Keynes's Appendix to Chapter 19: A Reader's Guide

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1. Introduction

In *The General Theory*, Keynes, as is well known, was concerned to accomplish two closely related tasks: to develop a new mode of thinking about the macroeconomy and to break free from the preceding "classical" mode. What exactly was the "classical" theory from which Keynes sought to escape? His critics have sometimes replied, "A straw man of his own making." I don't accept this judgment, but it must be admitted that Keynes's "classical theory" is a sort of Identikit picture, composed of elements from Smith, Ricardo, Mill, Marshall, Fisher, and Pigou, depending on the context. Among these various theorists, however, Pigou—as Keynes's Cambridge contemporary—clearly held a special place. It is Pigou who he explicitly discusses in chapter 2 on "The Postulates of the Classical Economics," and who he criticizes in detail in the appendix to chapter 19. According to Keynes, Pigou offered "the most formidable presentment" (1936, 279) of the mode of analysis he wished to attack. Indeed, Pigou had the distinction of being the only person "to write down the classical theory of unemployment precisely" (279).[1]

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1. Barens 1990 offers an interesting discussion of why Keynes eventually chose to open the argument of *The General Theory* with a critique of Pigou, rather than by means of a discussion of various different kinds of economies (barter economy, cooperative economy, and entrepreneur economy) as in earlier drafts (compare, CW 29).

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It is the thesis of this article that Keynes's critique of Pigou is fundamentally sound, despite the fact that in one respect (to be discussed presently) he got Pigou's theory wrong. Why not, one might then ask, let sleeping dogs lie? Is it not generally accepted that Keynes bested Pigou? Well, for better or worse, the dogs have already been woken up. Hutchison (1978, 190) disturbed their slumbers with his contention that the alleged inconsistency between Pigou's theory and his policy recommendations was never properly demonstrated by either Keynes or his followers; and more recently Aslanbeigui (1992) has thoroughly galvanized them with her argument that Keynes's critique missed its mark altogether, being based on a fundamental misinterpretation of Pigou's theory. I wish to dispute these claims, but not simply in the interest of re-establishing the *status quo ante*, of putting the dogs back to sleep. If, as I claim, Keynes's critique was sound despite one significant error, it may be instructive to inquire into the precise mode of operation of that critique: What was essential and what inessential in Keynes's argument? To understand more precisely the limitations of Pigou's analysis is at the same time to understand better the radical novelty of Keynes's theory.

I have chosen to organize this piece in the form of a commentary on the appendix to chapter 19 of Keynes's *General Theory*. This is because my main focus is on the merits of Keynes's critique rather than Pigou's theory as such, but also because a thorough guide to Pigou's *Theory of Unemployment* (1933) would of necessity be, like that book itself, immensely convoluted and tedious. Despite my Keynesian focus, I shall endeavor to play fair with Pigou's theory. This will involve conceding one of the main points made by Aslanbeigui (1992), although I shall maintain that this concession is finally of less significance than it initially appears.

2. Setting the Scene: Real Wages and the Real Demand for Labor

In the first two pages of the text, Keynes (1936, 272–73) gives a fair summary of the essence of Pigou's theory and shows the formal equivalence between Pigou's two-sector employment function and his own multiplier theory. Pigou, as Keynes states, derives an equilibrium level of employment from the combination of two elements, these being (a) a real rate of wages "for which the workpeople stipulate" and (b) a real demand function for labor. Let us take these elements in turn.

Determination of the Wage

As Keynes notes, Pigou talks in terms of the workers "stipulating for" a certain real wage. One might object here that it is the nominal wage that is actually decided in the course of such wage bargaining. Keynes makes it clear that Pigou recognizes this point, but at the same time regards it as unimportant: "The fact that workpeople in fact stipulate, not for a real rate of wages, but for a money-rate, is not ignored; but, in effect, it is assumed that the actual money-rate of wages divided by the price of wage-goods can be taken to measure the real rate demanded" (272). Aslanbeigui would perhaps say that Keynes should have gone further—that Pigou does not always maintain the assumption attributed to him in Keynes's last clause. Well, that may be so, but if Pigou does not in fact hold rigorously and consistently to the assumption that observed w/p represents the real wage upon which the workers are insisting, this assumption is nonetheless crucial to the coherence and determinacy of his theory (as we shall see later). Thus, to the extent that Pigou departs from this assumption, he is, so to speak, talking off the record, without the support of his own theoretical apparatus.

It may already be worth noting, however, that there is a misunderstanding lurking below the surface of this matter of the stipulated real wage. When Keynes talks of "the real wage for which the workpeople stipulate" he is thinking of this as a *schedule*, the stipulated wage being a function of the level of employment (as will become apparent on the next page of the appendix). Pigou, on the other hand, has in mind a *point value*, independent of the level of employment. The significance of this distinction will become clear shortly.

The Real Demand for Labor

Pigou's real demand function for labor demands particularly careful scrutiny. A true appreciation of the force of Keynes's critique depends, above all, on a clear understanding of this function. Pigou's economy is a two-sector construction: it comprises a wage-goods (hereinafter WG) sector and a non-wage-goods (NWG) sector. Employment in the WG sector is denoted by x and employment in the NWG sector by y. The production function in the WG sector is written as $F(x)$, and, given competitive profit-maximization, the real wage in terms of wage-goods is $F'(x)$. This real wage is assumed to be common to both sectors. It is a decreasing function of x (that is, $F''(x) < 0$) due to diminishing returns to labor in the short run, with the capital stock assumed to be more or less fixed.

Before proceeding with the logic of Pigou's analysis, I should note that for the purposes of comparison, Keynes identifies Pigou's "wage-goods" with his own "consumption goods," and Pigou's "non-wage-goods" with his own "investment goods." This identification is legitimate, since by "wage-goods" Pigou does not mean goods that are purchased *exclusively* by wage-earners. While wage-earners purchase nothing but wage-goods, non-wage-earners may also purchase these goods.[2]

Pigou (1933, 90) writes his real labor demand function thus:

$$x + y = \phi(x).$$

Keynes glosses this by saying that "the number of men employed in the wage-goods industries is a function of total employment" (1936, 273). While this is formally correct—the function in question being invertible—it would, however, better illuminate the structure of Pigou's theory to say, rather, that total employment is a function of employment in the wage-goods industries. To see why, consider the following.

Begin with a given real wage ("stipulated for by the workpeople") of, say, $F'(x_0)$. This is then associated with a profit-maximizing employment level in the WG sector of x_0, and hence with a total output of wage goods of $F(x_0)$. A portion of this output, namely $x_0F'(x_0)$, is required to meet the WG sector's wage-bill, and the remainder, $F(x_0) - x_0F'(x_0)$, constitutes what I shall call the "surplus" of the WG sector. Write K for the volume of wage-goods purchased by the non-wage-earners (compare to Pigou 1933, 92).[3] It then follows, given the assumption of a uniform real wage in terms of wage-goods across the two sectors, that NWG employment must be given by

$$y = [F(x_0) - x_0F'(x_0) - K]/F'(x_0)$$

2. In addition, Pigou notes that such goods may be exported. But it will be convenient for this discussion to ignore open-economy complications, as does Keynes. As Keynes says elsewhere (1936, 11), if the classical theory aspires to generality, it must be able to deal with the case of the closed economy.

3. One need not assume that K is a constant, but endogenizing this element (say, by making it an increasing function of total employment) would complicate the analysis without altering its essentials.

while total employment is given by

$$x + y = \phi(x) = [\mathrm{F}(x_0) - \mathrm{K}]/\mathrm{F}'(x_0).$$

Note here the assumption that $x\mathrm{F}'(x)$ and $y\mathrm{F}'(x)$ measure the absorption of wage-goods by the workers in the WG and NWG sectors, respectively, which is to say that the workers carry out no net saving. I shall maintain this assumption (Pigou's, but not Keynes's) for my purposes here.[4] Subject to this qualification, there is a formal isomorphism between the above Pigovian expressions and Keynes's own notion of the employment multiplier.[5] Keynes (1936, 273) writes the employment multiplier in Pigou's notation as $\Delta x = k'\Delta y$, which is to say that the increment to employment in the consumption-goods (or WG) sector is a multiple, k', of the increment to employment in the investment-goods (or NWG) sector. Since $\Delta(x + y) = \phi'\Delta x$, this yields the relationship[6]

$$\phi'(x) = 1 + 1/k'.$$

It should be recognized, however, that this formal equivalence conceals a fundamental economic difference. For Pigou, it is WG employment, fixed in the first instance by reference to a given value of the real wage in terms of wage-goods, that is in the driver's seat, and NWG employment must adjust to match it (that is, in such a way as to ensure the absorption of the WG surplus, after deduction of the purchases of wage-goods by non-wage-earners). For Keynes, by contrast, it is employment in the *investment-goods sector*, driven by the prospective profitability of investment as determined by the interaction of the marginal efficiency of capital schedule and the rate of interest, that is primary; while employment in the consumption-goods sector adjusts to match (in such a way as to ensure that the total output of consumption-goods is just sufficient to meet the real wage-bill of the investment-goods sector, plus purchases of consumption-goods by non-wage-earners, plus the real wage-bill of

4. Kahn and Kalecki also abstracted from workers' saving in their proto-Keynesian articles of the early 1930s (Kahn 1931; Kalecki [1933] 1971).

5. The first systematic treatment of such two-sector balance conditions—and therefore the common (unacknowledged) ancestor of Pigou's and Keynes's constructions—is found in the "reproduction schemes" of volume 2 of *Capital* (Marx [1885] 1967).

6. Actually there is a slight inconsistency on Keynes's part here. Previously, Keynes had defined the employment multiplier as "the ratio of the increment of *total* employment, which is associated with a given increment of primary employment in the investment industries" (1936, 115; emphasis added). In that case, he ought to have written, in Pigou's notation, $\Delta(x + y) = k'\Delta y$, whence $\phi'(x) = k'/(k' - 1)$.

the consumption-goods sector itself). Putting Keynes's own theory into Pigovian notation, therefore, it would be better to write

$$x + y = \phi(y).$$

Before moving on, let me stress these two points: (a) if we are given a definite point value for the stipulated real wage, $F'(x_0)$, then Pigou's theory clearly yields a determinate value for total employment; but (b) it does so only on the assumption that there will be no problem with the absorption of the WG sector's surplus, that is, that profitable employment will necessarily be found in the NWG sector for a number of workers $y = [F(x_0) - x_0F'(x_0) - K]/F'(x_0)$.

3. Keynes's Error: Pigou's Labor Supply Function

The one serious problem in Keynes's account of Pigou arises on the next page of the appendix (Keynes 1936, 274). Keynes begins by saying that Pigou assumes the supply of labor to be a function of the real wage and nothing else; and further, that as Pigou makes the real wage, $F'(x)$, a function (for a given state of productive technique) of employment in the wage-goods sector, x, alone, one may equally well express Pigou's labor supply as a function of x. So he imputes to Pigou a labor supply function $n = \chi(x)$, where n represents "the supply of labor available at a real wage $F'(x)$" (274). So far—since Keynes has not yet said anything explicit concerning the *shape* of this function—so good.

The error arises in the next paragraph, where Keynes accuses Pigou of trying to determine the level of employment from the two equations $x + y = \phi(x)$ and $n = \chi(x)$, containing the three unknowns x, y, and n. As it appears to Keynes, Pigou can do this only by imposing a third condition, $n = x + y$, hence $\phi(x) = \chi(x)$, which permits solution for x in the first instance, and then for both y and n. But this, of course, assumes full employment. Hence Keynes's judgment that Pigou's book, its title notwithstanding, does not present a "theory of unemployment" at all, but rather "a discussion of how much employment there will be, given the supply function of labor, when the conditions for full employment are satisfied" (1936, 275).

We now know this is wrong. It is unnecessary to rehearse here the textual evidence presented by Aslanbeigui (1992), who makes it quite clear that Pigou had in mind a macro labor supply schedule in the shape of a reverse L, when displayed in real-wage/employment space.[7] The vertical portion of the schedule represents an aggregate volume of labor available that is independent of the real wage, *so long as the latter reaches some required minimum*. While Pigou accepts that labor supply is elastic at the *micro* level, he reckons, in effect, that as a first approximation the income and substitution effects wash out at the macro level. The horizontal portion represents the minimum real wage that is acceptable to the workpeople at any given time (that is, that for which they are supposed to "stipulate"). This may be written formally as

$$\begin{aligned} n &= n^* \text{ for } \mathrm{w_r} \geq \mathrm{w_r^*} \text{ and} \\ n &= 0 \text{ for } \mathrm{w_r} < \mathrm{w_r^*} \end{aligned}$$

where n is the supply of labor available, n^* is a constant representing full employment, $\mathrm{w_r}$ is the real wage in terms of wage-goods, and $\mathrm{w_r^*}$ is the real wage "for which the workpeople stipulate." This means in turn that Keynes's function $n = \chi(x)$ should be written in the form

$$\begin{aligned} n &= n^* \text{ for } x \leq x^* \text{ and} \\ n &= 0 \text{ for } x > x^*, \end{aligned}$$

given that $\mathrm{w_r}$—which equals $\mathrm{F}'(x)$—is a decreasing function of x. If employment is less than full ($n < n^*$) but greater than zero—this is the condition which Pigou claims to be investigating—we have $\mathrm{w_r} = \mathrm{w_r^*}$, which fixes x by fixing $\mathrm{F}'(x)$, as explained in the previous section. Pigou is not, in fact, an equation short, so long as a specific value of $\mathrm{F}'(x)$ is given. And then, of course, unemployment is also determinate: it is given as $n^* - (x + y)$.

Two questions arise at this point: what might have been the source of Keynes's error, and what are its consequences for his critique as a whole? As for the source of error, it might be said that Pigou's function is a rather idiosyncratic one and is not spelled out (or at least not emphasized) in the text of *The Theory of Unemployment*, so it was perhaps not surprising that Keynes overlooked it and imputed to Pigou the more "standard" idea (which Keynes himself had in mind in *The General Theory*) that labor supply slopes upward with respect to the real wage.[8] After all, Ralph

7. Pigou clarified this point in a brief letter to Keynes in May 1937 (CW 14:54).

8. This is of course the labor supply function found in modern textbook presentations of the "classical" model, such as Froyen 1993 at the undergraduate level and Sargent 1979 at the graduate level.

Hawtrey, a more sympathetic reader of Pigou than Keynes, also had trouble understanding precisely what Pigou meant. Following Pigou's clarification of the reverse-L in correspondence with Keynes (see note 7 above), Hawtrey commented: "And how is any reader of the *Theory of Unemployment* to guess what Pigou has in mind, seeing that there is not a word about it from the beginning of the book to the end?" (CW 14:55). In addition, Roy Harrod, who had reviewed Pigou's book for the *Economic Journal*, did not see any problems with Keynes's critique of Pigou, which he described as "splendid" (CW 13:563).

But there is a deeper point to be made here. To understand it, we must remember that, whatever doubts he may have had later,[9] at the time of writing *The General Theory*, Keynes believed just as firmly as Pigou in what he called "the first classical postulate," namely that in competitive equilibrium the real wage equals the marginal product of labor, which is a decreasing function of employment, and hence any increase in employment is bound to be associated with a decrease in the real wage. We must also remember that Keynes believed that in the conditions of Britain in the 1930s, with two million people unemployed, a substantial increase in employment might be obtained via an expansion of aggregate demand, *despite* the accompanying fall in the real wage. He therefore regarded as "fantastically far removed from the facts" the proposition—which he ascribed to Pigou—that "*any rise in the cost of living, however moderate, relatively to the money-wage will cause the withdrawal from the labor market of a number of workers greater than that of all the existing unemployed*" (Keynes 1936, 277). This proposition holds on condition that the current level of employment represents, despite appearances, the intersection of a labor demand schedule and an upward-sloping labor supply schedule (that is, all the statistically observed unemployment is either voluntary in the ordinary sense, or frictional). But the remarkable point is that the proposition holds *a fortiori* for Pigou's own reverse-L labor supply. For if this construction is taken *au pied de la lettre*, it implies that Keynes's "rise in the cost of living, however moderate, relatively to the money-wage" will cause not merely a number greater than the current unemployed but the *entire workforce* to withdraw from the labor market. Keynes noted this point in correspondence with Hawtrey (CW 14:36–37), and, considering this implication to be "from the realistic point of view

9. These are expressed in Keynes's (1939) discussion of the empirical findings of Dunlop and Tarshis, which cast doubt on the idea of a countercyclical real wage.

. . . complete nonsense" (37), he found it sufficient reason to dismiss the idea that Pigou could possibly have meant what it appears he did in fact mean! (Although as I have noted already, Pigou does not necessarily adhere *consistently* to the idea that the real wage—the horizontal portion of the reverse-L—is "given.")

What of the consequences of Keynes's misprisal of Pigou's labor supply? Aslanbeigui holds that the error is "crucial" (1992, 418) and that most of Keynes's argument falls as a result. But this is wrong. It is possible to identify quite precisely those statements in the appendix to chapter 19 that depend on the assumption of an upward-sloping labor supply curve, and that are therefore invalid as comments on Pigou. Whenever Keynes says that Pigou is assuming full employment (1936, 274, paragraphs 2 and 3; and 275, line 1 and paragraph 2), he is wrong. When he says that, in the Pigovian system, no more labor will be forthcoming without an increase in the real wage (277, first three lines), he is wrong. But—surprisingly perhaps—every other proposition retains its validity and its importance. Let us see how this can be so.

4. Keynes's Critique Regained

Consider the argument that Keynes makes in the two paragraphs immediately following the false (as I have admitted) ascription to Pigou of the assumption that $n = x + y$. This passage is partly contaminated by the labor supply error, but nonetheless contains an easily salvageable key point. Drawing out what he perceives as an implication of Pigou's theory, Keynes writes, "if the supply function of labour changes, more labour being available at a given real wage (so that $n_1 + dn_1$ is now the value of x which satisfies the equation $\phi(x) = \chi(x)$), the demand for the output of the non-wage-goods industries is bound to increase by just the amount which will preserve equality between $\phi(n_1 + dn_1)$ and $\chi(n_1 + dn_1)$" (1936, 274). The disturbance Keynes has in mind here is a rightward shift of a standard upward-sloping labor supply schedule. This particular thought experiment is not valid in Pigou's system, but let us substitute the valid counterpart, a reduction in the real wage stipulated for by the workers. The argument then is easier to make. $F'(x)$ falls, so x increases, so the surplus of the WG sector increases, so y must increase, too, in order to absorb this surplus. It is tacitly assumed that the required increment to y is achieved without any difficulty.

The next paragraph continues the argument, with Keynes saying, "it is assumed [by Pigou] that the rate of interest always adjusts itself to the schedule of the marginal efficiency of capital in such a way as to preserve full employment" (274–75). If one deletes the phrase "full employment" and substitutes "the relation $y = [F(x) - xF'(x) - K]/F'(x)$, for given $F'(x)$," Keynes's statement is perfectly correct. I have already remarked on this under point (b) at the end of section 2 above. But if Keynes's statement is *correct* under the proposed substitution, does it still have any bite? Yes, since it means that Pigou ignores entirely the conditions governing the profitable level of employment in the NWG (or investment-goods) sector.[10] And it is only on condition of this omission that Pigou is able to get away with assuming that the real wage is "given" in the first place. For if the required absorption of the WG sector surplus were *not* to occur (due to employment in the NWG sector remaining stubbornly depressed), there would then emerge an excess supply of wage-goods, resulting in a fall in the price of wage-goods and a rise in the real wage. In that case, the real wage is *not* given by stipulation of the workers, but, rather, as Keynes maintains, by a complex set of macroeconomic interactions involving, *inter alia*, the rate of interest and the schedule of the marginal efficiency of capital. And then Pigou really is one equation short, as charged.

The second main critical point made by Keynes is even less affected by the labor supply error. This concerns Pigou's rejection of the multiplier effect. Keynes writes, "Professor Pigou rejects ([1933] p. 75) the theory of the multiplier by assuming that the rate of real wages is given, *i.e.* that, there being already full employment, no additional labour is forthcoming at a lower real wage" (1936, 277). Strike the phrase "there being already full employment" and this is accurate. Pigou's argument is that while a program of public works may generate some additional employment in its own right, it cannot induce any expansion of employment in the WG sector, because such expansion would be conditional on a fall in the real wage in terms of wage-goods (as $F''[x] < 0$), which is ruled out as the real wage is fixed at the level stipulated for by the workers. Keynes continues:

> Professor Pigou does not notice . . . that the argument, which he advances against "secondary" employment as a result of public works, is, on the same assumptions, equally fatal to increased "primary" em-

10. Monetary considerations *are* introduced in the second half of his book, but belatedly and in an ad hoc manner, without being integrated into the core theoretical apparatus.

> ployment from the same policy. For if the real rate of wages in the wage-goods industries is given, no increased employment whatever is possible—except, indeed, as a result of non-wage-earners reducing their consumption of wage-goods. . . . Yet Professor Pigou accepts, apparently, the possibility of increased primary employment. The line between primary and secondary employment seems to be the critical psychological point at which his good common sense ceases to overbear his bad theory. (277)

This comment is dead on target. To verify this, let us examine once more the Pigovian equation for employment in the non-wage-goods sector,

$$y = [\mathrm{F}(x) - x\mathrm{F}'(x) - \mathrm{K}]/\mathrm{F}'(x).$$

The real wage $\mathrm{F}'(x)$ being given, as well as the technical conditions of production in the wage-goods industries, y may increase only to the extent that K (purchase of wage-goods by non-wage-earners) falls, hence "freeing" a part of the wage-goods sector surplus for the payment of additional workers.[11] But public works employment is a component of y. QED.

Here, then, is Keynes's nicely judged response, forty years before the fact, to Hutchison's querulous demand for chapter and verse regarding Pigou's inconsistency. We know that Pigou advocated public works during the 1930s, but the theoretical logic that led him to deny the multiplier effect of public works employment should, by rights, also have led him to deny the possibility of *any* increase in employment from that source. Conversely, if he was serious about the possibility of raising employment through public works, he could not consistently deny the multiplier effect; but recognition of this effect would have required the abandonment of the central theoretical core of *The Theory of Unemployment*, built around the confrontation of a real demand schedule for labor and a given real wage.

For each of the criticisms of Pigou cited above, I have argued that although Keynes phrases his comments in terms of Pigou's having as-

11. This feature of Pigou's theory explains a point in chapter 2 of *The General Theory* that at first sight may appear quite cryptic. Keynes (1936, 7) lists four ways in which employment may be increased on the classical theory. Points (a), (b), and (c) are all easily understood (improvement in labor-market organization, decrease in marginal disutility of labor, and increase in the physical marginal productivity of labor, respectively), but (d) seems to come out of the blue: "an increase in the price of non-wage-goods compared with the price of wage-goods, associated with a shift in the expenditure of non-wage-earners from wage-goods to non-wage-goods" (7). Clearly, Keynes had Pigou's theory in mind when he wrote this.

sumed *full employment*, the theoretical points he was making may be readily disengaged from this particular charge. For an additional perspective on this argument, it may be helpful to consider Keynes on "the second classical postulate" (1936, 5). This postulate, which Keynes ascribes to Pigou among others, states that the utility of the wage equals the marginal disutility of labor, or "the real wage of an employed person is that which is just sufficient (in the estimation of the employed persons themselves) to induce the volume of labour actually employed to be forthcoming" (5). For Keynes, this means (a) that to induce a supply of labor larger than the existing level of employment, a higher real wage will be needed, and (b) that if the real wage were to fall below its current level, the quantity of labor supplied would be less than the current volume of employment. Keynes assumed that these two features naturally went together; but it is possible to unbundle them, and this is precisely what Pigou does. He denies (a) but upholds (b). In a state of Pigovian unemployment, with the real demand function for labor cutting the labor supply schedule somewhere along its horizontal segment, there is more labor for the asking at the given real wage, yet a fall in the real wage will cause the withdrawal of all labor (or in other words, any means of increasing employment that will involve a reduction in the real wage is ruled out). If Keynes is wrong to say that Pigou held the "second classical postulate" in its full form, the question arises as to which element, (a) or (b), is the more important. I believe it is the correctly ascribed (b). Since Pigou doesn't hold (a), Keynes cannot fairly accuse him of "assuming full employment," in so many words, but that Pigou does hold (b) makes his theory radically inadequate for dealing with actual unemployment, in precisely the ways Keynes claims.

Two aspects of Keynes's critique remain to be examined, but after the work done above they are relatively plain sailing. Let us consider Keynes's argument concerning Pigou and wage-cuts, and his (closely related) comment on the notion that shifts in unemployment over the course of the business cycle might be explained by shifts of Pigou's real demand for labor function.

As for wage-cuts, it is perfectly plain that a reduction in the "stipulated" real wage is bound to increase employment in the Pigovian framework. Before jumping to the conclusion that Pigou "ought" to have called for wage-cuts rather than public works in the 1930s, one must ask whether there could not be some slack in the relationship between the money wage and the real wage. Would Pigou allow the possibility that a cut in the *money* wage might end up generating an equal fall of the price of wage-goods, hence failing to reduce the real wage and leaving employment unaltered? The short answer is no, he would not (Pigou 1933, chap. 10, esp. 106). He was emphatic that a cut in the money wage would quite reliably cut the real wage.[12]

So by Pigou's own lights, cutting the money wage is a reliable way of raising employment. To follow his own argument logically, Pigou should really have blamed the wage policy of the workers for the continuation of high unemployment during the 1930s. But Pigou equivocates on this. He insists that when there is unemployment, this represents a *mutual* maladjustment of the wage and the demand for labor. Yes, one may say that (given the real demand function) if the real wage were lower there would be less unemployment, but one can equally well say that (given the real wage) if the real demand for labor were higher there would be less unemployment. He uses the image of an overloaded ship to make his point: Is the ship too small, or is the cargo too big? In an *absolute* sense, neither: simply, the ship and the cargo are mutually maladjusted (1933, 27 and 253).

Aslanbeigui (1992, 429–31) stresses this sort of formulation and uses it to suggest that Keynes had Pigou wrong. Yet Pigou's evenhandedness, well-intentioned as it may be, is spurious. While it is easily within the power of the workers to reduce the real wage (according to Pigou), raising the Pigovian real demand function for labor is quite another matter. One more glance at the equation

$$x + y = \phi(x) = [\mathrm{F}(x) - \mathrm{K}]/\mathrm{F}'(x)$$

confirms that this would require an improvement in the real marginal productivity of labor in the wage-goods industries, or, of course, a reduction in K, purchases of wage-goods by non-wage-earners. The former is clearly not a policy variable; and as regards the latter possibility, it is a further measure of the degree to which Pigou's good common sense overbore his bad theory, that he never (so far as I am aware) actually

12. Keynes (1936, 276, paragraph 2) points out that Pigou's argument to this effect begs the question. Pigou assumes that "at the outset," following a cut in the money-wage, nothing happens to non-wage-earners' money income (1933, 102). But he has just proved on the previous page that non-wage-earners' income can remain unchanged *only if employment changes*. (What he showed directly was that if employment stays the same, then non-wage-earners' income must change in the same proportion as wage-earners'.) Therefore the conclusion that the cut in the money wage will raise employment—or lower the real wage, these being equivalent in context—is implicit in the assumption with which the argument begins.

advocated a cut in rentiers' consumption as a practical remedy for unemployment in interwar Britain.

In his evenhanded formulation, Pigou is in effect trading on a confusion. If "the real demand for labor" is understood in a commonsensical way—that is, such that it could be raised in a straightforward manner by stimulating investment or by public expenditures—then the evenhanded approach might make sense (always assuming that labor is in a position to lower the real wage via its money-wage bargaining, which of course Keynes disputes). But as we have seen, and as Keynes stresses (1936, 278–79), Pigou's real demand function for labor is quite a different thing. Based only on the production function $F(x)$ and the inter-sectoral balance condition $\phi(x)$, one might expect it to be quite stable in the short run and, at the same time, little susceptible to policy manipulation. Its likely stability means that it cannot serve as a plausible candidate for *explaining* variations in employment over the cycle;[13] while its invariance with respect to public works expenditure or expansionary monetary policy means that it cannot really, within Pigou's theoretical scheme, be seen as symmetrical with real wage policy as a means of *smoothing* such variation.

5. Conclusion

The specifics of Pigou's *Theory of Unemployment* are probably of little inherent interest to modern macroeconomists, but Keynes's critical points have a broader relevance. Consider in particular his argument that while the mechanisms determining the money wage are not irrelevant to macroeconomic performance, nonetheless the level of the *real* wage at any point in time is, so to speak, a "referred" effect—the projection into the labor market of a configuration of macroeconomic elements including the rate of interest and the schedule of the marginal efficiency of capital. Given the first classical postulate, it will be true that whenever there is involuntary unemployment in Keynes's sense, the real wage will stand above the level associated with full employment. Yet—and this is perhaps the central point to emerge from the critique of Pigou—that does not mean that the workers are insisting upon an excessive real wage or even that they have it in their power to reduce it. Of those modern

13. The modern real business cycle theory takes this bull by the horns with the claim that shifts in the physical production function *can* explain the cycle. I cannot discuss this theory here but simply note that Pigou stopped short of such a claim.

macrotheories that also depend on the idea that the real wage is in principle subject to control by the participants in the labor market, and hence that persistent unemployment must betoken the presence of "rigidities" or "frictions" in that market, it may be said, *de te fabula narratur.*

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