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1967

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Southern Economic Journal, Vol. 34, No. 2 (Oct., 1967), pp. 268-279

Summary: *This article attempts to show that Pigou does not rely on the "wealth effect" in his attack on the doctrine of "unemployment equilibrium" with flexible money wages (a doctrine which, incidentally, he never considers clearly Keynesian). Instead, he depends on a form of "substitution effect," hinging on a change in the "convenience yield" on money relative to the yield on physical capital. This particular line of thought is much closer than the "wealth effect" to the sort of reasoning concerning stock adjustments to differences in yields which has become popular today. In this view of Pigou's position, the principal mechanism in his work for restoring full employment under flexible wages is the "substitution" rather than the "wealth effect" of wage-price reductions. The "substitution effect" requires a mere rise in the ratio of real money to real wealth, while the "wealth effect" requires a rise in real wealth.*

INTRODUCTION

The "wealth effect" is generally considered as A. C. Pigou's basic reply to J. M. Keynes concerning possible "unemployment equilibrium" under flexible money wages. But a scrutiny of Pigou's major writings soon gives rise to a number of suspicions regarding this interpretation of his stand. For example, it is curious that in the one section of his 1943 article on "The Classical Stationary State"[2] dealing with the impact of a general wage reduction on unemployment as such, he ignores the "wealth effect" and concentrates on a different argument. It is also odd that later in this article and throughout the 1947 companion piece on "Economic Progress in a Stationary Environment,"[3] in treating the way in which the "wealth effect" eliminates an excess supply of commodities, Pigou assumes that there would be no un-employment in the first place if money wages were flexible downward. In addition, wherever the question of the impact of money wage reductions on unemployment occurs in Pigou's late writing, there is not the least allusion to the "wealth effect." He utilizes this effect strictly in order to analyze the case of a general over-production of commodities at a theoretical minimum interest rate.

I will attempt to show here that Pigou does not rely on the "wealth effect" in his attack on the doctrine of "unemployment equilibrium" with flexible money wages (a doctrine which, incidentally, he never considers clearly Keynesian). Instead, he depends on a form of "substitution effect," hinging on a change in the "convenience yield" on money relative to the yield on physical capital. This particular line of thought is much closer than the "wealth effect" to the sort of reasoning concerning stock adjustments to differences in yields which has become popular today. In this view of Pigou's

[1] I would like to thank the Social Science Research Council and the Tulane University Faculty Research Council for their support during the period of this study. I am also grateful to Professor William J. Baumol, and my colleague, Professor Seymour S. Goodman, for helpful comments.

[2] Arthur C. Pigou (1943).

[3] Pigou (1947), pp. 180-90.

position, the principal mechanism in his work for restoring full employment under flexible wages is the "substitution" rather than the "wealth effect" of wage-price reductions. It is important, therefore, to be clear at the start about the difference between these two effects, both of which pertain to an influence of a change in real money. The "substitution effect" requires a mere rise in the ratio of real money to real wealth, whereas the "wealth effect" hinges on a rise in total wealth. An increase in real balances necessarily raises the ratio of real money to total wealth (thus producing a movement in the relative yields on different assets), but may not augment total wealth. The reason is that, in a wage-price fall, private real indebtedness to the monetary sector may increase as much as the value of money balances, thus keeping total wealth the same. Therefore, though a "substitution effect" necessarily follows a wage-price reduction under constant money, there may be no "wealth effect."

Further, the two effects must operate, at least in part, in different markets. In the immediate aftermath of a real balance change, the "substitution effect" cannot occur in the consumption goods market. Any influence on consumption requires a movement in the general yield on wealth relative to consumption, whereas initially, a rise in real balances only affects the yield on a few particular assets. Consequently, immediately after a real balance change, if tastes and productivity are unchanged, all movements out of assets into consumption (as opposed to movements between assets) must be attributable to a variation in total wealth. On the frequent assumption of no "budget restraint" among firms, furthermore, there never can be a "wealth effect" on the demand for physical investment. In accord with these distinctions Pigou relates the "substitution effect" to the demand for investment goods but not desired saving, while strictly applying the "wealth effect" to the consumption demand in the commodities market.

Still the issue may appear to be basically of historical interest. There is, however, an important analytical question involved. One major assumption of the Keynesian debate, still thriving in many quarters, is that the so-called "liquidity trap" leaves no room for any legitimate criticism of Keynes besides the "wealth effect." If so, Pigou's "convenience yield effect" is an invalid objection to Keynes's theory under the "liquidity trap." Per contra, however, I will try to show that Pigou's argument holds in this case. On this view, the dramatic postwar emphasis on the "wealth effect" respecting Keynes has been much exaggerated. First in order of presentation will be Pigou's famous 1943 and 1947 contributions to the *Economic Journal* and *Economica*, which have been the center of attention thus far. Next we will also examine the evidence from Pigou's other writings. In the final section, the focus will be on the validity of Pigou's treatment in the context of Keynes's peculiar interest rate floor.

MAIN TESTAMENTS

As Pigou makes clear in the first few pages of "The Classical Stationary State," this article is a response to a few critical passages in Alvin Hansen's *Fiscal Policy and Business Cycles*,[4] which develop the important yet secondary theme of the General Theory that highly industrialized countries have a secular tendency toward a position of "unemployment equilibrium." According to Hansen, the classicists were right in

[4] Alvin Hansen (1941), p. 288. See also pp. 334-35.

arguing that there is a long run tendency toward zero net investment, but they were wrong in supposing that this "stationary" equilibrium position is necessarily one of full employment. Due to the strength of saving habits, "stationary equilibrium" might be attainable only at levels of output far below those which the economy has the capacity to produce. Consequently, the "classical stationary state" might involve large-scale unemployment.

In reply, Pigou first explains that under usual classical conditions, which require equality of the rate of interest and the marginal rate of time preference in equilibrium, the interest rate mechanism would suffice to bring about equilibrium in the commodities market. He maintains, however, that this classical view hinges on the assumption that people save only for the sake of future income receipts. Contrary to this view, though, Pigou considers that people save partly for safety reasons and for purposes such as prestige. In the light of these further motives, equilibrium can be said to hold only when the marginal rate of time preference equals a certain "amenity yield" plus the market rate of return.[5] Saving then may be positive at a zero rate of interest, since at this rate the "amenity yield" on saving might outweigh the positive marginal rate of time preference (favoring consumption). Therefore, a position of "stationary equilibrium," where desired saving and desired investment are zero, may require a negative rate of interest. A negative rate of interest, however, is impossible, because saving always can be made in the form of money, which Pigou regards as a sure means of earning a zero market rate of return.[6] This brings Pigou to the central problem of his discussion: the possibility of an excess of desired saving over desired investment at all positive or zero interest rates.

Before tackling this problem, however, Pigou turns briefly to Hansen's contention of the possibility of unemployment under flexible money wages in the stationary state, which he dismisses at the opening, saying: "It is not necessary to examine it [Hansen's argument] at any length."[7] Since Pigou's argument on this point forms a central pillar of my revision, I may quote him at length:

> With any known type of banking system, and equally under an arrangement in which the stock of money is rigidly fixed, money income must be a function of the rate of interest, being lower or higher according as that rate is lower or higher. This follows from the fact that, for equilibrium, the convenience and so on yielded to the representative man by the marginal unit of resources held in the form of money must be equally attractive with the interest yielded by the marginal unit invested in real capital. For the degree of this convenience is greater or less ac- cording as real income divided into the real value of the stock of money is less or greater; i.e., ac- cording as money income divided into the stock of money (i.e., the Marshallian *k*, which is the inverse of the income velocity of money), is less or greater, i.e., when the stock of money is given, according as money income is greater or less.... Thus, monetary arrangements being given, money income cannot fall unless the rate of interest falls. Since, however, in our supposed less-than-full-employment

[5] Pigou's first statement of this point in the Keynesian debate may be found in Pigou (1941), pp. 105, 126. The identical wording appears in the more readily available 1949 revised edition of this work, pp. 111, 130-31.

[6] Cf. Pigou (1941) pp. 118-26 (or pp. 123-31 of the 1949 reprint); and Pigou (1950), pp. 33-36.

[7] Pigou explicitly views this section as a diversion. See Pigou (1943), sec. 8, 1.1 (p. 347), and sec. 10, 1.4 (p. 349).

stationary state, the rate of interest is already at the minimum admissible level, it cannot fall any farther. There- fore the acceptance of lower money wage-rates by wage-earners cannot cause money income to fall. Therefore, with given employment, it cannot cause prices to fall. It follows that by cutting money wage-rates workpeople can cut real wage- rates, and so *can* expand employment above the amount proper to any less-than-full-employment stationary state.[8]

To recapitulate, Pigou reasons that given unemployment and a fixed stock of money, a fall in money wages, by reducing money income, would raise k. This in turn would cause the "convenience yield" on money to fall, hence further leading to a switch out of money into other forms of wealth in order to equalize yields.[9] But if, corresponding to Pigou's previous dilemma, "the" interest rate-meaning the yield on physical capital-is "already at the minimum admissible level," then implicitly no further fall in the "convenience yield" on money is possible. Therefore no rise in the ratio of money to income, or k can result. As money is constant, this means that money income cannot fall and hence that any drop in the money wage rate must raise employment and not merely lower commodity prices. In short, as long as the rate of interest on assets in general can fall, reductions in money wage rates increase the demand for investment goods through a "convenience yield effect," while once the rate of interest no longer can fall, Reductions in money wage rates must directly raise employment.

Next, Pigou returns to his main dilemma of a possible excess supply of commodities at full employment "at the minimum admissible rate of interest." In this section, he explicitly assumes "that we are dealing with full employment," thus expressly abandoning his concern with the impact of money wage reductions on employment. Indeed, he simply supposes, as his preceding argument implies, that if money wages are downwardly flexible, falls in commodity prices do not induce unemployment. It is under circumstances of this sort, where wages are flexible and there is no unemployment, that in 1943 Pigou introduces the famous "Pigou effect." His attendant reasoning is more fully developed in the later and better known article, "Economic Progress in a Stable Environment."

There, he divides the case of commodity excess supply at a minimum, or zero interest rate in two parts. First, Pigou supposes money wages to be perfectly rigid. On this assumption, he reasons that the fall in commodity prices, by causing falling employment, will cut real income, thereby reducing the desire to save, and in this fashion eventually bring about commodity market equilibrium at a low level of employment.[10] Accordingly, equilibrium will be achieved independently of the "wealth effect." But since workers are not likely to admit any low level of employment by refusing to accept wage cuts, Pigou proceeds to the second assumption, namely, that money wages are too flexible downward to permit sizeable unemployment.

On this assumption, at last Pigou introduces the "wealth effect." That is, if falling prices merely lead to falling wages, " Pigou views that the influence of rising values of

[8] Pigou (1943), pp. 348-49 (author's italics).

[9] Cf. Pigou (1917), pp. 38-65 (especially pp. 166-68 of the more readily available 1951 reprint); Pigou (1949), pp. 77-81; and Pigou (1950), pp. 16-19.

[10] This point was stated clearly in Pigou (1941), where no mention was made of the "wealth effect." The corresponding passage in the 1949 edition is on pp. 133-34.

cash balances on private wealth explains commodity market equilibrium.[11] Clearly, the "wealth effect" does not enter this reasoning to explain the supposed tendency of reductions in money wages to equilibrate the labor market. In fact, the 1947 essay, unlike the 1943 piece, offers no reason for this tendency.

A SYSTEMATIC EXPOSITION OF PIGOU'S ARGUMENT

A more systematic presentation of Pigou's argument is possible at this point with the aid of Figure 1. Let us suppose that physical capital and money are the only two types of wealth present. Suppose also that the market rate of interest on money is uniformly zero. This means, of course, that a "convenience yield" of some sort is necessary to explain why any money is held at a positive rate of interest on physical capital. A problem of dimensions occurs in regard to this "convenience yield" on money, since it must be viewed as a percentage, while the denominator in the fraction, money, has an accounting value, but the nominator "convenience," viewed in the abstract, can be understood only as measured in terms of utility. What I propose to do in order to overcome this objection, without any precedent in Pigou, is to assume higher transaction costs on physical capital than money and no difference in risks between the two. This results in a conceptually unambiguous "convenience yield" on money as an economy in transaction costs per unit of money per time period (r_t). In line with Pigou, I will assume this yield, r_t, to be a negative function of the ratio of money to income, or the Cambridge *k*. In equilibrium, it then can be said, the return on investment, *r*, must equal r_t. In order to avoid unnecessary further complications, I will suppose no difference in transaction cost per unit of consumption and net investment (positive or negative) in real or money terms. Hence, in equilibrium *r* also must equal the rate of discounting future satisfactions as adjusted for the positive amenity yield on saving (ρ).

In regard to the net investment demand and saving functions, Pigou's presentation can be essentially followed with minor modifications (which will be indicated in footnotes). Let the demand for net investment (*I*) be a function of the existing stock of capital (*C*) and the yield on money (r_t).[12]

(1) $$I = \phi(C, r_t),$$

where

$$\frac{\partial I}{\partial C} < 0,$$

and

$$\frac{\partial I}{\partial r_t} < 0.^{12}$$

[11] Pigou (1947), pp. 248-51 of the 1951 reprint.

[12] Pigou considers *I* as a function of *r*, the rate of return on physical investment, but should have treated it instead as a function of r_t, since *r* depends crucially on *I* through the productivity function.

Let desired saving (S) be a function of total private wealth (W), the rate of interest on desired net investment (r), and the yield on human capital (Y) (which will be referred to hereafter as "real income").[13]

(2) $$S = f(W, r, Y),$$

where

$$\frac{\partial S}{\partial W} < 0, \frac{\partial S}{\partial r} > 0,$$

and

$$\frac{\partial S}{\partial Y} > 0.$$

The form of the first function is governed by the marginal productivity of investment; the form of the second by the rate of discounting future satisfactions as offset by the amenity yield on saving. The only relevant equilibrium conditions, omitting others which will be assumed to hold whenever these do, are:

(3) $$S = I;$$

(4) $$L = N,$$

i.e., quantity of labor demanded equals quantity supplied; and

(5) $$r = r_t = \rho.$$

One other major point in Pigou's is the assumption of a lower at zero, *i.e.,* $r_t \geq 0$.

In Figure 1, r and r_t are measured along the vertical axis, while I_o and I_1 illustrate two particular schedules of desired net investment as a function of r_t at two different levels of capital, C_o and C_1. Since r_t cannot fall below zero, I_o is the lowest net investment demand schedule along which a non-negative net investment solution is possible. On the saving side, three different schedules as a function of r are shown. All three are associated with the same level of wealth, W_o, but different levels of real income. S_o is the saving schedule for the full employment level of output (Y_f). This schedule is deliberately shown as positive at $r = 0$ so as to correspond with Pigou's problem. $S,$ and $S,,$ pertain to two levels of real income below Y_f, involving successively higher employment. Pigou's argument now can be readily presented.

Assume that the physical stock of capital is C_1, wealth is W_o, real income is Y_t', and we are at point A. The relevant saving and investment functions are therefore $S,$ and $S,,$, and equilibrium exists in the commodities market while there is unemployment. Now, if the money wage rate falls in response to the unemployment, commodity prices will fall. This will lower the convenience yield on money (represented by r_t),

[13] There is some small difference in Pigou's definition of the saving function. If we take the 1943 article as our basic text, Pigou first presents S as a function of the physical stock of capital, the rate of interest on investment, and real income. When the general wealth-saving relation comes in view, he then includes real money balances as a fourth variable in the equation.

which in turn will enhance the quantity of net investment demanded, and thereby bring more labor into employment and raise real income. In terms of Figure 1, therefore, the outcome of the fall in the money wage rate will be a shift rightward in desired saving. Through such repeated shifts, the saving function will attain S_o, and downwardly flexible wages eventually will bring about equilibrium at $r' = r_{t'} = \rho$ and net investment of *OC*. This particular solution only will hold, however, if we neglect the expansionary influence of the wage-price reduction on private wealth, since a rise in wealth would inhibit, and possibly altogether reverse the rise in desired saving, thus yielding commodity market equilibrium with full employment at a rate of interest above *r'* and a level of investment below *OC*. As Pigou neglects the "wealth effect" in this part of his argument, the *r'-OC* solution can be said to agree with his exposition.

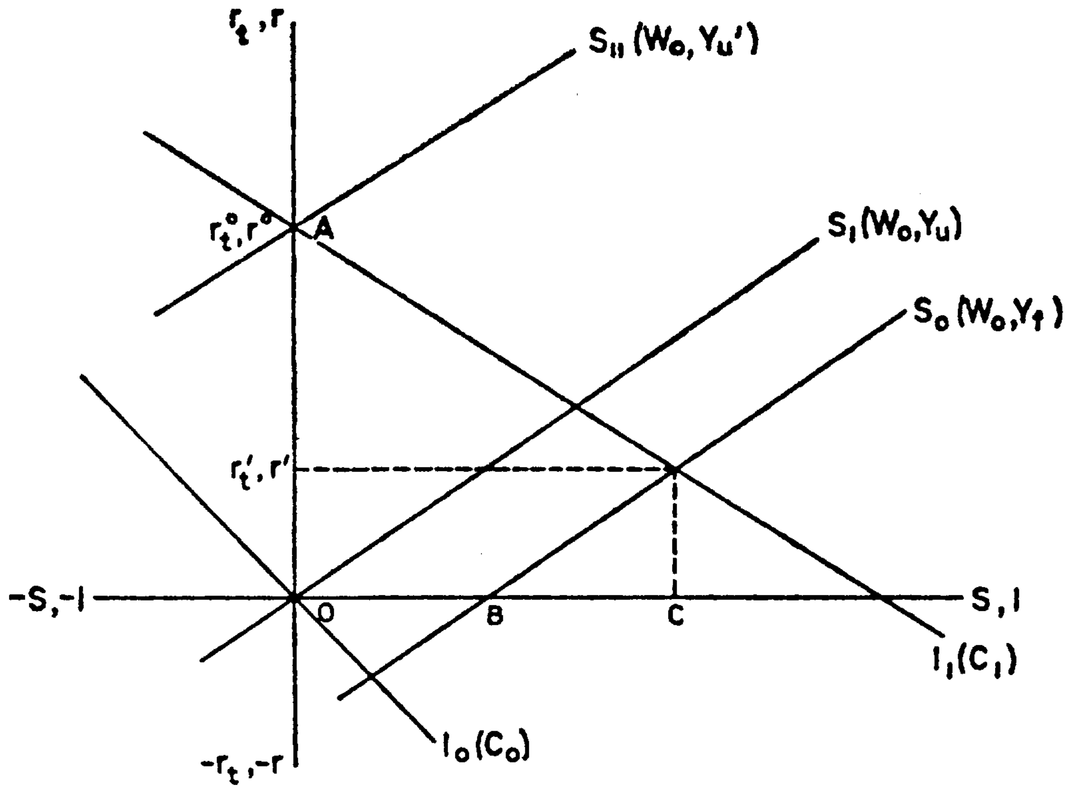

Figure 1

The next position to be considered is at the origin, 0, with income Y_u, capital C_o, and r_t and *r*, of course, zero. i_o and *S*, then are the relevant functions. Once again, there is unemployment coupled with commodity market equilibrium. But in this position, a fall in r_t is not feasible. With *M* constant, it is then impossible to entertain the possibility of any fall in commodity prices. Therefore, a fall in money wages must produce a proportional fall in real wages at first, leading to higher employment and real income, which then permits some fall in commodity prices. Eventually this process will lead to the elimination of unemployment at income Y_f. We will then arrive at position *B* on the S_o saving schedule. However, this will leave us with an excess supply of commodities OB. Therefore, wage flexibility would not have taken us very far; or to repeat Pigou: "The logical outcome is that in circumstances where a full employment stationary state is impossible a less-than-full-employment stationary state is also impossible; in other words, that no position of long-run equilibrium can be attained."[14] What is the "escape from this impasse"?

Given the full employment but over-supply of commodities at position *B*, if commodity prices fall and money wages stay rigid then, of course, we will simply return to point 0 at the origin, attaining commodity market equilibrium through the positive income-saving relation but at the expense of unemployment. However, if at position *B*, money wages are permitted to fall in proportion to commodity prices, the current level of employment will hold. Then the influence of falling prices and wages on real balances, thus on private real wealth, will afford the mechanism yielding commodity market equilibrium. As wealth rises, the saving function will fall, real income staying at Y_f, until full equilibrium is attained at point 0. (The saving function which illustrates this equilibrium, involving Y_f and some W above W_o, is not shown on the diagram.) This completes Pigou's argument.

One point that Pigou overlooks in this exposition is that his grounds for rejecting falling commodity prices after a fall in money wages, given unemployment at point 0, apply with equal force given full employment but excess supply of commodities *OB* at point *B*. At the latter point, as at the former, a fall in commodity prices is ruled out since the fall would lower the convenience yield on money, which is already zero and cannot fall. Yet without a fall in commodity prices there can be no "wealth effect." This simply shows the awkwardness of conducting the analysis at the lower mathematical limit of a yield on money and other assets of zero.[15] With the "convenience yield" on money at zero, and no other source of market or subjective return on money, additional money ceases to be a good. Thus we cannot consider the yield on money at the level zero. It is best therefore to proceed on the assumption that the rate of interest, in general, has fallen very low but not quite to zero. From this position it is quite clear that both the "wealth effect" and the "convenience yield effect" are immediately relevant under unemployment, overproduction, or both.

This points to another problem in Pigou's exposition; namely, that there is no logical basis for his apparent division of functions between the two effects, according to which the "convenience yield effect" explains full employment under flexible wages while the "wealth effect" explains commodity market equilibrium under wage-price flexibility. Whether unemployment or an excess supply of commodities initially is present simply determines whether the wage level or the price level falls first.[16] Given a price level fall, barring exceptional circumstances, both effects immediately come into play. This division of functions probably stems largely from a polemical concern.

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[14] Pigou (1943), p. 349.

[15] Because of possible inflation, this value is not necessarily the lower mathematical limit in the general case. For another relevant consideration, see Pigou (1945), p. 22.

[16] It may be noted, in this connection, that some pre-Pigouvian presentations of the classical reply to Keynes clearly stressed the "wealth effect" in regard to unemployment under flexible wages. See Tibor Scitovsky (1941), and Gottfried Haberler (1941), esp. 499-500. It is important to observe that the cited pages in Haberler's *Prosperity and Depression* belong to a section which does not appear in the first, 1937 edition, or the second, 1939 edition. In the earlier editions, Haberler's argument is consistently formulated, it seems to me, in terms of changes in the distribution of private wealth in the form of liquidity rather than changes in aggregate private wealth due to variations in total liquidity.

Most likely, he did not wish to use so novel an argument as the "wealth effect" in order to defend classicism on the important traditional issue of full employment.[17]

The main source of error in interpreting Pigou has been the failure to observe his distinction between unemployment and commodity overproduction. This mistake is evident in the essay which has played the largest part in the development of the current conception of Pigou's reply to Keynes: Don Patinkin's 1948 article, "Price Flexibility and Full Employment."[18] In the early parts of this article, Patinkin defines Pigou's opposition to Keynes basically in terms of equilibrium in the commodities market, as we might expect any close textual rendition of Pigou to do.[19] In the same process, he subsumes the question of unemployment beneath that of commodity market equilibrium, making reference to full employment saving and investment functions. That is to say, Patinkin simply assumes that Pigou's equilibrating mechanism in the commodities market explains full employment too. Now, while Pigou might have reasoned in a corresponding fashion without falling into any error, the fact is that he did not. Moreover, Patinkin's association of equilibrium in the commodities and in the labor market in the 1948 essay, uncharacteristic of later work, is rather simplistic – too much so to do credit to Pigou on any construction of his stand.

OTHER SOURCES

Further collaborating evidence for the preceding interpretation of Pigou may be found in his other writings dating from the appearance of the *General Theory*.

These other writings confirm the previous distinction in Pigou's thinking between the doctrine that money wage reductions may not influence unemployment, and the idea that an excess supply of commodities may exist under full employment at the theoretical minimum interest rate. The first of these two doctrines Pigou never attributed to Keynes, and indeed seemed on the whole to consider non-Keynesian; the second he viewed as Keynes' main challenge to classicism. This distinction appears already in Pigou's 1936 review of Keynes' *General Theory*.[20] In this work, Pigou questions that Keynes actually had meant to deny that money wage reductions would lower unemployment if the aggregate demand for commodities otherwise were constant. He interprets Keynes to argue that reductions in money wages are ineffective if the aggregate demand for commodities is falling independently. Consequently, he finds no fundamental disagreement between himself and Keynes on the issue of money wage reductions, though mentioning some differences regarding the process through which equilibrium comes about.[21] Later, in his 1943 *Economic Journal* article, Pigou goes so far as to say: "[The argument that] it is out of the power of wage-earners to make cuts in the rate of wages for which they ask, and so to secure employment, because every cut in money wage-rates will automatically

[17] Cf. Pigou (1917) (esp. pp. 166-68 of the 1951 reprint).

[18] Don Patinkin (1948). See also Lloyd Metzler (1951), and Gardner Ackley (1951). For a more cautious treatment of Pigou's position, though still adhering to the same general view, see Haberler (1952), esp. 240-41.

[19] Note that all of Patinkin's figures pertain to the commodities market.

[20] Pigou (1936), pp. 127-30 in particular.

[21] "Though, if I am right, the results which Mr. Keynes and I forecast are the same, the processes by which we respectively look for them to be brought about are entirely different" Pigou (1936), p. 128.

bring about an equiproportionate reduction in prices... is sometimes found in popular expositions of what the expositors mistakenly believe to be Lord Keynes' views."[22] Though subsequent writings reveal some doubts in Pigou as to whether Keynes actually had argued for the possibility of large-scale unemployment strictly on orthodox classical grounds of downwardly rigid wages,[23] he never attributed any other position to his fellow pupil of Marshall. It is noteworthy, in this respect, that in his important 1943 contribution he always considers the tendency toward full employment under flexible wages in regard to Hansen rather than Keynes, while in his 1947 piece he does not entertain this question at all.

The 1936 review already contains a clear definition of the problem, upon which Pigou later lavished much attention, that at full employment an excess supply of commodities may exist at all positive or zero interest rates. If this problem holds, Pigou understood Keynes to say, equilibrium may settle in the commodities market only at a low level of income involving large-scale unemployment. It is this possible low-employment market equilibrium that Pigou referred to in 1936, 1941, and once again in 1947, as Keynes's "vision of the Day of Judgment."[24] Though inadequately explicit in 1936, he evidently attributed the Keynesian unemployment in this state to downwardly inflexible wages.

Subsequently, Pigou addressed a 1937 article, "Real and Money Wages in Relation to Unemployment," to the question of the impact of general wage reductions on unemployment.[25] This article would seem at first to be aimed against Keynes, though Pigou does not mention him. Nevertheless, a reply by Pigou to a note by Nicholas Kaldor[26] casts serious doubt on this interpretation. Commenting (by footnote) on a note by Keynes preceding the one from Kaldor,[27] Pigou says: "I have not been able

[22] Pigou (1943), p. 348.

[23] See, in particular (1950), p. 50. In Pigou (1945), pp. 22-25, containing probably his fullest discussion of Keynes's position on the influence of money wage reductions, Pigou may seem to admit that Keynes viewed money wage reductions as ineffective in reducing unemployment. The relevant pages, however, must be interpreted carefully. Pigou envisages a situation where due to a drying up of investment opportunities, a considerable excess supply of commodities is present, leading to falling commodity prices. In this context, if the interest rate already is at its minimum, he supposes Keynes to say that a fall in money wages will only produce an "equivalent" (equiproportional) fall in commodity prices, and thus fail to prevent unemployment. However, this must be interpreted in a dynamic sense, I believe, as concerning the question whether, given a prior fall in the demand for labor, falling money wages can avoid the occurrence of unemployment in disequilibrium. Pigou considers Keynes's answer negative on this point. But this does not mean that in a condition of unemployment and no downward pressure on employment, Pigou would understand Keynes as saying that a fall in the money wage rate would fail to raise employment under classical assumptions. This interpretation of Pigou seems to me supported by his agreement with Keynes in the particular case concerned that "owing to the inevitable lag in the first wage reduction, employment must be cut down." Yet it must be admitted that this entire passage does not accord fully with anything else Pigou wrote on the subject of Keynes, and that no particular interpretation, including my own, seems fully satisfactory. For a later interpretation of Keynes's stand by Pigou, in full harmony with the 1943 and 1947 articles, see *Pigou* (1949), pp. 133-36. The corresponding pages in the first (1941) edition (pp. 129-32) differ on small, yet significant points. Another interesting passage, but also somewhat difficult to interpret, is in Pigou (1946), esp. pp. 410-11.

[24] Pigou (1936), p. 129; (1941), p. 129; and (1947), p. 249 of 1951 reprint.

[25] Pigou (1937).

[26] Nicholas Kaldor (1937).

[27] John Maynard Keynes (1937).

to follow the reasoning of Mr. Keynes' short note.... But what is said in the following paragraphs about the interrelations of money wage-rates, employment and the rate of interest is much closer to his general view than the argument of §10 of my previous article."[28] Section 10 of Pigou's previous article had concerned an aspect of the equilibrium process through which money wage reductions supposedly eliminate unemployment in the case of perfect competition. The subsequent paragraphs of the comment, which Pigou suggests, are likely to suit Keynes better than Section 10 of the original, retain the essential conclusion that money wage reductions are effective in achieving full employment. It would seem, therefore, that Keynes was not the essential culprit whom Pigou had in mind, but leaves open the question of the identity of this, or these culprits. On this issue, the published evidence permits no answer. While evidently suspecting the accuracy of various interpretations of Keynes, it is obvious that Pigou himself was considerably uncertain about Keynes's exact meaning. Unfortunately, Keynes's brief response to his 1937 article would not have resolved these doubts.

On the question of unemployment, Pigou's argument in the 1937 writing significantly corresponds to the one in his 1943 article discussed above. The essential difference is that the 1937 argument never entertains the possibility of a fall in the interest rate, whereas the 1943 one does. But given a constant interest rate, the two arguments amount to different ways of saying essentially the same thing: namely, that if money stays constant along with the interest rate as money wages fall, a fall in commodity prices while output is the same, implying a fall in V (a rise in k) is out of the question, and therefore the fall in wages must lead to some rise in employment and output. Significantly, the failure of V to fall, in both arguments, derives not from a general postulate of constant V, but rather from the fact that the interest rate is supposed not to go down. Kaldor's criticism of Pigou's article, in fact, was directed mainly at the alleged constancy of the interest rate. He maintained that under the conditions Pigou stipulated, the interest rate must fall with the drop in money wages since any rise in output would lead to greater saving. Subsequently, Pigou completely accepted this criticism in his comment on Kaldor's note. Still, he held that even if the interest rate should not fall due to the absence of any relation between desired saving and the rate of interest, a fall in the wage rate would increase employment on the previous grounds.[29] Therefore he surrendered nothing of substance in his earlier position vis-a-vis Keynes.

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[28] Pigou (1938), p.134, n. 1.

[29] "Our main conclusion that, within the framework of our model, a cut in money wage rates will lead to a new equilibrium situation in which employment is larger, and the rate of interest lower, than before, depends, it will be understood, on the *factual* proposition that the representative man's rate of time-preference falls as aggregate real income increases. If it were independent of aggregate real income, a cut in money wage rates would increase employment, while leaving the rate of interest unchanged" (1938), p. 138 (author's italics). Still, Lawrence R. Klein claims in Klein (1949, p.108): "One of the most important points to recall from this debate [the present exchange between Kaldor and Pigou] is that Pigou admitted that money wage cuts will not increase employment unless interest rates are reduced as a result of the cut." Klein was generally amiss in his report of Pigou's position in the 1937 article, maintaining, contrary to the very crux of Pigou's message in 1937, that in order to establish that money wage cuts would lead to more employment Pigou "made use of the proposition that the main influence of the wage cut would be on interest rates" (p. 107). This description contrasts with Pigou's closing statement of his stand in the relevant section of the 1937 article: "It is enough for my purpose

Pigou returned again twice to the question of the influence of wage flexibility on employment after the 1943 article: first in 1949, in *The Veil of Money*,[30] and more formally in 1950, in *Keynes's "General Theory": A Retrospective View*.[31] On neither occasion did he mention the "wealth effect" in regard to this last question. Instead, he pressed the aforementioned argument that a fall in money wages given unemployment, by inducing lower commodity prices, must yield a drop in the interest rate on assets in general, thus leading to higher demand for output and employment. He chose not to raise the question of a possible floor on the interest rate in these writings. After 1943, in general, he considered the "wealth effect" only in connection with the resolution of a possible excess supply of commodities at the theoretical minimum interest rate.[32] If Keynes's basic challenge is to be viewed, therefore, as the doctrine that unemployment may not be resolved by flexible money wages under classical conditions, the evidence would indicate that the "wealth effect" is no fundamental part of Pigou's reply.

CONCLUDING OBSERVATIONS ON PIGOU'S STAND

The essential problem remaining for contemplation is whether Pigou's "convenience yield effect" is valid under the conditions of interest rate downward inflexibility which Keynes postulated as contingent in a state of widespread unemployment. It may be noted, first, that this "convenience yield effect" is not tantamount to the "Keynes effect," which clearly is ruled out under the "liquidity trap." The "Keynes effect" pertains strictly to a movement between money and securities. Keynes's writing does not make it plain whether this movement is supposed to derive from a change in the yield on money relative to other assets or a change in aggregate wealth or both. By contrast, however, Pigou's "convenience yield effect" concerns a movement between money and physical capital due to a change in the yield on money relative to capital. If we suppose, on Keynesian grounds, that there is no advantage in converting extra money assets into securities, thus foreclosing the "Keynes effect," nothing is to prevent the "convenience yield effect" from causing shifts of new money into investment goods.[33]

Another objection to Pigou's "convenience yield effect," though subordinate, is that the conversion of money into investment goods could be undertaken only by firms, which suggests that this effect is confined to the business sector. However, this criticism is lighter than it may appear. A fall in the yield on money relative to capital, theoretically speaking, not only may induce firms to convert cash balances into investment goods, but also may induce households to transfer money into business accounts. In the case of individual proprietorships and partnerships, this may entail, *pari passu*, an expansion in desired investment. In the instance of corporations, though, admittedly increases in households' equity would require a purchase of shares, and therefore involve the mediation of securities. Even then, it is questionable that Keynes's argument for an indefinite "speculative demand" for

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to show that a money wage cut is not simply a piece of ritual that enables the real cause of employment expansion - a fall in the rate of money interest - to take effect" (Pigou (1937), p. 411).

[30] Pigou (1949), pp. 75-111, esp. 104-11. The preface to this book, though, is dated October 1947.

[31] Pigou (1950), pp. 49-50.

[32] Apart from the 1947 article, I refer to Pigou (1949), p. 24; and (1950). p. 36.

[33] On this point and with respect to the general previous emphasis on the distinction between yields on different assets, cf. James Tobin (1961).

money applies. In line with frequent observations, by "the" rate of interest Keynes usually meant the rate of interest on long-term bonds; and as Joan Robinson has suggested, the expectation of rising yields on long-term bonds is quite compatible with anticipation of capital gains on stocks.[34]

It can be easily surmised at present that the only possible obstacle to Pigou's "convenience yield effect," as I have termed it, is a higher expected yield on money than all non-money types of wealth. Therefore the sole serious challenge to Pigou's position under the "liquidity trap" is the interpretation of this "trap" as a zero rate of return on all non-money assets. In a condition of pervasive zero returns, if money bears utility, money is necessarily more attractive than any alternative form of wealth. Indeed, at a zero rate of interest on assets in general, including a zero "convenience yield" on money, which is the only similar case that Pigou considers, he abandons his "convenience yield effect" argument. Instead he relies on an inconsistency in the view that a fall in money wages would lead strictly to a fall in commodity prices. But apart from the conceptual difficulties which this zero-yield hypothesis involves, the previous interpretation of the "liquidity trap" has little textual basis. The spectre of a zero interest rate appears in Keynes only in the course of a discussion of the possible - admittedly not too distant - future. Yet as widely recognized, his fundamental theory, relating to the short run, pertains to a condition of positive yields (even if we abstract from costs of negotiation, which enter into Keynes's discussion). That is, by common understanding, the "liquidity trap" arises in Keynes due to fears and expectations of adverse price movements cancelling a positive contractual return on securities alone. On this view, implying non-positive returns nowhere but on securities, Pigou's "convenience yield effect" is a perfectly suitable reply to Keynes in the case of his particular interest rate floor. Only in the rarefied atmosphere of the Keynesian "Day of Judgment" does the "convenience yield effect" lose its vitality.[35]

But in this "Day of Judgment" the "wealth effect" is also fully infirm. If the rate of interest on all assets, including the "convenience yield" on money is zero, the price level cannot fall since the "convenience yield" on money already is at a minimum. Therefore, a "wealth effect" cannot occur. Alternatively, with the "convenience yield" on money at zero, there is no reason for anyone to accept money in trade for any other good, since short of anticipations of deflation, money provides no source of return or satisfaction. As additional money is not wealth, rises in money cannot produce a "wealth effect."[36] Moreover, the hypothesis of a zero yield on all assets is fundamentally weak, since on any sensible view of the economic universe, such a condition can be only approximated, but never reached.

The outcome of these deliberations, therefore, is that Pigou's "convenience yield effect" of wage-price reductions is true under relevant Keynesian conditions. If we

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[34] Joan Robinson, (1951), esp. pp. 21-23 of the 1952 reprint.

[35] The textual basis for Pigou's general pre-occupation with the "Day of Judgment" is almost exclusively to be found in Keynes's Chapter XVI, "Sundry Observations on the Nature of Capital" of Keynes (1936), pp. 210-21. Apart from this chapter, I believe that it would be quite difficult to relate Pigou's treatment of the *General Theory* to Keynes's text.

[36] A similar conclusion follows if the yield on money is supposed to be positive and all other yields are zero, though the reasoning is somewhat different. While the price level can fall in this case, and thus raise wealth, the subsequent "wealth effect" must consist entirely of an increase in the demand for real money assets. Thus, there is again no "wealth effect" in the commodities market.

admit a certain set of other circumstances, which deviate sharply from Keynes's short-run theory, this effect does not hold. But then the other principal argument for full employment through flexible prices in this state is equally untenable. Perhaps the best course to follow in a zero-yield world and unemployment is that of trying, like Pigou, to prove an inherent inconsistency in the situation if money wage reductions are supposed not to raise employment.

It appears that Pigou made a more sizeable contribution in his reply to Keynes than has been observed in the past, requiring some reassessment of the previous Keynesian debate. Pigou's persistent effort in later writings to establish the post-Keynesian viability of Marshallian thought may be subject to criticism. But there is little doubt that in his 1943 and 1947 writings, he performed this task more skillfully than former accounts of his position would convey.

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