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Author: Jukka Lassila, Tarmo Valkonen

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Prefunding in a Defined Benefit Pension System
The Finnish Case

Jukka Lassila and Tarmo Valkonen

8.1 Introduction

The pension system of Finland consists of earnings-related pensions that cover almost all paid work, and a residence-based national pension. There has been considerable rivalry, even battle, between these two parts, with the former now the undisputed winner. The Finnish earnings-related system has some rather unique features: It is statutory by law but largely privately run, and it has collected funds to smoothe the contribution increases due to aging in the future. Despite the severe challenges caused by aging, it seems likely that the system will be changed from within, rather than simply replaced with a new system. It is difficult to foresee, however, what the changes will be and how the existing funds and future prefunding will be used.

Under the first comprehensive pension arrangement, the 1937 National Pension Law, the national pension was earnings related. In this arrangement there were personal retirement accounts, which were fully funded. Contributions began in 1939; but then came the war, inflation ate half of the accounts, and unfunded but indexed supplementary benefits became dominant. What was left in the personal accounts was never paid to the contributors,[1] but was used instead as starting capital for a new system,

Jukka Lassila is research director of The Research Institute of the Finnish Economy (ETLA). Tarmo Valkonen is head of unit at ETLA.

1. This decision was, of course, bitterly criticized by many of the contributors. For many others, however, especially those who had participated in the wars in 1939–40 and 1941–44, the accounts were small even nominally, and they felt that more redistribution was needed. Thus, new and bigger PAYGO pensions were lucrative. The decision was also shadowed by other urgent economic questions, such as the gradual abolishment of war-related regulations

enacted by the 1956 National Pension Law. The views of the rural population dominated, and the national pension became a means-tested, flat-rate pension.

The Employees' Pensions Act (TEL) came into force on 1 July 1962. It was created during negotiations between trade unions and employers' organizations, and supported politically by social democrats and conservative parties. To reduce political risks, administration was given to several private pension institutes. During the 1960s there were attempts in the form of law initiatives to combine TEL with the national pension system, but they failed to receive a majority. TEL is now by far the largest private-sector pension system in Finland, and has served as a model for several other earnings-related systems in that country.

After the 1960s, the growing importance of an increasingly united trade union movement was further reflected in the relative roles of the earnings-related and national pension systems (see Niemelä 1994). The former became the dominant pension arrangement, and plans to develop the national pension into a universal retirement provision, without means testing, were abolished.

This article proceeds as follows. Section 8.2 contains a description of the main features of the Finnish pension systems, and section 8.3 describes the current situation and future prospects. Section 8.4 discusses the reforms made during the last decade. Recent policy proposals are surveyed in section 8. 5. Section 8.6 concludes with some views on future changes.

8.2 The Present Old Age Pension System in Finland

The Finnish pension system consists of two main parts: The earnings-related pension system aims to provide retirement income sufficient for consumption comparable both to that of working years and to current workers' consumption. The national pension guarantees a minimum income in cases where the earnings-related pension is absent or insufficient. Both systems are mandatory. Voluntary pensions, whether employer-based or industry-wide supplementary pensions or personal pension arrangements, are of minor importance in Finland.

8.2.1 Statutory Earnings-Related Pension

The statutory earnings-related pension covers almost all paid work. It covers risks related to old age, disability, long-term unemployment of aging workers, and death of family earners.

Every employment contract and self-employment period adds to the

and the general strike in 1956, which, in itself, prevented the trade unions and employers from defending the earnings-related accounts in unison.

pension (after age twenty-three). The pensionable wage is aggregated over the last ten years of each contract. The accrued pension right is vested, even when the worker is changing employers or stopping work.

The target level of benefits is 60 percent of wages. This accrues in about forty years: 1.5 percent per year between ages twenty-three and fifty-nine and 2.5 percent per year between sixty and sixty-five. There is no upper absolute limit to benefits, but an upper percentage limit is 60 percent of the highest pensionable earnings. Pensions accrued under different systems are integrated. The disability pension is projected to the retirement age. Pension rights and benefits are index-linked, with 50–50 weights on wages and consumer prices, respectively, during working years and 20–80 weights after age sixty-five.

Contributions are collected from both employers (16.8 percent of wages in 2000) and employees (4.7 percent). Future changes have been agreed to be shared equally between employers and employees (see figs. 8.1 and 8.2).

The private-sector earnings-related system is partially funded. Funding is collective but based on individual pension rights. Currently, the main prefunding rules are as follows:

- *Old age pensions.* A part of old age pension benefits, payable after age sixty-five, is funded for each employee. Funding takes place between ages twenty-three and fifty-four, so only benefits accrued during those years are (partially) funded. The degree of funding is below one-third.[2] Of the 1.5 percent (of wage income) pension right accruing every year between the ages of twenty-three and 54, 0.5 percent is funded. The present value of accrued rights is calculated using a 3 percent discount rate. No funding is done for benefit increases due to indexation. Several additional detailed assumptions and rules are used to calculate the amount to be put in the fund.
- *Disability pensions.* Funding takes place when the case occurs. Funding was full for large firms, but beginning in 2000 the maximum funded share is 80 percent. The disability pension is paid, and funded, only until age sixty-five. After that the pensioner receives the old age pension. Again, no funding is done for benefit increases due to indexation. Similar funding rules apply to the unemployment pensions.
- *Both.* The rate of return also affects the size of the fund; see section 8.2.3.

2. There is no specified target for the share that is funded. Before 1997, funding between the ages of twenty-three and fifty-four was "full," in the sense that, had there been no wage inflation, the 5 percent nominal yield requirement of the funds would have resulted in funds sufficient to pay out (with no PAYGO financing) exactly the amount of benefits one had accrued between the ages of twenty-three and fifty-four. Needless to say, there was inflation both in prices and in wages, and funding was far from full. The changes made in 1997 (described later) were calibrated so that the required funding would stay at the prevailing level; 0.5 percent is a result of that calibration.

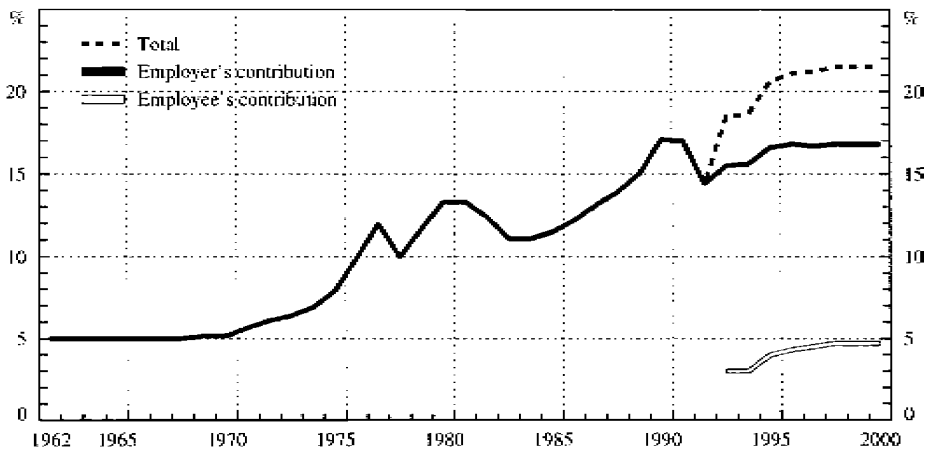

Fig. 8.1 TEL contributions
Source: Data from Central Pensions Institute.

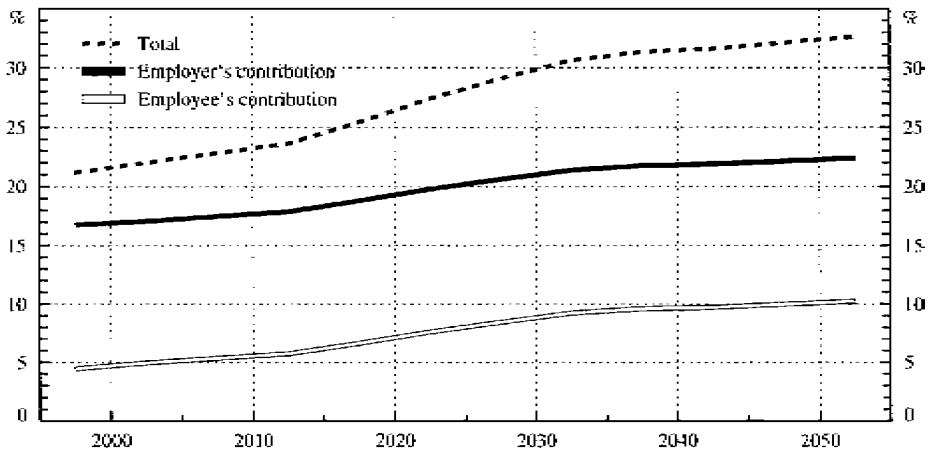

Fig. 8.2 Projected TEL contributions
Source: Lassila and Valkonen (2000b).

The funds are collective: Individual pension benefits do not depend on the existence or yield of funds. Funds affect contributions only. When a person receives pensions after the age of sixty-five, his or her funds are used to pay that part of the pension benefit that was prefunded. The rest comes from the pay-as-you-go (PAYGO) part, the so-called "pooled component" in the contribution rate.

The statutory earnings-related system was created in cooperation with labor market organizations, which are represented in the administrative bodies. The administration is decentralized among several pension institutes. The largest of these are private pension insurance companies and the Local Government Pensions Institution. These institutes collect the contributions, pay the pensions, and invest the retained funds. The Central Pension Security Institute maintains the central register, compiles statistics, and redistributes among the other institutions the pooled component of contributions collected in the private pension scheme.

The labor market organizations occupy at least half of the seats in the administrative bodies of the pension institutes. They also negotiate with the representatives of the central government about the future development of the pension scheme.

The earnings-related pensions in the public sector are very similar to those in the private sector, described above. The amount of annual funding, however, is discretionary and is not formally based on any formula concerning accrued pension rights or future expenditures. The Local Government Pensions Institution, handling the earnings-related pensions for municipal employees, has funds amounting to 137 percent of the sector's annual wage bill in 1999, roughly comparable to the TEL system. The pension fund of the central government is still small, but there is an agreement to raise the funding rate to the same level as in the private sector by the year 2010 (table 8.1 describes the distribution of pension fund assets among the general groups).

8.2.2 National Pension

The residence-based national pension guarantees a minimum pension to those without a sufficient earnings-related pension. The benefits also include survivors' pensions for widows, widowers, and children, housing allowances, care allowances, and veterans' supplements. The benefits are indexed to consumer prices. The national pension system is administered by the Social Insurance Institution (Kela), under the supervision of Parliament.

Before 1996, the basic national pension amount was paid to all pensioners over sixty-five years of age. For new retirees whose earnings-related pensions exceed a certain limit, a national pension is no longer paid, and for those retired before 1996 with a similar earnings-related pension, the

Table 8.1 **Assets of Pension Funds in 1999**

	Amount (in euros)	In Relation to GDP
Private sector	52.4	43
Local government	11.7	10
Central government	2.8	2
Total	67.0	55

Sources: Authors' tabulations from various databases.

basic part of the national pension is gradually reduced and will be abolished in 2001.

8.2.3 Experiences from the Finnish Prefunded Defined Benefit System

The main justification officially presented for partial prefunding was to alleviate the burden due to the aging baby boom generation. The expressed aim was to use the funds to lower the projected peak in the contribution rate. The current population forecasts imply, however, that there will be no marked reduction in pension expenditures after the large cohorts have died. This has created a situation in which there is no general agreement about the future funding rates.

The original reason for funding, however, was not necessarily to serve as a precautionary tool for future aging. Short-term tactical considerations may well have dominated. Employers' representatives could have favored partial funding for two reasons: First, it provided a way to have low actual contributions initially. Unions demanded higher pensions immediately, which would have meant high contributions. Funding allowed raising contributions with only small liquidity effects, because firms were entitled to borrow back most of the funded part of contributions. Second, in the aftermath of the 1956 National Pension Law, there were fears of a political takeover of the earnings-related pension system. Employers thought that trade unions would be more willing to defend the TEL system when there was money in the funds. That turned out to be correct: Even though socialists and communists in general favored national pensions, in trade unions they—along with social democrats—supported TEL.

During the first twenty-five years of the pension scheme, the allocation and even the yield of the funds were strictly regulated. The Insurance Companies Act and the instructions given by the Ministry of Social Affairs and Health restricted the risk content of portfolios by determining how assets with various risk characteristics were considered in the solvency calculations. These regulations were not, however, the most binding. The portfolio allocation was dominated by the privilege of firms to borrow most of the contributions paid. These premium loans were guaranteed

mostly by banks and were therefore risk free for the pension institutions. The justification expressed for the low interest rate premium loans was to give preference to the strengthening of the contribution base by promoting investments.

The role of the Bank of Finland as a regulator of monetary and currency policy was also important. The direct methods to affect the pension fund portfolios were to give instructions for lending, to agree with the pension institutions about the lending rate, and to restrict foreign investments to an insignificant amount. Indirectly, the regulations of the central bank and the capital income tax code ensured that the domestic financial markets remained undeveloped and that savings were transmitted from households and the public sector to firms almost totally by promissory note loans. The control of lending rates, together with the high inflation rate, also lowered the real rate of return of the pension funds. Because part of the nominal yield was distributed back to employers in the form of lower contributions, the actual real yield affecting the size of the prefunded amount was negative until the year 1983.

After the liberalization of financial markets at the end of the 1980s, the real interest rate rose in the economy. The demand for loans decreased and the markets of other assets boomed. During the recession in the beginning of 1990s it became evident that the regulatory rules were not in line with the new investment environment. The solvency of the pension institutions was too weak to benefit the higher yield of the growing markets fully.

The investment regulations were amended according to the life assurance directive when Finland joined the European Union (EU; Tuomisto 1999). Another important decision was to join the Economic and Monetary Union (EMU), which allowed international diversification of investments without breaking the rules of uncovered currency positions. The pension system was nevertheless slow to react to the new investment environment, and it was not until 1997 that the new prefunding rules allowed more risky portfolio allocation.[3] In between, there has been a very favorable trend in stock markets, which has not been utilized until lately. The reform reduced the minimum rate of return on the funds and directed extra funds to the solvency margin of the pension institutions for three years. The impacts of the new rules and the growth of stock market prices have raised the share of domestic and foreign stocks in the private-sector pension fund portfolios from 11.9 percent in 1997 to 27.7 percent in 1999.

The new prefunding rules of the old age pensions can be described as follows. The funded component of the pension contribution is determined so as to give the individual a pension right of 0.5 percent of his or her yearly earnings between ages twenty-three and fifty-four. In the calculation

3. The earlier nominal minimum yield of 5 percent was also harder to generate by low-risk assets when inflation was subdued.

it is assumed that the observed mortality rates apply and the invested amount yields nominal interest rate of 3 percent. The impacts of inflation and the growth of wages to the final pension are not considered. The actual funding is supported by transferring the investment yield corresponding to the *TEL-calculated interest rate* (5.75 percent in 2000) to the individual's account. The TEL-calculated interest rate is the required rate of return on the invested funds and is determined by the Ministry of Social Affairs and Health. A working group is currently reconsidering whether this yield requirement should be linked to some combination of financial market indexes.

If the yield of the assets is higher than the TEL-calculated interest rate, the pension institution can either use the funds to strengthen its solvency or distribute the surplus to customer employers. The new solvency rules set both a minimum zone and a target zone for solvency. The higher the risks in the portfolio, the higher the required position inside the zone. If solvency of an institution falls below the target zone, the opportunities to distribute the surplus yield to employers are limited.

The supervisory board of a pension fund, in which the social partners are represented, is obliged to draft an investment plan and to supervise its implementation. This plan defines the aims of the investment policy, including, for example, the targeted average yield, diversification, and the security of assets and their convertibility into money. The fund's aims must be in line with the rules outlined in the relevant paragraphs of the Insurance Companies Act. In practice, the investment departments of pension funds have many degrees of freedom to operate within the given limits. The portfolio shares at the end of 1999 were roughly as follows: 41 percent in bonds, 28 percent in stocks, nearly 10 percent in both money market instruments and real estate, and the remainder in investment and premium loans.

The importance of prefunding to the pension system can be evaluated by noting that according to the recent forecasts, when the funds are stabilized at their equilibrium level around the year 2050, the yield will lower the private-sector contribution rate by 5 percentage points. This calculation assumes that the real rate of return on the pension fund assets is 3 percent.

Assuming that the incidence of employers' contributions has been mainly on labor, the mandatory prefunding has increased total saving and thereby investments as well. The efficiency of resource allocation was, however, subject to doubts during the period of strict regulation. Since the liberalization and development of financial markets, the allocation has improved, but the savings-investment link has lost its importance in the small open economy. Nevertheless, the beneficial impacts of saving on national wealth and on the intergenerational distribution of the aging burden remain.

8.3 The Financial Prospects of the Pension System

The overall prospects of the current Finnish pension system are dominated by rapid aging. The ratio of the population aged sixty and older to that aged twenty to fifty-nine is expected to increase from the current 0.35 to 0.66 in 2030. The stochastic population simulations of Alho (1998) challenge even this gloomy base scenario. These simulations, based on previous forecasting errors in fertility, mortality, and migration, show that uncertainty is higher than usually recognized. The 80 percent confidence interval of the age dependency ratio is 0.61–0.79 in 2030. The lower limit (0.61) results mostly from nonincreasing life expectancy, and the upper limit (0.79) from declining fertility and emigration.

The age dependency ratio does not comprehensively describe the ratio of pensioners to employees. The other often-used measure is the economic dependency ratio, which takes into account labor market conditions. Several contradictory trends affect the future labor force participation rate in Finland. First is the expected reduction in the unemployment rate from the current level of 9 percent. Another is the already high female participation rate, which does not allow much potential for improvement. Yet another is the fact that the average retirement age, although expected to rise somewhat, is as low as fifty-nine years and only 10 percent of each cohort retire at the statutory retirement age of sixty-five years.

Furthermore, the pension system is still maturing. The first employees in the private sector have just reached the right to retire with full pension (after contributing for the required number of years to the system), and it will take approximately thirty years until this is possible for all pensioners.

There are also two features that postpone the effects of the beneficial impacts of the recent reforms on pension expenditures. The first is the generous grandfathering rule followed in the reforms. Although most of the privileges in the public-sector scheme were abolished, it was decided that the new, higher retirement age (from sixty-three to sixty-five years) apply fully to the new entrants of this scheme only. Second, the likely positive impacts of a higher return on pension funds, facilitated by the 1997 reform, are not reflected in contributions until the corresponding cohorts retire.

The Central Pension Security Institute calculates long-term scenarios primarily for the private-sector scheme, but also for the public-sector pensions and the national pensions. The latest is published in Klaavo et al. (1999). According to the baseline scenario, the ratio of all pension expenditures to GDP rises from 11.7 percent in 1998 to 16.4 percent in 2034. After that the ratio declines somewhat due to the means testing of the basic pensions, the passing away of the baby boom generation, and the growth of income. The average private-sector pension contribution rate

rises from the current 21.5 percent of wages to 32 percent in 2050. During the same period, the private-sector pension funds rise from 132 percent of the corresponding total wage bill to 250 percent in 2050.

Lassila and Valkonen (2000b) show that this baseline scenario is very sensitive to demographics. If the previously mentioned upper-limit (0.79) scenario of the confidence interval of the age ratio is followed, the private-sector contribution rate exceeds 50 percent in 2060. Scenarios with different assumptions exist in abundance. Increasing the retirement age by one year lowers the contribution rate by 1.5–2.0 percentage points. A 1 percent rise in the rate of return on the existing funds would lower (in the short term) the contribution rate by 1.3 percentage points. In the long term, the corresponding reduction would be 2.5 percentage points. If the growth rate in productivity and real wages is 2.0 percent, instead of the baseline assumption of 1.5 percent, the ratio of pension expenditures to wages will decline more than 2 percentage points in the long run (Klaavo et al. 1999). The contribution rate would decline by half of that amount under current funding rules.

8.4 Recent Reforms

Until the severe recession in the beginning of the 1990s, the trend in pension reforms was to raise the benefit level and to loosen the rules for eligibility to early pensions. The recession created an urgent need to cut labor costs both in the private and in the public sector and emphasized the problems of long-term sustainability of the pension system. In addition to the necessary expenditure cuts, the following reforms were aimed at several other objectives, such as a more stable ratio of pension expenditures to total wages during business cycles, a higher actual retirement age, and a higher yield on pension funds.

The first policy reaction was to introduce the employees' pension contribution and to agree that future hikes in the contribution rate would be divided 50–50 between the employers and employees. Furthermore, the generous benefit rules of the public-sector pension system were scaled down in line with those prevailing in the private sector. Later, the pension benefits were cut by tightening several times the rules for early retirement and by introducing a bent pension index. In the bent index, the weight of earnings is smaller and the weight of consumption prices larger after age sixty-five.

The introduction of the bent index implies that the discussed possibility of using the index system as means of adjusting the expenditures to variations in total wages was ruled out and that preference was given to expenditure cuts. The objective of dampening the impacts of business cycles was not, however, totally rejected. The labor market parties agreed in 1997 on

the introduction of buffer funds both in the unemployment insurance system and in the private pension system. The special buffer reserve in the pension system is about 2.5 percent of the corresponding total wages.

Another major reform during the latter part of the decade was a shift in the funding rules. The separation of pension contribution determination from the same-period yield of the pension funds provided an opportunity for a more efficient portfolio allocation. Because the funding rate in the new system depends partly on the yield of the investments, the real value of the assets can be sheltered more efficiently from inflation than in the old fixed interest rate system. This becomes true if the TEL-calculated interest rate follows market rates.

There is a wide consensus that workers should not retire as early as they now do. The average retirement age is currently somewhat below sixty years. For instance, the current government aims to increase the average age of exit from the labor force by two to three years in the long term. There is a National Program on Aging Workers for the years 1998–2002, organized by the ministries of social affairs and health, labor, and education, aiming to help older workers to stay in work. The measures include increasing the physical and mental condition of aged workers, designing specific services to be provided by employment agencies, and in general making attitudes more favorable to elderly workers. Moreover, the economic incentives to retire early have been reduced, as discussed above.

These reforms have had a profound impact on the pension expenditure scenarios. Table 8.2 summarizes the main features of the Finnish pension reforms. Table 8.3 presents in more detail the contributions of the various reforms to the total 8.4 percentage point cut in expenditures in the long term.

8.5 Proposals and Discussion

8.5.1 Employers' Proposed Reduction in Contributions

Although there seems to be no disagreement about the necessity to raise the contribution rate in the future, a serious discussion concerning whether to decrease the current rate for a few years has emerged. The employer side proposed a reduction in the fall of 1999. The size of the measure for the year 2000 was not specified, but it could have been about one percentage point.

The proposed cut is based on two things. First, the cut could be seen simply as a result of following current rules. There is room for the contribution decrease because the EMU buffer stock fund target (2.5 percent of the respective annual wage bill), agreed upon in 1997, has been reached more quickly than originally planned. Second, if the reduction would not immediately result in wage increases of equal magnitude, labor costs

Table 8.2 **The Main Features of the Pension Reforms, 1990–2000**

Year Implemented	Measure Undertaken
1990	Eligibility rules for surviving spouse's pension were tightened.
1993	Employee's pension contribution was introduced. The public-sector pension scheme was curtailed in line with the rules of the private-sector scheme: The retirement age was raised from 63 to 65 years and the yearly accrual rate of pensions was lowered from 2.2 percent to 1.5 percent. For new employees the replacement rate drops from 66 to 60 percent. For current workers the rate will be somewhere in between.
1994	The index adjustment (1.3 percent) in pensions was not implemented. Agreement to divide the future hikes in the contribution rate equally between employers and employees was reached. The decision was made to deduct the employee's pension contribution from the pensionable wage. The minimum age for individual early retirement pensions was raised from 55 to 58 years and was lowered for part-time pensions from 60 to 58 years. The accrual rate for employees aged 60–64 was raised from 1.5 percent to 2.5 percent.
1996	The way in which pensionable earnings are calculated was changed so that the wages of the last 10 years in every employment contract are used, instead of the last 4 years. The implementation has been gradual; the transition period ends in 2005. The accrual rate for the post-contingency period in early retirement pensions was lowered from 1.5 percent to 1.2 percent if the retiree is 50–60 years old, and to 0.8 percent if the retiree is 60–65 years old. A two-index system was introduced. During working age an index consisting of an average of consumer prices and wages (halfway

(*continued*)

Table 8.2 (continued)

Year Implemented	Measure Undertaken
	index) is used, as earlier, but in the index of paid pensions the weight of wages was reduced from 0.5 to 0.2 and the weight of consumer prices was raised from 0.5 to 0.8 (bent index). When calculating either of the indexes the change in employee's pension contribution is reduced from the change in earnings. Means testing for eligibility to the national pension was extended.
1997	The rules of pension funding were changed. The link between current contributions and the current yield of pension funds was cut. This enables an increase in risky investments without changing the forward-looking funding principle. The lower age limit for additional days in unemployment benefits was raised from 55 to 57 years. This means, in practice, that the long-term unemployed can receive earnings-related income transfers either as unemployment allowances or as unemployment pensions from age 55 to 65. This "unemployment tube" began earlier, from the age of 53.
1998	The lower age limit for part-time pension was lowered temporarily from 58 to 56 years.
2000	The unemployment pension was cut. The prefunding of unemployment pensions was increased and the prefunding of the disability pensions was reduced in order to equalize the costs for the employer of using these alternative channels to reduce its labor force. The lower age limit for individual early retirement pensions was raised from 58 to 60 years.

Sources: See table 8.1.

Table 8.3 The Expenditure Impacts of the Main Pension Policy Measures (1990s)

Measure	Implementation	Change in Expenditures[a]
Surviving spouses' pensions	1990	−0.8
Public-sector pensions	1993	−2.7
Eligibility ages	1994	−0.7
Pensionable wages	1996	−0.4
Accrual rate for the post-contingency period	1996	−1.5
Bent index	1996	−1.5
Means testing of national pension	1996	−0.8
Total		−8.4

Source: Central Pension Security Institute (1999).
[a]As percent of total wages in 2030.

would be lower and the still-sizeable rate of unemployment could be reduced. This would also benefit the pension system.

The employee representatives have opposed the cut. Trade unions believe that the inevitable sharp increase in contributions, after the few years with lower rates, would strengthen the case for benefit reductions. The rate reduction did not take place for the year 2000. Instead, the social partners agreed that the need for funding shall be assessed before the rates are reduced. The issue reappeared in the fall of 2000, and the social partners agreed to suggest to the Ministry of Social Affairs and Health a cut of 0.4 percentage points. These suggestions are seldom turned down.

8.5.2 Ceiling for Pensions

An absolute ceiling for earnings-related pensions is recurrently, although not often, suggested for both cost-saving and distributive reasons. The system responds by saying that the ceiling would increase private voluntary arrangements, which would increase total costs. The effects of a pension ceiling on income distribution may also be counterintuitive. Palme (1999) shows that although the distribution of pensions in Finland is very wide in international comparison, the overall distribution of pensioners' income is one of the narrowest in Europe. He contrasts the Finnish case to those of countries that try to narrow the distribution of public pensions, thus leaving more room for the private pensions market and eventually having a more uneven distribution in total income.[4] High-income earners in Finland are satisfied with the current earnings-related pension system because it has no ceiling, and resort to private arrangements only to a minor degree.

4. Palme argues against means testing, but the same arguments can be used against pension ceilings.

8.5.3 Bent Index

Pension benefits are index-linked to both wages and consumer prices. After age sixty-five a bent index is used: The weight of earnings in the pension index is reduced from 0.5 to 0.2 and the weight of consumption prices increased from 0.5 to 0. 8. This "bending" reduces the increase in benefits that results from rising real wages. The bent index was introduced in 1996 and remains a disputed political issue. Pensioners' organizations speak of age discrimination and create political pressure, but their efforts seem unlikely to change matters. A law initiative was signed by 155 of the 200 members of Parliament in 1997, aimed at abolishing the bent index and returning to the use of a halfway index for all pensioners. Although there seemed to be a clear majority, Parliament managed with little difficulty to postpone the issue, and the initiative was automatically dismissed when a new Parliament was elected in 1999. The cost-saving effect of the bent index, compared to that of the halfway index, is about 1.5 percent of total wages (see table 8.3).

8.5.4 The Active Population's Share

Administrators of the pension systems argue that increasing pension expenditures and rising contributions will not necessarily be a problem. An oft-used argument is that the increase in productivity will probably be rapid enough to allow the living standards of the working-age population to increase, despite the growing share of the elderly. The opponents argue that growth in incomes does not necessarily make high contribution rates any more attractive.

8.5.5 Propositions by Hautala and Tuukkanen

The main ideas of the pension reform suggested by Hautala and Tuukkanen (1999) are to strengthen the link between pension contributions and benefits, to reduce the options for early retirement pensions, and to introduce an individual pension account for middle-aged workers. In the proposed pension scheme, old age pension contributions are paid entirely by employees, benefits are based on paid contributions, the retirement age is flexible, and early retirement reduces pensions actuarially. The system is financed mainly by the PAYGO principle until age fifty-four. After that, the employee moves to a fully funded, defined contribution pension scheme. The funds in the accounts are invested collectively, which reduces risks and administrative costs. The transition to the new individual account system requires little new financing because the labor force participation rate in that age group is low. The average retirement age is expected to rise markedly due to the improved incentives and due to the abolition of the current unemployment pension system. The reform is aimed at increasing efficiency and equity in both the earnings-related pension scheme and the unemployment insurance system.

8.5.6 Information Account Proposed by Lundqvist

The Lundqvist (1999) proposition takes as a starting point the diversified needs and the willingness of individuals to secure their old age incomes. Therefore, employees should be able to get information continuously about the amount of accrued pension entitlements in both the mandatory and voluntary schemes. The created information system also would make the links between contributions and benefits more transparent. According to the proposition, it is also necessary to enhance the possibilities to save for old age outside the earnings-related pension scheme.

8.5.7 Simplification of the Pension System

Representatives of the pension institutions and labor-market parties are currently discussing a package of measures aiming to simplify the pension system and to foster its transparency. The initiative for the reform can be traced back to the present government's program. Most of the issues in this discussion have already come up some time earlier. The main ideas are to improve the link between benefits and contributions and to simplify the administration of the overall pension system by unifying the rules of various private-sector pension schemes. In more detail, the proposed changes are to unify the accrual rate from age eighteen to age sixty-five to be 1.5 percent of corresponding wages; to use the wages of the whole working career to determine the pensionable wage; and the link the amount of early retirement pensions to the length of the working career. The initial idea is to implement the reform so that it does not change the amount of future expenditures. The adjusting variable is possibly indexation during working age, which could be made more generous because the other elements of the reform generate savings.

The outcome of the preliminary discussions is unclear because, even though industrial workers support the ideas, clerical workers and others with long employment records or with seniority rules in wage determination (or both) are against some of the proposed changes.

8.5.8 Adjustment of the Benefits and Prefunding as a Reaction to Demographic Trends

The reformed Swedish pension system reduces pension benefits if life expectancy increases. The updated Finnish population forecasts assume that life expectancy will continue to rise for several decades, implying higher pension expenditures. These two starting points have generated a discussion about whether the Finnish pension system should adopt a similar life expectancy adjustment (see Lindell 1999).

Another suggestion is to link the prefunded amount of contributions in Finland to current birth rates. This idea is based on the observation that, from the point of view of pension expenditures, uncertainty about future birth rates is much more important than uncertainty about longevity.

Therefore, intergenerational insurance against unfavorable trends in the birth rate is necessary (see Lassila and Valkonen 1999). The corresponding adjustment on the benefits side could be, for example, indexation of the pensions to total wages (see Lassila and Valkonen 2000a).

8.6 Conclusions

The statutory earnings-related pension system has a strong position in Finland. It is generally accepted and widely supported. Besides its basic role of providing retirement income, it gives economic power to labor market organizations. It is flexible in the sense that changes have been (and are) made often. Its financial position is good in international comparison, due especially to partial prefunding and the high yield on these funds in recent years.

The other main part of the Finnish pension system, the national pension, also has an undisputed role. It provides basic subsistence for those with insufficient or no earnings-related pension. Thus, it is clearly secondary to the earnings-related pension. Its size may diminish relatively in the future, depending on how the concept of "basic subsistence" will be interpreted politically.

It seems likely that in the future, reforms will be made within current systems rather than through the establishment of new systems. The developments in the 1990s have created confidence that changes can be made when required. On the other hand, this positive attitude may reduce precautionary and far-sighted policies such as increasing prefunding.

Voluntary pensions have only a small role in Finland at this time. It is likely that supplementary pensions will become more common. This may have far-reaching consequences, because TEL cannot offer many choices even if in the future it would like to, due to EU competition rules. TEL is now an accepted exception in competition, but probably cannot expand the limits. Within TEL, more efficiency is sought.

Contributions will rise in the future. Although prefunding makes the Finnish position better than that of many European countries facing the aging problem, it may be that the contribution increase required to keep current benefit promises are deemed too high. The question, then, is how much and in which way the benefits will be reduced.

Partial pension funding has increased the domestic saving rate, thereby contributing markedly to the relatively high investment rate in Finland. However, the previous investment policy of the funds, which was linked to the then-strongly regulated financial system, may not have reached the standards of efficient resource allocation. Furthermore, the real yield generated by the funds was negative during the periods of high inflation rates.

Furthermore, adjustment to the new investment environment has been slow. Therefore, the possible benefits of a virtuous circle of increasing

profitable investments, developing financial markets, and high investment yields were largely missed. With better coordination of financial market liberalization and reforms in solvency regulations and other investment rules, the pension funds could have profoundly contributed to the development of financial markets. Currently, there is no lack of financial resources in the small open economy; therefore the saving-investment link is weaker. The existing pension funds use modern investment-allocation methods and the funds' yields follow the market indexes rather closely.

One of the future challenges of the system is how to increase competition while ensuring the long-term solvency of the institutions. There are positive returns to scale in both the insurance and investment operations, which tends to lead to centralization. At the moment, the main means of competition is the repayment of pension contributions to the customer firms, facilitated by successful investment policy. If the smaller institutions cannot keep up in the competition, they will lose customers. Another related challenge is how to determine the minimum required rate of return on investments so that it is as high as possible, while still leaving room for a sufficient number of institutions to survive and develop.

Appendix

Old Age Pension Prefunding Rules in the TEL System

We first describe the prefunding of the average employee's future old age pension benefits, and how the fund is run down in the retirement age. Then we aggregate to the total population level and give a simplified presentation of the dynamics of total funds, the mechanism of contribution determination, and the use of the yield of funds.

Prefunding at the Individual Level

Every year, a new pension right accrues for each worker, and a part of the present value of the right is prefunded. For someone already retired, part of the money prefunded in his or her working years is used to pay a part of his or her pension. Equations (1) and (2), below, describe these funding rules for the average worker and pensioner in each age group i in period t. The gross labor income of the average worker in age group i is denoted by g.

$$h_{t,i} = a \frac{\sum_{j=65}^{M} kg_{t,i} S_{t,ij}}{(1 + r^h)^{j-i}} \qquad i = 23, \ldots, 54 \tag{1}$$

individual accumulation rule

$$(2) \qquad w_{t,i} = \sum_{j=23}^{54} h_{t-i+j,j}(1 + r^{\mathrm{TEL}})^{i-j} \qquad i = 65, \ldots, M$$

individual decumulation rule

According to equation (1), a share a of the present value of the pension right accruing in period t to workers aged twenty-three to fifty-four is put in the funds. The present value includes all old age pension years from sixty-five to a maximum age denoted by M. The labor income g creates a pension right for each year from age sixty-five onward. For prefunding purposes, the magnitude of this right is evaluated ignoring all future changes due to wage or price developments. Thus the value of the right is simply kg for each retirement year. Currently, k is 1.5 percent.

The discount factor includes both an interest rate and survival probabilities. The fund rate of interest, used in this calculation, is administratively set. We denoted it by r^h. The term S in equation (1) describes the expected effects of mortality. Only a share S of those in age group i in period t are expected to be alive in age j.

Equation (2) states that, for a retired person, the amount prefunded earlier (when the current pensioner was between ages twenty-three and fifty-four) for periods t's pension, and the interest accrued to those funds, is used to pay a part of the person's pension (the rest comes from the PAYGO part). The interest accrued is calculated using another administratively set interest rate, the so-called *TEL-calculated interest rate* (assumed constant here for a simpler exposition).

Equations (1) and (2) are, in practice, interesting only to pension companies because they are used in calculating the companies' pension liabilities. Each company is responsible for the prefunded parts of the pensions of those insured in the company. The companies are jointly responsible for the rest of the pensions. Of course, the equations are also important for the aggregate dynamics of the pension system, especially for the level and the time path of the contribution rate.

Aggregate Pension Funds and the Contribution Rate

The total amount of new funding in period t is obtained by multiplying the average individual funding in age group i, described in equation (1), by the number of workers n in the age group, and summing over all age groups. This is done in equation (3). The total amount withdrawn from funds is obtained analogously (equation [4]). Two other aggregates are defined in equations (5) and (6): the total wage bill, from which the pension contributions are collected, and the total amount of old age earnings-related pension expenditure, where the average individual pensions are denoted by z.

$$(3) \qquad A_t = \sum_{i=23}^{54} n_{t,i} h_{t,i} \quad \text{new funding total}$$

$$W_t = \sum_{i=65}^{M} n_{t,i} w_{t,i} \quad \text{withdrawals from funds, total} \tag{4}$$

$$G_t = \sum_{i=14}^{64} n_{t,i} g_{t,i} \quad \text{contribution base (wage bill)} \tag{5}$$

$$Z_t = \sum_{i=65}^{M} n_{t,i} z_{t,i} \quad \text{total old-age pension expenditure} \tag{6}$$

The dynamics of the total amount of funds, H, follow from equation (7), and the contribution rate is determined as a residual from equation (8).

$$H_t = H_{t-1}(1 + r^{\text{TEL}}) + A_t - W_t \tag{7}$$

$$(\tau_t^l + \tau_t^e)G_t = Z_t + A_t - W_t \tag{8}$$

The employer's contribution rate (τ^l) and the employee's contribution rate (τ^e) must bring receipts sufficient to cover the part of pension expenditure that does not come from withdrawals from funds, plus new funding. The employer's contribution rate is higher than the employee's, but they move hand in hand.

Actually, employers usually pay less than the nominal contribution rate. If the actual yield on funds exceeds the TEL-calculated interest rate, the difference is paid back to the employers. This yield difference varies among pension companies and is the main factor in their competition for customers, which are firms and other employers providing pension insurance for their workers. The employer's ex post contribution rate $\hat{\tau}^l$ is determined according to equation (9).

$$\hat{\tau}_t^l = \tau_t^l - H_{t-1}(r - r^{\text{TEL}}) \tag{9}$$

The presentation above is still simplified. We have ignored disability and unemployment pensions and the funds related to them, and other transfers the pension system pays.

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Comment

Reijo Vanne

Jukka Lassila and Tarmo Valkonen have done pioneering work on models of overlapping generations in the Finnish economy. The sustainability and intergenerational effects of the pension system have been among their subjects of research. During the course of their work, they have acquired a profound knowledge of the Finnish pension system, and I regard their text as a good description of both the system and its problems, and of the reform proposals presented. Below, I will introduce a few additional points, mainly on the history of the ideas and arguments behind the present system.

Although the Finnish earnings-related pension system is based on agreement among the social partners, it has formally been statutory from the very beginning. However, private companies and funds run the schemes. In the national accounts, the pension institutions and their assets are nowadays included in the general government figures. Nevertheless, pension funds make their own decentralized investment decisions, like any other private funds.

Pension reform ideas and their acceptance have typically come up in

Reijo Vanne is chief economist at the Central Pension Security Institute in Helsinki, Finland.

negotiations among representatives of the social partners. Technically, the design of the system has been the responsibility of mathematicians and lawyers; economists have played a minor role.

Before the 1990s, the driving forces behind reforms were concepts of the Nordic-type welfare state. During the 1990s, these forces were, as the authors state, the recession and a growing awareness of an aging population.

The Original Ideas of an Original System

The authors offer a good presentation of the history of the Finnish pension system, which consists of the national and the earnings-related pension schemes. However, some of the first ideas of the earnings-related system and contemporary conditions may be worth mentioning. The committee that designed the prefunded defined benefit pension system worked from 1956 to 1960 under the chairmanship of Professor Teivo Pentikäinen (Report of the Pension Committee 1960).

The topical problem that had to be solved was poor and high-risk living standards in old age and in the event of disability. I suppose this was the reason behind the two main features of the plan. First, it was not possible to wait for decades until the first sufficiently high benefits could be paid. This fact recommended a pay-as-you-go (PAYGO) solution. Second, the designers emphasized that the fundamental purpose of a pension plan is to guarantee a targeted living standard after retirement. This view recommended a defined benefit system.

The committee also dealt with the issue of intergenerational distribution in the spirit of overlapping generations and possible political majorities in the future. It stated that a fully funded system would not sustain any intergenerational redistribution or political tension. Rather, the long transition period and the committee's view of the risks of the fund returns led them to recommend only partial funding. Inflation was regarded as the main threat to the real value of the funds. This view should be understood against a background of the regulated markets of that time. Also, thoughts related to the later Aaron's principle (Aaron 1966) were presented. The workforce would be expanding in future years due to the baby boomers, although the total fertility rate was declining rapidly.

Lassila and Valkonen state that prefunding is officially seen as a vehicle for smoothing the effects of baby boom generations on contribution rates. It is true that a couple of common views in Finland during, say, the last twenty-five years have been that prefunding is due to baby boomers and that funding should be a transitory phase. In spite of increasing longevity (which has either materialized or is expected) and other factors that recommend continued prefunding, this view is still widely shared in Finland, although not among experts. However, the baby boomer problem was not originally the main argument for partial prefunding, and nowadays better arguments are clearly available again.

The committee noted that no decent market for voluntary pension

schemes had emerged and the fact that the advantage of the first generation in a PAYGO system may make later generations withdraw from the system. It therefore recommended a statutory scheme.

The Main Reforms before the 1990s

The real growth rate of the Finnish economy was fairly high in the 1960s and 1970s. The working-age population, productivity, and the wage sum were growing rapidly. There seemed to be room for a rise in the living standard of the elderly. The targeted replacement ratio was raised from 40 to 60 percent in 1975. Naturally, this had to be done by lowering the funding rate and by increasing the PAYGO part of the implicit liabilities. At the time of the decision, a few peaks and valleys had just been reached: an all-time low in the fertility rate, and all-time high in the growth rate for human capital in terms of expected real earnings due to the age structure, and a bottoming-out of relative oil prices. It appeared that the target level was too ambitious. The contribution level more than doubled in the 1970s, and the index link between pension benefits and accrued rights to the real wage level was reduced to 50 percent from the former 100 percent.

Rapid economic growth and changes in economic structure resulted in depreciation of the skills of aging workers in certain industries. The educational level of the older generations was very poor compared with that of younger generations. I suppose that the magnitude of this difference is one of the world records held by Finnish society. The pension system based on support form the social partners was in a sense a natural agent for internalizing the costs of human capital depreciation, and early retirement legislation was passed in the 1970s and 1980s.

At the beginning of the 1980s, the national pension scheme was thoroughly overhauled. Up until then, the benefits had been means tested against the total incomes of the beneficiaries. Since then, reform benefits have been means tested against the earnings-related pension benefits.

The problem of an aging population has been well known, at least since the beginning of the 1980s. The first exhaustive, long-run social expenditure projections had been presented in 1980 (Report of the Working Group for Evaluating the Expenditures and Goals of Social Security 1980). A mechanical projection based on a deterministic population forecast is still the most popular method for approaching the problem of aging populations all over the world. Even with hindsight, one cannot find the reason that the issue of aging populations was not emphasized when the decisions were made.

The Recent Past and Recent Future Projections

Lassila and Valkonen give a clear picture of the economic and demographic background, and of the nature and extent of the reforms in the 1990s.

Since 1994, the real annual growth rate of the Finnish economy has been nearly 5 percent, on average; the average real returns on the pension funds have been even higher, at 7–8 percent, although pension institutions have held low-risk portfolios. If the recent productivity growth rates and rates of return were those of the stationary state of the economy, we would not need to raise contribution rates by the year 2050 according to the baseline population forecast, even if ever-increasing longevity were included.

Although the present contribution rate of 21.5 percent has not been an obstacle to rapid growth, in the event of modest real returns we will have to raise contribution rates. According to the projections of the Central Pension Security Institute (Klaavo et al. 1999) as well as those of Lassila and Valkonen (1999), a balanced path can be found with (for example) a real return rate of 3 percent, a labor productivity growth rate of 1.5 percent, and a contribution rate rising to 32 percent by the year 2050. The risk is that the calculations underestimate the growth slowdown or the political effects of raising contribution rates, not to mention the risk included in the population forecasts described by Lassila and Valkonen.

The funds' rate of return has a crucial role to play in defining the funding rate and thus the future contribution rates. The funds are run mainly by private companies and foundations; investment decisions are made by the portfolio managers of these institutions, while in the national accounts the wealth of funds running statutory schemes is included in the general government coffers. Finland is thus one of the very few countries in which the net financial wealth of the general government is positive. I expect public net financial wealth at the end of the year 2000 to be approximately 50 percent of the year's gross domestic product (GDP). Generational accounting with 1995 as the base year showed that the net intertemporal liabilities of the Finnish general government were among the highest in Europe, 2.50 times the 1995 GDP (Feist et al. 1999). Using the year 2000 as the base year, the net liabilities are no more than 1.25 times the 2000 GDP according to my estimate. The reasons behind the improvement are forced saving to pension funds, high returns, expenditure cuts, and favorable economic development.

Advantages of a Mixed System

First, mixed decision making has worked well so far. The social partners have designed the reforms, but the political decision makers have also accepted them and passed the laws. The prerequisite for the success of this procedure is that both social partners have an interest in taking part in the process. With respect to fiscal-policy decision making, the Finnish pension system is also a mixed one. Both rules and discretionary decision making have been present. Lassila and Valkonen propose to link benefits or contributions to longevity or fertility rates. These proposals give more weight to rules compared with the present procedure, in which contribution rates

are decided annually and longevity is to be managed by adjusting benefits and employers' costs so that incentives to continue working are strong enough.

Second, for several reasons there would not have been any opportunity to accumulate wealth to cover the liabilities of the aging population if the funds had been run by public institutions. It is very unlikely that political decision makers could have resisted the temptation to raise present expenditures or cut present taxes. Finally, it would have been unacceptable for politicians or the authorities to manage such vast wealth.

Third, partial prefunding represents a kind of risk sharing, in which the explicit part of the liabilities is covered by financial capital and the implicit part by human capital (i.e., by the PAYGO part of contributions). A mixed strategy may be a good one, for example, when it is unclear whether the benefits of the "new economy" will materialize in human capital or financial capital returns.

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Discussion Summary

According to *Horst Siebert,* a remarkable feature of the Finnish pension system is that social partners were able to build up a sufficient pension fund and that they did not use the fund for their own purposes. He asked whether there is any secret behind this outcome. *Georges de Menil* pointed out in this respect that in 1956 the government took money from the pen-

sion fund. He asked why this might not be a likely outcome again. *Jukka Lassila* answered by noting that it is not easy to find the secret behind decision making in the Finnish pension system, because the process of decision making is not clearly established but has come out of practice. The Finnish system appears to be rather effective right now, but a situation like that in 1956 is not totally inconceivable. Lassila interpreted the Finnish system as a division of labor between the political parties and the social partners, in which decisions on the pension system are separated from other political decisions. However, some kind of political consensus between the social partners and the main political parties is necessary in his view. *Reijo Vanne* added that in the beginning of the reforms the social partners did not want to rely on the state and tried to keep the state away from the pension system. This may also explain why the social partners made their decisions so rapidly, because they feared state intervention if they did not come to an agreement.

Martin Feldstein inquired about the statement of the authors that the pension system gave the trade unions more power. Feldstein wanted to know in which sense this was true. *Tarmo Valkonen* responded that the power of the social partners mainly results from the tripartite decision making in the development of the pension system, and from the seats in the administration of the pension institutes.

Laurence J. Kotlikoff asked the discussant whether he has redone the generational accounting for Finland recently and how the results have changed. *Reijo Vanne* responded that the generational accounts have not been redone yet, but his preliminary guess is that the true public debt including social security has declined from 2.5 times the GDP in 1995 to 1.5 times the GDP in 2000.

A. Lans Bovenberg asked whether there is any evidence for Finland that low income earners are supplying less labor as a consequence of means testing. He regarded this as an important issue, because there is a great deal of pressure in many countries to target pension funds to lower income levels, and the key question is whether this leads to more distortions. In his answer, *Jukka Lassila* noted that most people do not understand the workings of the pension system, so that the labor supply disincentives resulting from the integration of the national pensions into the earnings-related pensions are probably not very high. However, the disincentive effects will be more important if people become aware of the high marginal tax effects of the pensions. He added that work incentives for low-income earners are generally very low, because many transfer systems are means tested and have high marginal tax rates of more than 100 percent in some cases.

A. Lans Bovenberg wondered whether the public in Finland is concerned about the increasing level of equity investments of pension funds, because this might lead to problems of politicization of the equity holdings. *Assar*

Lindbeck estimated that pension fund holdings make up only 5 or 10 percent of the Finnish stock market so that their influence should be rather small. *Jukka Lassila* added that the increasing share of equity holdings of Finnish pension funds results from the increases in the prices of the equities and not from new investments in equities. In addition, a large part of equity holdings of the pension funds is held in foreign stocks. *Tarmo Valkonen* emphasized the importance of investments in new information technologies, which have yielded a great deal in Finland. According to *Reijo Vanne,* the pension funds follow a strategy of passive portfolio investing rather than strategic investing, so that their influence in the economy is also limited by this fact.