

A THEORETICAL ANALYSIS OF THE SIGNIFICANCE OF THE  
WEALTH EFFECT IN MACRO-ECONOMIC THEORY

by 500

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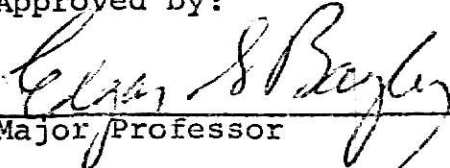
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## INTRODUCTION

The relationship of wealth to the level of consumption appears to have been recognized by economists at a very early date.<sup>1</sup> Wealth was interjected into economic analysis primarily as a response to the Keynesian contention that equilibrium is possible at less than full employment. The so-called "classical economists" found this prospect extremely disturbing--most particularly when it was applied to a perfectly competitive system with wage and price flexibilities.<sup>2</sup> While it would appear valid to say that much of Keynesian economics is compatible with the classical views<sup>3</sup> (a point that individuals on both sides of the controversy did not immediately recognize) it is equally evident that they are not totally compatible. It was as an attempt to show that there was an "automatic" mechanism which tended to restore full employment (in the absence of rigidities) that the wealth effect was first introduced as an element of a systematic body of theory.<sup>4</sup>

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<sup>1</sup> Boris P. Pesek and Thomas R. Saving, Money, Wealth, and Economic Theory (New York: The Macmillan Company, 1967), p. 1.

<sup>2</sup> Ibid., p. 11.

<sup>3</sup> Gardner Ackley, Macroeconomic Theory (New York: The Macmillan Company, 1961), p. 404.

<sup>4</sup> Pesek and Savings, Economic Theory, p. 12.



## OBJECTIVES

The purpose of this paper is fourfold:

First - to identify the phenomenon commonly referred to as the wealth effect.

Second - to examine the different mechanisms through which the wealth effect may operate.

Third - to analyze the conditions which determine whether the wealth effect can, in theory, be operative.

Fourth - to discuss the importance of the wealth effect in Macro-Economic Theory.

## A COMPARISON OF CLASSICAL AND KEYNESIAN SYSTEMS

In the latter portions of this paper the author will show that the wealth effect plays an important role in classical argument for a full-employment equilibrium. In order to construct a basis from which the wealth effect can be intelligibly introduced, we will next present a comparison of the classical and Keynesian models. The classical and Keynesian systems may be effectively described by the following set of equations and graphs of the type used by Ackley:

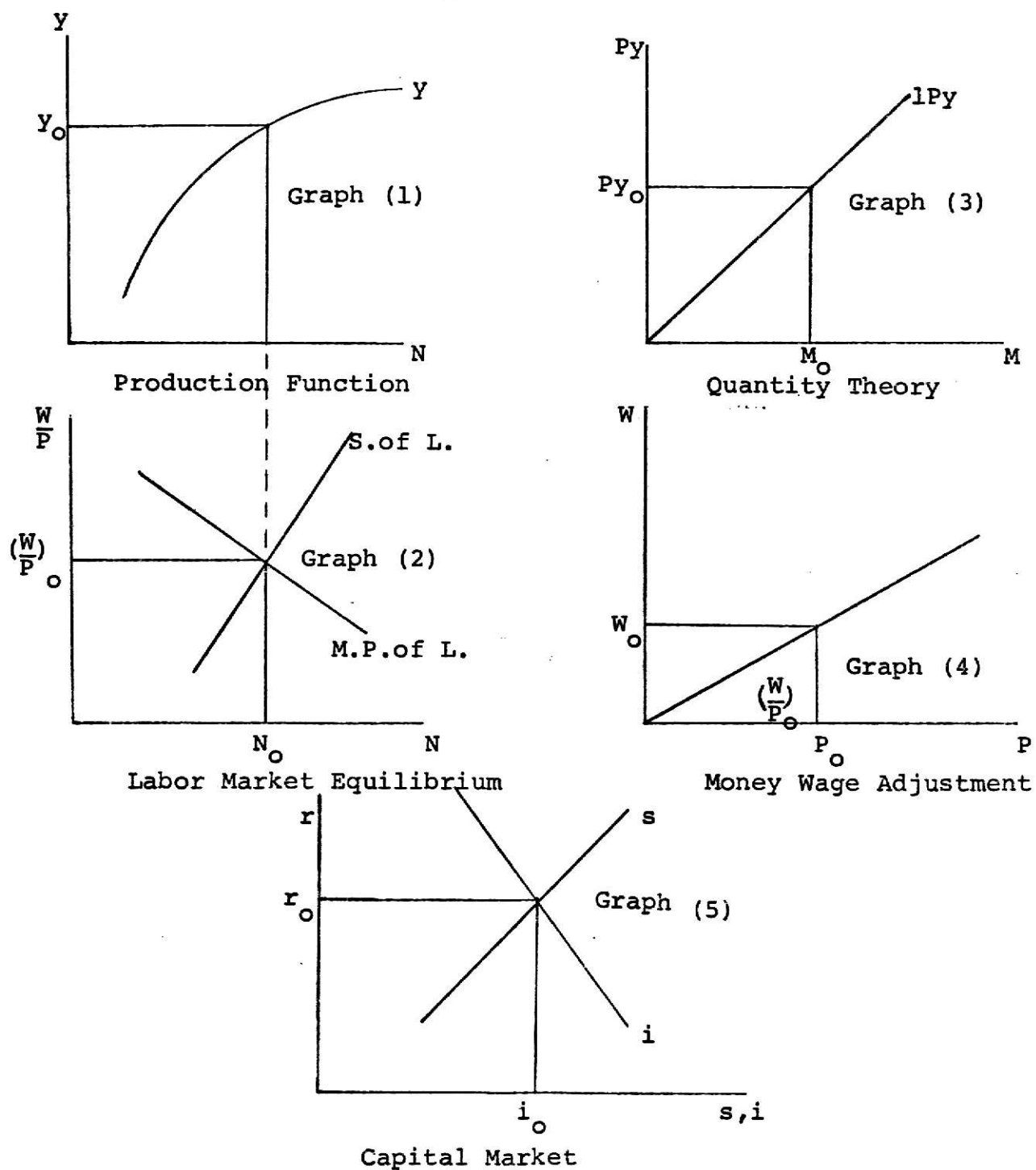
	<u>Classical</u>		<u>Keynesian</u>
(1)	$M = lPy$	(1)	$M = lPy + L(r)$
(2)	$y = y(N)$	(2)	$y = y(N)$
(3)	$\frac{dy}{dN} = \frac{W}{P}$	(3)	$\frac{dy}{dN} = \frac{W}{P}$
(4)	$N = N\left(\frac{W}{P}\right)$	(4)	$W = W_0$
(5)	$s = s(r)$	(5)	$s = s(y)$
(6)	$i = i(r)$	(6)	$i = i(r)$
(7)	$s = i$	(7)	$s = i$

where:

y = output	s = savings
N = employment	i = investment
W = money wage rate	r = the rate of interest
P = price level	Py = money income
M = quantity of money	
l = fraction of income that needs to be held to satisfy the transactions' demand for money	
L = fraction of income that needs to be held to satisfy the speculative demand for money	

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<sup>5</sup>Gardner Ackley, Macroeconomic Theory, p. 403.

Figure 1. The Classical System.<sup>6</sup><sup>6</sup> Ibid., pp. 131, 149.

The essential feature of the classical system is that it presents a model of full employment. Let us briefly examine this model.

We may (arbitrarily) start our analysis in the labor market. Here we assume profit maximization and perfect competition. The equilibrium condition for full employment is that the real wage rate  $\frac{W}{P}$  be such that demand for labor equals supply. The supply of labor is an increasing function of the real wage which is assumed given under perfect competition. On the demand side, output--and thus the demand for labor--are pushed to the point where the marginal product of labor is equal to the real wage rate. Technology is expressed in the form of a production function. Because the capital stock is assumed given, output depends only on the level of employment:  $y = y(N)$ . This portion of the classical system may be represented by Graphs 1 and 2 in Figure 1.<sup>7</sup>

Turning to the money market (see Graphs 3 and 4) we have the traditional requirement that demand and supply be equal in equilibrium. On the demand side we assume that no idle balances are held and that there is no speculative demand for money. This means that we have only a transactions demand for money, i.e., that the demand for cash balances is solely a matter of having

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<sup>7</sup>R. G. D. Allen, Macro-Economic Theory, A Mathematical Treatment (London: Macmillan Company, 1967), p. 103.

enough to meet the needs of current output ( $y$ ) in money terms.<sup>8</sup> The diagonal line  $l_{Py}$  shows the amount of money required for each level of money income or, phrased another way, the level of money income which each possible quantity of money can support. If the actual stock of money is  $M_0$  then the money income cannot exceed  $P y_0$ . We know  $y_0$  from Graph 1 so we can compute the equilibrium price level  $P_0$ .<sup>9</sup>

Graph 4 allows us to find the necessary level of the money wage. Recall that we found the equilibrium real wage rate in Graph 2. We plot this real wage....as a diagonal line in Graph 4. ("any real wage is a ratio of price to money wage; therefore corresponding to each real wage are numerous possible combinations of  $P$  and  $W$ , all of which fall on a straight line through the origin whose slope measures the real wage.") Given the equilibrium real wage which is determined in Graph 2 and the equilibrium price level which can be computed from Graph 3 and Graph 1, there is only one money wage which is consistent with both of these-- $W_0$ .<sup>10</sup>

It should be noted that this analysis can be divided into two parts, one real and one monetary. The real wage and the levels of employment and output are determined by only real factors: the

<sup>8</sup>Ibid.

<sup>9</sup>Ackley, Macroeconomic Theory, p. 132.

<sup>10</sup>Ibid.

marginal productivity of labor and the marginal disutility of labor. Money wages and prices are determined by only monetary factors. While changes on the "real" side can affect prices and wages, changes on the monetary side have no effect on real magnitudes.<sup>11</sup>

In its simplest form, the classical theory of saving and investment has no influence on the determination of income and employment. The function of the rate of interest is simply to equate planned savings and planned investment. The savings and investment functions are both in real terms, with investment (in real terms) a declining function of the real rate of interest, and savings an increasing function.<sup>12</sup>

In summary, it is of some importance to note that the classical system can be divided into three separate, self-contained branches. These are: employment theory and the real wage (Graphs 1 and 2), the price level (Graphs 3 and 4), and the rate of interest and the volume of savings and investment (Graph 5).<sup>13</sup>

In the classical system, if there is a divergence between the number of people desiring work at the going wage, the real wage will adjust in the appropriate direction and to the proper extent to allow all those desiring work to be employed. The only

<sup>11</sup>Ibid., p. 135.

<sup>12</sup>Allen, Macro-Economic Theory, p. 107.

<sup>13</sup>Ackley, Macroeconomic Theory, p. 158.

thing which could prevent this from happening would be a rigid or sticky wage rate--one that would not adjust at all or that did so too slowly.

Money wage rate adjustments could accomplish this result by working through the income and substitution effects resulting from the money wage cut. If only one wage group were seeking more employment they would obtain it because the price of their labor had declined relative to other wage groups or relative to other factors of production (i.e., capital and land). If we are talking about across-the-board wage cuts, increased employment might more easily be explained by labor replacing other factors with less trade-off among competing labor groups or with emphasis on the income effect. While an across-the-board money wage reduction would entail price reductions, it would also lead to a reduction in the real wage, although a smaller reduction.<sup>14</sup>

Hoarding--holding idle balances--was accepted as an occasional possibility (although irrational, it could happen in time of panic). It could not, however, result in unemployment because if money wages were flexible, employment could be maintained at the same level with the same real wage. The only thing that would be affected would be the price level. A simple manipulation of the equation of exchange ( $MV=PT$ ), which expresses the classical quantity theory of money, will confirm this conclusion.

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<sup>14</sup>Ibid., p. 162.

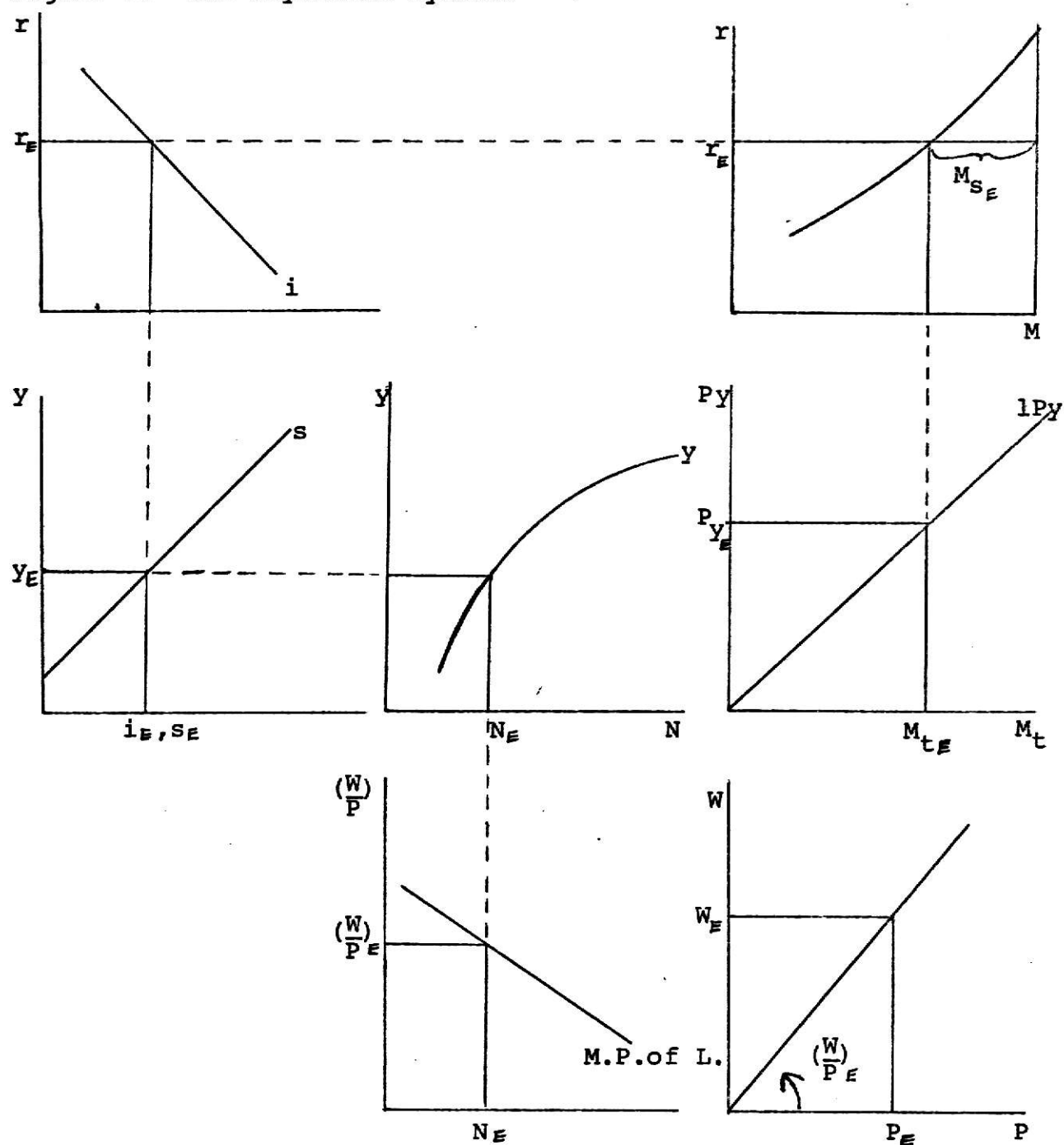
Changes in the propensity to save or in investment opportunities will have no effect on the level of employment. Increased or decreased thriftiness would be met by changes in the interest rate which would check the trend, thus maintaining demand. If interest-rate flexibility was not sufficient to maintain investment and consumer demand, full employment would still be maintained through wage and price adjustments.<sup>15</sup>

In conclusion, it should be noted that in the classical model unemployment--other than the frictional unemployment that will exist due to workers in transit between jobs and other "frictions" which prevent adjustment from occurring instantaneously--is caused by rigid wages.

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<sup>15</sup>Ibid., p. 163.



Figure 2. The Keynesian System.<sup>16</sup><sup>16</sup> Ibid., p. 378.

The Keynesian system, unlike the classical system, is completely interdependent (as is shown by the graphs on the preceding page). There are only three differences between the Keynesian system and the classical system.

- (1) The classical model has savings as a function of the rate of interest while Keynes presents it as a function of income.
- (2) The Keynesian demand for money includes both transactions and speculative demands for money while the classical includes only the former.
- (3) The classical economists viewed the real wage rate as flexible and the labor supply as a function of this real wage. Keynes viewed the labor supply as a function of the money wage and considered this wage to be autonomously determined. The use of an autonomously-determined wage rate allowed Keynes to represent his belief that wages are determined by factors beyond the control of the workers and are rigid--at least below some level. In the Ackley version of the Keynesian system the wage rate has reached the level at which it becomes rigid. The rigid money wage, together with the price level, determines the real wage rate. Employment then is determined by the demand function for labor--specifically, by the marginal product of labor and the

real wage rate, as illustrated in Figure 2.<sup>17</sup>

Let us analyze each of these differences with respect to the classical conclusion that there is an automatic mechanism which operated to maintain full employment.

### Savings

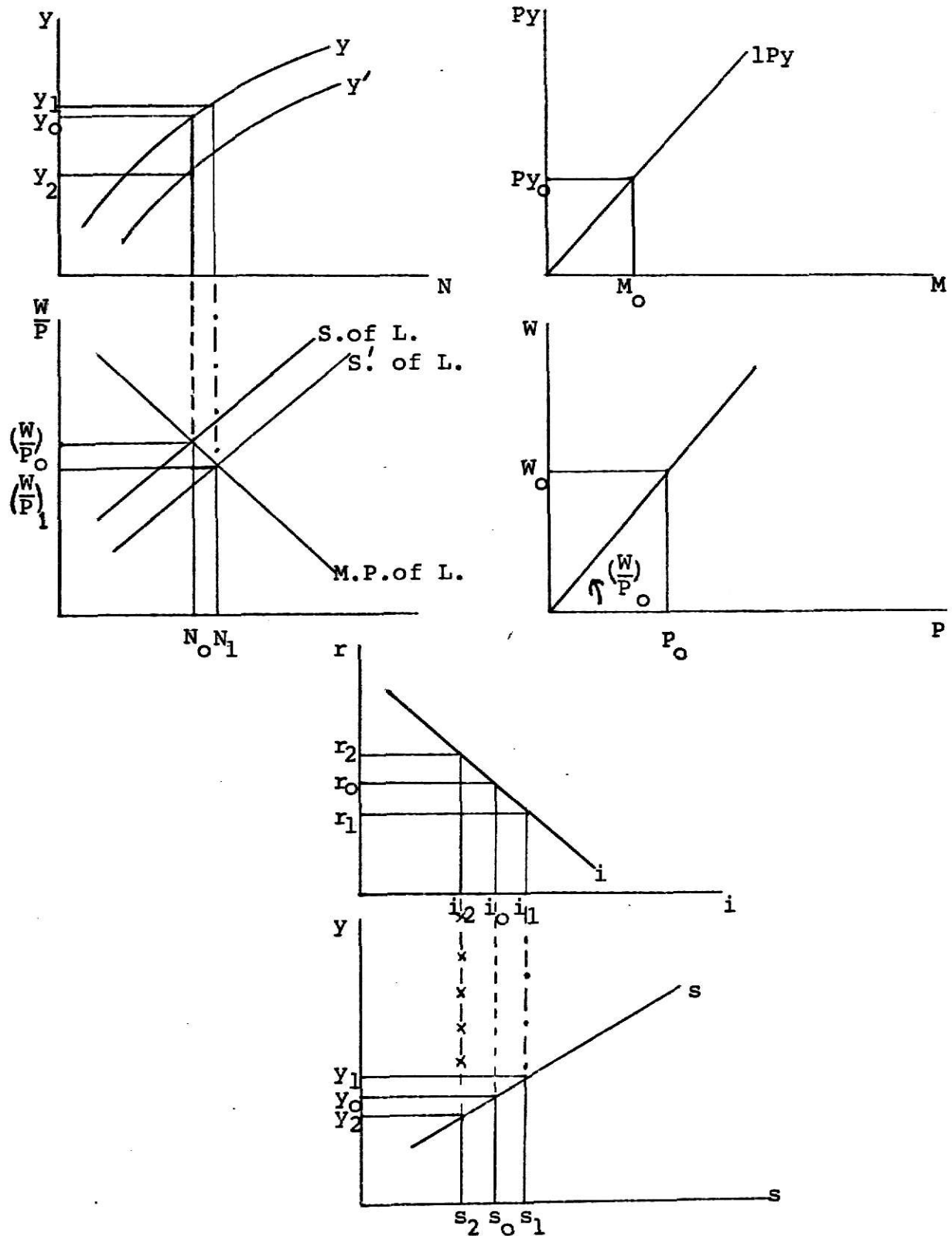
First consider the Keynesian alteration of the savings function. If the only change we make in the classical system is in the savings function--that is, allow savings to be a function of income rather than the rate of interest--the classical full-employment solution is not altered. (Refer to Figure 3.) The only difference is that, now, a shift in either the production function or the supply of labor will alter the rate of interest, because, by altering income, they change the level of saving relative to investment.<sup>18</sup> (In Figure 3, first note the movement of the labor supply function and the resulting increase in income from  $y_0$  to  $y_1$ . Next note the movement of the production function from  $y$  to  $y'$  and the change in income from  $y_0$  to  $y_2$ .)

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<sup>17</sup> Ibid., pp. 403, 404, and Allen, Macro-Economic Theory, p. 124.

<sup>18</sup> Ackley, Macroeconomic Theory, p. 404.

Figure 3. The Classical System with Modified Savings Function.



### Speculative Demand

Next let us discuss the consequences of the Keynesian speculative demand for money. Recall that as the classical economists saw the functioning of the capital market, the interest rate would automatically fluctuate to reflect changes in either saving or investment schedules. Thus, it was the decisions to save or not to save which were crucial to interest-rate determination. Keynes emphasized that the individual had to make an additional decision after deciding to save--whether the savings should take the form of an interest-bearing security or cash.<sup>19</sup> (Classical economists assumed holding idle cash balances--hoarding--was irrational and would occur only in a period of panic.) Keynes said cash might be held in preference to an earning asset in hopes of "securing a profit from knowing better than the market what the future will bring forth."<sup>20</sup> This is the speculative demand for money and was regarded by Keynes as a function of the rate of interest. (When interest rates are below those considered normal--that is, as reflected in security prices being above "normal"--people will sell bonds and hold cash. When bond prices are below what people regard as normal they will use their balances to buy

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<sup>19</sup> Myron H. Ross, Income: Analysis and Policy (New York: McGraw-Hill Book Company, 1964), p. 133.

<sup>20</sup> John Maynard Keynes, The General Theory of Employment, Interest and Money (New York: Harcourt, Brace & World Inc., 1936), p. 170.

securities--dishoard.) Now the demand for money depends on both the level of money national income and on the interest rate.<sup>21</sup>

This second demand for money (in which expectations about the future rate of interest play a crucial role) prevents the rate of interest from operating in the way the classical writers assumed it would.

If the interest rate varied automatically and freely to equate saving and investment, shifts in saving or investment schedules could have no effect other than to change the rate of interest and the division of a given total output between investment and consumption. But if the adjustment of the rate of interest is limited by speculation, the impact of shifts in saving or investment schedules will be on the aggregate demand for goods, leading, if wages and prices are flexible, to inflation; or, if they are rigid, to an increase or decrease in output and employment.<sup>22</sup>

Note that if the classical assumption of flexible wages is not violated, the classical conclusion regarding full employment remains valid. Any change in the quantity of money will cause prices and wages to change in the same direction and the same proportion. (See Figure 4.)<sup>23</sup>

What real difference does the inclusion of the speculative demand make, then? As a result of the speculative demand, changes in investment and saving propensities can no longer be handled

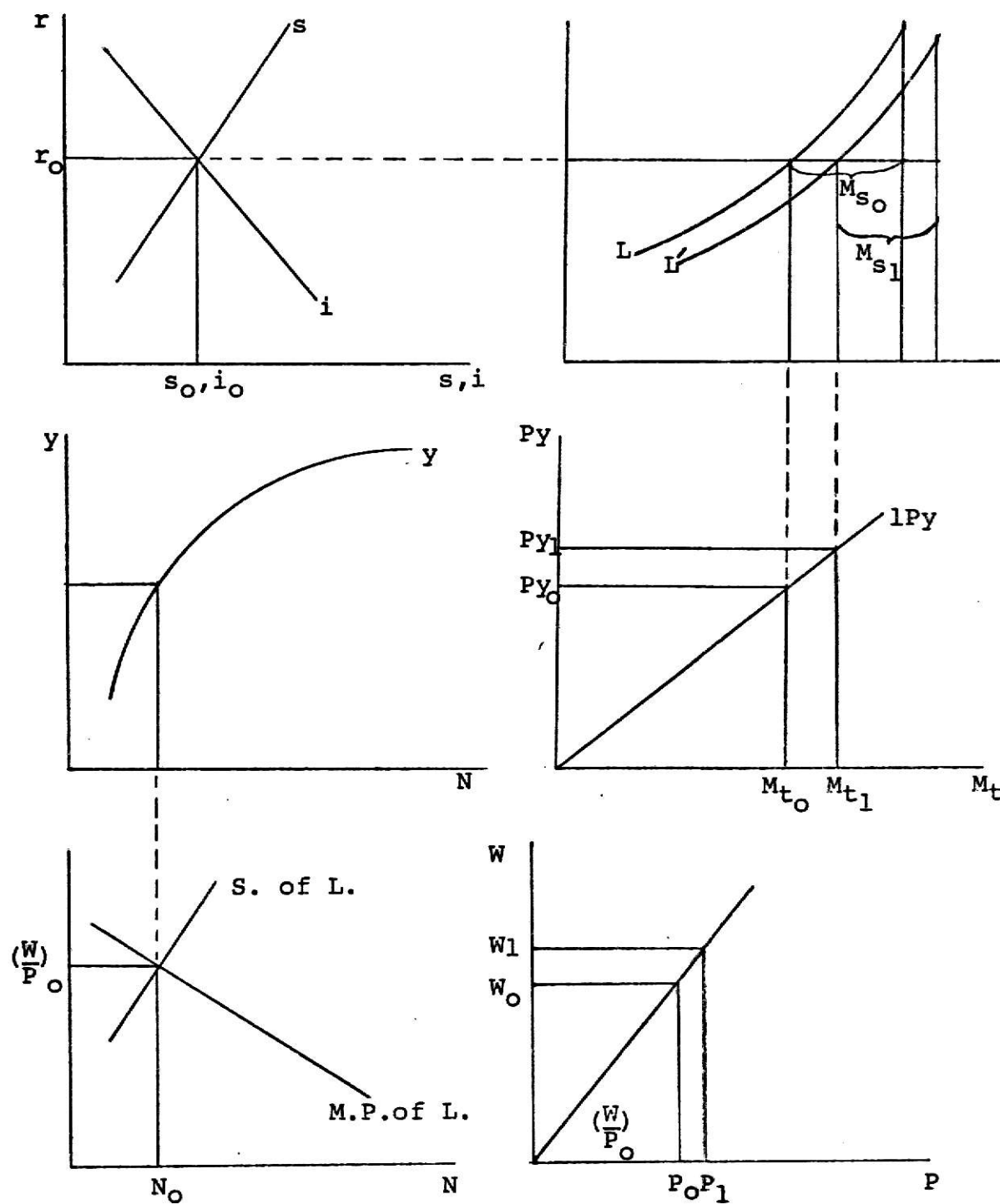
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<sup>21</sup>Ackley, Macroeconomic Theory, p. 178.

<sup>22</sup>Ibid., p. 184.

<sup>23</sup>Ibid., p. 191.

Figure 4. The Classical System Modified to Include the Speculative Demand.



by interest-rate adjustments alone, but will require price and wage changes. This places a heavier burden on the wage price mechanism to avoid unemployment. Still, however, the classical mechanism will (in theory) maintain full employment.

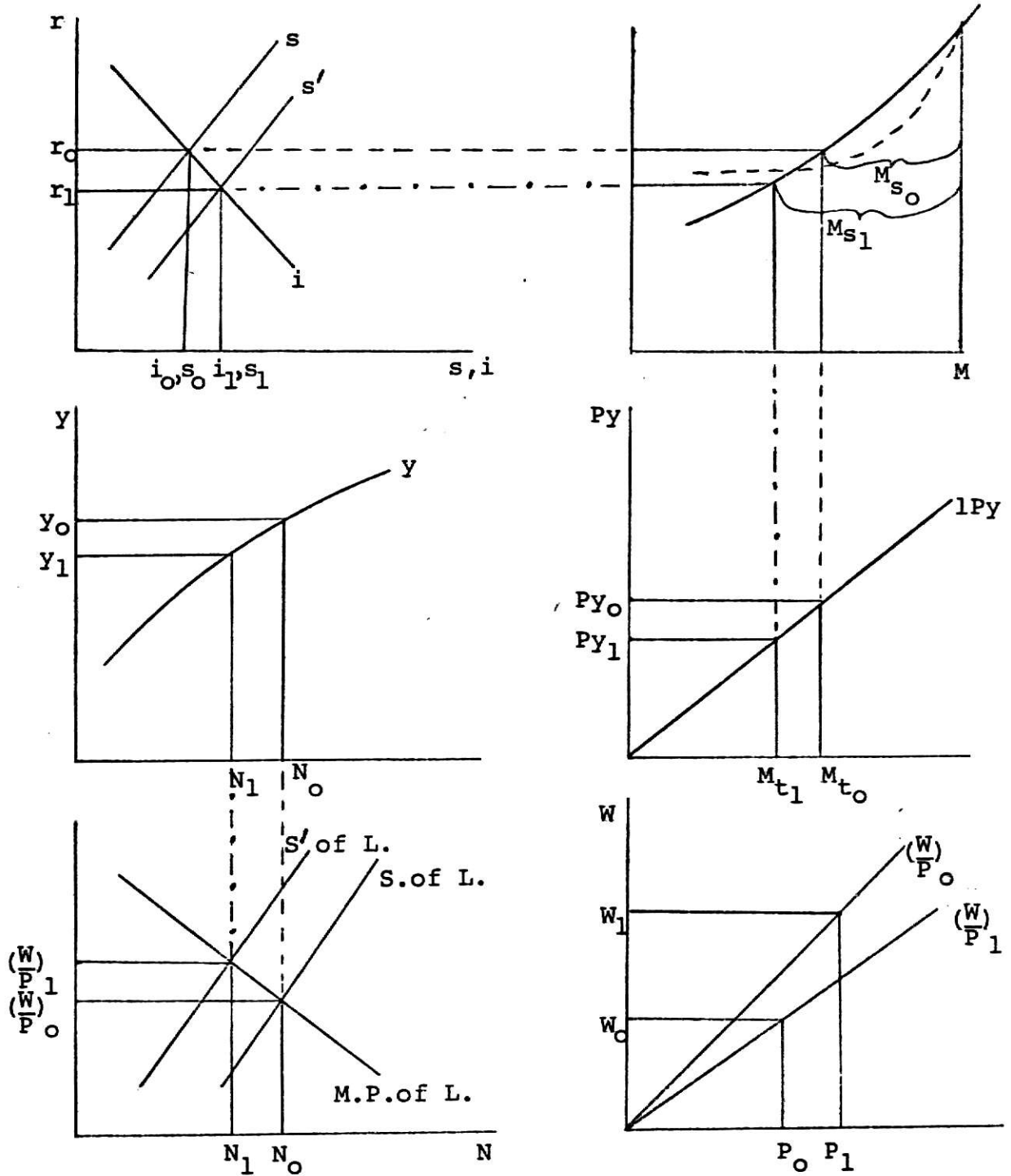
Keynes, however, pointed to an extreme case in which the speculative demand might make automatic full employment impossible even if wages and prices were entirely flexible. This situation is referred to as the liquidity trap. The argument is that during certain periods the speculative demand for money may become infinitely elastic or at least approach it. (See Figure 5.) What this means is that the public will hold any quantity of money at the going interest rate. If this interest rate is not one which is consistent with full employment (if aggregate demand is not sufficient to maintain full employment), revised classical theory--that is, classical theory modified to include the speculative demand--would tell us that falling wages and prices would release funds from transactions' balances and that these funds would go into speculative balances, bidding down the interest rate. This would stimulate investment demand and thus restore full employment. But, if we are at the trap level--all released funds will go to satisfy speculative demand at the same interest rate and the interest rate will not be affected. Thus, there is no stimulus to aggregate demand and the level of employment and income must drop to that consistent with the existing level of investment.<sup>24</sup> Thus,

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<sup>24</sup> Pesek and Saving, Economic Theory, p. 375.



Figure 5. The Classical System Modified to Include the Speculative Demand and the Liquidity Trap.



if we encounter the trap phenomenon, Keynes argues that there was no automatic mechanism which maintained full employment--even with flexible wages and prices.

If the only change we have made in the classical system is the inclusion of the speculative demand for money, we can show that there is a tendency to insure full employment. Assume that  $N_0$  represents full employment and that  $r_0$  is the rate of interest consistent with that level of employment. Say that the savings function shifts to the right. At the prevailing rate of interest ( $r_0$ ) the investment outlook is such that planned savings exceeds planned investment. Since we know that the realized savings and realized investment must be equal, we would have a reduction in the level of income to that which would provide a level of savings consistent with the existing level of investment. Now, this new level of income would also mean a higher level of  $(\frac{W}{P})$  initially. However, at  $N_1$  unemployment exists, thus if wages and prices were flexible competition would begin to bid the wage rate down. Thus we would have lower values of  $\frac{W}{P}$ ,  $P$ , and  $W$ . Because of these lower values we would also have a lower value for  $M_t$ . Thus, if we do not have a liquidity trap (trap represented by the dashed liquidity preference curve) this lower level of  $M_t$  releases money for the speculative sphere, driving down the rate of interest and thus increasing investment to  $i_1$ , the level which (in conjunction with consumption demand) provides the aggregate demand necessary to restore full employment.

Now, if we encounter the liquidity trap, this process will occur, but it will be in vain. The rate of interest will not fall below the trap level--thus we will have no stimulus to aggregate demand and full employment will not be restored. Income will fall until the level of saving is equated with the level of investment.<sup>25</sup> However, since we do not have full employment, there will continue to be incentive for money wages and prices to continue to fall toward zero. These, however, will not be able to affect the level of output or employment, or the real wage, because the liquidity trap prevents these monetary factors from influencing the rate of interest.<sup>26</sup>

There is another possible situation which Keynes felt might occur and one which would result in less than full employment equilibrium. This phenomenon is referred to (by Ackley) as the inconsistency of saving and investment. If the saving and investment schedules were both quite inelastic and did not intersect at a positive rate of interest, then full employment would be impossible.

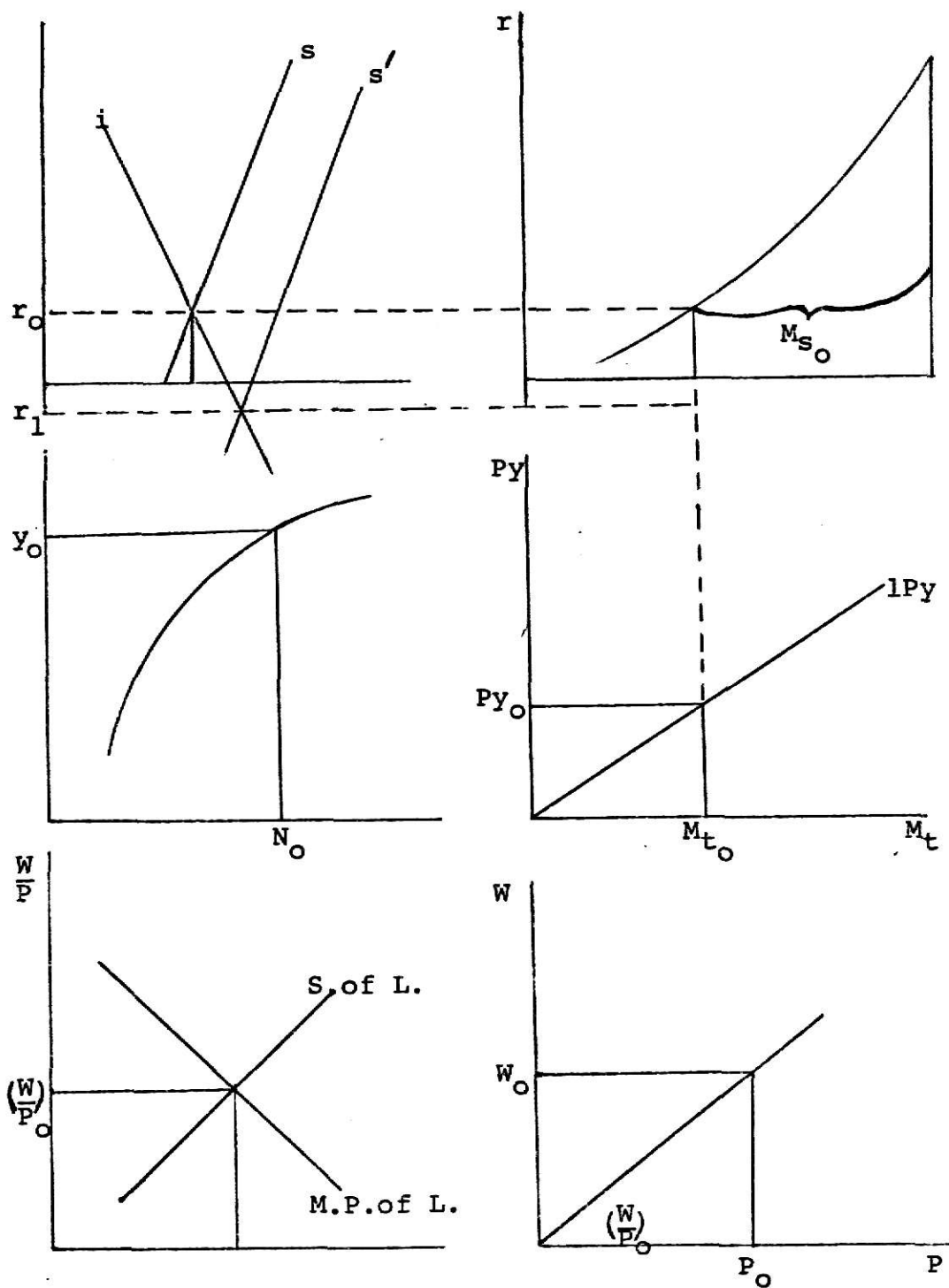
Referring to Figure 6, let us imagine some exogenous impact on the economy which causes the savings schedule to shift to the right (to  $s'$ ). In this new position the only rate of interest

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<sup>25</sup> Ross, Income: Analysis and Policy, p. 189.

<sup>26</sup> Ackley, Macroeconomic Theory, p. 384.

Figure 6. The Classical System Modified to Include the Speculative Demand and the Inconsistency of Saving and Investment.



which would equate savings and investment is a negative (and therefore impossible) rate. Thus aggregate demand must decrease and income and employment must fall.

In this situation we will not have a full employment equilibrium, but we will not have a less than full employment equilibrium either. Since the prevailing rate of interest will (of necessity) be something positive, income must fall initially (when savings schedule shifts from  $s$  to  $s'$ ). After that, money wages and prices will continue to fall and the interest rate will fall towards zero. Thus investment will increase from what it was after the initial fall but it cannot reach the full employment level (because that would require a negative rate of interest).<sup>27</sup>

#### Rigid Wages

The third modification which Keynes mentioned had to do with the real wage rate. He suggested that "since there is, as a rule, no means of securing a simultaneous and equal reduction of money-wages in all industries, it is in the interest of all workers to resist a reduction in their own particular case."<sup>28</sup> Thus Keynes says that the assumption which classical economists relied on to maintain full employment is not realistic.

If we introduce rigid wages in the classical system,

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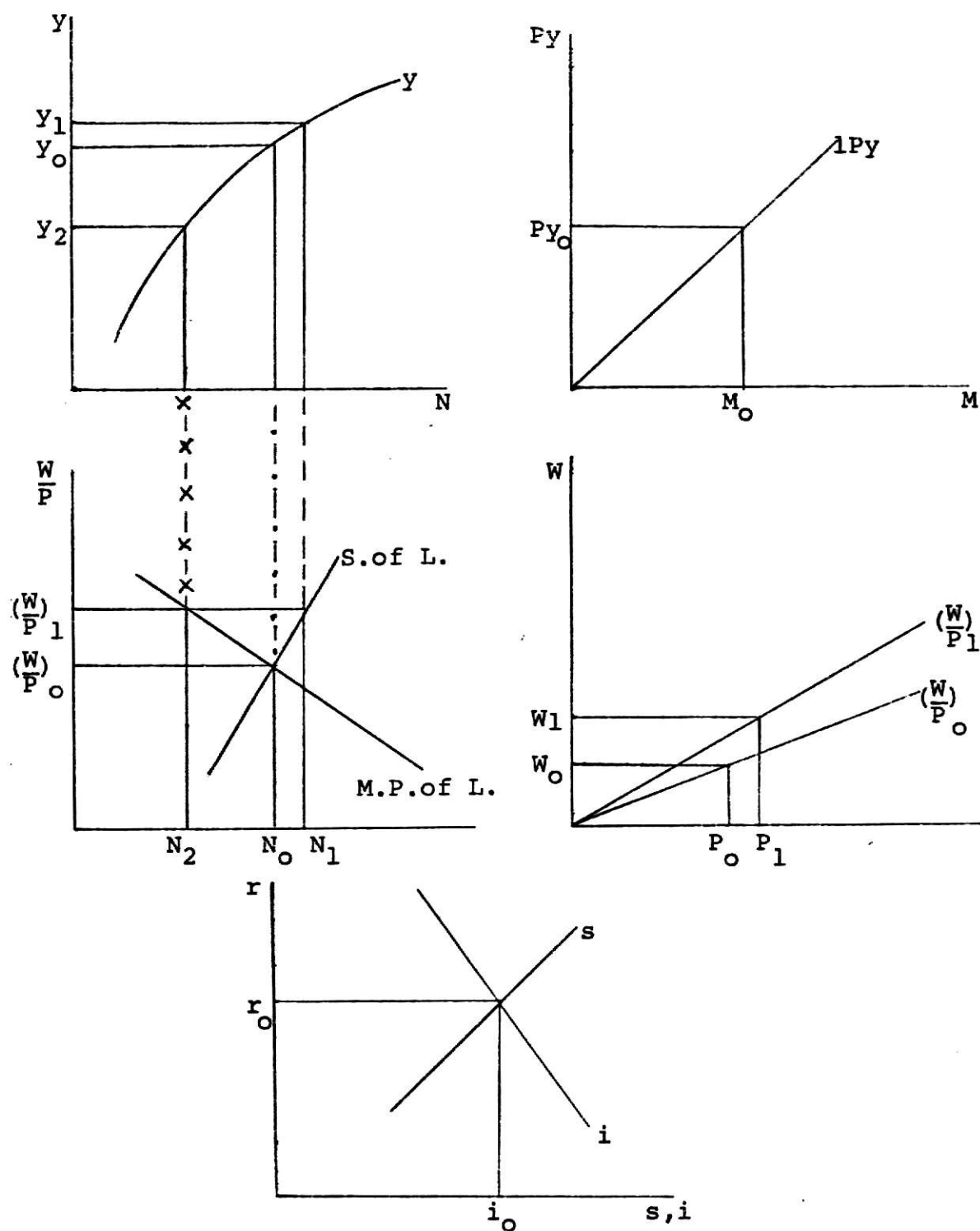
<sup>27</sup> Ibid., p. 385.

<sup>28</sup> Keynes, The General Theory, p. 264.

a larger burden is imposed on interest rate adjustments. If the interest rate is allowed to fluctuate to equate saving and investment there will still be no deficiency of aggregate demand. However, if rigidities develop in the interest rate, aggregate demand will fall and the wage rate will not be able to adjust to prevent unemployment.

If, due to labor union influence, the wage rate were rigid at some level--say  $(\frac{W}{P})_1$  in Figure 7, and the wage rate consistent with full employment was  $(\frac{W}{P})_0$ , unemployment to the extent  $N_1-N_2$  would exist. If wages were rigid there would be no tendency for this situation to be eliminated and income would be reduced to  $y_2$  with the level of employment reduced to  $N_2$  and the real wage rate increased to  $(\frac{W}{P})_1$ .

Figure 7. The Response of the Classical System to an Increase in the Labor Supply.



## THE WEALTH EFFECT

As mentioned earlier, many classical economists found rather disturbing the Keynesian contention that a less-than-full employment equilibrium was possible. It was in an attempt to show that such an equilibrium could not exist (unless prices and wages are rigid) that the wealth effect began to appear in the literature of economics.

### The Price-Induced Wealth Effect

There are several mechanisms by which the wealth effect may operate. The first attempts to defend classical theory were formulated in terms of the "price-induced wealth effect".

The price-induced wealth effect was discovered (or perhaps rediscovered, depending on how we view some earlier references in literature) almost simultaneously by Haberler, Scitovsky and Pigou.

Gottfried Haberler's version of the wealth effect appeared in a passage of his book Prosperity and Depression. Previous to the following excerpt, Haberler has been talking about the contraction phase of the business cycle. He continues:

.....continuance of the contraction must be accompanied by a growing accumulation of money hoards in various shapes; liquidity increases,  $M_2$  goes up (note this is a Keynesian analysis). The magnitude of these hoards will increase, as measured in terms of the monetary unit, at the expense of money in circulation: it increases still faster owing



to the fall in prices, in terms of real purchasing power. (What Haberler is referring to here is the fall in prices which accompanies a fall in wages.) These hoards will grow in relation to real income as well as in relation to real wealth. In other words, people will hold an increasing proportion of their real income and wealth in the liquid form of money.....After liquid resources have reached a certain high proportion of wealth, the need for liquidity will eventually become satisfied and people will stop adding to their hoards.....One or both of two things will then happen. Either more....money will be lent out on the capital market, with the result that the rate of interest will be forced down.....or, if demand of producers for credit is absolutely inelastic, people will become less disposed to save--in Mr. Keynes' terminology, the propensity to consume will rise in addition to the decrease in the liquidity preference--and the demand for consumers' goods will cease to fall, or may even rise.<sup>29</sup>

What Haberler appears to be saying is that the marginal propensity to consume depends in part on the level-of-wealth holding of an individual (as well as the individual income). Money hoards are a form of wealth--liquid wealth, to be precise. When prices fall, the real purchasing power represented by these hoards (stocks of wealth) increases. Haberler suggests that at some level of real wealth people will be satisfied that this stock represents a large enough stock. (People are hoarding for some purpose--at some level of real wealth they will believe that they have enough accumulated to provide for that purpose.) When that happens they will become less disposed to save--that is, their marginal propensity to save will decrease. This phenomena,

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<sup>29</sup>Gottfried Haberler, Prosperity And Depression (Geneva: League of Nations, 1941), pp. 388, 389. Reader should note that passages in parentheses reflect comments by author of this report and are not a part of the quotation.

in which a decline in prices causes the real value of wealth to increase, which in turn leads to a decrease in the marginal propensity to save, is what is called the "price-induced wealth effect".

Tibor de Scitovszky, in an article published at about the same time, also indicated that wealth might be a determinant of consumption (saving) and noted the possibility of a price-induced wealth effect.

As to the determinants of the rate of saving, we shall assume that the proportion people save out of their income is an increasing function of the level of real income, an increasing function of the real rate of interest, and a diminishing function of the stock of purchasing power already accumulated.

....the third of our assumptions--that the accumulation of wealth diminishes the desire to save--I have never as yet seen mentioned and it is only stated here tentatively for completeness' sake.

....the stock of savings is given by the fixed quantity of money. As prices fall the stock of purchasing power which it represents increases and, if our third assumption holds good, this will cause the rate of saving--and with it the time-rate of price--fall, to diminish. Thus, on this assumption, we get an asymptotic approach to a long-period equilibrium where the price-level ceases falling because the stock of money has come to represent such a large store of purchasing power that the community can no longer increase its satisfaction by adding to it and, therefore, spends its entire income.<sup>30</sup>

While Haberler and Scitovszky were two of the three discoverers" of the price-induced wealth effect, the third was by far the most influential. The third member of the group was

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<sup>30</sup>Tibor de Scitovszky, Review of Economic Studies, Vol. VIII (New York: Kraus Reprint Corp., 1940-41), pp. 71, 72.

### A. C. Pigou.

In a book published in 1941 (the same year that Haberler's book was published) Pigou began to lay the groundwork for his offering in defense of classical theory.

The factors *prima facie* relevant to the proportion of income saved may be set out as follows. The first factor is the amount of a man's real income. Plainly, it makes no difference to the proportion whether money income is large and prices high or money income is small and prices correspondingly low. The significant thing is not money income but real income.....the second factor is the rate of interest.....the third factor is the rate of time preference .....the fourth factor is his consumption utility curve.. .....a fifth factor is the present value of the direct amenity utility, in the form of power, sense of security and so on, if any, which a typically constituted man expects to derive from having his marginal unit of present savings, as distinct from the utility which he expects the future incomes due to that unit to yield.<sup>31</sup>

This fifth factor is of crucial importance because it means individuals will save even at a zero rate of interest.

Pigou says that if we assume the amenity value of having savings to be zero, an individual will save nothing and dissave nothing if his rate of time preference is exactly equal to the rate of interest. But he says this is probably not the case; the individual probably does receive some amenity utility from the savings he has. This means that when his rate of time preference is equal to the rate of interest he will still have incentive to save something. Pigou notes two conditions under which

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<sup>31</sup> Arthur C. Pigou, Employment and Equilibrium (London: Macmillan and Co. Limited, 1941), pp. 101-103.

an individual will save (or dissave) nothing:

- (1) His rate of time preference exceeds the rate of interest by an amount sufficient to compensate for the amenity value of his marginal unit of saving.
- (2) The relevant part of his consumption utility curve is absolutely, or nearly absolutely, inelastic.  
(Which implies he is very poor.)<sup>32</sup>

We have seen that the amenity value of savings plays an important role in determining whether an individual will continue to save or not. The magnitude of this amenity value depends on two things:

- (1) The level of a man's consumption.
- (2) The size of his stock of already accumulated capital.

If an individual's level of consumption is low, he is more concerned with the source of his next meal than in providing for a more long-term objective such as a secure future. By the same token, if this individual reaches the point where he can meet his subsistence requirement and also manage to save some portion of his income, additions which he manages to make will yield more amenity as they are added to his small store of savings than they would if he already had a large nest egg.<sup>33</sup>

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<sup>32</sup> Scitovszky, Review of Economic Studies, p. 105.

<sup>33</sup> Pigou, Employment and Equilibrium, p. 112.

Considering the above discussion, it should be plain that if the "representative" man's real income is less than some positive amount, he will not save anything, no matter what the prevailing rate of interest. That is to say, a low-level full employment stationary state must be possible because at this low level we do not have to worry about deficient aggregate demand due to planned savings not equalling planned investment. Pigou felt, therefore, that we need be in doubt only about a high-level full-employment stationary state. The common view until Keynes' General Theory of Employment, Interest and Money had been that such a high-level full-employment stationary state was not only possible but was the inevitable goal of an economy. This is true, provided that there is no internally-imposed limit below which the rate of interest offered by demanders cannot fall. But, if this rate has a lower limit, the issue is less clear.<sup>34</sup>

Pigou states that while Keynes suggested that this minimum level of the rate of interest could be substantially greater than nothing, he believes the realistic rate to be zero. Pigou felt that Keynes failed to notice that what is relevant is not the average, but the marginal, cost of bringing borrowers and lenders together, and that many people invest in their own businesses where these costs do not exist.<sup>35</sup> What Pigou has actually

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<sup>34</sup>Ibid., p. 122.

<sup>35</sup>Ibid., p. 124.

done here is rule out the Keynesian liquidity trap as a practical possibility (just as Keynes ruled out flexible prices as a practical possibility). He next proceeds to discuss the so-called savings-investment inconsistency.

It may happen, for all possible amounts of capital accumulation, that the rate of interest at which exactly nil new investment will be supplied is negative. That is to say, it may happen that there is no level of capital accumulation for which the demand price for one unit of new investment stands as low as the supply price, i.e., at which the equilibrium of a high-level full-employment stationary state can establish itself.<sup>36</sup>

Pigou says that the only way to prove that a high-level full-employment equilibrium is always possible would be to show that in the last resort forces will be brought into play which prevent the rate corresponding to the representative man's rate of time preference--corrected to reflect the amenity value of savings--from being negative.

Let us suppose that the interest rate has fallen to zero. This is where Keynes appears. His argument is basically this: People still want to save. This follows from the fact that the rate of interest plus the amenity value of marginal saving is greater than the rate of time preference.<sup>37</sup> At a zero rate of interest no new investment is being demanded (it is lack of investment demand which has driven the rate this low) so the indi-

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<sup>36</sup>Ibid., p. 126.

<sup>37</sup>A. C. Pigou, "Economic Progress In A Stable Environment" in Readings In Monetary Theory (New York: The Blakiston Company, 1951), p. 248.



viduals will try to satisfy their savings desire by making purchases of already existing durable goods. The people who possess these goods, since the quantity of them cannot be increased, will continually ask, and those who do not have them will continually offer, higher and higher prices in terms of consumer goods. This causes a continuous reduction in aggregate money demand.

Since....the rate of interest cannot fall below nothing, the only way in which demand and supply can be brought into equilibrium is by workpeople being forced out of employment, till a new and lower level of real income is established, in respect of which the representative man does not desire to invest (i.e., save) anything at a nil (or small positive) rate of interest. What, then, happens? To resist this movement and maintain themselves in work, wage-earners offer to accept lower rates of money wages, and go on doing this so long as the pressure to reduce employment is maintained. At first sight it seems as though this process must land us in an endless state of disequilibrium with money wage-rates falling for ever. But this is not so. As money wage-rates fall money income must fall also and go on falling. Employment, and so real income, being maintained, this entails that prices fall and go on falling; which is another way of saying that the stock of money, as valued in terms of real income, correspondingly rises. But the extent to which the representative man desires to make savings otherwise than for the sake of their future income yield depends in part on the size, in terms of real income, of his existing possessions. As this increases, the amount that he so desires to save out of any assigned real income diminishes and ultimately vanishes; so that we are back in the situation....where a negative rate of interest is impossible.<sup>38</sup> Thus, through the decline of money income, the investment-income function is modified in such wise that a set-up emerges in which no condition incompatible with full employment is embodied.<sup>39</sup>

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<sup>38</sup> It appears to the author that Pigou uses the term "rate of interest" to refer to the actual rate and the theoretical rate. The actual rate is a function of money income and can never fall below zero (probably could never actually reach zero but could approach it). The equilibrium rate of interest could be negative were it not for the wealth effect. (Con. next page.)

Refinements and extensions of the "Pigou effect"--the most prominent of the early versions of the price-induced wealth effect--emphasize that whether or not a wealth effect can be theoretically operative depends on precisely what assets are affected by the price change and on how these assets are dispersed throughout the economy. The importance of these specifications will become evident as the report progresses.

The Pigou effect is commonly viewed as emphasizing the wealth effect as generated through the effect of falling wages and prices on government bonds and government money.<sup>40</sup> This

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38 (Con.) Pigou notes that "...the rate at which the representative man discounts future satisfactions can obviously never be  $\leq 0$ , no matter how large his real income". But, as mentioned earlier, "People save partly from other motives--the desire for possession as such, conformity to tradition or custom, and so on. This entails that the rate of interest is less than the rate at which the representative man discounts future satisfactions. The fact that this latter rate cannot be nil or negative does not, therefore, imply that the rate of interest cannot be nil or negative". What Pigou is drawing attention to in the passage that this footnote refers to is the fact that this other motive--the extent to which the representative man desires to make savings otherwise than for the sake of their future income yield--depends on the size (in real terms) of his existing possessions. As prices fall the real value of this stock increases and his desire to save for this "other motive" ultimately vanishes. When this happens we are back to the situation where the rate of interest represents the rate at which future satisfactions are discounted and, as mentioned earlier, this cannot be less than zero.

<sup>39</sup>A. C. Pigou, "The Classical Stationary State" in Economic Journal, Vol. 53-54 (December, 1943), pp. 349-350.

<sup>40</sup>Thomas Mayer, "The Empirical Significance of the Real Balance Effect" in Quarterly Journal of Economics, May, 1959, p. 280, and: Gardner Ackley, "The Wealth-Saving Relationship" in The Journal of Political Economy, April, 1951, p. 154.



interpretation probably stems from a passage in "Economic Progress in a Stable Environment":

As the money rate of wages falls the money price of consumption goods falls also. This entails that the value in terms of consumption goods of the stock of money, and, along with this, that of other sorts of non-instrumental property, such as Old Masters, which are specially attractive as receptacles for, or embodiments of, savings, expands. This means that the total stock of property, as valued in consumption goods, which is held by the public becomes progressively larger and larger.<sup>41</sup>

#### Extensions of the Price-Induced Wealth Effect

The Pigou effect is the form of the price-induced wealth effect which really laid the groundwork for later formulations and began to expose questions which needed to be answered.

#### Patinkin

Patinkin analyzes some aspects of the wealth effect that Pigou seems to slight. (The manner in which Pigou states his version of the wealth effect implies that he was aware of them but he neglected any discussion of them.)

It is obvious that a price reduction has a stimulating effect on creditors. But, restricting ourselves to the private sector of a closed economy, to every stimulated creditor there corresponds a discouraged debtor. Hence from this viewpoint the net effect of a price reduction is likely to be in the neighborhood of zero. The neatness of the Pigou approach lies in its utilizing the fact that although the private sector considered in isolation is, on balance, neither debtor nor creditor, when considered in

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<sup>41</sup>Pigou, "Economic Progress", pp. 249, 250.

its relationship to the government it must be a net "creditor". This is due to the fact that the private sector always holds money, which is a (non-interest bearing) "debt" of government. If we assume that government activity is not affected by the movements of the absolute price level,<sup>42</sup> then the net effect of a price decline must always be stimulatory. The community gains at the "expense" of a gracious government, ready, willing, and able to bear the "loss" of the increased value of its "debt" to the public.<sup>43</sup>

Not every price reduction will (necessarily) have this stimulating effect. If the decline were to reduce the real value of other assets (i.e., houses, stock shares, etc.) to an extent which more than offset the increased value of real cash balances, then the net effect would be discouraging. Patinkin emphasizes, however, that as Pigou presents his analysis there always exists a price level sufficiently low so that the total real value of assets corresponding to it exceeds the original real value--in other words, such that the increased value of real cash balances outweighs the decline in the real value of these other assets.

Patinkin notes that this conclusion is subject to at least two reservations that Pigou did not consider:

- (1) We have been tacitly assuming that the depressing effect of a price decline on a debtor is approximately offset by its stimulating effect on a creditor; thus

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<sup>42</sup>Patinkin believes that Pigou made this assumption because Pigou's investment function--which Patinkin assumes includes government expenditure--is independent of the absolute price level.

<sup>43</sup>Don Patinkin, "Price Flexibility and Full Employment" in Readings in Monetary Theory (New York: The Blakiston Company, 1951), pp. 261, 262.

the private sector, being on balance a creditor with respect to the government, can ultimately be stimulated by a price decline. However, allowance must be made for the possibility of a differential reaction of debtors and creditors. This means that if debtors are discouraged by a price decline much more than creditors are encouraged, it may be that there exists no price decline which would have an encouraging effect on expenditures. (That is, Pigou is overlooking the possibility of "distribution effects".)

- (2) Thus far we have only considered the effects of a change in real balances on household behavior. Patinkin points out that the analysis should probably be extended to include the influence of real cash balances on firms (and thus the investment function) as well as households. This extension cannot be made automatically because the motivations of firms and households are not necessarily the same. When we begin to consider firms the concept of differential reactions becomes increasingly important.

If firms are, on balance, debtors with respect to households and government, then a persistent price decline will cause a wave of bankruptcies. This will have seriously depressing effect upon the economy which may not be offset by the improved status of creditors. Furthermore, in most cases of bankruptcy the creditors also lose. For these reasons it is not at all certain that a price decline will result in a

positive net effect on the total expenditures (consumption plus investment) function.<sup>44</sup>

Patinkin believed that still another clarification of the Pigou position needed to be made. We know that Pigou assumed (explicitly) that savings are directly related to the price level and thus inversely related to the size of real cash balances. Patinkin notes, however, that even disregarding the two reservations mentioned above, this assumption is not sufficient to reach Pigou's conclusion. Patinkin states that, in an attempt to reach the desired conclusion, Pigou implicitly made an additional assumption which is possibly less plausible than the first. In addition to postulating the direction of the relationship between savings and the price level, Pigou implies something about its intensity.

As the price level falls, the savings function shifts to the right; this follows from the first assumption. Patinkin points to the possibility that if the real value of peoples' cash balances continues to rise, they may be less and less affected by this increase. What he means is that for each successive increase in real balances resulting from a price decline, the savings function may move less and less to the right. Patinkin notes that eventually it might respond only "infinitesimally", no matter how much further prices fell. Thus, what Patinkin is suggesting

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<sup>44</sup>Patinkin, "Price Flexibility and Full Employment", pp. 262-264.

is that the savings function may approach some limiting position. The validity of Pigou's argument depends on the assumption that the intensity of the inverse relationship between savings and real cash balances is such that it is possible to shift the savings function to a position where it will intercept the investment function at a positive rate of interest.<sup>45</sup>

While Patinkin probably should not be classified as one of the "discoverers" of the wealth effect, his writings did a great deal to expand and clarify the discussion about the price-induced wealth effect.

Actually, it was Patinkin that first coined the term "Pigou Effect".<sup>46</sup> In subsequent works he used the term "real-balance effect" to refer to this same phenomenon.<sup>47</sup>

<sup>45</sup>Ibid., pp. 266, 267.

<sup>46</sup>Ibid., p. 27.

<sup>47</sup>Don Patinkin, Money, Interest and Prices (White Plains, N. Y.: Row, Peterson and Company, 1956) - the footnote p. 21. Some writers have attempted to make a distinction between the "Pigou Effect" and the "real-balance effect":

Lawrence R. Klein, The Keynesian Revolution (New York: The Macmillan Company, 1966), p. 201: "...Pigou stimulated much interest by his analysis of the effect of real-cash holdings. This was generalized and elaborated by Patinkin to the real-balance effect, including all consumer wealth and not simply cash wealth."

E. J. Mishan, "A Fallacy in the Interpretation of the Cash Balance Effect" in Economica, (May, 1958), p. 106 and esp. p. 116: "....the asset-expenditure (Mishan's terminology for Pigou) effect....., unlike the cash (real) balance effect,..... requires for its action a movement in the price-level and not merely a movement in the level of money income."

.....the individual's excess demand for a given commodity depends on the relative prices with which he is confronted in the market and on the real value of his initial collection.....we denote the real value of the initial money holdings.....by the term "real balances"....it (dependence on real balances) is simply the obverse side of the familiar demand for money.....For to say that an individual adjusts his money balances so as to maintain a desired relationship between them and his planned expenditures on commodities is at the same time to say that he adjusts these expenditures so as to maintain a desired relationship between them and his money balances.....If the individual is confronted with a change in the price<sup>48</sup> of a single commodity, the corresponding change in the amounts he demands of the various commodities is the resultant of all three effects: for there is a change in relative prices, and hence a substitution effect; there is a change in real income, and hence an income effect; finally, there is a change in the price level and therefore in the real value of his initial money holdings, and hence a real-balance effect.<sup>49</sup>

#### "The Nature of the Assumptions"<sup>50</sup>

In the opinion of the author, Patinkin's most valuable contribution to the discussion of the wealth-effect was his analysis of the basic assumptions on which the wealth effect depends for its validity. Patinkin was among the first to explicitly discuss these assumptions and his efforts surely form the foundation for later extensions and revisions.

In this section of the paper we will present these assumptions as Patinkin viewed them and then make whatever additional

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<sup>48</sup>While the example deals with price changes, it is only an example. Note footnote number 47--see "Mishan".

<sup>49</sup>Patinkin, Money, Interest and Prices, pp. 19-21.

<sup>50</sup>Title of Chapter 12 of Money, Interest and Prices, 1st Ed.

comments seem necessary to reflect views differing from those of Patinkin or extending his analysis.

### Wage and Price Flexibility.

Recall from earlier in the paper that Patinkin viewed the real-balance effect as occurring because "there is a change in the price level and therefore in the real value of his initial money holdings." Patinkin states quite unambiguously that without the assumption of wage and price flexibility no real-balance effect can be generated.<sup>51</sup>

The Patinkin conclusion is also the conclusion reached by most writers discussing the assumption of price flexibility. It would appear to be Pigou's agreement about the importance of this assumption<sup>52</sup> (and other factors such as speed of operation) which led him to view the wealth effect not as a possible policy measure but as an "academic exercise...., of some slight use perhaps for clarifying thought, but with very little chance of ever being posed on the chequer board of actual life".<sup>53</sup>

Lerner: Pesek and Saving point out that A. P. Lerner denies the empirical relevancy of the price-induced wealth effect

<sup>51</sup>Ibid., p. 191.

<sup>52</sup>Pigou agreed about the importance of price and wage flexibility and agreed that it probably would not exist, in "Economic Progress in a Stable Environment", p. 251.

<sup>53</sup>Ibid.



precisely on the basis outlined by Pigou.<sup>54</sup>

If there were perfect price flexibility, so that any deficiency in demand would make prices fall so rapidly and excess demand would make prices rise so rapidly that we would not have to worry about what happens while the adjustment is going on, there would be no room for "Keynesian economics", or indeed for any policy at all with regard to effective demand.<sup>55</sup>

Lerner emphasizes that we do need policy--because we do not have, and can never have, this kind of price flexibility. He notes that it is the degree of imperfection in price flexibility (from "perfect" flexibility) that dictates the appropriate policy measure.<sup>56</sup>

Although Lerner did not believe that it would be possible to raise the consumption function via the mechanism indicated by Pigou and Patinkin, he did suggest a method which he felt would work.

A tendency to depression exists only when people do not spend enough--they are too eager to save.....

The people want to save so much because they do not have enough already saved up. The growth of national debt is an increase in the holdings of wealth, the past savings of the people, and so it relieves the pressure to save. If we assume that the government borrows the money for its augmentation of spending, there is an automatic growth of the national debt as long as people want to save more than is being invested. This goes on until an equilibrium level of national debt is reached when people are so rich in claims to wealth

<sup>54</sup> Pesek and Saving, Money, Wealth and Theory, p. 29.

<sup>55</sup> Abba P. Lerner, "On Generalizing the General Theory" in The American Economic Review (March, 1960), p. 134.

<sup>56</sup> Ibid. For a discussion of the different degrees of price flexibility see pp. 134-143.



that they no longer want to save more than is compatible with the maintenance of full employment with a balanced budget.<sup>57</sup>

Lerner's version of the wealth effect (termed the Lerner effect by Ackley) has been met with mixed reactions. Alvin Hansen feels that Lerner's method of raising the consumption function (by an increase in the real value of assets via an expansion of assets) is on much more solid ground than Pigou's method (an increase in the real value of assets via price deflation.)

Hansen does not believe that the Pigou effect should even have gained the degree of acceptance that it has as a purely theoretical argument. He believes that the most the Pigou effect can do is to eventually stop deflation and the decline in output and employment. He does not believe that the Pigou effect itself could ever restore the economy to full employment because "as soon as the increased real value of assets raises the consumption function sufficiently to start employment and output up again, price and wages will cease falling, and the real value of assets will cease rising". (Note that Hansen also feels that the assumption of flexible wages and prices is necessary.) "Thus the real-asset effect vanishes."<sup>58</sup>

He feels that the "Lerner effect" may, however, not prove

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<sup>57</sup>A. P. Lerner, "The Burden of the National Debt" in Income Employment and Public Policy--Essays in Honor of Alvin H. Hansen (New York: W. W. Norton & Co., 1948), pp. 264, 265.

<sup>58</sup>Alvin H. Hansen, "The Pigouvian Effect" in The Journal of Political Economy, (December, 1951), pp. 535, 536.

very effective either. This conclusion is based on figures showing that the great majority of consumers do not usually hold very large real values of liquid assets and Hansen believes that "it is upon the behavior of the mass of consumers that significant shifts in the consumption function must depend".<sup>59</sup>

Ackley also voiced a criticism of the Lerner analysis. He felt that Lerner should have stated that the "Lerner effect" would only work to the extent that the assets created (to finance the deficit) for consumers to hold were not matched by new productive wealth--that is, increased productive capacity. If they were so matched, the level of full-employment income would also have grown and the problem of maintaining a full-employment level of income would be no nearer solution than before.

Thus far all of the comments which have been made would appear to strengthen Patinkin's position with reference to the importance of the assumption of wage and price flexibility. There are, however, points to be made for the other side of the argument.

Pesek and Saving note that the wealth effect is usually rejected as unimportant on the basis of the argument that prices

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<sup>59</sup> Ibid. Hansen's criticism of the Lerner effect was also applied to the Pigou effect so that, in effect, he criticized Pigou's analysis from two points. His criticism of Lerner is based partially on an empirical study. (See pg. 536.) The reader should note that it is entirely possible that a second study would not confirm the initial study's result. It is important to note the reliance on a single study's findings.

<sup>60</sup> Ackley, "The Wealth Savings Relationship", p. 161.

and wages are rigid downward. They then proceed to enumerate the parts of the wealth effect that are untouched by the downward rigidities:

- (1) Although price and wage rigidities make the automatic operation of the price-induced wealth effect inoperative during periods of recession and depression, they do not affect its importance during inflationary periods. (Here, of course, the price level is increasing so the mechanism would tend to lower the consumption function.)<sup>61</sup>
- (2) The next point the author feels is an extremely important one and one to which the reader should pay particular attention. Pesek and Saving tell us that "Even in depressions or recessions, whatever the price and wage reductions cannot accomplish, a policy-determined increase in the nominal quantity of money can."<sup>62</sup>

When we incorporate wealth into macroeconomic analysis, monetary policy ceases to affect aggregate demand solely through the money market. We now also have an effect generated through the commodity market. This effect will exist whether or not we have full employ-

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<sup>61</sup>Pesek and Saving, Money, Wealth and Theory, p. 30.

<sup>62</sup>Ibid.

ment and is not dependent on price flexibilities. Now why do Pesek and Saving feel that they can make this statement? If prices and wages are flexible, then the wealth effect will be unleashed endogenously--in the manner in which the wealth effect is traditionally thought to exert its influence. If prices and wages are rigid then this endogenous element of the wealth effect is impaired (to a degree depending on the degree of rigidity) but if this happens the exogenous or policy-induced element of the wealth effect is strengthened.

It stands to reason that if the price level is rigid then increases in the nominal quantity of money will have a large effect on real cash balances. Thus we see that:

The more rigid the prices, the greater the effect of a change of money supply on income demanded and the smaller the dissipation of such an increase in the money supply through price changes. Thus, the more flexible are prices, the more important is the wealth effect as an automatic stabilizer; the more rigid are prices, the more important is the wealth effect as a tool of the policy maker.<sup>63</sup>

- (3) In addition to the effect of changes in wealth resulting from changes in the real quantity of money, the introduction of wealth into macroeconomic analysis also brings into play the interest-induced wealth

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<sup>63</sup> Ibid., p. 31.

effect which is completely unaffected by the argument of price and wage rigidities.<sup>64</sup>

Metzler: In an article entitled "Wealth, Saving, and the Rate of Interest", Lloyd Metzler advanced the thesis that when the wealth effect is incorporated into classical theory (as it has been by individuals such as Pigou and Haberler) the equilibrium rate of interest ceases to be determined by solely "real" phenomena.<sup>65</sup>

Under the above circumstances Metzler feels that we have a "monetary" theory of interest.

A theory is usually regarded as a monetary theory if the economic system envisaged is one in which the equilibrium interest rate.....can be altered by a change in the quantity of money. Although this definition is satisfactory for most purposes, it is not sufficiently accurate to characterize an economic system containing the wealth saving relation. It is inadequate, in particular, because it does not indicate the manner in which the quantity of money is altered.<sup>66</sup>

Metzler believes that there are two fundamentally different types of increases or decreases in the quantity of money.<sup>67</sup>

- (1) "The first type is a change which takes place through open-market transactions of the central bank." The important feature here is that it consists of an exchange of one asset form for another. (For exam-

<sup>64</sup> Ibid.

<sup>65</sup> Lloyd A. Metzler, "Wealth, Saving, and the Rate of Interest" in The Journal of Political Economy (April, 1951), pp. 93-95.

<sup>66</sup> Ibid., pp. 96, 97.

<sup>67</sup> Ibid., p. 97.

ple, when money holdings are increased through central bank purchases of securities, holdings of securities outside the bank are reduced by a corresponding amount.

- (2) "The second type of change consists of a direct increase in the money supply without any off-setting changes in private holdings of other assets." An example would be a reduction of the money supply by means of a budgetary surplus where the excess receipts are impounded.

The basic thesis of the Metzler paper<sup>68</sup> is that if the change in the quantity of money is of the first type, the equilibrium interest rate will be altered and the theory of interest involved would be a "monetary" theory. If the change is of the second type, no change in the equilibrium interest rate will occur and we will be dealing with a "real" theory of the rate of interest.<sup>69</sup>

We are, for purposes of this report, particularly interested in alterations in the quantity of money which affect the equilibrium rate of interest. Metzler's conclusion regarding the effect of an alteration in the quantity of money via open market operations may be summarized as follows. Let us suppose that the

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<sup>68</sup> Ibid.

<sup>69</sup> Ibid., p. 110.

central bank engaged in open market purchases of securities.

These purchases would cause a change in the composition of privately-held wealth; the stock of privately-held securities would be reduced and the stock of money would be increased.

When the central bank begins to purchase securities, the first effect is a rise in security prices and a corresponding decline in the interest rate (because  $\frac{\text{money yield (fixed)}}{\text{market value}} = r$ ). The actual security transactions themselves do not alter the total private value of private asset holdings but merely change the form in which assets are held. Therefore, the initial result of the open market purchases is a rise in the real value of private asset holdings. The fall in the interest rate, taken by itself, would normally lead to an excess of full-employment investment over full-employment savings. The inflationary pressure generated by planned investment exceeding planned savings is enlarged by the increased value of private wealth which via the wealth effect has decreased saving. (Thus it has widened the gap between savings and investment.) The rise in prices and the reduction in the real value of private money holdings must continue until the real value of security and cash holdings combined is low enough to encourage sufficient saving once more equal to full employment investment.<sup>70</sup>

The reduction in the real value of privately held wealth tends to increase saving and thus reduces the rate of interest at

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<sup>70</sup> Ibid., p. 110.

which full-employment saving is equal to full-employment investment.<sup>71</sup>

It is important to note the unique manner in which the wealth effect enters this analysis. The rate of interest can be viewed as the percentage yield of a stock. That is because of the manner in which this yield is computed:

$$\frac{\text{Money Yield}}{\text{Market Value}} = \text{Rate of Interest (Yield)}$$

Because the income earned (money yield) by the stock is fixed in the short run, the yield (or rate of interest) is inversely related to the value of the stock.

When the rate of interest is altered--as it was in the above analysis by Metzler--the real value of the security is altered in the opposite direction. If a wealth-saving relationship exists, the change in the real value of this asset form will alter the marginal propensity to save. This phenomenon, where a change in the interest rate (or capitalization rate) alters the propensity to save by raising or lowering the real value of securities, will be referred to as the interest-induced wealth effect.<sup>72</sup>

The interest-induced wealth effect is particularly interesting because all it required to lower the equilibrium interest rate was upward price flexibility. This lower rate of interest

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<sup>71</sup>Ibid., p. 111.

<sup>72</sup>Ibid., p. 101.



would, of course, be a stimulus to investors. Thus the interest-induced wealth effect has the ability to raise the level of aggregate demand without relying on downward price flexibility.

This concludes the discussion of the assumption of wage and price flexibility. The next assumption we wish to discuss deals with the "absence of money illusion".

### The Absence of Money Illusion.

Patinkin introduces the concept of money illusion in the following manner:

An individual will be said to be suffering from such an illusion if his excess-demand functions for commodities.... do not depend solely on relative prices and real wealth, inclusive of initial real balances. Conversely, an individual will be said to be "free of money illusion" if his excess-demand functions do have this property. It follows that if an illusion-free individual were confronted with an equiproportionate change in all accounting prices--including that of paper money--none of his amounts demanded of commodities would thereby be affected; for such a change would affect neither the array of relative prices confronting him, nor the level of his real wealth.<sup>73</sup>

Patinkin analyzes the importance of this assumption by first considering its role in the bond market.

What if we were to assume that money illusion existed (only) in the bond market? Then bond demand and supply curves would not be affected by changes in the price level but would be affected by changes in nominal money balances.

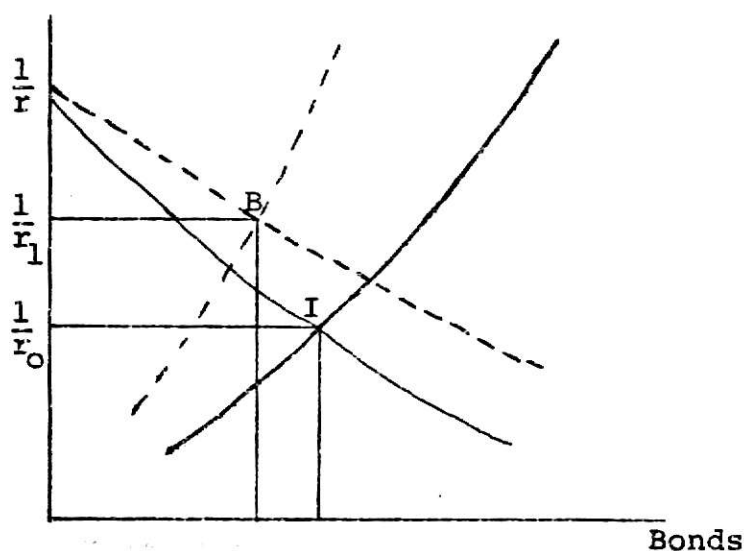
Having postulated the existence of money illusion, let

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<sup>73</sup> Patinkin, Money, Interest and Prices, 1st Ed., p. 23.

us next assume that the initial equilibrium is disturbed by a doubling of the quantity of money. This would cause the demand and supply curves to shift to the positions (dashed lines) indicated below (see point B).

Figure 8. Equilibrium in the Bond Market.



This shift occurs because the increased money balances of individuals cause them to want to lend more and borrow less.<sup>74</sup> We note that at the initial rate of interest ( $r_0$ ) there exists an excess of demand over supply in the bond market. This would mean that the prices of bonds would be driven up and (because interest is computed as the ratio of money yield to market price) the interest rate would begin to be driven down. This lower rate of interest would now exert its effect in the commodity market.

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<sup>74</sup>Patinkin, Money, Interest and Prices, 2nd Ed., p. 277.

As the rate of interest is forced lower, desired investment begins to exceed desired saving. This causes prices in the commodity market to begin to rise; however, because the demand for bonds is affected by changes in nominal money balances and not real money balances (under the assumption of money illusion), the bond market does not respond to the reduction in the real value of money balances. This means that the interest rate will continue to decline to  $r_1$ , the rate consistent with the new demand and supply curves for bonds (those which resulted from the increased liquidity). When the rate declines in this manner we get an even greater excess of planned investment over planned savings. Thus prices must increase still further in the commodity market (where we are assuming no money illusion) in order to reduce the real value of money holdings (and thus increase saving) enough to equate desired investment and desired saving.<sup>75</sup>

The author feels that the important point to notice is that if money illusion does exist (in just the bond market), the price system really has to work overtime to restore equilibrium in the commodity market and this restoration will entail (especially in our example) rather excessive inflation. If money illusion had not existed in the bond market, when prices began to rise in the commodity market and the real value of money balances began to fall, individuals would have wanted to lend less and borrow more at every interest rate; this would have started the movement

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<sup>75</sup>Ibid.

back toward equilibrium before the interest rate had needed to fall to  $r_1$  and without such excessive inflation.

It would appear that to whatever extent money illusion exists, the real balance effect will be diminished. (What the author is talking about now is the possibility that one sector may at times make decisions on other than "real" criterion.<sup>76</sup> To the extent that this occurs, the real-balance effect is weakened.) The real-balance effect does not appear to exert any influence in the market where total money illusion does exist. If total money illusion exists in some markets, but not in others, the real-balance effect will be operative where money illusion does not exist but the maintenance of equilibrium will be a difficult task due to the added pressure exerted from other markets in which this corrective factor cannot operate.

#### Distribution Effects.

In the discussion about the assumptions of price flexibility and money illusion we have assumed that aggregate consumption behavior depends on the total of real incomes, bond holdings and money holdings in the economy; but not on their distribution among the individuals of the economy. We have also assumed that any monetary increase was uniformly introduced among these individuals. Power has summarized the traditional assumption that

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<sup>76</sup>Mayer, "The Empirical Significance of the Real Balance Effect", p. 285--esp. footnote.

distribution effects do not exist in the following fashion:<sup>77</sup>

This means, among other things, two that are important to our discussion: (1) the way in which any change in the money supply or in income is distributed is irrelevant; (2) the reactions of creditors and debtors to the price level exactly offset one another.<sup>78</sup>

Let us consider Power's first point. We know that different individuals in the consuming public have different levels of accumulated wealth, different levels of income and different tastes and preferences. For all these reasons they will have different marginal propensities to save. This first point by Power tells us that we may ignore these differences when analyzing the "real-balance effect". If we relaxed his assumption we would note that the manner in which further increases in income are distributed affects how the aggregate levels of consumption and saving are altered. If most of the increases go to individuals with low marginal propensities to save, then aggregate savings is altered only slightly. If they go to people with high marginal propensities to save, then most of the increased income may go into new saving. The effect of further increases in wealth depends--as we already know--on the initial stock of wealth. It stands to reason that since these initial stocks differ from individual to individual, we may expect differing responses depending on how the increased wealth is distributed.

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<sup>77</sup>Patinkin, Money, Interest and Prices, 2nd Ed., p. 285.

<sup>78</sup>John H. Power, "Price Expectations, Money Illusion, and the Real-Balance Effect" in Journal of Political Economy (April, 1959), p. 131.

The second point that is noted here may be explained as follows. If we have a change in the price level, the real value of assets is going to be altered. If it is assumed that all debtors and creditors react in offsetting ways to this change in real wealth, there will be no "net" wealth effect. It is important to note, however, that creditors and debtors need not react in offsetting ways! Patinkin called attention to this possibility in a journal article, published in 1948.<sup>79</sup>

.....allowance must be made for the possibility of a differential reaction of debtors and creditors. That is, if debtors are discouraged by a price decline much more than creditors are encouraged, it may be possible that there exists no price decline which would have an encouraging effect on expenditure.<sup>80</sup>

Thus, if we do not assume that creditors and debtors respond in offsetting ways, we need to know just how they will react before we can ascertain the magnitude and direction of the real-balance effect.

It is important to note that the real-balance effect in Patinkin's words "is itself a distribution effect". This point was conveyed earlier by Patinkin in his discussion of the Pigou effect; however, a quote may serve to emphasize its importance.

For our fiat money is the debt of the government; and if the government were to react to changes in the real value of this debt as do households and firms to theirs, there

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<sup>79</sup> Patinkin, Money, Interest and Prices, 2nd Ed., p. 287.

<sup>80</sup> Patinkin, "Price Flexibility and Full Employment", p. 263.

could be no net real-balance effect in the economy as a whole.<sup>81</sup>

Thus it is crucial that we make an assumption about distribution effects other than the assumption noted by Power.<sup>82</sup> All of Pigou's and Patinkin's analyses of the price-induced wealth effect--and the conclusions that they reached regarding its importance--are based on the tacit assumption (which Patinkin feels is realistic) that the government alone is unconcerned with the real value of its outstanding--non-interest bearing--debt.<sup>83</sup>

What Patinkin has said is that we must have a "distribution effect" in order to obtain a net real-balance effect in the economy. Pesek and Saving disagree with that conclusion. It would be impossible to present their entire argument in this paper; however, some basic points shall be noted. If it could be shown that money was an asset but not a debt, then changes in the real value of that "asset" would not be offset by changes in the real value of the debt. In that case we would not find it necessary to make this assumption regarding the existence of distribution effects in order to obtain a net wealth effect.

Pesek and Saving devote a major portion of their book to the analysis of whether or not money is a debt. It would appear

<sup>81</sup>Patinkin, Money, Interest and Prices, 2nd Ed., p. 288.

<sup>82</sup>Power also noted this exception to the assumption.

<sup>83</sup>Patinkin, Money, 2nd Ed., p. 288.



to the author that their conclusion may be conveyed as follows.

....how does one argue simultaneously that money has no net existence and that, nevertheless, economic behavior depends on it?<sup>84</sup> Unless one makes explicitly some special assertions about the behavior of at least some economic units not derivable from general economic behavior and unless by doing so one makes corresponding implicit assertions about the behavior of all the remaining units,<sup>85</sup> this difficulty appears insurmountable. And yet, all these difficulties... disappear.....if we abandon the notion....that money is a debt.<sup>86</sup>

Pesek and Saving believe that both fiat money and bank money are substitutes for commodity money. They feel that because they are "substitutes" for commodity money they represent additions to commodity money. (The term commodity money refers to a commodity that is used as a medium of exchange.) Because commodity money is produced like any other commodity, it constitutes a part of net wealth; therefore these other forms of money should also be regarded as part of net wealth.<sup>87</sup>

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<sup>84</sup>Pesek and Saving feel that those who assert that money is a debt place monetary theory in an awkward position. It is awkward because, despite its alleged net nonexistence, empirical evidence indicates that money and changes in the money supply do have major economic consequences. It is difficult analytically because "since a good that does not exist--in net terms--cannot have a price; since the reciprocal of the price of money is the general price level, the price level is also indeterminate." See Pesek and Saving, Money, Wealth and Economic Theory, p. 238.

<sup>85</sup>Pesek and Saving make the comment that the government cannot ignore its debts unless they are allowed to. "Thus the alleged irrationality of the government has its inevitable--and extremely disturbing--counterpart: the irrationality of the consumers themselves. Ibid., p. 240.

<sup>86</sup>Ibid., p. 242.

<sup>87</sup>Ibid., p. 243.



If Pesek and Saving are correct in their conclusion, then it would appear that we can obtain a real-balance effect without assuming the existence of a distribution effect.

### Expectations.

To conclude the discussion of the assumptions required to obtain a wealth effect, let us next discuss the importance of price expectations. In addition to the assumptions that we have already discussed, it is traditionally postulated the real-balance effect will be operative in the absence of destabilizing expectations. The absence of destabilizing expectations is generally interpreted to mean either that the present prices are expected to remain unchanged indefinitely or that individuals have perfect foresight.<sup>88</sup>

Power states that it is "the usual view that 'static' expectations are more favorable to a stabilizing real-balance effect than are 'dynamic' expectations". By static expectations we mean that (as mentioned above) present prices are expected to prevail in the future also. Dynamic expectations mean that we anticipate some change.<sup>89</sup>

Static expectations are important if we are to expect the asset holder to feel "wealthier" when we have a decline in the

<sup>88</sup>Power, "Price Expectations, The Money Illusion and the Real Balance Effect", p. 133.

<sup>89</sup>Ibid.

price level or less wealthy when we have an increase. The asset holder must feel that he is permanently wealthier or permanently less wealthy if he is to be expected to respond to a change in the real value of his asset holdings with a reduction or increase in his propensity to save. If he feels that tomorrow--or some time in the future--the price level will return to its old level--then his response to the change in the real value of his assets is much more uncertain than that postulated under the traditional assumptions. Power notes that this problem is avoided by the assumption that each new price level is expected to be permanent.<sup>90</sup> (This would appear to be another way of stating the assumption mentioned earlier.)

Patinkin does not believe that we need to assume static expectations in order to obtain a real-balance effect.

.....if we take account of the fact that expectations are not pulled out of the air, but are related to past price experience; and if we assume further that this relation expresses itself in the fact that the expected price is a weighted average of past ones (where the weights decline as one goes back in time)--then it can be shown that a system stable under static expectations will remain so even after these are replaced by dynamic ones.<sup>91</sup>

Thus Patinkin seems to conclude that the real balance effect can operate to stabilize a system as long as we assume that future expectations are based on past experience.

<sup>90</sup> Ibid., p. 134.

<sup>91</sup> Patinkin, Money, 2nd Ed., pp. 311, 312. Patinkin cites as the source of the demonstration of this fact: K. J. Arrow and M. Nerlove, "A Note on Expectations and Stability" in Economica XXVI (1958), pp. 297-305.

## SUMMARY AND CONCLUSIONS

The wealth effect was originally formulated primarily to show that the classical conclusion regarding the maintenance of full employment remains valid in a Keynesian system as long as wage and price flexibility exist. The question of the validity of that conclusion is an important one. It is important because it allows us to understand more fully just what the "Keynesian revolution" entailed. It would appear that through the use of the wealth effect individuals such as Pigou have unambiguously shown that such a system does contain self-corrective mechanisms which tend to maintain full employment.

When Pigou discussed the validity of the classical conclusions, he used the price-induced wealth effect in his argument. Pigou's analysis was extended in several ways by subsequent writers. Patinkin noted the possibility that debtors and creditors might not respond in exactly offsetting ways to a decline in the price level. He was also among the first to explicitly discuss the assumptions underlying the wealth effect. Included among the assumptions outlined were: wage and price flexibility, the absence of money illusion, distribution effects and expectations.

More recent discussion of the wealth effect has been concerned with the importance of these assumptions. While Patinkin

believed that the real-balance effect was a distribution effect, Pesek and Saving do not believe that the wealth effect needs to rely on any assumptions about distribution effects. Pesek and Saving also point to aspects of the wealth effect which do not rely on downward wage and price flexibility to operate--such as the interest-induced wealth effect.

We have, the author believes, revealed the crucial role played by the wealth effect in the defense of classical theory against the Keynesian argument that there might be a less than full-employment equilibrium even if wages and prices were flexible.

Keynes dealt with the wealth effect only in a cursory and superficial manner. Why he took this approach we can only speculate. The question that must be answered is not why he did not discuss it but rather should he have discussed it. From the perspective of pure theory, particularly with reference to the classical debate, the answer to this question is yes. When we begin to talk about Keynesian theory, with the assumptions of Keynesian theory (especially rigid wages and prices), the answer to the question becomes more difficult. It depends, for one thing, on the different mechanisms by which the wealth effect can exert its influence and on the assumptions on which the different mechanisms are based. What we must determine is can the wealth effect--at least some version of the wealth effect--be operative in the

Keynesian setting? The answer to this question is extremely difficult, but it is the type of question to which Pesek and Saving are addressing themselves.

Modern macroeconomic theory reflects attempts to modify Keynesian analysis to consider issues such as the wealth effect. The importance of the inclusion of the wealth effect in modern theory depends on the significance of the wealth effect as a real-world phenomenon. While it is hoped that we have provided a framework from which this question can be analyzed, this is an empirical issue and therefore beyond the scope of this paper.

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A THEORETICAL ANALYSIS OF THE SIGNIFICANCE OF THE  
WEALTH EFFECT IN MACRO-ECONOMIC THEORY

by

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AN ABSTRACT OF A MASTER'S REPORT

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The relationship of wealth to the level of consumption has long been a topic of discussion in the literature of economics. The purpose of this paper is to identify the phenomenon referred to as the wealth effect, to examine the different mechanisms by which it may operate, to analyze the conditions which determine whether the wealth effect can be operative and to discuss the importance of the wealth effect in macro-economic theory.

Wealth was interjected into economic analysis primarily as a response to the Keynesian contention that equilibrium is possible at less than full employment. Individuals such as Pigou have subsequently demonstrated that the classical contention regarding the maintenance of full employment is valid--granted the classical assumptions.

The discussion of the wealth effect has, however, been extended far beyond the analysis of the classical conclusions. More recent discussions are concerned not with the validity of the classical conclusions but with their assumptions.

When Pigou discussed the validity of the classical conclusions, he used the price-induced wealth effect in his argument. Pigou's analysis was extended in several ways by subsequent writers. Patinkin noted the possibility that debtors and creditors might not respond in exactly offsetting ways to a decline in the price level. He was also among the first to explicitly discuss the assumptions underlying the wealth effect. Included among the

assumptions outlined were: wage and price flexibility, the absence of money illusion, distribution effects and expectations.

More recent discussion of the wealth effect has been concerned with the importance of these assumptions. While Patinkin believed that the real-balance effect was a distribution effect, Pesek and Saving do not believe that the wealth effect needs to rely on any assumptions about distribution effects. Pesek and Saving also point to aspects of the wealth effect which do not rely on downward wage and price flexibility to operate--such as the interest-induced wealth effect.

The wealth effect played a crucial role in the defense of classical theory against the Keynesian argument that there might be a less than full-employment equilibrium even if wages and prices were flexible.

From the perspective of pure theory, Keynes' neglect of the wealth effect does not seem justified. When we begin to discuss the importance of the wealth effect in the Keynesian model the question becomes more involved. Whether or not Keynes was at all justified in his neglect of the wealth effect depends on the minimal assumptions which are necessary to achieve a wealth effect and on whether or not these assumptions are consistent with the Keynesian model.