The notion of the "wealth effect" associated with Pigou is defined as the impact on consumption due to a change in wealth. In later years, this notion has become confused with the "real balance" effect. The existence of either a "real balance" effect or a wealth effect is crucial in neoclassical economics to show that flexible wages and prices will restore full-employment equilibrium. The argument relies on a positive "wealth" effect — i.e., that increases in wealth will result in an increase in consumption and a decrease in saving. Recent work being done under the name of supply-side economics, however, indicates that wealth and consumption are negatively related. (Both and Roth and Patinkin) The supply-side argument has definite implications for current macroeconomic theory.

The purpose of this paper is to show the differences in the analysis used by Pigou, Patinkin, and the supply-side view. It will be argued that neither Patinkin nor the supply-side view is consistent with Pigou's notion and that the major difference between Patinkin and the supply-side view is the definition of wealth. It is also shown that the positive relationship between wealth and consumption is for both Pigou and Patinkin, simply an assumption.

The Wealth Effect of A. C. Pigou

Pigou described the wealth effect with wealth as a separate variable in the utility function. This is distinctly different from the analysis of Patinkin where the wealth effect is described via changes in the individual's budget constraint. Pigou's analysis requires the assumption that wealth yields utility quite apart from the utility of the goods and services it will command. Pigou sets out five factors important in determining the amount of saving out of a given level of income for a representative individual. (Pigou, p. 101-103) The first factor is the amount of the man's real income. The second factor is the rate of interest: (Pigou assumes constant prices so that the real rate and the money rate were the same.) The third factor is the rate at which future satisfactions are discounted. This rate of discount is referred to as the rate of time preference. The fourth factor is the schedule of marginal utilities that "would be derived by our typically constituted man from different quantities of income devoted to consumption ..." (Pigou, p. 105)

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 income due to that unit to yield. (Pigou, p. 103)

Pigou argued that if this utility received from having the marginal unit of savings were nil, then the individual would neither save or dissave if his rate of time preference and the rate of interest were the same. If there is a zero return from having the last unit of savings or stock of wealth, then for the individual
to save nothing, the time preference minus a correcting factor must equal the rate of interest. The correcting factor was the ratio of the utility of the stock of wealth, given his consumption level, to the utility of the consumption level. Pigou argued that for the lower income level or consumption level, the utility of the last unit in the stock of savings would probably be greater than for a richer man. Yet, at a higher level of consumption, the marginal utility of that level of consumption would fall. Thus, as consumption increased, both the numerator and the denominator of the ratio would fall, with an uncertain result on the value of the correcting factor.

Pigou developed the above analysis in order to explain the relationship between saving and income. In this argument, he assumed constant prices. The purpose of this paper, however, was to show why less than full employment could not be maintained. He argued that if there is no positive rate of interest at which capital accumulation would take place, the following adjustments would occur (pp. 124-125). Since the rate of interest must be equal to the rate of time preference minus the correcting factor, a negative rate of interest implies that the rate of time preference (e) minus the correcting factor (c) is negative. He asks what must take place to ensure that e-c cannot remain negative. He reasons that if e-c negative, the representative man still desires to save. His attempt to save (to store value), with no new capital being produced results in his purchasing existing durable things. "Thus the value of land and similar property and, above all, the value of money, which is an especially convenient store of value, will continually rise." (p. 127) With this increase in the value of wealth, with no increase in real income, the denominator of the correcting factor, the utility of the last unit saved, falls, while the numerator of the correcting factor remains unchanged, since there is no change in real income. This continues even though money income and prices fall. The value of e-c as e approaches zero, approaches the value of c. The rate of time preference which is always assumed positive, leading Pigou to conclude, "The conditions which prevented a high-level stationary state from being established are thus destroyed." (p. 129). Because of the increase in wealth, the supply of savings decreases, bringing investment and saving into equilibrium again at a positive rate of interest.

Pigou, of course, did not represent the wealth effect in terms of indifference curve analysis. If we did so, to do justice to Pigou's view, we would have to include wealth as a separate variable in the utility function in addition to the normal current goods and future goods.

\[ U = f(G_1, G_2, W) \]

Where \( G_1 \) = current goods, \( G_2 \) = future goods, \( W \) = wealth.

Along an indifference curve, \( dW = 0 \)

\[ dU = f_{G_1} dG_1 + f_{G_2} dG_2 + f_{W} dW \]

The slope of an indifference curve is:

\[ dG_1/dG_2 = - f_{G_1}/f_{G_2} \]

If the change in wealth, \( dW \), is zero, we have usual trade-off between current and future goods. The impact of an increase in wealth is to change the slope of the indifference curves. Pigou assumed that the change in wealth would be associated with a decrease in saving or an increase in consumption. The result would be a steeper indifference curve at every level of current consumption, reflecting the increase in current consumption and a decrease in future goods. From Bundle A to Bundle B in Graph 1. Note there is no change in the budget constraint reflecting Pigou's analysis of wealth affecting the utility of the consumer rather than the budget constraint.

**Graph 1**

The wealth effect of Pigou.

The wealth effect associated with Pigou is more properly termed a "real-bal ance" effect. In his analysis, Pigou defines the "real wealth of the individual" as "the sum of initial money holdings and the week's income." (Pigou, p. 129) Pigou argues that an equal proportionate change in all prices does not change relative prices, and, therefore, cannot generate any substitution effects. "...it does, however, cause an opposite change in the real value of initial money holdings, and hence generates a wealth effect." (Pigou, p. 129) Pigou notes that a change in the price level could affect wealth in non-monetary wealth and would generate substitution effects. He argues, however, that the important effect for monetary theory is the effect from equal proportionate changes in prices.

Pigou discusses the trade-off between commodities and real money balances. This can be illustrated with indifference curve analysis as in Graph 2. Commodities are measured on the x-axis and real money balances are measured on the y-axis. The wealth effect is described as the shifting out of the budget constraint due to an equal proportionate decrease in prices. Notice there will be an increase in commodities, assuming commodities are not inferior, and an increase in real balances. This is quite different from Pigou's notion that an increase in wealth will increase consumption or decrease savings out of a given level of income.
In Patinkin's analysis, the importance of the real-balance effect is twofold. First, it is essential for the determination of the absolute price level. It has been argued, however, that the importance of Patinkin's real-balance effect is in describing the disequilibrium process by which equilibrium is restored, rather than the determination of the absolute price level at equilibrium. (Sargent and Wallace) In this sense, Patinkin's use of the real-balance effect is identical with Pigou's use of the wealth effect. In Patinkin's analysis, if there is less than full-employment, the resulting downward pressures on prices would increase the real value of money balances and increase the demand for commodities. This will continue until full-employment is restored with demand equal to the supply of commodities.

One explicit presentation of the supply-side view is that of Roth and Pollinori. The labor-leisure trade-off is developed incorporating progressive marginal tax rates. It is argued that less income and more leisure will be selected by the individual, given his preference function, at every nominal wage rate if a progressive marginal tax rate is imposed. The conclusion is that the level of appraised nominal disposable income is a function of the marginal tax rate, the average tax rate and the nominal wage rate. It is then simply argued that wealth should also be included in the labor-leisure choice, although it is not derived from the analysis. Since saving is a function of the level of nominal disposable income and the current level of interest rates, and since nominal disposable income is a function of the marginal and average tax rates, the wage rate and wealth, saving must be a function of the current level of interest rates, the marginal and average tax rates, the wage rate and wealth.

The above is a rather unusual way to incorporate wealth into the savings function. Furthermore, it is unclear just what role this plays in the individual's trade-off between saving and consumption. Normen Yor (p. 558-559) contends that marginal tax rates increase the cost of saving relative to the cost of current consumption by lowering the expected income stream. He argues the purpose of saving is to acquire sources of a future income stream, which would allow the individual to command more resources in the future. Although he does not present the traditional utility maximizing analysis, the implication is that the individual chooses between current consumption and additions to a future income stream.

If wealth is defined as the expected future income stream, however, the increase in wealth and its effect on current consumption may differ from traditional analysis. Assuming a two-period model, one unit of expected income, given a positive rate of interest on saving, $r$, is 

$$W = \frac{Y}{1 + r}$$

where $d$ is the appropriate rate of discount which may or may not be equal to $r$. Thus, for every unit of foregone, the individual could obtain:

$$\text{utility} = \frac{Y}{1 + d}$$

The supply-side analysis can be illustrated by looking at Graph 3. Here the trade-off, assuming a two-period model, is between current consumption, C, and the present value of the after-tax future income stream or Wealth, W. The slope of the budget constraint is:

$$M = C + \frac{1}{1 + d} \cdot W$$
The supply-side argument is that an increase in the present value of the expected after-tax income stream will result in a decrease in consumption and an increase in saving. This is represented by a relation upward in the budget constraint, from B3 to B4 and a decrease in current consumption. Notice that the income effect of this increase in wealth may indeed be positive. From bundle A to bundle C. However, the assumption is that the substitution effect of the change in the relative price of consumption versus saving will offset the income effect. Presumably, anything which causes the expected future income stream to increase will result in the same effect.

The supply-side view can be compared to both the Pigou analysis and Patinkin's. If there is a decrease in expectations of inflation due to a decrease in current prices such that both the rate of interest (r) and the appropriate discount rate (e) change by the same amount, there may still be a change in the slope of the budget constraint if the lower prices result in a lower marginal tax rate (t_e). If the tax rate is lower, the expected stream of future income will increase and the relative price between saving and consumption will change. If the substitution effect is stronger than the income effect associated with the lower prices, there may be a decrease in consumption rather than an increase. The ambiguous results when including expectations are also a problem with Patinkin's analysis. (Harris, pp. 76-177)

A more direct contradiction of Patinkin's analysis is that of Roth (1955). Roth contended that the demand for real money balances is a function of wealth such that an increase in wealth results in a decrease in the demand for real money balances. Wealth is included in the budget constraint for the demand for real money balances. That is, the demand for real cash balances is taken to be constrained by real after-tax income, wealth, of both. (Roth, 1955, p. 9). However, wealth is not defined as the real value of money balances as for Patinkin, but the capitalized values of real after-tax human and non-human income. The purpose of Roth's analysis is to argue that a decrease in marginal tax rates, because this increases wealth, will decrease the demand for real cash balances.

Roth's analysis could be presented along the lines described by Pigou's analysis, with the increase in wealth not increasing the budget constraint in a parallel fashion. Harris argues that the Pigou effect can be illustrated by incorporating the adjustment factor described by Pigou into the budget constraint so that the slope of the budget constraint reflects not only the return to saving as the rate of interest but also the implicit return to saving wealth. (Harris, p. 228). Thus, an increase in wealth would lower the slope of the budget constraint because the implicit return to the last unit of wealth would be less. This result follows only because of Pigou's assumption that wealth is subject to diminishing marginal utility quite apart from the diminishing marginal utility of future consumption. Roth, on the other hand, argues that increases in wealth will not lead to a decrease in saving relative to consumption. "Intuition and experience suggest that there is no limit to the stock of wealth demanded." (Roth, 1951, p. 7). This is a reflection of Pigou's assumption that wealth is subject to diminishing marginal utility. If so, the increase in wealth need not decrease the slope of the budget constraint and in fact may increase it, increasing the amount of saving relative to consumption.

Conclusion

The traditional notion of the wealth effect is that an increase in wealth will cause a decrease in saving relative to consumption. The importance of such an effect in arguing that an overabundance of commodities cannot be maintained is reflected in the works of both Pigou and Patinkin. Patinkin's analysis, however, is substantially different from that of Pigou. Pigou argues that a return to the rate of interest exists quite apart from the future commodities such wealth can command. Patinkin, on the other hand, assumes the return to wealth is the utility associated with the future purchasing power of this periods real money balances. As a result, the decrease in the general level of prices does not change relative prices or the slope of the budget constraint. Substitution effects are assumed away and it is argued that the pure income effect of the real balance effect is such as to increase the demand for commodities. The supply-side view reinstates the substitution effect arguing that increases in wealth associated with decreases in tax rates will increase saving relative to consumption. Here, the definition of wealth is the present value of the expected future income stream. If changes in prices affect the relative cost of consumption versus additions to the future income stream, the slope of the budget constraint will be affected. If so, the supply-side view is that substitution effects can outweigh income effects. The Roth view, indeed, argues that wealth and saving would be positively related.

If the supply-side view is correct, we have yet another argument against the notion that the economic system will necessarily move toward full-employment equilibrium. The inside money versus outside money arguments cast doubt on the strength of the real balance effect and it has often been argued that even if a Pigou effect exists, it is relatively weak due to the absence of any type of real wealth in the aggregate. Patinkin's real balance effect has also been weakened with the inclusion of the expectation of future prices based on current prices, which yields an ambiguous result with respect to the impact of price reductions on money balances.

The assumption that the system moves to full-employment equilibrium is essential in the arguments with respect to the neutrality of money and the implications for monetary policy and fiscal policy. If one can assume that full-employment ob-
teins, the wealth effect or real-balance effect is not crucial for arguing that money is neutral. However, it is essential for arguing that the system will necessarily move to full-employment. To the extent that the wealth effect or the real-balance effect is weakened, the policy prescriptions based on the assumption that full-employment outcomes should also be reconsidered. Policies based on disequilibrium models may be more relevant to the world in which we live.

BIBLIOGRAPHY


