to a higher level of employment, greater output of, and expenditure on, bread, and a shift to wages in the distribution of income (*though money profits will be the same in the two situations*). (Harcourt 1965: 95; italics added)

Total profits are given by the equation $\Psi_t = \pi_t + \Pi_t = P_t I_t$, where π_t stands for profits in the bread sector (= wage bill in the steel sector), Π_t stands for profits in the steel sector, P_t is the price of steel and I_t is the sum of the demand for investment in real terms in the bread and steel sectors (Harcourt 1965, equations 5.17 to 5.19, p. 92; the notation has been changed slightly). Total money profits are, therefore, determined by the value of investment. A variation in the mark-up in the bread sector affects the share of profits in income, but not total profits, because of the impact on the demand for bread and aggregate output (in real and money terms) of the change in real wages for a given level of investment demand in steel terms. After deriving the multipliers effects of a lower mark-up in the bread sector on employment, expenditure and bread output, Harcourt (1965: 95) worked out the expression for the impact on the distribution of income, determined by a multiplier of

$$\frac{\Psi_t}{\pi_t} 1/[1 + A_t\ (2 + \ B_t)]\ [1 + A_t^*\ (2 + B_t)]$$

That was followed by an investigation of the multiplier effects of an increase in the expenditure on steel, accompanied by a higher money-wage rate in that sector. Upon deriving expressions for the positive employment and expenditure multipliers, Harcourt (1965: 96) pointed out that "There is however no change in the distribution of income" between wages and profits. Hence, whereas changes in the mark-up in the bread sector affect income distribution but not total money profits, changes in investment affect money profits but not income distribution. That was the essence of what Harcourt (2001b: 13) would call his 1965 "macroeconomic theory of distribution". Microeconomic factors were also involved, though, especially through the size of the mark-up and, indirectly, the inputs of labour per unit of output (Harcourt 1965: 93; see above). Moreover, the "bread and steel" model featured no

mechanisms able to bring about full employment, "except by accident" (Harcourt 1965: 97). That was related to the absence of money and the rate of interest from the model.[8]

It is noteworthy that Kalecki was not mentioned in Harcourt's "Two-sector model" article, despite the fact that the Polish economist had put forward similar results concerning the determination of profits and their share in income, combining imperfect competition and effective demand. According to Kalecki (1942: 260), an increase in the mark-up, because of a higher "degree of monopoly" brings about a reduction in real wages and in the demand for consumption goods. Gross margins increase, "but the national output falls just so much that, as a result, the total real profits remain the same. However great the margin of profits on an unit of output, the capitalists cannot make more in total profits than they consume and invest."

Harcourt (1969a: 396, n. 43) would mention Kalecki in a published article for the first time in his well-known survey of the capital debates, with a reference to Kalecki as a source of "inspiration" for Cambridge macroeconomic theories of distribution and growth (see also Harcourt 1972: 9 on Kalecki's "pioneering work" on distribution and pricing). By the time he produced the "Two-sector model" Kalecki's theory of profits was not widely discussed in Cambridge. Even Joan Robinson, despite her repeated positive references to Kalecki's effective demand theory since the 1950s, would only grasp his theory of profits in the late 1960s, shortly before Kalecki's death in 1971, culminating in her 1977 tribute. Hence, Robinson probably did not call attention to Kalecki's contributions at Harcourt's Cambridge "Two-sector" seminar. Harcourt (1965) reached his main results, concerning the determinants of total profits and their share in income, independently of Kalecki (1942). It was only later that he realized the extensive similarities between his "Two-sector model" and Kalecki's framework, as mentioned above.

Harcourt often expressed his bewilderment at the fact that Kaldor did not take notice in the 1950s of Kalecki's prior discussion of how both employment and the distribution of income were determined simultaneously, without any constraint to be at full employment (see e.g. Harcourt 2001a: 9). However, Harcourt (1965) had not

[8] "A major item missing [from the 1965 model] was an explicit role for Keynes's monetary insights and the determination of the rate of interest, always something of a mystery to me" (Harcourt 2001a: 13). Harcourt (1969b) would discuss the rate of interest in his version of the IS-LM model.

realized Kalecki's contribution himself while working on his "bread and steel" model. Kaldor (1955-56) did discuss Kalecki's "'degree of monopoly' theory of distribution", only to dismiss it as "tautological".[9] That might help to explain why Harcourt (1965) refrained from referring to Kalecki. Indeed, Cambridge economists (Keynes included) had been critical of several aspects of Kalecki's economics since the period he spent doing research at Cambridge in the late 1930s, mostly because his theoretical framework did not fit key features of Marshallian microeconomics (Toporowski 2013, chapter 14; Marcuzzo 2020). That would change gradually in the post-war period, especially in the 1960s, when Robinson looked more carefully at Kalecki's integration of micro and macroeconomics.

The scholarship about Kalecki's contributions picked up in the 1970s, particularly after the publication of Feiwel's (1975) massive study, which Harcourt (1977c) reviewed positively. The turning point in Harcourt's appreciation for Kalecki's economics was the publication – under Harcourt's initiative as co-editor of the *Australian Economic Papers* – of the translation of Kalecki's 1936 review of Keynes's *General Theory*, which, in Harcourt's view, established Kalecki's credentials as co-discoverer of the ideas made famous by Keynes's book (Targetti. and B. Kinda-Hass 1982; see Harcourt 2006: 21-25). In the 1980s he supervised Peter Kriesler's Cambridge PhD thesis about Kalecki's microanalysis, published in 1987 with a foreword by Harcourt. Kriesler (1987: 89-90, 95-96) stressed Kalecki's "basic insights" that the key to distribution lied in the pricing decisions of capitalists and the notion that distribution is not influenced by changes in output. Basic insights, rather than formal models, provided the foundations of Kalecki's study of short-run employment and distribution, argued Kriesler. Harcourt (1965), on the other hand, attempted to deliver a formal structure to investigate those issues, based on behavioural functions, technical relations and the aggregate-demand/aggregate-supply framework.

It was only *after* Harcourt (1965) that Robinson advanced for the first time the claim that "the most important point in Kalecki's analysis is the demonstration that the overall rate of profit cannot be raised by raising the degree of monopoly. A higher proportion of profit margins leads to lower real wages and lower utilization of plant, not to a higher overall total profit" (Robinson 1969: 89). One may wonder whether

[9] See Kriesler (1987, appendix) for a defense of Kalecki from that charge, made also by others besides Kaldor.

Robinson was influenced by Harcourt (1965) as she went back to re-read Kalecki at the time. Robinson (1964) did not refer to that "most important point" in her contribution to the Kalecki Festschrift. Robinson (1977: 13-14) would add that there were "two elements in Kalecki's analysis". The share of profits was determined by the profit margins, whereas total profits flow depended upon capitalists' expenditures on investment and consumption. She illustrated the argument by means of a diagram (Robinson 1977: 14) regarded by Harcourt (2006: 11) a "simple, clever and illuminating" representation of the main results of Kalecki's distribution and employment model, on which "generations of Cambridge undergraduates were brought up" by Robinson and then, later, by Harcourt himself.

[INSERT FIGURE 1 AROUND HERE; NOW AT THE END OF THE PAPER]

Harcourt (2006: 12) reproduced the diagram in the section "Kalecki's 'degree of monopoly' theory", right after the section on "Kaldor's 'Keynesian' theory". Those were the first sections of chapter 2 on "Post-Keynesian macroeconomic theories of distribution". Kalecki's approach was presented as a preferable alternative to Kaldor's, for the reasons discussed above. Given the background of Harcourt (1965), one would expect him to mention the 1965 article in the section following his critical presentation of Kaldor (which continues on pp. 115-18 of that book, with extended references to Harcourt 1963a, but not to the "Two-sector model"). Instead, Harcourt (2006: 11-14) built on Robinson's Kaleckian diagram, enlarged by some elements of his own "Two-sector model", to convey the short-run determination of the income level and distribution, without ever referring to the 1965 essay. In that sense, Robinson's version of Kalecki "replaced" Harcourt's (1965) more complex model in his Cambridge lectures from 1982-1998 and in his 2006 book. Likewise, Robinson's 1977 diagram was central to Harcourt's ([1982] 1985: 135) and Hamouda and Harcourt's (1988: 223) surveys of post-Keynesian economics. As in Harcourt (1965), wages were entirely consumed and profits saved.

Instead of Robinson's (1977) half-page discussion, Harcourt's (2006) detailed presentation of the ideas surrounding the diagram (Figure 1) extended to four pages. In Figure 1 prices and costs are measured on the vertical axis and employment in the consumption and investment sectors on the horizontal axis. Under the assumption of a reverse L-shaped marginal cost curve (assumed also in Harcourt 1965: 85), if all

quantities are measured in terms of the amount of labour that is needed to produce one unit of the consumption goods, price and cost (as well as price per unit of labour and the wage rate) may be measured on the vertical axis (Harcourt 2006: 11-12). The vertical line in the diagram indicates full employment and full capacity in the consumption sector, with *OB* capacity working. *BC* workers are absorbed in the production of capital goods, given investment demand. The money-wage is given at *w0*, unlike Harcourt's (1965) model. The wage bill in the investment sector is accordingly measured by *BCDE*. The rectangular hyperbola with asymptotes starting at *w* subtends the area *BCDE*, the profits in the consumption sector. Under free competition, prices of consumer goods would tend to $0p_c$ with a profit margin of wp_c at full capacity in that sector (but not necessarily full employment altogether). However, if there is imperfect competition and the mark-up is wp_m instead, employment and output in the consumption sector is measured by *0A*. Total profits are the same (= investment) and the real wage is lower in the second situation. Unlike Harcourt (1965), the prices of the investment goods and the profits of the investment sector are not explicitly determined in Robinson's Kaleckian model. Apart from the absence of Harcourt (1965) from his 2006 book, other factors have contributed to his relatively reduced readership, as discussed next.

4. The fate of the 1965 "Two-sector model"

Harcourt's (1965) Kaleckian results concerning the independence of the profit share from output were not written in stone. Indeed, while making an effort to formalize Robinson's (1965: 30) remark – that a higher investment brings about a higher level of employment *and* a higher profit share – Harcourt (1972: 201-14) put forward a one-sector model with given money-wages, in which the mark-up was a positive function of planned investment *I*, according to the equation $p = \lambda I$, where p is the price index and λ is a constant. The impact of investment on income distribution and consumption demand implied, as Harcourt (1972: 212) showed, that the multiplier could be *negative* (see also Harris 1974: 147-49). That differed from Harcourt (1965) as much as Robinson's 1965 remarks differed from her later statements about Kalecki. Harcourt (2006: 27-28) discussed carefully his 1972 model – which linked

up with his emphasis on retained profits as a source of financing of investment – in contrast with the conspicuous absence of his 1965 model from that book. Again, whereas Harcourt and Kenyon (1976) well-known paper about the determination of the mark-up refer to Harcourt's (1972: 201-14) model, the "Two-sector" essay goes unmentioned.

Harcourt's rare self-references to his 1965 essay came out – apart from his autobiographical pieces – mostly in connection with methodological issues. In view of the results of the capital debates, Harcourt (1976: 156) concluded that "we therefore have to start on a different tack." One possibility was "the 'here and now' of the Keynesian-Kaleckian short period and its developments which have been neglected in the literature on the theory of growth." He had in mind his own "bread and steel" model, as indicated by his reference to that model as an "early example" of dividing time into sequential short-periods á la Kalecki (Harcourt 1977d: 359, n. 12).[10] Harcourt (1965: 84) expected that, by linking "the happenings of one short period both to those preceding it and to those following it, it is hoped eventually to say something about longer periods of time as well." Shortly after the publication of his "Two-sector model", he asked, to that effect, J. Mirrlees and then J. Stiglitz (who was visiting Cambridge at the time) to collaborate with him in extending the model to a sequence of short periods. They both declined (Harcourt 1998: 8). He never gave up his plans to collaborate with a mathematically gifted economist in extending the "bread and steel model (see Harcourt 2018: 4-5).

In conversation with John King (1995), Harcourt blamed the outlet (*The Economic Record*) for what he perceived as the disappointing readership of his "Two-sector model".

> If they ever read [the 1965 paper], they'd recognise it as really a pioneering article in Post Keynesian economics. But because it was in the [*Economic*] *Record* it virtually vanished without a trace … When people are referred to it they suddenly realize what was in it. (Harcourt in King 1995: 173)

A few authors – e.g. Eichner and Kregel (1975: 1307, n. 35); Harck (1981: 3); Dixon (1988: 247); Dutt (1988: 136, n. 2); Arestis (1996: 125) – did acknowledge

[10] Harcourt (1977b: 15-16) was aware that such device had a long pedigree in economics, going back to the Swedes and Hicks.

Harcourt's (1965) early contribution to post-Keynesian economics.[11] The 1965 *ER* piece did not really "vanish", but it is hard to disagree that it "was mostly overlooked" (Milmow 2017: 170). The *Economic Record* was created in 1925 as the flagship journal of the Economic Society of Australia and New Zealand. Average citations of *ER* articles in the mid 1960s were around 5 (see Millmow and Tuck 2013: 121). As put by Butlin (1966: 515), "one finds depressingly few citations in overseas journals or books of theoretical contributions in the *Record*. T.W. Swan is the most obvious exception." Trevor Swan's (1956) classic *ER* paper on growth had 2316 Google Scholar citations as in December 2011 (Millmow and Tuck 2013. According to Millmow and Tuck, the 25 most cited papers published in *ER* over 1960-2009, using Google Scholar data, varied from 227 to 82 citations. Harcourt (1965) is not on that list, but it probably got close. Measured in September 2022, the "Two-sector model" article had 89 citations, as compared to 254 for Harcourt and Kenyon (1976). Of course, Harcourt's (1969a) *JEL* survey is by far his most cited paper (even more so if the 1972 book version is taken into account).[12]

Harcourt was disappointed that his "bread and steel" paper did not effectively launched a post-Keynesian two-sector model research agenda along the lines he suggested. Indeed, although Harcourt's (1965) contribution, as the first two-sector model of distribution and employment with Keynesian/Kaleckian features, has been occasionally acknowledged, the canonical two-sector Keynesian-Kaleckian model is generally ascribed to Dutt (1988, 1990) and Lavoie and Ramirez-Gastón (1997), among others (see e.g. Fanti and Zamparelli. 2021). Their modelling strategy has been quite distinct from Harcourt's "bread and steel", even if they, like Harcourt, have tried to go beyond long-run equilibrium (or the steady state) in order to investigate short-run disequilibrium dynamics and convergence.

Harris (1967) put forward a two-sector model sharing several features with Harcourt (1965) – which he did not mention – such as specific capital and the role of the economic surplus. However, Harris (1967) was restricted to steady states (see also Harris 1978). Up to the late 1980s, Harcourt (1965) was the main exception to the

[11] Joan Robinson never did it, despite her quite positive reaction to Harcourt's Cambridge seminar presentation of the paper.

[12] Harcourt's decision to submit his "Two-sector model" to the *ER* – instead of to a British or an American journal – was probably influenced by his bad experience with the submission of his 1963a paper to the *Review of Economic Studies* (see Harcourt [1995] 2012).

dominance of two-sector steady state models, with its explicit attempt to examine the "actual course of the economies", but it "confined attention to the determination of employment and distribution in the short run only" (Dutt 1988: 136, n. 2; 1990: 229, n. 8). That differed from the treatment of dynamics – in the modern vintage of two-sector Kaleckian models with mark-up pricing, and in much of economics in general – as deviations from the long-run equilibrium growth path. According to Dutt (1993: 212), that went a long way explaining Harcourt's (1965) relatively reduced impact.[13] Harcourt's (1965) reduced form expressions for the multipliers – discussed above – have not been acknowledged in the literature, probably because they looked awkward when compared to traditional Keynesian multipliers.

From an Sraffian perspective – although not from the perspective of Dutt and other Kaleckian economists – Harcourt's "bread and steel" model lacked a discussion of long-run equilibrium as a result of the equalization of rates of profit across sectors (see Nell 1983). Harcourt (1972: 169, n. 1), upon summing up the distribution aspects of his "bread and steel" short-run model, now under the explicit assumption of a uniform rate of profit, remarked cryptically that "the weakest, and yet the most vital, link in this chain of reasoning is the assumption of a uniform rate of profits; for, without it, the *relative* price system appears to remain undetermined."

Harcourt's own favourite notion of economic dynamics pointed, instead, to a business cycle perspective. He felt that, had he been able to extend his "Two-sector model" as a succession of interconnected short-periods equilibria, it would have come close to tracing a process of cyclical growth, along the lines of Richard Goodwin's mathematical models and Kalecki's later suggestions that the trend (growth) and the cycle were indissolubly mixed, not determined by separate, independent factors (Harcourt 2006: 121-22). When asked what was the way forward for post-Keynesian economists, Harcourt (2011: 11) replied that they should develop Goodwin-Kalecki cyclical growth models as *the* proper way for "understanding capitalism and for putting policy around it" (see also Harcourt 2015; Harcourt and Kriesler 2013b). He perceived the "bread and steel" model as a meaningful, if unfinished, building block of that suggested research program.

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[13] "While [Harcourt's two-sector models] are fascinating because they incorporate institutional realities, behavioural conventions and complexities introduced by the passage of time, they might have received more of the attention they deserve had they been more technically elegant" (Dutt 1993: 212).

References

Arestis, P. 1996. Post-Keynesian economics: towards coherence. *Cambridge Journal of Economics*. 20: 111-35.

Arestis, P. and T. Skouras (eds.). 1985. *Post Keynesian economic theory*. Sussex: Wheatsheaf Books.

Boianovsky, M. 2005. Some Cambridge reactions to the *General Theory*: David Champernowne and Joan Robinson on full employment. *Cambridge Journal of Economics*. 29: 73-98.

Boianovsky, M. 2019. Arthur Lewis and the classical foundations of development economics. *Research in the History of Economic Thought and Methodology*. 37A: 103-43.

Boianovsky, M. 2022a. Geoffrey Colin Harcourt (1931-2021): a Cambridge economist from down under. *History of Economic Ideas*. 30: 9-44.

Boianovsky, M. 2022b. Evsey Domar and Russia. In *West-Russia-West: transfer of economic ideas*, ed. by V. Avtonomov and H. Hagemann, Cham (Switzerland): Springer.

Butlin, S.J. 1966. The hundredth Record. *Economic Record.* 42: 508-19.

Champernowne, D. G. 1936. Unemployment, Basic and Monetary: The Classical Analysis and the Keynesian. *Review of Economic Studies*. 3: 201-16.

Davis, J.B. 1997. Harcourt as a historian of economic thought. In P. Arestis, G. Palma and M. Sawyer (eds.): 444-55.

Dixon, R. 1988. Geoff Harcourt's Selected Essays: a Review Article. *Economic Analysis and Policy*. 18: 245-53.

Domar, E.D. 1957. A Soviet model of growth. In *Essays in the theory of economic growth*, pp. 223-61. New York: Oxford University Press.

Dutt, A. 1988. Convergence and equilibrium in two sector models of growth, distribution and prices. *Journal of Economics*. 48: 135-58.

Dutt, A. 1990. *Growth, distribution, and uneven development*. Cambridge: Cambridge University Press.

Dutt, A. 1993. Review of Sardoni 1992 (ed.). *Manchester School*. 61: 212-13.

Eatwell, J., M. Milgate and P. Newman (eds.). 1987. *The New Palgrave – A Dictionary of Economics*, 4 volumes. London: Macmillan.

Fanti, L. and L. Zamparelli. 2021. The paradox of thrift in a two-sector Kaleckian growth model. *Metroeconomica.* 72: 526-38.

Feiwel, G. 1975. *The intellectual capital of Michal Kalecki: a study in economic theory and policy*. Knoxville: The University of Tennessee Press.

Findlay, R. 1966. Optimal investment allocation between consumer goods and capital goods. *Economic Journal*. 76: 70-83.

Hamouda, O. and G.C. Harcourt. 1988. Post-Keynesianism: from criticism to coherence? *Bulletin of Economic Research.* 40: 1-33. As reprinted in Sardoni (ed.): 209-32.

Harck, S. 1981. The supply side in a post-Keynesian two-sector model. *Journal of Economics*. 41: 1-26.

Harcourt, G.C. 1963a. A critique of Mr Kaldor's model of income distribution and income growth. *Australian Economic Papers*. 2: 20-36. As reprinted in Sardoni (ed.): 67-82.

Harcourt, G.C. 1963b. A simple Joan Robinson model of accumulation with one technique: a comment. *Osaka Economic Papers*. 11: 24-28.

Harcourt, G.C. 1965. A two-sector model of the distribution of income and the level of employment in the short run. *Economic Record*. 41:103-17. As reprinted in C. Sardoni (ed.) 1992: 83-98.

Harcourt, G.C. 1969a. Some Cambridge controversies in the theory of capital. *Journal of Economic Literature*. 7: 369-405.

Harcourt, G.C. 1969b. A teaching model of the 'Keynesian' system. *Keio Economic Studies*. 6: 23-46.

Harcourt, G.C. 1972. *Some Cambridge controversies in the theory of capital.* Cambridge: Cambridge University Press.

Harcourt, G.C. 1976. The Cambridge controversies: old ways and new horizons – or dead-end? *Oxford Economic Papers*. 28: 25-65. As reprinted in C. Sardoni (ed.): 130-65.

Harcourt, G.C. (ed.). 1977a. *The microeconomic foundations of macroeconomics*. Proceedings of a conference held by the International Economic Association in S' Agaro, Spain. London: Macmillan.

Harcourt, G.C. 1977b. Introduction. In G.C. Harcourt, G.C. (ed.). 1977a: 1-24.

Harcourt, G.C. 1977c. Review of Feiwel (1975). *Economica*. 44: 92-94.

Harcourt, G.C. 1977d. The theoretical and social significance of the Cambridge controversies in the theory of capital: an evaluation. *Revue D'Économie Politique.* 87: 351-75.

Harcourt, G.C. 1982. *The Social Science Imperialists*. Ed. by P. Kerr. London: Routledge.

Harcourt, G.C. [1982] 1985. Post-Keynesianism: quite wrong and/or nothing new? Thames Papers in Political Economy. London: Thames Polytechnic. As reprinted in P. Arestis and T. Skouras (eds.): 125-45.

Harcourt, G.C. 1983. Kenneth Boulding: a man for all systems. *Journal of Post Keynesian Economics.* 5: 143-54. As reproduced in Sardoni (ed.), pp. 369-78.

Harcourt, G.C. 1987. Post-Keynesian economics. In J. Eatwell, M. Milgate and P. Newman (eds.), vol. 3: 924-28.

Harcourt, G.C. 1992. Introduction. In C. Sardoni (ed.): 1-10.

Harcourt, G.C. [1995] 2012. Despised and rejected. In Harcourt (2012a): 261-65. Reproduced from G.B. Shepherd (ed.). *Rejected: leading economists ponder the publication process*, chapter "G.C. Harcourt, Cambridge University". Sun Lakes, Arizona: Thomas Horton.

Harcourt, G.C. 1998. Political economy, politics and religion: intertwined and indissoluble passions. *The American Economist*. 42: 3-18.

Harcourt, G.C. [1998] 2001b. Two views on development: Austin and Joan Robinson. *Cambridge Journal of Economics*. 22: 367-77. As reprinted in Harcourt (2001b), pp. 306-22.

Harcourt, G.C. [1999] 2012. 'Horses for courses': the making of a post-Keynesian economist. In A. Hertjee (ed.): 32-69. As reprinted in Harcourt (2012): 11-51.

Harcourt, G.C. 2001a. 50 years a Keynesian. In Harcourt (2001b): 1-30.

Harcourt, G.C. 2001b. *50 years a Keynesian and other essays*. London: Palgrave.

Harcourt, G.C. 2002. Battling with Nicky. In K. Sabbagh (ed.). *A book of King's views from a Cambridge college*: 98-100. London: Third Millennium.

Harcourt, G.C. 2006. *The structure of post-Keynesian economics*. *The core contributions of the pioneers.* Cambridge: Cambridge University Press.

Harcourt, G.C. 2011. The General Theory is not a book you should read in bed! Interview with G.C. Harcourt. *European Journal of Economics and Economic Policies: Intervention*. 8: 7-12.

Harcourt, G.C. 2012. *The making of a post-Keynesian economist: Cambridge harvest*. London: Palgrave Macmillan.

Harcourt, G.C. 2015. Fusing indissolubly the cycle and the trend: Richard Goodwin's profound insight. *Cambridge Journal of Economics.* 39: 1569-78.

Harcourt, G.C. 2018. Reflections on a representative selection of my essays over the past 60 years. *History of Economics Review*. 71: 2-24.

Harcourt, G.C. 2019. Geoff Harcourt on G.C. Harcourt, as told to Ajit Sinha. In Sinha and Thomas (eds.): 99-121.

Harcourt, G.C. and P. Kenyon. 1976. Pricing and the investment decision. *Kyklos*. 29: 449-77. As reprinted in Sardoni (ed.): 48-66.

Harcourt, G.C. and P. Kriesler (eds.). 2013a. *The Oxford Handbook of Post-Keynesian Economics*, 2 vols. New York: Oxford University Press.

Harcourt, G.C. and P. Kriesler. 2013b. Introduction. In G.C. Harcourt and P. Kriesler (eds.): 1-43.

Harcourt, G.C. and V. Massaro. 1964a. A note on Mr Sraffa's subsystems. *Economic Journal*. 74: 715-22.

Harcourt, G.C. and V. Massaro. 1964b. Mr Sraffa's *Production of Commodities*. *Economic Record*. 40: 442-54.

Harris, D. 1967. Inflation, income distribution and capital accumulation in a two-sector model of growth. *Economic Journal*. 77: 814-33.

Harris, D. 1974. The price level of firms, the level of employment and distribution of income in the short run. *Australian Economic Papers*. 13: 144-51.

Harris, D. 1978. *Capital accumulation and income distribution*. Stanford: Stanford University Press.

Hertjee, A. (ed.). 1999. *The makers of modern economics*, vol. IV. Cheltenham: Elgar.

Kaldor, N. 1955-56. Alternative theories of distribution, *Review of Economic Studies*. 23: 83-100.

Kaldor, N. 1957. A model of economic growth. *Economic Journal*. 67: 591-624.

Kalecki, M. 1942. A theory of profits. *Economic Journal*. 52: 258-67.

Kerr, P., with the collaboration of G.C. Harcourt. 2002. *Joan Robinson – Critical Assessments of Leading Economists*, vol. IV. London: Routledge.

King, J.E. 1995. *Conversations with post Keynesians*. Chapter 12 (Geoff Harcourt): 168-86. London: Macmillan.

Kriesler, P. 1987. *Kalecki's microanalysis*. Cambridge: Cambridge University Press.

Lewis, W. A. 1954. Economic development with unlimited supplies of labor. *Manchester School*. 22: 139-91.

Marcuzzo, M.C. Kalecki and Cambridge. *Review of Political Economy*. 32: 500-10.

Millmow, A. 2017. *A history of Australasian economic thought*. London: Routledge.

Millmow, A. and J. Tuck. 2013. The audit we had to have: *The Economic Record*, 1960-2009. *Economic Record*. 89: 118-28.

Mongiovi, G. 2001. The Cambridge tradition in economics: an interview with G.C. Harcourt. *Review of Political Economy*. 13: 503-21.

Nell, E.J. 1983. Review of *The social science imperialists*, by G.C. Harcourt. Ed. by P. Kerr. *Journal of Economic Literature*. 21: 1495-97.

Robinson, J. 1956. *The accumulation of capital*. London: Macmillan.

Robinson, J. 1964. Kalecki and Keynes. In *Problems of economic dynamics and planning – essays in honour of Michal Kalecki*, pp. 335-42. Warsaw: PWN - Polish Scientific Publishers.

Robinson, J. 1965. Piero Sraffa and the rate of exploitation. *New Left Review*. May/June: 28-34.

Robinson, J. 1966. Economic versus political economy. *Indian Economic Review*. 3: 57-64.

Robinson, J. 1969. A further note. *Review of Economic Studies*. 36: 260-62.

Robinson, J. 1977. Michal Kalecki on the economics of capitalism. *Oxford Bulletin of Economics and Statistics*. 39: 7-18.

Salter, W. 1960. *Productivity and technical change*. Cambridge: Cambridge University Press.

Sardoni, C. (ed.). 1992. *On political economists & modern political economy – selected essays of G.C. Harcourt*. London: Routledge.

Sinha, A. and A.M. Thomas (eds.). 2019. *Pluralist economics and its history*. London: Routledge.

Sraffa, P. 1960. *Production of commodities by means of commodities: prelude to a critique of economic theory*. Cambridge: Cambridge University Press.

Swan, T. 1956. Economic growth and capital accumulation. *Economic Record*. 32: 334-61.

Targetti, F. and B. Kinda-Hass. 1982. Kalecki's review of Keynes's *General Theory*. *Australian Economic Papers*. 21: 244-60.

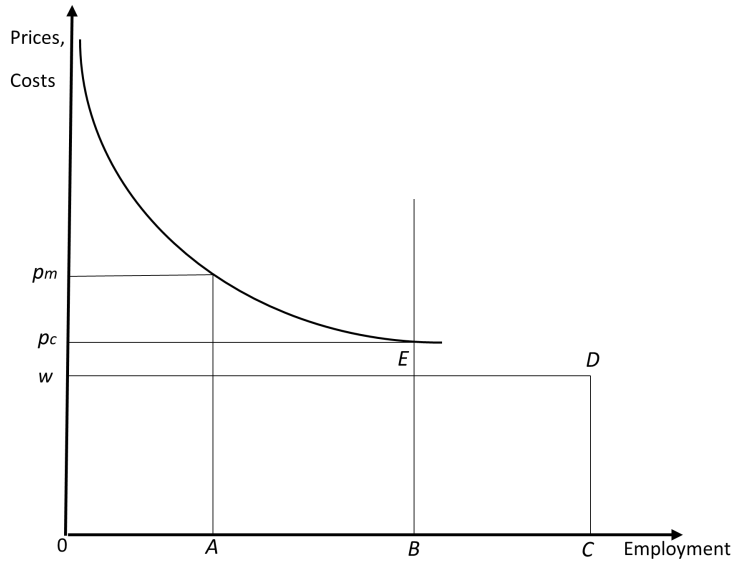

Figure 1. Joan Robinson's diagram of Kalecki's model
Source: Harcourt 2006: 12