

PENSION FUNDS AND THE UK ECONOMY

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by Jon Exley,
Chairman of the Financial Theory and Investment Working Party

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Seth Armitage, Jeroen van Bezooyen, Shyam Mehta, Andrew Smith and Cliff Speed
(members of the Working Party) at various stages of drafting.*

ABSTRACT

The paper considers the impact of UK defined benefit pension scheme funding and investment on the UK economy. It suggests that many conventional theories are based on incomplete or inconsistent economic theory. In particular we suggest that:

- an economy cannot really gain competitive advantage from high returns on the domestic assets in which pension funds invest,
- defined benefit liabilities are essentially similar for most schemes, and can be matched with bonds
- funding pension liabilities has no primary impact on levels of consumption or investment
- pension funds are not natural investors in the equity of new ventures, changes to benefit design could have some impact on the levels of such investment, but this is unlikely to be significant.

The conclusion of the paper is that the most significant impact of pension funds on the UK economy relates to the costs imposed by extreme mismatching between their financial assets and liabilities. We argue that such risks can, in essence, “crowd-out” entrepreneurial risk by increasing the cost of capital. We assert that the UK economy would gain from greater focus on the matching of the substantial assets and liabilities associated with pension funds.

1 Introduction

- 1.1 Pension funds are generally regarded as having a significant impact on the UK economy. Indeed, this has prompted two major investigations into the role of “institutions” namely the Wilson Report (1977) and more recently, the Myners Review (2001). Given the number of disparate commentators, committees, enquiries and other bodies that have looked in earnest at pension funding it is perhaps not surprising that a number of novel ideas have developed:

(1) The Assets Held

According to the recent EU Green Paper on Pension Reform “Low rates of return on pension funds...affect the indirect costs of labour and therefore have an adverse impact on the EU’s job creation ability”. Interestingly though, the economies of countries (Netherlands and Switzerland) where pension funds have historically invested more in bonds do not appear at first sight to have suffered as a result of these higher costs or experienced higher unemployment when compared, say with the UK, where pension funds invest more in equities. There is also an interesting puzzle. UK companies have also generally been more heavily equity financed and (since equities have returned more than bonds) this could be said in simple terms to have been a costly way for UK companies to raise capital. In fact it seems that all the benefits of lower UK pension costs arising from the returns on UK equities have been squandered

by the companies themselves on these higher costs of raising capital. The puzzle is whether this is a coincidence or not. Furthermore, if this is not a coincidence and the two effects always cancel, are there other effects associated with pension funds which might actually account for the relative under-performance of the post war UK economy ?

(2) Matching Liabilities With Bonds

There appear to be a widespread belief that a move by pension funds from equities into bonds should be a cause for concern due to the potential for “distortions” in the gilt or corporate bond markets (see again the Myners Review (2001) and associated submissions). These distortions allegedly involve bond prices becoming inflated (interest rates depressed). These are though, somewhat curious concerns. For example, in other contexts it has been argued that low long term interest rates (both gilt and non-gilt) are beneficial for the economy – as cited for example in relation to membership of the European Single Currency. Of course, low interest rates are good for mortgage borrowers but bad for those buying retirement annuities. Equally, low mortgage interest rates could be said to be bad for savers and low bond yields good for businesses raising fixed borrowing for ventures. In terms of the debate on the UK economy one might argue that rather than stifling enterprise, “low” long term bond yields provide “cheap” debt capital for long term projects and reward entrepreneurs prepared to take long term equity risk. It is all really a matter of viewpoint, but it is hard to see why low long term interest rates in the gilt or corporate bond market should necessarily be a matter of profound concern.

(3) Consumption and Investment

There appear to be conflicting views on the benefits of funding. The EU Green Paper sees funding as desirable and associates the establishment of retirement funds with increased investment in the economy, which is believed to be good. On the other hand many commentators in the UK have argued that increased funding of pension funds to meet solvency standards would result in reduced consumption, which is believed to be bad for the economy. Ideally therefore it seems that the commentators would like a method of pension funding which increases investment without reducing consumption. Sadly, the conventional debate will find it somewhat difficult to square this circle. It may perhaps surprise the reader to discover that it *is* in fact possible to solve this riddle, but only if we adopt a third, enlightened viewpoint. This enlightened view will also reveal that the tussle between the two conventional viewpoints (investment good, reduced consumption bad) is probably harmless since at a primary level pension funding affects neither consumption nor investment.

(4) Risk tolerance of pension funds and impact on new enterprise capital

By certain measures it has been argued that the system of funded pension schemes in the UK leads to undue conservatism in institutional asset allocation

which allegedly starves new ventures of capital. On the other hand it has been noted that many UK pension funds are currently insolvent (insufficient assets to meet liabilities to members if the scheme wound up) as a result of UK pension funds adopting investment strategies which take very large levels of risk relative to their liabilities. Ideally it seems that pension funds should invest in assets that are risky, but guaranteed to pay-out sufficient to meet the promised benefits in the long term. In other words, risky investments are fine as long as they do not result in losses. Indeed the EU Green Paper argues for precisely this utopia saying that “advocates of modern risk management techniques suggest that such techniques allow managers to control risk while investing in assets with greater volatility but higher rates of return”. We argue that this utopia cannot be achieved except in the form of guaranteed funds (say, holding a bond plus a call option), but these do not offer a free lunch in the way suggested by the Green Paper. *Crucially, we argue that the best way to stimulate enterprise is by minimising the frictional costs in the economy and thereby reducing overall costs of capital. For long term ventures we argue that small reductions in these costs can have substantial economic impact.*

- 1.2 We now expand in detail on each of these issues in an attempt to shed some light on what we believe to be the fallacies of conventional theories. We then explore the wider implications of our alternative viewpoint before setting out a summary of our key conclusions at the end of this paper.

2. The Assets Held

- 2.1 The basic irrelevance of asset allocation by defined benefit pension funds has been widely discussed both historically (see for example Treynor (1977), Black (1980) and Tepper (1981)) and more recently within the UK actuarial profession (see for example Exley, Mehta & Smith (1997), Gordon (1999) and Chapman, Gordon & Speed (2001)) and in the US (see for example Gold 2000). The basic proposition of these papers is that:
 - The belief that equities are highly likely “in the long term” to outperform bonds is irrelevant in establishing the optimal asset allocation for a defined benefit pension fund.
 - Long term data illustrating the extent of the historic equity risk premium is irrelevant – the existence of an equity risk premium is not disputed (although its size is largely unknowable going forward).
 - The reason why past return data is irrelevant is because the proposition is based on an arbitrage argument. This starts with the assertion that for a pension scheme offering the same benefits to employees regardless of investment returns in the fund, ignoring the risk of corporate bankruptcy, the shareholders of the company bear all of the investment risk (and gains) from the assets held.
 - To complete the indifference proposition from this assertion requires only that rational individual investors in a company are able to look through to

the underlying asset exposure of the pension fund (either directly, or indirectly through the observed volatility of UK shares).

- It then follows that the investor is basically indifferent between:
 - £1 of equity exposure in a pension fund
 - £1 of equity exposure held directly on the company balance sheet (by cross holdings or, at a portfolio level, by individual companies gearing their own balance sheets)
 - £1 of equity exposure held directly by the shareholder.

- 2.2 The sophistication of this argument is often lost in popular debate on pensions issues. In a nutshell, if equities go up (either over a day, a year or one hundred years) then they go up whether they are held directly or indirectly. Value is not created (nor the cost of the defined benefit promise reduced) by virtue of holding equities in a pension fund rather than holding the same assets on a company balance sheet or directly.
- 2.3 The irrelevance of pension fund asset allocation as described above is in fact identical in structure to the first proposition of Modigliani & Miller (1958). They used the same arbitrage construction to show that the value of a firm was the same (to first order) whether financed by equity or debt. In other words, looking at the mirror image of our proposition, it is not “cheaper” to finance a company with debt simply because historic bond returns are below equity returns.
- 2.4 As with the Modigliani & Miller proposition, the indifference proposition for pension funds is based on simplifying assumptions. However, it is our assertion that the rational way forward is to start with the basic proposition. From here we can unfold the simplifying assumptions to see how these affect the conclusion, rather than attempting to argue that the higher returns from equities invalidate the basic indifference proposition (either as applied to pension funds or by Modigliani & Miller).
- 2.5 In fact, in the context of the UK economy as a whole, the basic Modigliani & Miller arbitrage argument can be simplified even further to explain one of the puzzles in our Introduction. Why have the reduced pension costs from UK pension funds investing in UK equities been so neatly offset by the higher costs of financing UK firms’ capital investment with equity, rather than bonds? Looking at the whole economy we can start not with elegant arbitrage but instead with the more profane concept of a closed economy. In the case of a closed economy, holders of defined benefit promises have fixed (in terms of the scheme rules, although they may be linked to indices such as the Retail Prices Index) claims on future production. The equity holders have the residual claim. How the equity holdings are arranged between equity holders is clearly irrelevant to the big picture. If companies issue securities bought by the pension funds of other companies then it matters little to the big picture (to first order) whether these securities are equities or bonds – they are just cross holdings. If companies raise equity finance and pay large dividends then these dividends may well turn out to be greater than bond coupons. However the pension funds of companies holding the equities will receive the dividends

rather than bond coupons. Clearly, for every £1 (tax aside) that the dividends cost more than bond coupons to the paying company they reduce the cost to the receiving pension funds.

- 2.6 Of course it can be argued that the UK economy is not closed, but the relevance of closure in the whole picture needs to be considered. For example is the ability of UK companies to buy shares in overseas companies the root of the economic magic performed by institutional equity investment? If so, could the magic be redoubled by the UK government borrowing money to buy holdings in foreign companies? This would be an odd slant indeed on the idea that pension funds provide capital for the UK economy.
- 2.7 In reality, the example of a closed economy is given merely as a means of explanation for those struggling with the arbitrage argument. Although it is easier to visualise a closed economy, closure is not essential to the basic indifference proposition. If there is a free flow of assets between economies at market value then the total economy is simply an aggregation of the above arbitrage argument applied to each individual investor, whether he is resident in the UK or overseas.
- 2.8 The above represents no more than a restatement of orthodox financial theory applied to pension funds and will be familiar to many readers. The relevance to the popular debate on UK pension funds should not however be overlooked. Equity investment by UK pension funds does not reduce the cost of pension provision and a move by UK pension funds into bonds does not increase costs. If interest rates fall as a consequence then this provides lower interest costs on long term borrowing by companies which offset higher apparent pension costs. Transaction costs aside, there is therefore, on the face of it, no overwhelming reason for concern if pension funds switched their asset allocation entirely from equities to bonds.
- 2.9 If we want to find out whether the UK economy would benefit overall from one particular form of asset allocation or another (this asset allocation being largely in the form of cross holdings among UK companies) then we need to look beyond the indifference principle. Instead we need to analyse secondary effects hidden within the simplifying assumptions. These will be considered in a later section. At the risk of labouring the point though, the one carry-out from here is the irrelevance proposition; that the differences between equity and bond returns are irrelevant to the optimal asset allocation of defined benefit pension funds. Historic data showing that equities have outperformed bonds is, as befits an irrelevance proposition, irrelevant.

3. Matching Liabilities with Bonds

- 3.1 The vexed question as to whether bonds or equities match the liabilities of final salary pension schemes has taken on a new urgency given the increasing acceptance of the first indifference proposition above. If equities do not reduce the cost of pension promises can a rationale for equity investment be based on a “match” between equities and final salary pension scheme liabilities?

3.2 There are two separate strands to the debate on this subject. The first strand tackles the issue head on and seems to point to a complete lack of any justifiable evidence for a link between equities and salaries. The second strand tackles the same issue from a new angle and asserts that even if a link did exist, it would be irrelevant to a construction of final salary related pension liabilities based on classical financial economic principles. To coin a phrase, we might call this another irrelevance proposition

3.3 The recent argument on the first strand of this debate is set out in Dyson & Exley (1995). This gives a structural argument that dismantles the economic principle on which the link between equities and salaries is based (namely that both company profits and salaries form components of GDP). In particular:

- the share of profits as a percentage of GDP is not constant and therefore even if salaries and profits grew with GDP, a link is not assured
- the number of shares and the number of employees are not constant and thus inferences about profits per share and salary per employee cannot necessarily be drawn from the aggregate components of GDP.
- there is a large overseas component to the profits of UK companies, likewise many UK employees are employed by overseas companies
- Profits to shareholders are net of tax whilst pensionable salaries are gross of tax, thus the former are affected directly by tax rates whilst the latter are not.

Of course it is possible that some of these factors may offset each other. For example if the share of GDP taken as company profits rises it is possible that the Government may raise corporate taxes. To kill this possibility, Smith (1998) tackles the first strand of the argument using a statistical, rather than a structural, approach. Smith's is the "proof of pudding" argument – whatever the structural arguments, if a link exists then it should be possible to detect it statistically.

3.4 For the avoidance of doubt both of these modern analyses of the equity-salary link have made the obvious point that the fact that equities have gone up and salaries have gone up is insufficient to prove a "match". We should also mention in passing that simply because index linked bonds are linked to inflation and salaries have grown on average 2%pa faster than inflation does not rule out index linked gilts as a match (hint: try holding 2%pa more index linked gilts initially).

3.5 Smith (1998) also goes further to consider the more technical aspects of statistical analysis. In particular he explains the error of regressing units of "currency" (such as plain sterling currency, or an inflation linked currency linked to RPI, or a salary linked currency linked to NAE) on the prices of assets that deliver these currencies at future dates. Thus regressing equity prices on a salary index is as hopeless as regressing index linked gilts on inflation; the method doesn't even work in cases where a guaranteed link exists! However, despite the new sophistication in the approach, the detailed analysis by Smith (1998) only confirms the absence of any link between salary

related liabilities and equities. This is consistent with the findings of Wilkie (1995) who although not primarily concerned with the existence of this link, also found no evidence to support a link within his proposed asset model.

- 3.6 As an important corollary to the statistical analysis, it is worth stressing that link between salary related liabilities and equities is only of any practical use in the subsequent discussion in this paper if it allows us to establish whether a precise amount of equities is sufficient to match a prescribed salary related liability. A vague belief that a long term relationship exists obviously basks in the luxury of being unprovable. However, unprovability is also the nemesis of the “long term” argument, because a link based on belief is of absolutely no practical use. For a given liability, belief alone does not tell us whether we need £x or £y of equities to match it; distant handwaving about the long run is no substitute for a financial matching algorithm that can actually be applied in practice.
- 3.7 The new strand of the argument was advanced in Exley, Mehta & Smith (1997). This second strand casts fundamental doubt on whether a link between salaries and equities should be relevant to an accurate matching policy – even if it did exist. They argue that the actuarial convention of including future salary increases prior to retirement in “accrued” pension benefits is at odds with the way other corporate liabilities accrue. They assert instead that the discontinuance liability (subject to Retail Price Indexation only prior to retirement) gives a more consistent liability measure. Additional increases to this liability arising from future salary increases are regarded as new accrual of liability arising in the year of employment and it is left to new funding, rather than investment policy, to hedge these extra liabilities. This approach has the merit of being eminently applicable in an environment of accurate liability-matching using financial techniques and can be indifferent to hand-waving conjectures about long term relationships.

4. Consumption and Investment

- 4.1 The third key economic question relates to whether the funding of a pension liability affects consumption or investment in the economy at a *primary* level. (We will reveal our new viewpoint at a secondary level in the next section).
- 4.2 The explanation as to why funding is also basically irrelevant is similar to the irrelevance of the asset allocation as described above. Once again we have to look at the position of individuals, rather than a company centric view that £1 of dividends represents £1 of “consumption” and £1 of pension contributions represent £1 of investment.
- 4.3 If we again look through to the individual we might assume that the individual decides his own level of consumption. Suppose his consumption is determined not by him spending only the dividend income he receives from his shares but based on a personal consumption pattern that could be determined by a large number of factors. If he receives £1 of dividend, but he wants to save rather than spend, then he will re invest the dividend. Likewise if the company contributes £1 to the pension scheme instead of paying a

dividend then, assuming that the liabilities (pension payments) are unaffected, it seems likely that (tax issues aside) the share price will be £1 higher relative to paying £1 dividend. Thus if the individual wants to spend rather than save, he can sell shares to put himself in the same position as if he had received a cash dividend.

- 4.4 It is again interesting to pursue this line of argument at a macroeconomic level. The pre funding of UK pension liabilities is often cited as an economic advantage relative to other systems. However, in a closed economy, it seems rather immaterial whether companies pay out dividends, invest directly in their own business or buy each other's securities in the form of cross holdings as described above (that is borrow money from each other to finance investment).

5. Impact of pension fund investment on enterprise capital

- 5.1 We believe that an association between pension funds and investment in the seed capital for enterprises is often rooted in a misconception about pension funds as long term investors. It is true that pension fund liabilities are generally long term in the context of their duration. It is also true that if the pension fund can find illiquid assets which match the liabilities then the pension fund has a relative advantage in holding these assets to maturity.
- 5.2 However, these basic investment concepts often seem to be confused with the time horizon of the investor bearing the risk of defined benefit pension fund. Ultimately this risk of such investment is borne, not by "a long term institution" but by shareholders in the sponsoring company that runs the pension scheme. If a shareholder sells his shares in this company then he ceases to have any "long term" interest in the assets of the pension fund. Thus the time horizon of the typical ultimate pension fund risk bearer is identical to that of the typical investor in the sponsoring company (the investors are one and the same). Put another way, it matters little to this ultimate investor whether the company sets up a new venture as a subsidiary (the latter, arguably has the advantage of direct support from a parent company), the company buys shares in a venture, or the company pension scheme buys the same shares. In no sense does the pension fund represents a more "long term" investment route.
- 5.3 So defined benefit pension funds are in no way "natural" investors in venture capital. At the other end of the spectrum, criticism of funding standards such as the UK Minimum funding Standard for encouraging bond investment at the expense of alternative assets (see Myners Review 2001) also seems misplaced. The choice of bond assets is a consequence of the undeniably bond-like liabilities of a defined benefit pension scheme. Thus critics of bond investment should look to the liabilities themselves, rather than matching investment policies, if a case is to be made for the bond asset allocation of UK pension funds creating inefficiencies in the UK economy.
- 5.4 There are appear to be many anecdotal theories about the impact that these sorts of final salary liabilities may have on issues such as the flexibility of the

UK labour market. These theories are of course open to criticism. For example Exley, Mehta & Smith (1997) argue that, contrary to the widespread belief that final salary pensions “lock” employees into particular employers, a rational employee will look at the value of his total remuneration package. If the pension benefits associated with long service are valuable then the long serving employee will, other things equal, work for a lower salary. If a new employer has to pay a higher salary to persuade him to leave, on account of the pension foregone, then this merely reflects that the salary being paid to the long serving employee was previously pulled down by the value of the non salary pension benefit.

- 5.5 The true impact of the much vaunted “locking in” of employees created by final salary pension that we seek to explore here is, if it exists, a second order, frictional, effect. Different employees will have different values of pension arising from different service histories there are frictional costs associated with individually tailored pay scales. These frictional costs can be avoided by changes in benefit design. For example an obvious solution is a reversion to the old fashioned “career average” basis for pension calculations, rather than the popular final salary basis.
- 5.6 The main issue in benefit design is probably not the final salary link. Rather, it is the fact that from the perspective of an individual scheme member, a defined benefit pension may represent a substantial allocation of his personal wealth into an investment in a bond-like, rather than an equity-like vehicle, regardless of the fund’s asset allocation (because the *benefits* are bond-like). Arguably, he may not want this allocation, leading to an inefficiency in this individual’s personal allocation of wealth.
- 5.7 For a reasonably wealthy individual it could be argued that this benefit design issue is very minor. Given either a defined benefit or defined contribution arrangement, he will reorganise his personal assets and liabilities (mortgage, mortgage repayment vehicle, employee share schemes, ISAs etc) so that his overall implicit asset allocation meets his preferences.
- 5.8 Furthermore, looking at the UK population in aggregate, it is clear from our earlier analysis of cross holdings that the characteristics of UK equities are in part determined by the implicit gearing created by defined benefit promises. If a typical member holds an allocation to shares in UK companies then he has an implicit liability to pay defined benefit pensions to the employees of these companies. In aggregate this must offset his personal assets in the form of his individual defined benefit promise, since in aggregate the population merely owns a share of future production from the economy.
- 5.9 However, there will clearly be many less than wealthy individuals for whom these aggregate positions do not apply. It is debatable how significant these individuals are by value of pension liabilities, given that higher pension liabilities will tend to accrue to those with greater scope to allocate other personal assets. Nevertheless, it seems that frictional costs in benefit design could occur for an employee who has no other assets except a defined benefit

pension. It is possible that this individual might prefer to hold, say, an equity oriented money purchase pension rather than a bond-like defined benefit.

- 5.10 The extent of this potential cost remains a matter for conjecture (and further research). In terms of capital for new enterprises we return to our assertion that there is no utopian long term investment which is certain to deliver more than a bond whilst offering the prospect of higher returns. Accordingly it is questionable whether an individual with no significant assets other than his company pension would seek to invest substantially in new ventures (unless exploiting the state pension - underpin). Thus we would caution against over emphasis on this particular frictional cost as a source of misallocation of resources away from enterprise capital.
- 5.11 The way to address the above issue is of course to allow individuals the freedom to choose the form of their pension (or possibly total) remuneration on a cost neutral basis to the company. This will only be worthwhile if the cost of administration of these choices is less than the frictional cost associated with individual preferences not being catered for. Another approach may simply be to avoid over-provision of benefits so that a defined benefit pension represents only part of individuals' pension provision, rather than targeting an index linked pension of two thirds of final salary, say. Arguably, it is largely Government interference in benefits that has led to the current levels of provision (particularly indexation). In practice for the majority of employees, some form of defined benefit provision (possibly based on career average to enhance portability and possibly less generous overall than some current arrangements) may well fall broadly within an optimal overall portfolio, especially if the scheme has cost advantages over equivalent retail products.
- 5.12 Of course, if there are concerns over frictional costs in benefit design then apart from the compulsory indexation of benefits, the issue most easily addressed by Government is the requirement for retirement benefits to be paid (aside from the a tax free lump sum) in the form of a pension. This is a clear example of a particular asset (an annuity) being imposed on members at retirement. Abolishing this rule would pave the way for substantially greater flexibility in benefit provision (both defined benefit and defined contribution).

6. The Real Impact of Pension Fund Investment on the UK Economy

- 6.1 So we have established that many of the anecdotal theories of pension funding and investment appear to lack economic rigour. In this section we set out what we consider to be a more firm basis for analysis. As suggested earlier, our starting point is to accept our various indifference propositions, but we then explore how unravelling the simplifying assumptions in these propositions reveals "second order" economic effects, which we believe to be the real sources of the impact that pension funds have on the UK economy.

Tax

- 6.2 One of the major simplifying assumptions underlying the basic irrelevance propositions above is the absence of tax. In fact, viewed from the shareholder's perspective in isolation, it can be shown that there are significant tax advantages to bond issue by UK companies and corresponding bond investment by UK pension schemes. Indeed, even the Miller(1977) argument that personal taxes eliminate the tax advantage of a geared firm appears to be neatly addressed when the bonds are held within pension funds (see Bezoooyen et al, 1998).
- 6.3 On the question of paying a dividend versus investing in a pension fund, there are tax issues, but these should not be over-stated. In particular, the tax relief on pension contributions is primarily a deferment of tax only. Furthermore, it has been suggested that even the advantage of a gross investment roll up within pension schemes may be less important than conventionally recognised. For example Armitage & Exley (2000, draft) argue that if capital gains taxes are comparable with income taxes then the taxation of the appreciation in share value arising from the investment in the pension fund may offset much of the tax advantage of tax exempt pension fund investment.
- 6.4 However, although the reader is invited to pursue these issues in the context of advice to individual firms, we argue here that at the level of a total economy, such tax issues are once again irrelevant. Indeed here the simplification of assuming no taxes seems entirely appropriate, since if Government expenditure remains unaffected, an arrangement resulting in less tax being paid by one section of the population will need to be offset by higher taxes from another sector. Accordingly we will not pursue the issue of tax further in this paper.

Agency Monitoring

- 6.5 Company management are primarily agents of shareholders put in place to manage a business. The shareholders themselves represent the principals or owners of the firm. There is widespread literature (see Jensen & Meckling (1976)) on the potential conflict between agents and principals. The costs imposed by this conflict are referred to as agency costs. Ultimately these costs must be borne either by principals or agents (or some combination of the two), but either way they represent a drag on an economy to the extent that capital is not allocated optimally to worthwhile projects that would have enhanced overall wealth. Examples include the costs of extravagant head office buildings or unprofitable pet projects in which the shareholders would not have invested had they been given the opportunity to decide by subscription of new capital. This has led Jensen & Meckling to argue that, quite apart from any tax benefits, more highly geared firms are optimal owing to the tighter control exercised by shareholders on the allocation of resources. For our purposes here we will not attempt to quantify these costs but merely note that the costs exist and that, in the light of the basic indifference proposition, an arrangement that increased these costs would be detrimental to the economy and an arrangement that reduced costs would be beneficial.

- 6.6 The argument that bond investment within pension funds minimises agency costs is rooted in the assumption that bonds match the liabilities significantly more closely than equities as discussed in section 3 (or more practically, that a system of matching liabilities based on bonds can be implemented accurately). We also assume that the optimal level of balance sheet gearing of a company represents some trade off (which we need not specify fully for our argument) involving costs of bankruptcy or financial distress versus the positive gains (particularly reduced agency monitoring costs) from gearing. It seems clear that the effect of a mismatched pension scheme invested in equities will move this optimal level of gearing downwards (ie more equity and less bond finance of the firm) and thus increase agency monitoring costs.
- 6.7 Although expressed in terms of the impact on optimal gearing levels, the above effect can be explained more simply in terms of the impact that a mismatched pension fund has on free cash flow in a business. We might postulate that during a recession, when equities will generally underperform in the mismatch, there will be a squeeze on cashflow as cash contributions to the pension fund will increase. However, arguably such a squeeze is not beneficial since the company is likely to already be experiencing distress and so the risk of profligacy with shareholders money is probably already well under control anyway. By contrast the mismatch is likely to boost the free cash flow available to management in precisely the sort of “boom” conditions when control of cash flow in the hands of management is paramount.

Signalling Costs

- 6.8 Signalling costs relate to the question of insiders versus outsiders in a firm. Although generally the insiders are agents and the outsiders are principals, the issue is not related to the conflict of interest between these two parties but rather the difficulty “insiders” have in signalling their success to “outsiders”. Some of the literature on why companies pay dividends despite the apparent tax cost involved (see Zodrow c1992 for a summary of the literature) suggest that shareholders are prepared to incur significant costs in order to signal information to shareholders.
- 6.9 We argue that if shareholders are prepared to incur costs for such crude measures of inside information then the costs associated with interference with the signal must also be large. Accordingly it would appear that the costs of cashflow disruption created by mismatched pension funds could also be large in terms of signalling costs: For example a firm with an efficient business whose cashflow is disrupted by a financial event in the pension fund unrelated to the core business might be unable to signal its efficiency to outsiders, or an inefficient firm with a pension fund windfall may give a misleading signal. Overall this may results in mis-allocation of capital in the economy, with associated costs in terms of overall wealth. An essentially similar issue is considered further quantitatively by Gold (2000) in the context of the disclosures provided by accounts.
- 6.10 Of course, (as recognised also by Gold 2000) signalling costs and the scope for mis-information can be reduced by transparent accounting and the drive by

the ASB towards more transparent recognition of financial gains and losses through pension funds is an alternative solution to matching. However, we would argue that any accounting standard is prone to some manipulation and matching assets and liabilities is a far simpler and cheaper solution.

- 6.11 Another important aspect of signalling relates to signalling between shareholders and employees. In order to see the importance of this we need to flex the basic model of a defined benefit pension scheme slightly and admit two areas of fuzziness in the arrangement. Firstly, it must be accepted that if the firm goes bankrupt and there is a deficit in the pension fund then some of the promised pensions may not be paid. In most schemes there are priority rules which (at present) give first priority to pensions in payment in this event, so that non retired members bear the brunt of this default risk. Secondly, if surplus accrues in the fund then in some schemes there is a possibility of contractual benefits being improved. Indeed, arguably from a member perspective this is the sole rationale for Trustees taking risks with the pension fund assets by investing in equities.
- 6.12 Signalling is relevant to this slightly more fuzzy model because the scheme members need to assess the value of the pension promise, not only for the wage bargaining process of employee members but also more generally for all members in terms of deciding their optimal personal allocation of wealth. By way of illustration of the latter issue, if the pension is worth $\pounds x$ then they may save an additional amount $\pounds y$ and spend $\pounds z$ but if the pension is already worth $\pounds x + y$ then they may save nothing else and spend $\pounds y + z$. The important issue is therefore the accuracy with which members can assess the value of their pension. If the pension scheme holds matched assets then the fuzziness largely disappears from the picture, but if the pension is mismatched how do members assess the company's commitment to restore a deficit, or the possibility of surplus being distributed? It seems clear to us that a fuzzy benefit created by mismatching assets and liabilities either adds signalling costs or results in leakage of value arising from mis-valuation by members that in turn leads to suboptimal personal consumption and investment or allocation of wealth.
- 6.13 Of course the latter point gives a further spin to our comments on the impact of pension funds on consumption versus investment. We start from the view that individuals, rather than policy makers, decide the correct balance between these two items. To us it then follows that any obstacle which distorts behaviour away from what the individuals were trying to achieve is costly in welfare terms, whether or not it results, say, in more "investment" which policy makers may see as desirable.

Utility Gaps

- 6.14 For completeness, a linked issue raised in Exley, Mehta & Smith (1997) is the appearance of utility gaps associated with pension scheme mismatching. They too argue that fuzziness created in benefits is expensive in terms of signalling. However they also note that there is a gap between the value of default as seen by an investor in a company able to diversify his credit risk exposure and the

cost as seen by an employee in the firm. This is because the employees' job and pension are linked to the default risk of the same firm which is difficult or expensive for him to diversify. In this context the creation of a risk of default through mismatching creates another loss of value in the economy.

Specialisation (Core business focus)

- 6.15 Another important principle of modern business management (Stewart 1990) is the focus of the scarce management resources on running the core business activity rather than peripheral activities either in which the management has no unique expertise or in which the shareholder has no desire for the management to get involved. The time spent by senior company management on the (mis) management of large pension fund assets and liabilities by deliberate mismatching of assets and liabilities ostensibly to generate surplus would seem to be a classic textbook example of quality management time wasted. Obviously the shareholder could, as we have already stressed, achieve exactly the same result himself, more efficiently, simply by buying more equities and holding fewer bonds, or investing in geared firms. Indeed the term "casino capitalism" seems apt to describe a situation where senior management representatives on Trustee bodies devote time dabbling with highly geared financial risks rather than running a business.
- 6.16 In this context it seems ironic that some objections to solvency standards for pension funds attempt to argue that scarce capital is "wasted" when tied up in a pension scheme. Capital used by a pension fund to buy securities in other companies does not, of course, disappear into an economic black hole. The scarce resource here is *human capital* and in particular competent and efficient company management, whose endeavours should be focussed on their business, not asset liability mismatching.

Portfolio Construction Costs

- 6.17 A final cost at the level of the individual investor relates to the costs of constructing personal portfolios that meet investor preferences. Suppose an investor wanting to invest in, say, a telecoms company. Suppose also that the pension fund of this telecoms company is heavily invested in private equity. We now have two situations:
- (a) The individual did not want additional exposure to private equity (perhaps having already invested heavily in tax privileged vehicles himself), in which case he faces the costs of selling private equity in his own portfolio (or if he has no holdings, he must either "short" the exposure somehow or face the utility costs of being forced to holding sub optimal asset allocation.
 - (b) The individual wanted to hold private equity, although he probably prefers to control his holding directly, rather than hold it via the pension fund of a telecoms company.

In either case it seem that there are costs relative to direct holding by the individual investor himself.

Recap

6.18 We pause here to note that the above five economic costs are all associated with *mismatching* a pension liability. Furthermore, they are nothing more than a restatement of widely accepted theories as to:

- why risk management arms exist in companies,
- why companies are not gratuitously risk seeking in their financial exposure and
- why a large risk management and insurance industry exists.

To argue that these issues are in aggregate trivial would be to argue that risk management is not economically worthwhile. We stress that we are not talking here about business risk in the context of an entrepreneur starting a new venture, such risks are the lifeblood of a market economy. Rather we are talking risks taken with financial assets and liabilities, risks that are costly to the underlying business without adding any value or serving any purpose. If a pension schemes assets and liabilities can be matched, why take risks? Why not leave entrepreneurs and shareholders to decide for themselves which equities they want to invest in and focus the management of a company on its business activities rather than the pension fund?

Direct Costs

6.19 An obvious further more obvious cost associated with mismatching assets and liabilities is the direct costs of employing a whole host of external managers and professionals to deal with the arrangement. It is our assertion that most treasury professionals within UK companies have the expertise to match accrued liabilities with bonds. The fact that pension liabilities are long term does not, as some would have it, project pension fund asset beyond the realms of mere mortals. The liabilities of pension funds have a long duration, admittedly, and some of the matching bonds are inflation linked, rather than conventional, but this is hardly rocket science.

6.20 We suggest that one potential beneficial consequence of the Myners Review (2001) may be that the recommendation for more professionally trained trustees may encourage the involvement of corporate finance and Treasury professionals with the correct expertise to manage the risk exposures associated with defined benefit pension schemes. This will also most certainly lead to greater focus on matching bond assets and less inclination to take large financial risks which could disrupt the business.

6.21 Given our conjecture that the mismatching of pension liabilities with equities serves no particular purpose and potentially incurs significant economic costs it is interesting to look at the direct costs of the current arrangements. It would seem reasonable to suggest that 0.3% pa of pension assets are currently spent on this management system by way of fund management and other advisors fees. As noted previously, these fees are paid for managing pure cross holdings in the UK economy. On the basis of £1 trillion of pension assets the

total direct cost to the economy then amounts to £3 billion per year. Of course this money does not disappear down a black hole either – it is reappears mainly in the form of the profits of fund management companies and salaries and bonuses paid in the City, which are then spent in the economy. However, it does divert scarce human resources into activities that do not, on the face of it, create any value at all.

6.22 By contrast, money spent on risk management systems has the potential to add value in the same way as any insurance or risk management function within a company can add value – by ensuring smooth operation of the core business.

6.23 *It is our assertion that by reducing the significant costs of financial mismatching, the cost of capital in the UK economy would be reduced. Inevitably, small reductions in the cost of capital have most impact on “marginal” projects, precisely those associated with new ventures. The effect would also be more pronounced for longer term projects and would in effect, increase the “time horizon” of capital projects (by lowering discount rates).*

7 Conclusions

7.1 In this paper we have challenged many of the conventional views on the economic impact of defined benefit (“final salary”) pension funds. In particular:

(1) The Assets Held

We assert that the assets of defined benefit pension schemes represent little more than cross holdings within UK companies. These can be likened to the *Keiretsu* system of direct cross holdings seen in Japan. They do not, as suggested by the Myners Review (2001) represent “the savings of millions of people”, except indirectly to the extent that individuals hold shares in the companies that hold the pension funds. In the case of defined benefit pension schemes the millions of members have defined benefits (pensions payable from certain dates) rather than “savings” in the sense of these asset pools. To the extent that the assets themselves are cross holdings, cash flows such as dividends received by pension funds from UK shares represent an internal transfer within UK companies. The economy clearly cannot reduce the cost of the defined benefit liabilities themselves by such arrangements. We go on subsequently to assert that an economy functions *less* efficiently with equity cross holdings, owing to the associated frictional costs (created by *inter alia*, agents and intermediaries).

(2) Matching Liabilities With Bonds

On the liability side, we assert that the defined benefit liabilities of the vast majority of UK pension schemes are surprisingly similar. In most cases the appropriate asset allocation to match the liabilities consists of a mixture of conventional and inflation linked bonds. Differences

between schemes may affect the emphasis on the two different types of bond, or their duration but the overarching feature is the substantial degree of similarity. In particular, the mix between active members and pensioners (“maturity”) tends only to affect the duration of the matching bonds. Contrary to the assertions of the Myners Review (2001), these same conclusions would be reached by different asset-liability models with different assumptions if correctly applied. Although the Myners Review (2001) does stress the importance of setting pension fund investment policy by reference to the liabilities, the widespread similarity in defined benefit liabilities and the existence of (model-independent) matching bond portfolios does not seem to be widely appreciated. We cannot establish any reason why the matching of liabilities with these assets can be cited as a distortion of investment behaviour.

(3) **Consumption and Investment**

Our assertion is that substantial gains in UK economic efficiency could potentially be achieved if equity (cross) holdings were eliminated in favour of UK pension funds investing instead in matching corporate or government debt securities. By eliminating equity cross holdings we argue that the UK economy could substantially reduce frictional costs, thereby reducing the cost of capital in the UK economy and increasing capital investment.

(4) **Enterprise**

The ultimate end investor bearing the investment risk of a defined benefit company pension scheme is the investor in the company itself. As such, these investors are no more “long term” than any other investor in company shares. The fact that defined benefit liabilities are matched with bonds is a function of the bond like nature of the liabilities. It is possible that some inefficiencies arise from benefit design, but these can be addressed by, for example, moves to “career average” schemes, or more simply by less generous levels of provision. The Government imposes potentially onerous indexation of pensions and restricts flexibility in pensions in payment, which could also be addressed. However, the assertion of our paper is that the best way to encourage enterprise is to focus on reducing the cost of capital in the UK economy by removing frictional costs associated with the mismatching of the large financial assets and liabilities of pension funds. By matching assets and liabilities costs could be substantially reduced. This would have most effect on marginal projects and projects with long time horizons, precisely those commonly seen in new enterprises.

- 7.2 With the exception of the highly visible direct costs of the current institutional fund management arrangements, our arguments for reducing frictional costs has been largely couched in dry economic terms. Agency costs, signalling costs and utility gaps do not often appear in anecdotal theories, although we

would hope that the gains from specialisation, when expressed as “core business focus” are now widely recognised. However, the big issues should not be missed:

- Mismatching by pension funds adds significant costs to the UK economy, these costs appear in the form of higher costs of capital which stifle enterprise and wealth creation.
- By matching assets and liabilities, far from damaging enterprise, the economy would be freed of a significant drag, reducing costs of capital and encouraging enterprise.

7.3 The punch-line to all of this is that it may not, after all, be coincidence that, the UK economy, with its focus on equity investment by institutions, has nevertheless tended to underperform the economies of countries with more conservative approaches to institutional investment. Our argument is that, clearly, equity investment alone cannot offer competitive advantage from superior returns (the equities themselves are internal cross holdings). What we are saying, in simple terms, is that a propensity to dabble in unproductive financial risks inside pension funds can crowd-out investors’ appetite for genuine entrepreneurial risk taking. UK institutions have been cross examined on two occasions (the Wilson Report and the Myners Review) on the accusation of hindering the UK economy. However, the conclusion of this paper, that pension funds may actually be taking too much risk, rather than too little risk seems so far to have eluded the jury at large.

7.4 This paper expresses personal views only and should not be attributed to any firm or employer.

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