Human Capital Theory and Retirement Income: Some Further Considerations

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In a recent paper, Waits and McNertney (1980) attempted to provide a normative basis for the receipt of retirement income in terms of human capital theory. Within the context of a market economy, the stated goal of their paper is, ". . . to provide a basis for identifying what is an appropriate level of income for a retired person." While we agree that this is an important issue, we cannot agree that WM have provided an adequate framework for resolving it.

Our objections to WM's analysis fall into two main categories. The first category is they have inadequately represented current conceptualizations of retirement income. Second, they have missed important theoretical links between human capital and retirement income so that their analysis cannot sustain their normative conclusion.

We begin with our first category of objections. Among other things, WM claim, ". . . that current discussion focuses on retirement benefits as transfer payments from the currently employed population," and the appropriate level of such transfers have the following proposed criteria in the literature:

1. retirement income should be based on need; and

2. retirement income should be based on some portion of one's earnings during work-life.

This representation is clearly false. Consider the major sources of retirement income other than individual savings and investment and primary poverty relief programs; namely Social Security and employer pension plans. We do not wish to get into the Social Security issue except to note that it is not exclusively thought of as a pure transfer program, and, in fact, has been widely rationalized on the normative grounds of merit goods and efficiency (e.g. Diamond 1977 and Buchanan 1968). For employer pensions, however, we can be much more emphatic as they are not and cannot be considered gratuitous transfers, especially since the passage of ERISA in 1974. Employee pensions are, rather, contractually stipulated components of an employee's compensation package and this provides the link to human capital theory.

The simplest model of this is to suppose that an individual maximizes wealth as a corollary to maximizing intertemporal utility. Investment in human capital increases productivity and, as a result, discounted life cycle compensation increases, under a given set of market conditions, according to the function

$$C = C(I); \ C' > 0; \ C'' < 0$$

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where C is discounted life cycle compensation and I is the amount of human capital investment. The individual's wealth maximization problem is simply

$$\max W = C(I) - I$$

which can be solved for optimum $I = I^*$ at the point where $C' = 1$ and generates compensation of $C^* = C(I^*)$. The important point, however, is that any compensation package with the same present value as C^* is sufficient to compensate the employee for undertaking I^*. In a two period model of working-life earnings and retirement pension benefits, this means that,

$$C^* = E + \frac{P}{1 + r}$$

where E is work-life earnings, P is pension benefits, and r is the interest rate. The exact combination of E and P must be determined in conjunction with the objectives of the employer because employees are willing to trade-off earnings for pensions at the rate

$$\frac{dE}{dP} = -\frac{1}{1 + r}.$$

This indicates that we should observe an inverse relation between earnings and pensions for a given compensation level. This type of model has been theoretically elaborated for public sector employment (Mumy 1978, 1980) and empirically tested (Ehrenberg 1980, and Smith, forthcoming) with the empirical results strongly confirming the inverse relationship between E and P. If this is true for public sector employment, it should be a true *a fortiori* for private sector employment. The implications of this model for WM's analysis are clear. It is not true that an individual's compensation for human capital investment ends at retirement after which only gratuitous transfers are received. Rather, pensions are a necessary compensation when substituted for working-life earnings at the required rate.

This brings us to our second category of objections which has to do with WM's normative conclusions. Basically WM argue that an individual's human capital is not completely depreciated at retirement. However, according to their view, since an individual's compensation for human capital ends at retirement and there is no institution for transfering the property rights in human capital, an individual is uncompensated for part of his investment. This, then, provides WM with a normative basis for treating retirement income programs as the social institutions for completing the compensation.

Holding for a moment criticism of the analysis that led WM to this conclusion, it is still possible to show that this line of reasoning is wrong. First, as shown above, an individual's compensation does not end at retirement. Even if an individual does not receive formal pension benefits it must be the case that working-life earnings are augmented enough to allow savings and investment for a compensating amount of retirement income. Second, since an individual's human capital must be used in the owner's direct productive activity, it, of course, does become valueless at retirement and in the economic sense has been completely depreciated (this being analogous to the concept of technological obsolesence in the analysis of physical capital). The third point, which is independent of but consistent with the first two, is that the individual is compensated for his human capital investment (or at least expected to be *ex ante*) because, otherwise the investment wouldn't have been made. In light of these considerations, WM's analysis is based on the following equation:

$$X_{t,i} = A_t + r_t H_{t,i}$$

where

$X_{t,i}$ is person i's potential earnings at time t
A_t is the potential earnings of an individual with only basic skills

$H_{t,i}$ is person i's stock of human capital
r_t is the rate of return on human capital

They then contend that A_t is an increasing function of the total stock of human capital at time t, i.e. $\Sigma_i H_{t,i}$. Although this contention is left unjustified, we are willing to assume that it is true as an interesting possible case. It is on these grounds that WM claim that a retired person's past accumulations of human capital have a continuing value because they increase the value of A_t for the currently working generation. This, however, is a *non sequiter* if a retired person's human capital has been completely depreciated and $H_{it} = 0$, as we argued above. Nevertheless, it is possible to say that A_t does somehow depend on the past investments of now retired individuals. But even if this is true it does not follow that individuals should receive some additional compensation in the form of retirement benefits. What we have here is a classic case of positive externalities. The benefits from human capital investment have two components; the private benefits (increased compensation) to the individual making the investment and the external benefits to everyone else. The private benefits dictate the size of and compensation for the investment. It may be socially optimal for individuals to invest more but they don't because they cannot appropriate the external benefits. In this case, society may want to induce more investment by subsidizing it (as is now done with education) or by explicitly increasing the return to such investment. If the latter inducement is chosen, our model above, indicates that forms other than retirement incomes are feasible, and are probably preferred on the ground of making the link betwen returns and investment more immediate and clear cut. The important point here is that such inducement programs should be aimed at increasing the amount of human capital investment and not at increasing the compensation to investments that would be undertaken anyway and compensated by private benefits.

At best, then, WM's analysis might argue for inducement programs to increase the amount of human capital investment. So even though we agree that analysis of retirement income issues is important, it appears that a normative justification based on human capital theory is very tenuous.

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