Erkki Liikanen: Population ageing, pension savings and the financial markets

Speech by Mr Erkki Liikanen, Governor of the Bank of Finland, at the International Conference of Social Security Actuaries and Statisticians, Helsinki, 23-25 May 2007.

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Population ageing has become an integral part of international debate on economic policy and has attracted a lot of attention in recent years. I joined the Bank of Finland in July 2004. The first major international event I participated in was a symposium on global demographic change. This was organised in Jackson Hole, Wyoming, USA. The opening remarks were made by Alan Greenspan. All the prominent central bankers from all over the world were present together with leading economists. So it became clear to me from my first days as a governor that ageing is a major issue also for the financial markets.

As you all know so well, when we look at current projections of population trends in the future, the scale of the problem is staggering. This is an issue that affects every country in the world. In its latest population projection, the UN forecast the median age of Europe's population will rise by almost 10 years between 2000 and 2050. In Asia and South America, the increase will be even faster. The increase will be smallest in North America, only around 6 years. The median age of the world as a whole is at present rising by around 8 days every month.

Everybody understands that this degree of change in population structure must affect the economy in many ways. A harder question is to determine precisely what these effects will be. We have very little empirical data on changes in the age structure of the population. This means that, when we study this issue, we have to rely to a great extent on theoretical analysis and models.

Today, I'd like to discuss the importance of pension savings as a source of finance on the international financial markets. I will also take a look at the impact of changing population structure and pension reforms on the determination of real interest rates internationally. In that context, I shall also present estimation results of the Bank of Finland Dynamic General Equilibrium Model, which analyses the consequences of ageing for overall economic dynamics.

Pension savings and the financial markets

Preparing for old age is one of the most important reasons why people save and is also a key source of market finance. The pension funds are major players on the financial markets. Still, this is just one of the financial market impacts of ageing. Besides the pension funds' own investments, a large proportion of private share-ownership, unit trust investment, bank deposits etc. reflect people's preparation for old age. How large a proportion is impossible to assess. There are many reasons why people save, and there is no simple way to quantify their relative shares.

Financial markets play an important and increasing role in the management of ageing-related risk. But it is clear that it is possible to hedge only a certain part of ageing-related risks on the financial markets. A little imagination can illustrate the magnitude of savings needed to fully fund pension liabilities. Let's first imagine a country with a developed economy in which the birth rate, retirement age and life expectancy are such that the elderly dependency ratio (the ratio of over-65s to the working-age population) is 23%, the present average for the developed economies. Imagine, next, that all the over-65s have retired and all those of working age are actually working. Imagine, further, that the country has a fully funded pension scheme that provides a pension equal to 60% of the average wage in the economy at any given moment. If we then add a few typical assumptions regarding productivity growth, real interest rates and production technology, we can estimate how large the pension funds would become in the long term. The answer this calculation yields is approximately 340% of the country's gross domestic product! This is an enormous amount. As a comparison we could take Finland's national assets, which, depending on the definition we choose, are worth 4–5 times the value of GDP.

Next we can add in the effect of population ageing. The UN estimates that the elderly dependency ratio of the developed economies will increase to 44% by the year 2050. If we repeat the above calculation with an assumed elderly dependency ratio of 44% instead of 23%, the result is an enormous increase in the required value of the pension funds. In the long term, the funds would grow

to around 640% of GDP! Different assumptions would yield slightly different results, but the general magnitude would be similar.

What do such highly categorised calculations tell us? They do perhaps tell us two things. In the first place, they tell us that it is hard to provide pension security of the assumed level solely through a funded pension scheme. It is not possible to maintain funds worth six times the value of GDP, not nationally, and particularly not globally. The supply of productive investments would quite simply run out. An economy with real assets worth more than six times the value of GDP would be strongly overcapitalised, and its return on capital insignificant. Thus, it is clear that a large part of the funds needed to pay our future pensions will inevitably have to be covered through pay-as-you-go schemes.

The second thing we can take from these calculations is that, even if pension provision is covered primarily through pay-as-you-go schemes and only a small proportion is funded, the volume of the pension funds would still be very large. From this we can conclude that the way in which pension provision is divided between funded and pay-as-you-go schemes will be one of the key factors shaping the future of the financial and capital markets.

The baby-boomers and financial market meltdown

A few years ago, a new concept, “financial market meltdown”, began to gain currency in the debate over the future of the financial markets. It refers to some calculations on the retirement of the baby-boom generation. When they retire, the baby-boomers will stop saving towards their pensions and begin to consume the assets they have already accrued. According to the meltdown concept this would destroy the balance of the financial markets: buyers would disappear when the pension funds begin to realise their assets. The price of the assets would then collapse and the value of pension savings be wiped out – or so the argument goes.

Most recent research paints a less dramatic picture of the future. I already mentioned the Jackson Hole symposium in 2004. It concluded that the change in population structure is more likely to be reflected on the financial markets as fluctuations in demand for different types of financial instrument than as a general collapse in prices. One development that was considered particularly likely was growth in demand for insurance-type instruments.

The impact that the retirement of the baby-boomers will have on the financial markets will be softened by at least three factors. In the first place, some commentators have drawn attention to the fact that pensioners' actual consumption behaviour does not seem to be the same as assumed in the models: pensioners do not realise their assets with anything like the speed the theoretical models would lead us to believe. Financial assets certainly decline during retirement, but it's a slow process, and a considerable proportion remains intact until death. When this is taken into account in the calculations, the result is a considerable reduction in the forecast financial market impact of ageing.

Another factor that will serve to prevent sudden price movements is the fact that the retirement of the baby-boomers can be anticipated. Events that can be anticipated are not going to cause a collapse on the rationally based financial markets. Thus, if the retirement of the baby-boom generation is seen to change the balance of supply and demand for financial instruments, the markets will already take this into account in their pricing years before the baby-boomers actually retire.

The resistance of the financial markets will also be improved by a third factor. At least in those countries where pension cover is based to a considerable degree on private savings, there will be a mutual self-correcting interaction between the retirement of the baby-boomers and asset prices. If the approaching retirement of the baby-boom generation began to build up sales pressures on the asset markets and push down the prices of stocks, bonds and houses, this would reduce the value of the baby-boomers' own assets. Many pension savers would then face a situation in which their pension assets would no longer allow them to maintain the standard of living they had hoped for in their retirement. Some of those who had already planned to retire would then find themselves forced to stay on at work longer than they had intended. This would increase the level of pension savings and reduce the number of pensioners, improving the balance on the financial markets and preventing a price collapse.

A study at the Bank of Finland by Tuomas Saarenheimo[1] on the financial market impact of ageing introduces another point of view that has received less attention in international discussion: the change in people's lifespan. This means higher life expectancy and, especially, longer retirement. From 1950 until the present day, the additional life expectancy of a person aged 60 has grown by around 5 years. It now stands at 22 years. By the year 2050 it is forecast to grow again by approximately another 5 years. The trend is more or less the same everywhere apart from those African countries that are suffering most from the AIDS epidemic.

For the sustainability of public pension schemes it would be good if part of this longer lifespan could be devoted to remaining longer at work before retiring. So far, there exists only weak evidence of such a trend. The most likely outcome is that, in the future, most of these extra years will be spent in retirement. In the next few decades we can expect the time spent in retirement to increase by about a quarter.

It is clear that an increase of this size in life expectancy increases the need to prepare for the funding of retirement pensions. Retirement lasting over 20 years costs more than 15 years. Some of the increased costs will be covered by publicly funded pay-as-you-go schemes (particularly in Continental Europe), but the need and desire for private pension savings will also increase.

According to a study conducted at the Bank of Finland, the increase in savings will be considerable. The study anticipates a large increase in the saving ratio of a typical European 62-year-old approaching the end of his working life. According to the model used, the ratio is at present a good 30% of disposable income. As a result of increased life expectancy this is anticipated to grow to around 40% by the year 2050. This is despite the fact that public pension schemes will cover most of the costs of living in retirement. If public pension benefits are cut, the increase in the saving ratio could be much stronger.

Thus, global savings will in future be shaped by two opposing factors. On one hand, declining age cohorts will reduce the number of pension savers relative to the number of retired persons consuming previous savings. On the other hand, lengthening lifespans will make people of working age keener to save. The calculations conducted at the Bank of Finland suggest that this latter trend will be stronger, at least over the next couple of decades. Only around the year 2030 will the impact of declining age cohorts begin to dominate and depress the level of savings. Even then, the impact will be gradual and visible mainly as slower growth in new investment funds entering the financial markets, not a collapse in investment.

Of course, we should not see these types of calculations as forecasts. Predicting economic trends for decades ahead is not realistic, and that is not the intention. The idea has been to apply a mainstream economic research model to analyse the likely economic impact of certain demographic trends that can already be relatively well anticipated.

To the list of factors increasing pension savings we can add another, more speculative motive. Attitudes towards retirement would appear to be changing. At one time people stopped working when their working capacity had declined so much that they could no longer work productively. But expectations have changed. People can increasingly look forward to many years of healthy life after retirement. Many now see their retirement years as an opportunity to enjoy their leisure time in a way that was impossible while they were at work. There appear to be rising expectations about consumption levels during retirement. An increasing readiness to consume in retirement also means an increasing need for pension savings. How large an impact this change in attitude will have on the financial markets is hard to assess, but the direction of the impact is surely clear.

We can, then, sum up our discussion with the observation that ageing, and particularly the retirement of the baby-boom generation, will slow volume growth of the financial markets, but current estimates suggest growth will nevertheless continue, and there is no reason to fear sudden or strong price disturbances.

[1] See Tuomas Saarenheimo: Ageing, interest rates and financial flows, Bank of Finland Discussion paper 2/2005

Ageing, real interest rates and public pension schemes

Although there is no immediate prospect of a collapse in global asset prices, population ageing will still impact on the economy and the financial markets in a number of ways. In the developed world, there will be slower growth in the labour force, and without large-scale immigration the labour force will in fact begin to contract. The resulting contraction in labour supply will weaken the profitability of investments and hence reduce the overall volume of investment. This will mean slower growth in the capital stock. Coupled with the smaller labour force, this, in turn, will produce sluggish growth in GDP.

All these factors will affect the formation of the equilibrium interest rate – in other words, the level of real interest that balances investment and savings and is in harmony with price stability and balanced growth.

The scale of these of interest rate effects has been estimated in a number of studies. Almost every one of these studies has observed that ageing reduces both willingness to save and willingness to invest. With regard to the formation of real interest rates the key question is which of the two reacts more strongly, savings or investment. Generally speaking, the most comprehensive calculations suggest the change will be more marked in investment, resulting in a decline in the equilibrium interest rate. For example, the research literature suggests the results of the Bank of Finland calculations are fairly typical, with the demographic changes reducing global real interest rates – other things being equal – by around 0.7 percentage points over the next quarter of a century.

In these projections, the role of public pension schemes is both central and very interesting. As I said at the outset, the extent to which provision is made for paying pensions by funding (through pillars one, two or three), and the extent to which we rely on public pay-as-you-go schemes, is of central importance to the supply of finance. At the present moment, public pay-as-you-go schemes predominate, particularly in Europe. Their future is, however, uncertain. What is certain is that, if pension systems are not radically reformed, there will be a dramatic rise in the scale of the pension contributions levied to finance pay-as-you-go schemes. The Bank of Finland's calculations indicate that pension contributions in Europe would rise from their present level of around 16% of aggregate wages to around 28% by the year 2040. Japan, which starts out from a lower base, would end up at approximately the same level. Even in the United States, where population ageing is slower, the pension contribution percentage would rise from 11% to almost 20%.

Economic policy and macroeconomic consequences of ageing

The above calculations treat economic growth as exogenous: public pension systems, financed by tax-like pension contributions, redistribute income but do not affect economic activity. This is, of course, unrealistic. We know, on the basis of both theoretical and empirical literature, that higher taxes do affect behaviour, and in a manner that makes maintaining fiscal sustainability in an ageing society even more challenging. When a government, responding to the rising fiscal cost of ageing, raises taxes or tax-like pension contributions, people will adapt their behaviour, economic growth will slow down, and slower growth will generate less tax revenues. (This is a manifestation of the infamous Laffer curve.) Hence, taxes will need to be raised even more than the calculations with the global savings/investment framework would suggest.

To quantify these effects, I'd like to refer to another study conducted at the Bank of Finland. It analyses the economic implications of ageing when the economic costs resulting from tax distortions are also systematically taken into account. In that study, the economic costs of ageing for the Finnish economy were estimated in a general equilibrium macroeconomic model[2].

According to this study, even with retirement age increasing by 2-3 years, income taxes and tax-like pension contribution rates would need to rise substantially to bring public finances on to a sustainable

[2] This model covers variables of consumption, labour supply and investment decisions defining the dynamics of the economy and its long-term equilibrium. Demographic ageing has some direct behavioural implications in the model, as consumers take changes in the length of working life and period of retirement into account when making decisions on consumption and labour supply. In the face of an expected extension of the period of retirement, consumers of working age will make appropriate provision by increasing their savings. Conversely, expectations of a longer working life will boost the consumption of the working-age population in step with higher expected permanent income.

path[3]. On the other hand, the analysis indicates that if, instead of increasing pension contributions, pension replacement rates were reduced, households would respond by increasing their labour supply, and the loss in economic activity would remain far smaller. The required reduction in pensions would, however, be drastic, and so would its social and political costs.

If it were to materialise, the large global increase in public pension contributions would not only mean an intergenerational income transfer, but could also entail losses in employment. At the same time, the growing fiscal cost of elderly care would increase pressure to raise taxes. It is doubtful whether pension contributions could really rise this much, particularly at a time when the increasing mobility of both labour and capital is reducing national governments' room for manoeuvre in taxation.

The effort to achieve a more sustainable base for our pension systems has in recent years been a key plank of economic policy throughout the developed world. The sustainability of pension systems can, of course, also be improved by postponing retirement. This, would increase the number of people paying in and reduce the number of people receiving benefits. Postponing retirement would slow the growth in pension expenditure, increase the supply of labour, improve the return on investments and accelerate economic growth.

For the financial markets, the most important feature the various pension reforms all have in common has been the attempt to reduce the role of pay-as-you-go schemes in providing an income for the elderly. This does not necessarily mean the increased use of funded schemes within public pension systems. Macroeconomically, the same result could be achieved simply by reducing or restricting access to the benefits of pay-as-you-go schemes. These types of reform would mean a reduction in the transfer of income from future age cohorts to present cohorts. As a result, the present generation's expected income flow would be reduced, people would become keener to take out private pension insurance to bridge the gap, and the saving ratio of the economy as a whole would rise. We all know how difficult such reforms would be politically.

It is interesting to note that the impact on financial market balance if the retirement age is raised is precisely opposite to the impact of cutting pension benefits. In the end, the fall in real interest would be either small or non-existent. In this calculation, an extra four years at the end of working life (worldwide) would be enough to neutralise the downward pressure of population ageing on real interest rates.

These calculations are essentially a mental exercise and should not be taken literally. It is, however, clear that developments in pension savings and public pension systems are among the key factors that will shape the macroeconomics, supply of finance and the future of the financial markets.

Transparency and credibility of pension systems

Irrespective of how much future pensions end up being funded, balanced economic development requires two vital qualities of any pension scheme: transparency and credibility.

Transparency means that those covered by the scheme understand what sort of security it provides them and what it will cost them. Pension schemes should be understandable – they should not mislead their customers to over- or under-estimate their pension security. This is, of course, obvious from a human and social perspective, but it is also important macroeconomically: misunderstandings will sooner or later come to light, and the result then could be sudden changes in people's savings and investment behaviour that could destabilise the financial markets.

Another important perspective, one regarding the credibility of the pension system, relates to the nature of contributions and incentive effects. In a credible, actuarily fair system, pension contributions accrue in full to augment the beneficiary's personal pension assets. They are in this respect equivalent to personal savings. This type of contribution does not have the unfavourable incentive effect of taxation. Pension contributions only begin to take on the nature of tax when the system begins to move away from this ideal. The further a system departs from the credible, actuarily fair ideal, the more pension contributions become just another tax.

[3] Juha Kilponen – Helvi Kinnunen – Antti Ripatti: Population ageing in a small open economy – some policy experiments with a tractable general equilibrium model, Bank of Finland Discussion paper 28/2006

The message for policymakers preparing the reform of pension systems is clear: the goal has to be a clear and sustainable system. Thus, on one hand the reform must guarantee the long-term sustainability of the system, while on the other hand providing people with a clear and unvarnished picture of their public pension security so they can plan properly for their personal future needs.

In conclusion,

we can draw a number of different conclusions from the calculations that have been done on the effects of population ageing. One thing is, however, clear: the world is facing demographic changes that will have considerable implications for the economy and the financial markets. On one hand, the end of labour force growth, and in many countries its reversal, will lead to lower investment demand. On the other hand, the change in population structure will tend to reduce the flow of savings and the supply of finance. At the same time, lengthening lifespans, and especially more years spent in retirement, will increase the need to finance private pension security.

Management of the economic and social consequences of population ageing will require three mutually supportive elements. In the first place, the volumes needed for financing pensions mean the system will always have to be based on a public pay-as-you-go scheme. On top of this there will also be a need for a solid funded element to balance out disturbances, spread the burden between generations and thus help the economy adapt to the demographic changes. As a third pillar, we will also need to provide a clear framework for private pension savings that will provide scope for personal planning and fill any gaps that may remain in the public system.