Population ageing and pension finance: How best to secure pension claims?

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Abstract This paper deals with some basic characteristics of both pension finance systems, pay-as-you-go and capital reserve. The merits and demerits of both finance systems are discussed. The major question most frequently asked is whether funding does matter and if so, what conditions have to be fulfilled. Funding generally does not transfer the pension burden over time, as is commonly believed. Apart from stimulating national savings and investments, the major advantage of funding for the elderly is that it provides the best way of securing pension liabilities and provides an adequate mechanism for solving the distributional problem of national product between the retired and non-retired through the ownership of (part of) the capital stock.

Keywords: *pensions finance; funding; pay-as-you-go; security; viability; population ageing*

Introduction

The question of whether funding does matter in securing pension claims is dealt with in this paper. After some introductory remarks on the basics of pension finance the main arguments favouring funding and pay-as-you-go are presented. Furthermore, it is explained that in advocating the transfer from pay-as-you-go to funding, the wrong arguments are almost always used, particularly as a principal redistribution of resources over time is not possible on a macro-level. A major issue is whether the pension finance system can make a contribution to a better performance of the economy. Finally the paper considers the relevance of ownership of capital in respect of the long-term viability of pension schemes.

The basics of pension finance

In the case of a funded scheme, employees pay part of their (labour) income into a fund of financial assets from which the pensions are eventually paid out. The retirement pensions are paid out of current capital income, originating from investment revenues and by selling to younger generations.¹ A funded system relies more on the development of the international capital market than a pay-as-you-go based system, which is dependent on the domestic labour market.

Under a pay-as-you-go system pensions are paid out from contribution payments (predominantly out of domestic labour income) only. There is a cross-sectional income redistribution from workers to pensioners on the basis of an

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implicit social contract: each generation finances the pension income of the previous generation on the understanding that its own pension income will be financed by the next generation, with the inherent risk that future generations can or may be forced to break the contract, at least in part. Pay-as-you-go based pension plans are normally implemented through the state's power to levy taxes.

Any judgment about the sustainability of future pension payments — irrespective of whether they are of the basic or supplementary type, personal or on a collective basis, funded or pay-as-you go financed — must depend solely on the productive capacity available in the future to finance all liabilities in respect of pension obligations and a multitude of other obligations of national interest.

Evidently, the pension burden on any society is dependent upon the amount of future payments in respect of all old-age income provisions, but above all on the expected size of the future national product. More accurately, the costs of a pension scheme or the true measure of the pension burden for the society as a whole are the resources or benefits that are no longer available (for consumption by the non-retired and for investment purposes), as they are being used for supporting the elderly. A doubling in the size of the aged, for example, will, *ceteris paribus*, simply double the burden of support on the national economy. In other words, the larger the ratio of pension rights to gross national product, the higher the share of future national product to be committed to pension expenditures.

When the tax and contribution burden is felt to be no longer sustainable in the sense that it will give rise to an unacceptably high payment level for those who are paying tax and

contributions, this is likely also to be true for the welfare state as a whole, as this is also financed on a pay-as-you-go basis. Therefore, measures such as cuts in pension expenditures or reduced spending elsewhere have to be considered.^{2,3}

Arguments in favour of funding and pay-as-you-go

The merits and demerits of funding and pay-as-you-go have been discussed at some length. Both systems have their advantages and disadvantages, and the merits of the one system are generally the demerits of the other system.

There are at least two main reasons why pay-as-you-go programmes have proved to be so popular in Europe in the decades following the Second World War. First, in a funded system it will take many years to build up a reasonable pension. In contrast, under a pay-as-you-go system a full pension can be paid immediately, with a transitional gain to retirees and the older cohorts of workers. When the pay-as-you-go schemes were installed, the first generation(s) of pensioners had a very good deal: they received pensions without having contributed, or having contributed only partially.⁴ Secondly, because pensions are paid out of workers' contributions, they can be increased — reflecting changes in prices and/or wage-level — relatively easily without levying increasing contribution rates from workers' income.

An important feature of a funded scheme is that its contribution payments are less likely to be regarded as taxes than as own savings for old-age provision, thereby avoiding negative labour market distortions and possibly giving rise to an increased labour force participation.

It is often claimed that the major

disadvantage of the funding principle is that it runs far less of a risk of a low real rate of investment returns and low asset prices due to persistent (and unexpected) inflation than the pay-as-you-go systems. This claim is not considered here.

In the following sections three issues that are often overlooked in respect of pension finance are dealt with in more detail.

Pension finance systems do not differ in that, contrary to common belief, they do not affect the redistribution of resources over time. This aspect is discussed later in this paper. From a macro point of view the question arises of which pension finance system contributes most to the performance of the national economy. Funding (or pay-as-you-go) will be preferential to the extent that it increases national product. We turn to this issue in the section on pension finance and the performance of the national economy.

The major merit of funding as opposed to pay-as-you-go for the elderly is the ownership of some of the capital stock, which in our view is of utmost relevance in securing pension entitlements and solving the distributional problem. We turn to this aspect in the later section on securing pension claims. Finally some concluding remarks are drawn.

No redistribution of resources over time

On a personal or micro level, the economic function of setting up a pension scheme is to transfer resources from an individual's working or younger age to his or her old-age years, thereby creating a claim on future national product. Saving or consumption forgone during the working period is balanced by consumption in the retirement period. On a macro level or for a society as a

whole this is not possible, '... ruling out the case where current output is stored in holes in people's gardens'.⁵ Generally, no generation can store for its own use in retirement all the commodities that it has produced. Some consumer goods that can be stored and saved for consumption later, in addition to durable infrastructural facilities, are, for example, durable goods like housing facilities, transport facilities, clothes, books and some good wines. Many others, however, particularly health services, cannot be stored, and hence must be produced simultaneously with their consumption. Thus, for a society as a whole there can be no redistribution of pension assets and purchasing power over time to a substantial degree. The consumptional expenditures of the elderly, today and in the future, always have to be provided for from current production in the same time period, irrespective of whether the pensions are funded or not. The goods and services the retirees consume are always part of the current output of the current working population equipped with the present capital stock. From an economic point of view it can be said that the costs in respect of any retirement income system, defined earlier as the resources or benefits foregone, are always equal, irrespective the way they are financed.

Fallacy of composition

It is often argued that the origins of all future pension problems lie in the failure to begin and maintain funded pension schemes rather than pay-as-you-go financed pension plans. If public and supplementary pension plans had accumulated sufficient assets, so the argument goes, paying future pension expenditures would be less of a problem — or would not be a problem at all. This solution, however, will not change the basic mechanism of redistributing

production among different groups of population, such as the retired and non-retired. The competition over resources raised by the pensions paid to the elderly is not removed by the transition from pay-as-you-go to funding. In fact, this simply changes the situation from one where old-age pensioners solicit a share of labour income, to one where they have a claim on the return on the capital stock.

On a personal or micro-level — and on a cohort or meso-level as well — funding is clearly the only feasible way to create an old-age pension. During one's working years actuarially fair contributions are paid in order to receive a pension income in the years of retirement, which will be paid from interest revenues and the proceedings from selling pension assets to the younger generations. On a macro-level, as a rule pay-as-you-go or any funding principle can be chosen.

It has been pointed out by, for example, Thompson (1988)⁶ that '... the tendency to generalise from the individual to the economy is one of the major shortcomings of much of the debate over retirement costs because it often results in what economists call the *fallacy of composition*.' It is a fallacy of composition to assume that because something is true for an individual it is necessarily true on aggregate. For instance, '... if I stand on my seat in the theatre I will get a better view, but if everybody does so, nobody will get a better view'.⁷

Pension finance and the performance of the national economy

The crucial question arises of whether funding (or pay-as-you-go) can make a real contribution to the better

performance of the economy and if so, under what circumstances and under what conditions? In other words, does funding matter?

Evidently a major difference between funding and pay-as-you-go is that funding generally leads to an additional flow of saving during the growth period — and under circumstances also in an ageing economy with economic growth — thereby creating a resource base, which enables higher levels of production.⁸

Conditions to be fulfilled

The idea of stimulating economic growth by building up a larger capital stock by pension saving is based on four major assumptions.

First, additional pension saving increases total national saving, at least in part, as long as there are no offsetting reactions from households, firms or government. For instance, saving within a public fund may be offset by increased spending in other government programmes, leading to dissaving to a certain extent, and saving within private complementary schemes might be offset by reduced saving in other forms. If pension savings simply replace other savings, it makes little real difference. For a short survey of how pensions affect personal and total national savings, see for example Reisen.⁹

Secondly, the additional pension savings will lead to investments that increase the productive capacity of a country. In other words, investments do not fall short of the savings level. This is not an automatic process, however; economies do not behave like well-oiled equilibrium machines. If savings fall behind, this can result in increased hoarding and decreased national income levels or in a (larger) surplus on the current account of the balance of

payments. If pension savings lead to new productive investments — which would not otherwise have occurred — then funding can make a real difference.

Thirdly, capital stock and national savings are below their optimum level and are expected to persist for a long time period ahead. It can be argued that savings nowadays in many, if not most countries, are below their optimal level on a macro-level. There appears to be a structural shortage of capital supply worldwide, particularly in the transitional economies and many developing countries and this shortage may increase further in the coming decades.

Fourth, increased pension saving must be the best way to stimulate productive investments. If increasing the national saving rate were the main reason to fund pension plans, other and perhaps better ways to accomplish this goal could be found. The government could, for example, run a surplus on its budget, thereby creating government savings; or it could use various kinds of incentives to stimulate private savings and investment. If there was an alternative policy to promote savings and productive investments either more efficiently or with less risk, then it might be the preferred policy.¹⁰

Funding as a mechanism to promote savings and increase national product

When the four conditions above are fulfilled, the question of whether funding matters, and whether it could be part of a solution to the problems caused by adverse demographic developments, for example, can be answered affirmatively.¹¹

Funding will be preferential to the extent that it causes national product to be higher. It will be clear that the costs of population ageing cannot be avoided. On the other hand, by increasing

investments now (so that the economic costs or benefits forgone reduce the current consumption expenditures of the present generation) one is anticipating the difficulties that could otherwise (with non-funding) arise in an economy with a lower national product. This favours future generations.

A further expansion of funded occupational supplementary pension plans can be considered as an adequate, though not unique mechanism to promote savings.

Note, however, that pension finance systems are not created because of the impact they might have on the performance of the national economy. First and foremost, they are designed as a mechanism adequately to provide pension incomes to the elderly.

Aside from the impact that funding can have on the size of future productive capacity, pension saving may be particularly preferential to some people as it carries more security than pay-as-you-go. In other words, the major (economic) difference between funding and pay-as-you-go extends beyond the macro-economic issues of savings and investment.

Securing pension claims

The argument that funding and pay-as-you-go are equivalent in real economic terms has its own drawbacks as it ignores the basic nature of the economic process and of social and financial institutions in solving the distributional problem. To consider workers and pensioners as opposed productive and non-productive groups is incorrect from a (supply side) economic point of view.¹² As consumers of scarce goods and services, however, they can be competitors. National product is the result of the joint input of labour (owned by the workers) and of capital

(owned by the elderly) and as a consequence output is divided between capital and labour — under equal conditions — according to their marginal product, ie, wage rate and profit rate. This basic distributional aspect is ignored in much of the social security literature. In particular, the role of the ownership of the capital stock is overlooked, at least on a macro-level.

The crucial issue in respect of future pension payments is that they constitute a claim on future output in exchange for forgoing a part of current output. Pensioners need a firm and solid claim on the national product in order to be able to consume the goods and services being produced at that time. Under a funding scheme, the retired population has such a claim at its disposal, arising from their identifiable ownership of productive capital as a resource base of their own.¹³ A higher participation of the elderly in the labour force also gives rise to such a resource base.

The long-term viability of pension schemes

Capital earnings are received by the owners of the capital assets, ie, pension funds and many elderly people on a personal basis. The ownership of the capital stock will be a more secure basis for retirement income than the willingness and ability of the current labour force to pay pension contributions under a pay-as-you-go system. If pay-as-you-go contributions alone could satisfy promised pension payments ad infinitum, one could be content without any funding system. But this promise cannot be guaranteed; one simply cannot count on it forever. Economic and social institutions such as the ownership of goods and assets, embodied in pension entitlements and other social security benefits, are therefore of much more

relevance for the sustainability of old-age income plans than levying taxes and contributions from labour income or capital income, as there are many risks involved here. Workers can evade contributions and taxes on capital income are very difficult or impossible to enforce effectively due to the high mobility of the financial capital. Pensioners are thought to be better able to fight for their share of national product as owners of capital than as lobbyists for pay-as-you-go financed pensions.

Both pay-as-you-go and funding basically act as a mechanism for transferring resources between pensioners and other age groups. The primary point of interest when comparing funded and pay-as-you-go based pensions is how pension entitlements are secured, and only in the second place how they are financed. Funding is not a unique mechanism for financing pensions, therefore, but funding can be considered as a unique mechanism for solving and controlling the distributional problem in respect of old age pensions in an ageing society. Nevertheless, risks remain.¹⁴

The nature and basic value of pension rights under both systems is fundamentally different. The real value of claims under both systems depends on the availability of future resources as well as on a multitude of other future developments in the world. Under funding this value is dependent on issues such as inflationary processes, capital returns and the (market) price of assets.¹⁵ Under pay-as-you-go, the claim value depends on the ability and the willingness of workers and tax-payers to finance pension outlays.¹⁶ They can actually refrain from paying higher contributions, but outside expropriation and taxing they cannot take away retirees' pension assets.

A funded scheme offers an economic claim on future national product,

whereas a pay-as-you-go based scheme offers at best a moral claim (on future national product), if that. The pay-as-you-go scheme basically involves an expectation on future benefits and the claim is basically dependent on the political and bargaining strength of the elderly population and on the state power to levy contributions for the public pension system. Although the main argument for nonfunding rests on the quality of the pension promise made by the state, the state, and in particular the managers of a pay-as-you-go system, are in a position ultimately to commit themselves to maintaining the present pension level in the coming decades.

Funding as a mechanism to improve secure old-age social security

Guarantees in respect of pension promises are always virtual in some way or another. In a pay-as-you-go scheme they are based on the strength of an implicit social contract between generations, while under funding they are based on the ability of the economy always to yield an adequate return on financial assets.

When, in a funded scheme, total monetary purchasing power or the demand for goods and services exceeds the value and amount of current output at prevailing prices, a general price inflation will bring them back into line. First, prices of consumer goods will rise, bringing about a reduction in the real income of the retired. Secondly, the elderly will see the prices of the securities they wish to sell to the younger age groups decreasing, and thereby their claims on real goods and services. This means a further cut in their real purchasing power. On the other hand, under a pay-as-you-go scheme contributions will be lowered when a readjustment seems to be

inevitable, and consequently the real income of the pensioners will decrease proportionately. As a result, under both pension finance systems a new equilibrium will develop at a lower level of income and consumption for the retired. Both pension finance systems, then, appear not to be immune from ageing.

Summary and concluding remarks

How will developed countries cope with their greying populations in the coming decades? Whatever transfer mechanism is used, an increasing proportion of national product in the coming decades will be needed to provide for basic public pensions and supplementary pensions to the elderly, but above all for increased health care.¹⁷ The higher the national product and economic growth, the easier it will be to ensure that making one group better off does not leave another group worse off. A larger economic pie will provide everyone with a bigger slice. This is crucial to solve adequately the distributional problems in respect of ageing.

It must be remembered that a redistribution of resources over time is impossible, or almost impossible. An uninterrupted process of economic growth is therefore the best guarantee that the income distributional problem among the different age groups in a population will be solved comfortably. The major challenge for the economic performance of western countries due to the ageing of their populations will not be a shortage of savings and corresponding investments. Most western countries have unprecedented large capital stocks. A slower rate of capital accumulation is not the real issue, therefore; rather, a serious shortage of skilled labour may arise.¹⁸

It cannot be shown unambiguously that funding always makes a real economic difference. From a macro point of view the question of whether funding or pay-as-you-go is preferential cannot be answered conclusively. Rather, capital income arising from private property from the capital stock provides the elderly with a better safeguard against political and economic vicissitudes than promises made under pay-as-you-go systems. Understandably, absolute guarantees cannot be given.

Funding can therefore be considered as the best instrument to secure pension entitlements and for solving and controlling the distributional problem in respect of pension incomes in an ageing society.

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- 1 Note that an ageing society generally holds a larger capital stock, hence a higher capital intensity (or capital labour ratio), a declining capital productivity and rising labour productivity and higher real wages. Therefore, an enhanced capacity is created to finance old-age pensions. The younger generation acquires the ownership of assets — behind which the physical capital stock hides — from the aged.
- 2 Studies to reveal the macro-economic effects of population ageing have not produced unambiguous evidence. Some of them suggest that population ageing will have a substantial (and negative) impact on macroeconomic variables such as aggregate savings, investments, labour productivity, employment, social security, etc. (see Masson, P.R. and Tryon, R.W. (1990) 'Macroeconomic effects of projected population ageing in industrial countries', IMF Staff Papers, 37, pp 453–485). Some others conclude that there will be no major problems in respect of productivity or even social security finance (Cutler, D.M., Poterba, J.M., Sheiner, L.M. and Summers, L.H. (1990) 'An ageing society: opportunity or challenge?', *Brookings Papers on Economic Activity*, 1, pp 1–73; Miles, D. and Patel, B. (1996) 'Saving and wealth accumulation in Europe: the outlook into the next century', Merrill Lynch Financial Research; and Börsch-Supan, A. (1996) 'The impact of population ageing on savings, investment and growth', OECD). All that can be concluded so far is that the findings from macroeconomic studies are highly sensitive to the assumptions made and thus highly conjectural. This will not surprise us.
- Evidently population ageing will have a major effect in the field of health care and some other social services. See eg, Disney, R. (1996) 'Can we afford to grow older: a perspective on the economics of ageing', MIT Press, Cambridge, MA; Barr, N. (1988) 'The economics of the welfare state', third edition, Stanford University Press, Stanford, p. 214 (original (1987) Weidenfeld & Nicolson, London); and Jackson, W.A. (1998) 'The political economy of population ageing', Edward Elgar, Cheltenham.
- 3 It is often argued that the pension systems in, for example, France, Germany and Italy are not sustainable in the coming decades. If funding is (a part of) the solution, countries like Switzerland, The Netherlands and the UK are (happily) faced with a problem that is easier to deal with than that of the aforementioned continental European countries. It is to be remembered that, if funding makes little difference, all ageing countries may have a similar problem ahead. From the point of view of security, the UK's pension system is undoubtedly preferable to the systems we find in, for example, France, Germany and Italy.
- 4 On the other hand, when transforming a pay-as-you-go plan to a funded scheme, the 'last generation' of workers will pay twice: for both the present pensioners and for their own funded scheme. There appear to be definite losers and no winners, as the argument goes. But it is not so dramatic as that, as workers will in turn acquire ownership of capital assets, and lower consumption today — or increased own saving — is balanced by greater resources for consumption in the future.
- 5 Barr, N. (1988) 'The economics of the welfare state', third edition, Stanford University Press, Stanford, p. 214 (original (1987) Weidenfeld & Nicolson, London). The possibility and attractiveness of storing durable consumer goods in our view are underestimated by Barr. Storage of durables to some extent and up to a certain time horizon can be of relevance and should not be ignored.
- 6 Thompson, L.H. (1988) 'Altering the public/private mix of retirement incomes', in: S.M. Wachter, S. M. (ed.), 'Social Security and Private Pensions', Lexington Books, Massachusetts, p213.
- 7 Barr, N. (1988) 'The economics of the welfare state', third edition, Stanford University Press, Stanford, p. 214 (original (1987) Weidenfeld & Nicolson, London).
- 8 Higher levels of future national product evidently will not alter the spending on old-age pensions in relative terms, but paying for pensions out of a larger economic 'pie', still leaving higher incomes (a larger 'slice' of the future bigger economic pie) for the non-retired population in absolute terms, is much more comfortable.
- 9 Reisen, H. (2000) 'Pensions, savings and capital flows: from ageing to emerging markets', OECD/Edward Elgar, Cheltenham.
- 10 Ideally the contribution level should reflect the liabilities that are being incurred and send the correct signals in a timely manner. This is definitely not a characteristic of the pay-as-you-go system, but

such a missing link can be established without building up a fund. The government can levy higher taxes or contributions, so as to reduce borrowing and diminish the size of public debt. Decreasing interest payments on public debt can compensate future increases in contribution rates of pay-as-you-go pension plans. This principle (of *notional funding*) underlies the financing practice in respect of the basic pension scheme (AOW) in the Netherlands. From a fiscal point of view the policy of reducing the public debt/GNP ratio (in advance of coming demographic pressure) is equivalent to accumulating a fund.

- 11 Note that on the micro-level decisions in respect of financing pensions are taken with a view to interests of employers and employees only. The national interest (attaining the optimal savings level) and the concerns of individuals (providing for adequate old-age provision) do not automatically comply, and generally speaking they do not. These interests may be reconciled by well-chosen economic and fiscal policy measures, eg, adequate tax treatment.
- 12 From a social and psychological point of view there certainly can and will be opposed interests, as future generations of retirees receive high pension incomes and are also (very) wealthy. Cf. MacManus (1996): '... today's intergenerational differences primarily involve intensity rather than direction. [...] Tomorrow, we are more likely to find different generations supporting policy priorities that are diametrically opposed to each other as the nation undergoes its greying metamorphosis and the economic realities associated with it sink in.' MacManus, S.A. (1996) 'Young v. Old, Generational combat in the 21st century', Westview Press.
- 13 Diamond (1997) proposes to give social security benefit promises the same status as private contracts or private property as a means of constitutional protection and insulation against benefit reductions: Diamond, P.A. (1997) 'Insulation of pensions from political risk', in 'The economics of pensions, principles, policies, and international experience', (Valds-Prieto, S. ed.), Cambridge University Press.
- 14 From the point of view of security, equity and efficiency the IBRD (1994) recommends a multi-pillar system, a mixture of the publicly managed and tax/contribution financed first pillar and the privately managed fully funded second and third pillar. The second pillar can be mandatory and the third pillar is voluntary. (See IBRD (World Bank) (1994) 'Averting the old-age crisis; policies to protect the old and promote growth', Oxford University Press, Oxford.) A well developed fourth pillar (continued working) is also very useful so that the load can be spread as much as possible. The three pillar system is also strongly recommended by the Group of Ten (1998) 'The macroeconomic and financial implications of ageing populations', Bank for International Settlements, Basle.
- 15 The spectacular growth in pension fund assets in the

last few decades — and their further growth in the near future — may have simply increased asset prices, rather than increased real capital stock. If the process goes in the reverse direction at some point of time in the 21st century, asset prices may fall just when pensioners want to sell their assets to the younger generations. On the other hand, funding and the concurrent widespread ownership of individual and collective pension capital accounts may even contribute to a larger political engagement for adequate and responsible monetary and fiscal policies.

- 16 An interesting discussion on the long-term viability in pay-as-you-go schemes is given by Reynaud, E. (1995) 'Financing retirement pensions: pay-as-you-go and funded schemes in the European Union', *International Social Security Review*, 48 (3/4), pp. 41–58. There are two major elements involved: first, the need for a constant renewal of the insured population. This may be ensured by making participation compulsory within a designated area which is sufficiently large and socio-economically coherent. The second element concerns those involved in the management of schemes. Managers should not be involved in defending special occupational or sectoral interests, but dedicated to supporting common interests.
- 17 Fiscal implications arise in all those countries where health care is predominantly publicly financed. Note that the financing of health care can to a large extent be viewed as similar to pension financing as the major part of health services are consumed during old age.
- 18 David Blake is extremely pessimistic on this matter (Blake, D. (1996) 'On the long-term risks facing pension schemes and pension funds in Europe', *Journal of Pensions Management*, 1 (3), pp 225–244). He notices a 'significant minority problem' as he expects that the absorption and integration of minority cultures into that of the host population will not work. As a result standards in education and standards of civil behaviour will fall. 'Thus, if Europe's next generation is not able to achieve stable and productive long-term employment in a stable social and political environment, the future looks grim for both it and the current generation as it enters retirement. However, relative to the rest of the world, Europe's economic prospects are the worst that they have ever been in the continent's history. We could be seeing the beginning the end of European Economic Man, and, if that is the case, the author does not give much for the value of his pension in the future either!'

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