How Does Pension Wealth Affect Asset Composition, Savings and Retirement Behaviour?

David Blake

Pensions Institute
Birkbeck College
University of London
Gresse St
London W1T 1LL
United Kingdom

Phone: +44 (0)20 7631 6410
Fax: +44 (0)20 7631 6416
Email: d.blake@bbk.ac.uk
Internet: http://www.pensions-institute.org

February 2001

How Does Pension Wealth Affect Asset Composition, Savings and Retirement Behaviour?

This paper examines the impact of pension wealth on the UK personal sector's asset composition, savings and retirement behaviour.

1. The impact of pension schemes on asset composition

Table 1 shows how the asset composition of the UK personal sector has changed over the last 40 or so years. There has been a steady fall in the share of net financial assets in total assets since the 1950s. This was exacerbated by the high inflation of the 1970s, but the share has stabilised as a result of the low inflation environment of the 1980s and 90s. Housing assets have been on a rising trend over the period, although there have been three booms over the period (the one in the mid 1970s is clearly discernible in the table). The share of consumer durable assets has been on a steady downward trend over the period. But the striking feature of the table is the phenomenal growth in the share of pension assets in total wealth since the war. It has doubled from 23 per cent to 46 per cent, with the growth in private sector pension assets being particularly noticeable. Pension assets are now the largest single category of assets held by the UK personal sector.

What explains the growth in the share of pension assets and does the existence of pension assets influence the size of other asset holdings? A study by Blake (2000a) using an asset demand system based on the AIDS model of Deaton and Muellbauer (1980) sought to find out. It might appear from the final column of Table 1 that part of the explanation lies in the very high real returns generated by an investment in pension assets: as a result of both the generous tax breaks and employer contributions, UK pension schemes generated average real returns on employee contributions of between 10 and 12 per cent over the period 1948-1994. This is even higher than the real return on housing at 7 per cent and much higher than the real returns on net financial assets which was below 3 per cent and consumer durables at –10 per cent (due to depreciation). However, Table 2 shows that none of the own-yield elasticities is significantly different from unity, with the exception of occupational schemes for which the elasticity at 0.95 is actually significantly below unity. Rather it appears that rising per capita wealth explains much of the trend changes in all the asset categories over the post-war period: the wealth elasticities of demand equal or exceed unity for both housing and the pension assets and are significantly below unity for net financial assets and consumer durables (which is treated as the residual asset in the model). If there are liquidity constraints, then it is possible that current income will have an independent influence on portfolio behaviour. We find that personal pensions are luxury assets, net financial and housing assets are normal, and the basic state pension and human capital (measured by the expected present value of remaining lifetime earnings) are inferior assets.

Next, we examine the cross-yield elasticities, noting that positive figures denote complements, while negative figures denote substitutes. Financial assets and housing are substitutes, as are housing and personal pensions. The basic state pension is a complement to both financial assets and a personal pension, but a substitute for building up human capital. The SERPS pension is a substitute for financial assets, but a complement for an occupational pension, suggesting that workers would, if they were able

to, choose to have both an occupational and a SERPS pension, even though they are obliged to choose between them as substitutes. Occupational pensions are a substitute for both housing and personal pensions, and a complement to human capital.

2. The effect of pension schemes on savings and retirement decisions

We know that, under certain conditions, private pensions should have a neutral effect on individual behaviour. If the assumptions of the life cycle model of individual economic behaviour hold (no uncertainty, no taxes, perfect capital markets, workers paid wages plus employer pension contributions equal to the value of their marginal product in a spot labour market, and no compulsory retirement), then the existence of private pension schemes will not affect consumption/savings decisions or work/retirement decisions. The reason is that in such a model, consumption depends only on the present value of lifetime income, not its sources or timing, so individuals can fully offset pension saving with lower discretionary saving or by borrowing. It is also irrelevant whether the private pension scheme is funded or unfunded. If pension contributions are made to a pension fund or reinvested in the sponsoring firm (as in book reserve schemes), this will have no effect on aggregate savings. In the latter case, even if the pension contribution is paid out as a dividend to shareholders, then shareholders will save the whole of it if they recognise the consequential unfunded pension liability has reduced their net worth, so again there will be no effect on aggregate savings. Furthermore, aggregate savings are unchanged by the introduction of private pensions if: employers and employees correctly perceive that the pension promise increases future income and so accept correspondingly lower wages today, employees reduce discretionary saving by the amount of the pension promise, and employers fully fund the pension scheme or shareholders reduce current savings to reflect the unfunded pension liability. However it is possible for unfunded state pensions to have non-neutral effects. For example, if state pension savings (in the form of contributions into the state pension scheme) are inframarginal (i.e., below the individual's optimal savings level), unfunded state pensions reduce aggregate savings because the taxes the government needs to raise to pay for the pensions reduces personal savings pound for pound. But unfunded state pensions will have no effect on aggregate savings if state pension savings are marginal which is likely to be the case for poor people, since the additional forced savings of these people exactly offset the extra taxes raised by the government.

Blake (2000b) tested some of these propositions for the UK personal sector using the representative agent model of Merton (1971). The model implies that consumption is solely a linear function of aggregate wealth (including human capital). However, capital and labour market imperfections may mean that the components of wealth have differential effects and that other variables such as those relating to income, labour market or demographic status and spillovers from other sectors also have important influences. For example, if consumers face liquidity constraints, then current consumption will be largely constrained by the level of current income, in which case the coefficient on current income in a consumption equation regression is a measure of the proportion of the population who were liquidity-constrained over the sample period (1). In addition, wealth can influence the decision about when to retire, which, in turn, can affect consumption.

---

(1) Flavin (1985), Zeldes (1989).

Table 3 shows the long run elasticities from the model of consumption and the age participation rate (which measures the proportion of workers working after normal retirement age). Examining first the consumption equation, we find that both the naïve lifecycle model and the simple version of the Merton model are rejected. We find, in terms of state pension wealth, similar results to those found in the original work of Feldstein (1974, 1976, 1979), namely that state pensions have a strong savings replacement effect and reduce the need to save privately for retirement. Occupational pensions, in contrast, have a direct effect in increasing savings (reducing consumption), but an indirect effect in lowering savings via their effect on lowering the elderly participation rate (which helps to raise consumption). The net effect on savings is positive however, with a long run elasticity of 0.0577. Personal pensions also have a direct effect in increasing savings and this is reinforced by the positive effect that personal pensions have in raising the elderly participation rate, with a long run elasticity of 0.0217. Occupational pension fund surpluses have a effect in raising consumption (as a result of contribution holidays). So part of the explanation for the consumer boom in the late 1980s lies in the growth in state (especially SERPS) pension wealth and the occupational pension fund surpluses that arose from the 1980s stock market boom. The table also shows that financial assets, basic state pension assets, and corporate and government savings all provide substitutes for personal sector savings. The coefficient on the income variable reveals a high average proportion of liquidity-constrained consumers over the sample period, although the proportions have been falling over time as credit markets have improved.

Turning to the elderly participation equation, state pensions appear to have no induced retirement effect (or at least an effect in reducing the elderly participation rate). However, occupational and personal pensions have opposite effects, in the first case helping to induce earlier retirement, in the second case delaying retirement, as does housing wealth. These results indicate that the kind of people who join personal pension schemes and build up housing assets also seem to prefer to delay their retirement beyond normal retirement age and this preference dominates any wealth effect that higher personal pension and housing wealth may have in enabling earlier retirement. Finally, there is a positive income effect and a negative wealth effect on the elderly participation rate. An increase in income delays retirement, although the elasticity is less than unity. In contrast, an increase in human capital brings forward retirement. This can be rationalised as follows: recalling that this a representative agent model, the representative agent will be partly young and partly old. If the part that is young experiences an increase in human capital, this will induce the part that is old to retire earlier.

3. Conclusion

We have shown that the existence of pension assets can influence your portfolio behaviour, your pattern of allocating your lifetime income between consumption and savings, and your decision about when to retire. There has been a rising share of pension assets in total personal assets over the post-war period. Part of the explanation for this is that they act as substitutes for some of the other assets (eg, SERPS is a substitute for financial assets and occupational pensions are a substitute for housing). But the greater part of the explanation lies in the wealth effect: as people get richer, they invest a greater part of their increasing wealth in pensions. Rising state pension entitlements were found to encourage consumption during the working lifetime because they reduced the need to save privately for retirement. In contrast,

the effect of private pension assets was to encourage more savings. State pension assets appear to have no influence on the retirement decision, but private DB and DC pension assets have opposite effects. DB pension wealth helps to induce retirement, while DC pension wealth helps to delay retirement.

Two important policy conclusions emerge from this analysis. First, if governments wish to increase national savings, they should consider both privatising and establishing funds for state pension schemes. This has been recommended by , inter alia, Feldstein (1978,1997)(2). Second, if governments wish to encourage later retirement, they should encourage the development of DC schemes.

(2) National savings increased sharply in Chile following the privatisation of pension provision in 1981 (Holzman (1997)), although as Gale and Scholz (1994) have shown, any tax breaks used to encourage private pensions will tend to reduce public saving. Feldstein and Bacchetta (1991) have shown that policies that raise domestic savings also succeed in raising the capital stock: at most one-third of any increment leaks abroad.

Table 1 UK Personal Sector Portfolio Composition in Various Years (Percentages)

Asset category:	1954	1964	1974	1984	1994	Average real return (%)
Net financial assets	47.1	40.9	21.6	17.4	19.5	2.7
Housing assets	17.5	18.4	40.0	27.0	25.4	7.1
Consumer durable assets	12.6	11.5	9.8	7.2	5.8	-10.0
Basic state pension assets	18.6	21.5	27.3	23.9	19.4	11.9
SERPS assets	0.0	0.0	0.0	3.0	5.6	9.6
Occupational pension assets	4.6	7.6	10.2	20.4	20.5	10.1
Personal pension assets	0.0	0.2	0.2	1.0	3.9	10.1

Notes:

1. Non-human capital components of personal wealth.
2. Column sums may not add up to 100% due to rounding.
3. Average real returns calculated over the period 1948-1994 (except for personal pensions which began in 1956 and SERPS which began in 1978).
4. The returns on the state and occupational schemes are internal rates of return.
5. The real return on durable assets is equal to the (negative) of the assumed depreciation rate.

Source: Blake and Orszag (1999, Table 12)

Table 2 Key Long Run Elasticities in the Asset Composition Model

	Dependent variable: Share in total wealth of:						
	Net financial assets	Housing assets	Basic state pension assets	SERPS assets	Occupational pension assets	Personal pension assets	Human capital
Elasticity:							
Wealth	0.92 (2.73)	1.08 (4.35)	1.01 (0.80)	1.01 (0.16)	1.19 (2.88)	1.00 (0.07)	1.00 (1.06)
Income	-	0.15 (3.65)	-0.12 (6.91)	-	-	1.24 (9.46)	-0.03 (3.56)
Yield on:							
Net financial assets	1.005 (2.05)	-0.004 (2.69)	-	-	-	-	-
Housing assets	-	1.000 (0.26)	-	-	-	-0.070 (6.99)	-
Consumer durable assets	-	-	-0.004 (2.43)	-	-	0.024 (2.39)	-
Basic state pension assets	0.168 (3.88)	-	1.027 (1.24)	-	-	0.713 (4.24)	-0.052 (5.72)
SERPS assets	-0.017 (3.55)	-	-	1.681 (1.90)	0.093 (8.19)	-	-
Occupational pension assets	-	-0.019 (3.21)	-	-	0.947 (2.43)	-0.126 (4.17)	0.004 (3.68)
Personal pension assets	-	-	-	-	-	1.008 (1.11)	-

Notes:

1. Sample period: 1948-1994.

2. The residual asset is consumer durables.

3. Human capital is the expected discounted value of remaining lifetime earnings using a real discount rate of 3 per cent.

4. t-ratios in parenthesis (for the wealth and own-yield elasticities, the null for the t-test is that the elasticity is unity; in all other cases the null is that the elasticities are zero.

5. - not significantly different from zero.

6. The yield elasticities are uncompensated.

7. Long-run symmetry was rejected and so was not imposed.

8. Negative/positive cross-yield elasticities imply substitutes/complements.

9. The elasticities are evaluated at the sample means.

Source: Blake (2000a, Table 3.5)

Table 3 Long Run Elasticities in the Model of Consumption and Retirement Behaviour

	Dependent variable:	
	Consumption	Age participation rate
Elasticity:		
Wealth component:		
Housing assets	0.0847 (8.07)	0.1534 (3.89)
Basic state pension assets	0.0459 (2.43)	-
SERPS assets	0.0962 (4.73)	-
Occupational pension assets	-0.0995 (4.33)	-0.4839 (14.50)
Occupational pension surplus	0.0015 (1.86)	-
Personal pension assets	-0.0068 (6.27)	0.0682 (10.17)
Human capital	-	-0.5148 (3.09)
Yield on:		
Net financial assets	0.0005 (4.04)	-
Basic state pension assets	0.1077 (3.45)	-
Other variables:		
Income	0.7761 (19.41)	0.7058 (4.11)
Age participation rate	-0.0863 (3.84)	-
Government savings	0.0021 (4.73)	-
Corporate savings	0.0221 (2.31)	-

Notes:

1. Sample: 1948-1994.

2. Human capital is the expected discounted value of remaining lifetime earnings using a real discount rate of 3 per cent.

3. t-ratios in parenthesis.

4. - not significantly different from zero.

5. The elasticities are evaluated at the sample means.

Source: Blake(2000b, Tables 4.4 and 4.8)

References

Blake, D. (2000a), *Modelling the Composition of Personal Sector Wealth in the UK*, Pensions Institute, Birkbeck College, London (http://www.pensions-institute.org/wp/wp0007.pdf).

Blake, D. (2000b), *The Impact of Wealth on Consumption and Retirement Behaviour in the UK*, Pensions Institute, Birkbeck College, London (http://www.pensions-institute.org/wp/wp199804.pdf).

Blake, D. and Orszag, J.M. (1999), Annual Estimates of Personal Wealth Holdings in the UK since 1948, *Applied Financial Economics*, 9, 397-421.

Deaton, A.S., and Muellbauer, J. (1980) An Almost Ideal Demand System, *American Economic Review*, 70, 312-26.

Feldstein, M. (1997), The Case for Privatisation, *Foreign Affairs*, 76,24-38.

Feldstein, M. (1979) Social Security and Private Saving: Another Look, *Social Security Bulletin*, 42, 36-9.

Feldstein, M. (1978), Do Private Pensions Increase National Savings?, *Journal of Public Economics*,10,277-93.

Feldstein, M. (1976) Social Security and Savings: The Extended Life Cycle Theory, *American Economic Review, Papers and Proceedings*, 66, 77-86.

Feldstein, M. (1974) Social Security, Induced Retirement and Aggregate Capital Accumulation, *Journal of Political Economy*, 82, 905-26.

Feldstein, M. and Bacchetta, P. (1991) National Savings and International Investment, in Bernheim, B., and Shoven, J. (eds) *National Saving and Economic Performance*, University of Chicago Press, Chicago.

Flavin, M. (1985) Excess Sensitivity of Consumption to Current Income: Liquidity Constraints or Myopia?, *Canadian Journal of Economics*, 18, 117-36.

Gale, W., and Scholz, J. (1994) IRAs and Household Saving, *American Economic Review*, 84, 1233-60.

Holzman, R. (1997), Pension Reform, Financial Market Development and Economic Growth: Preliminary Evidence from Chile, *IMF Staff Papers*, 44, 149-78.

Merton, R. C. (1971), Optimum Consumption and Portfolio Rules in a Continuous Time Model, *Journal of Economic Theory*, 3, 373-413.

Zeldes, S.P. (1989) Consumption and Liquidity Constraints: An Empirical Investigation, *Journal of Political Economy*, 97,305-46.