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Diplomová práca

Influence of pension reforms on capital markets

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Prehlásenie

Prehlasujem, že som diplomovú prácu vypracoval samostatne a použil iba uvedené pramene a literatúru.

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Poďakovanie

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Abstract

This paper discuses pension reform and its contribution to capital market development. Focus is being put on pension reform based on funded accounts what involves establishment of pension funds. Thorough these funds and their impact on financial system is the influence of pension reform presented. In addition, an influence of pension reform on capital market in Chile is included as a model example.

Abstrakt

Táto práca sa zameriava na dôchodkovú reformu a jej prínos k vývoju kapitalového trhu. Dôraz je kladený na reformu s dôchodkovým sporením na vlastný účet čo znamená zavedenie dôchodkových fondov. Práve cez ich pôsobenie na finančný systém je vplyv dôchodkovej reformy prezentovaný. Ďalej je znázornený vplyv dôchodkovej reformy na kapitálový trh v Čile ako modelový príklad.

Table of Contents

1 Introduction

Pension reform is nowadays a greatly discussed topic throughout the world. The reason for this is an unpleasant demographic development mainly, but not only in developed countries. Ageing population brings many changes to the economy in various areas. One of them is a social security in retirement. This paper concerns with pension systems and their possible reforms. It discusses influences of pension reforms on capital markets through various economic, financial links.

The focus is put primarily on influences of funded pension reform where individuals are saving for their retirement on individual funded accounts. The potential of accumulation of substantial assets in these accounts brings new incentives for their proper investments. Administrators of these accounts, pension funds would therefore search for new ways of investment, create demand for special investment instruments and thus create incentives for further development of capital markets.

The thesis starts with outlining of available pension reforms strategies and a brief analysis of ageing impact on public budget. Next chapter concerns with the role of pension funds in an economy and their influences on financial market. In chapter four I include an analysis of the pension funds' regulation and taxation as to see existing approaches to their supervision from governmental authorities. Moreover, regulation and taxation of pension funds are important elements in terms of their investment strategies what as well influences their role at financial markets.

Fifth chapter further assesses operation of pension funds in developed markets and their contribution to financial markets. Following chapter presents empirical evidence of pension reform contribution to development of capital markets based on the Chilean pension reform. As this reform was initiated in 1981, the time-span allows for a comprehensive assessment. Last chapter discusses approach of Central and Eastern European countries towards pension reform and a brief outlook for pension funds development finalises this paper.

2 Reform strategies

This Chapter outlines pension reform strategies that are nowadays at the forefront of theoretical and empirical research. There are a number of approaches to deal with ageing problem that is affecting many countries worldwide. Some propositions suggest only partial improvements to ongoing pension systems; others go deeper and change the basic nature of social security as a whole. As this paper is searching for links between pension reforms and capital market developments, attention will be put on the latter ones because they have the greatest potential to overcome ageing problem and are likely to bring number of changes to the economy, which I would like to describe further in this paper.

General system used to provide for pensions in retirement is or used to be in most countries public pay-as-you-go[1] scheme that is nowadays under constant discussion about its future. Reform need arises from its real unsustainability as is shown in the following section. The reform proposals may take form of parametric adjustments of the ongoing system, introduction of Notional Accounts[2] or switch to funding. The main advantages of the first two options are in low transition costs but in the end do not really solve the ageing problem as they are both based on tax income for the budget that is shrinking, as the number of contributors is lower. On the other hand, funded system based on saving via individual account bears rather high transition and administration costs but as arises from its nature, individuals are saving for retirement by themselves what substantially improves sustainability of the system. Then there may be a mixed pension system consisting of the above proposals where each component in the pension system represents so called pillar. Therefore this pension system is sometimes being referred to as multi-pillar. The importance and magnitude of the funded pillar in this system represents a key component in overcoming ageing problem.

As recommended by World Bank (1994) pension reform in its final form should consist of pay-as-you-go system as a first pillar that would with low redistribution work

[1] Pay-as-you-go (PAYG) refers to an unfunded system in which current contributors to the system pay the expenses for the current recipients. In a pure PAYG system, no reserves are accumulated and all contributions are paid out in the same period.

[2] "Notional accoutns or NDC systems are accounting devices that treat a PAYG system like a defined contribution (DC) systems. Pension benefits are paid out of current contributions like in a conventional PAYG system, but the link between benefits and contributions is individualized and defined by the NDC accounting mechanism." (Börsch-Supan (2003) p.7)

as a safety net to protect against old age poverty and a funded pillar that would be the primary source of retirement saving. This setup of pension system has a benefit of risk diversification, namely, the public pillar is subject to political influences and the funded component is exposed to market risks.

Important is the question of mandatory nature of the funded scheme within multi-pillar scheme. In countries with a developed capital markets like the United States voluntary contributions would be probably more preferable providing participants with more choice, of course considering that the unfunded component is obligatory. In this case institutions offering retirement saving together with adequate tax incentives should be able to attract enough resources into this scheme. On the other hand, in countries where the capital market is less developed and availability of financial instruments is limited plus population is used to a rather paternalistic state care, compulsory contributions seem to be more favourable. In this case special fiscal treatment in not that necessary but still government should provide incentives for desired investment strategies. As noted by Yermo (2005), in a case that the whole pension system is based only on the funded component without the "safety" feature of the public social security, mandatory element of the system is being often implemented and justified by myopia of the population.

All compulsory and voluntary schemes can be available to virtually any country in a form of three pillar pension system where the third one would be funded on voluntary basis; however the importance lies within the optimal contributions distribution among particular pillars. Too generous first pillar may not fully eliminate macroeconomic distortions and create disincentives to work or save while more focus on funding may work right in the opposite way creating positive labour incentives and help the economy in overall.

Inclination towards funding implementation should primarily reflect retirement-income needs in term of averting old-age crisis but its effects on labour and capital markets should be kept in minds when setting up potential reform parameters. This is also true for a regulatory framework that should allow for optimal investments thus avoiding undesired result in inefficient funds performance or very high administrative costs of a scheme.

Another feature of retirement saving to consider is the distribution of risk/responsibility for pensions in terms of defined benefit (DB) and defined

contribution (DC) schemes. Generally defined benefit plan is popular among employees as it contains and insurance element. Davis (1998) suggests, as DB scheme is likely to be less flexible in terms of administration and management, this setup may be advantageous also for employers (if they are provides of retirement saving) in a way that they see this as a means of "controlling" their labour force in forms of various obstacles when applying for another job. If a regulation of such a plan is adequate and sufficiently covers problems like actuarially fair transfer values, ensuring rapid vesting and others than DB is advantageous for employees that do not change many jobs over their lifetime. On the other hand if this is not the case and employers perceive regulation as an excessive burden or companies are extremely short-lived, defined contribution scheme may be more appropriate.

Regulation of a pension industry may be also an important element. Research in Davis (1998b) shows that strong portfolio regulation lead to lower returns on investment than in a case where the regulation is rather loose. Opposite of strong regulation is a concept called "Prudent man rule"[3] which has an advantage of higher flexibility, may encourage higher supply of risk capital or stimulate international investment but at a cost of higher volatility. Stronger regulations could be reasonable in a developing or transition economies where prudent man rules might lead to a misuse or fraudulence behaviour arising from lack of transparency or unsatisfactory "investment culture".

Finally, each pension reform is country specific in its nature as the starting conditions differ substantially including the shape of current pay-as-you-go system, development of capital markets, availability of private schemes and openness to international capital flows so it is rather impossible to create an optimal uniform pension reform that would be suitable to every country. Therefore it is in hands of authorities of each country to setup a reform in a way that would ensure its success as there are more reform guidelines to follow.

Next section discusses impact of ageing on public finance that represents a main reason for pension reform. It also shows recent approaches of selected countries to pension reform that try to make their public budgets sustainable for the future.

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[3] „a prudent person rule is a concept whereby investments are made in such a way that they are considered to be handled "prudently" (as someone would do in the conduct of his or her own affairs)" Davis (2001) p.22.

2.1 Impact of ageing on and public finance

To show why countries consider pension reform at first place we need to look at incentives that force governments to undergo sometimes a very costly project.

Probably the most discussed influence of ageing concerns public finance. Tax income for government budget is likely to shrink due to population ageing as the number of active members of society is diminishing. Although the magnitude of this effect is limited to an extent the way tax regime is adjusted. Its influence would hinge on the set-up of participation rates, productivity, and immigration as well as the weights, in the tax base, of consumption based vs. income based revenues. Furthermore as argued by Antolin et al. (2004) deccumulation of pension assets and its taxation in retirement would partially compensate for decline in taxation receipts and the overall shift in government revenues is estimated to be up to one percentage point of GDP.

Hand in hand with decline in tax revenues, public spending pressures are expected to rise as the population ages (Table 1). This is especially apparent in relation to financing of public pension scheme based on pay-as-you-go system. Declining number of contributors diminishes amount of benefits available for retirees what causes further strain on the budget. Spending concerning pensioners would increase also in terms of healthcare for the elderly following that life expectancy is rising. This would be only partially offset by decline in expenditure on education of youngsters or childcare benefits as the number of newly born is decreasing.

Table 1.Ageing related public spending pressures are mounting (in % of GDP)*

	Old-age pension outlays		Health and long-term care spending	
	circa 2000	circa 2050	circa 2000	circa 2050
Canada	4.7	6.4	6.3	10.5
France	12.1	14.5	6.9	9.4
Germany	11.8	13.8	5.7	8.8
Japan	7.9	8.5	8.5	8.2
UK	5.0	5.6	5.6	11.0
US	4.4	6.2	6.2	7.0

Source: Visco et al. (2005) p.13

* Assuming unchanged policies as from the mid-2000s

Authorities have been aware of this development and in order to keep pension system sustainable in the future they have adjusted or are considering improvements into ongoing retirement scheme. As Table 2 shows, most of the recent reform steps in western countries were only parametric in nature, such as altering contribution rates or retirement age which solve the problem of ageing only partially. Already high contribution rates limit options for further raise and shrinking retirement payouts do not leave much room for improvement of public pension schemes as such. Hence moving towards more private saving is a very serious alternative. Raising strain on budgets through gradual deficiencies in unfunded public pension schemes creates a need for higher retirement saving through private funds whose importance undoubtedly is going to increase. Countries with virtually non-existent private retirement saving are about to face difficulties in transition towards less compulsory and defined contribution schemes as household would need to alter their saving behaviours to adjust to rising longevity.

Table 2.Reformation of pension systems in selected developed countries

		Mandatory pensions				Last major reforms	
	Last major reform	Contribution rate (%)	Gross replacement rate at average earnings (%)	Public pension benefit	Mandatory private regime	Changed level of DB	Increased contribution rates
Canada	1997	9.9	43	DB,P	No	No	Yes
France	2003	16.5	53	DB	No	Reduced	Yes
Germany	2001	19.5	46	DB	No	Reduced	Yes
Japan	2004	18.3	50	DB,NF	No	Reduced	Yes
Switzerland	2003	23.8	58	DB	Yes	Reduced	No
UK	2004	23.8	37	DB	No	No	No
US	1983	12.4	39	DB,NF	No	...	No

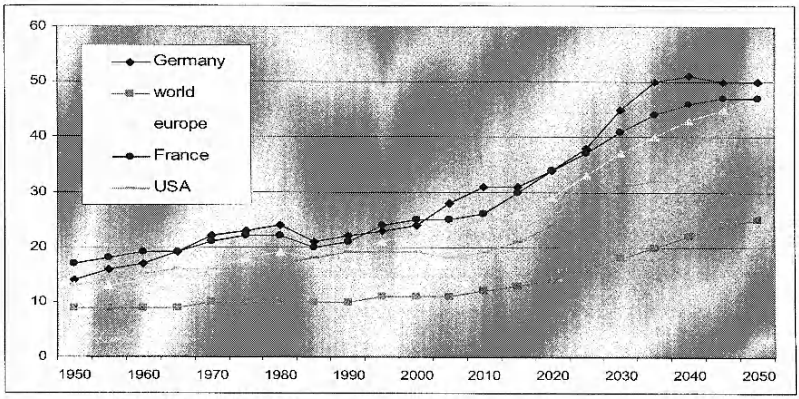
Source: Visco et al. (2005) p.14

Concerning parametric improvements to ongoing unfunded scheme Oliveira Martins et al. (2005) suggest, that to keep pay-as-you-go pension system balanced under given conditions[4], savings would need to increase substantially within few decades to keep level of consumption in retirement unchanged. This relates to growing old-age dependency ratio as the size of working population supporting retirees is shrinking (Figure 1). Their simulations research further show that for United States, France and Germany household saving rates would be around one percentage point higher in a

[4] Pension contributions unchanged, retirement age gradually increased, replacement rates for new retirees gradually reduced.

fifteen year horizon as well as capital deepening would be more evident and real interest rates lower.

Figure 1.Old-age dependency ratios are increasing sharply (%)



Source: United Nations Population Division, World Population Prospects: the 2004 Revision

To conclude, the need for pension reform arises from the unsustainability of public unfunded pension schemes due to population ageing. Raising dependency ratio may have severe implication on development of public finance. Lower tax income with raising old-age related expenditure creates sustained pressure on public budget. Parametric improvements to the pay-as-you-go schemes have their limits either in raising contribution rates, retirement age or in decreasing benefits. The former means increase in taxation burden for the population which undermines economic growth of a country. Changes in retirement age or benefits may be met with even stronger social opposition. Under the assumption that dependency ration would be further increasing in the future, adequate parametric improvements would need to follow all the time, which is not very realistic and feasibility of such adjustments is undermined.

3 Process of capital market development

Capital market development is a complex process which includes many variables. To understand which way pension reform can contribute to its development we need to look at the most important processes. This paper is focusing primarily on funded pension reform what implies introduction of pension funds. Detailed description of funds' influence on financial structure follows later in this chapter. In this section I will point to functions of financial market and development of capital market from a wider perspective.

When discussing process of capital market development it is useful to state functions of financial markets in general in order to see what improvements to an economy are likely to occur as the capital market evolves. Effectively operating functions of financial market contributes to economic growth "The existence of a positive effect of capital market development on growth has its main theoretical support in endogenous growth models, whereby more liquid and efficient stock markets provide the incentives for long-run investments, thus increasing economic growth." (Walker and Lefort (2001) p.5). The means thought which financial market improvement may contribute to economic growth are summarized by Merton and Bodie (1995)

1. clearing and settling payments
2. pooling of funds
3. transfer of economic resources
4. management of uncertainty and risk
5. providing price information
6. dealing with incentive problems

To enable these functions operate effectively financial market should work without substantial obstacles. Priority is put on process of capital market development especially in transition countries or countries with very low financial development as it may be necessary to setup an adequate legislative framework before any further progress can be made.

Expectation of high accumulation of assets by pension funds after pension reform requires government to enable and support development of adequate investment

instruments. For institutions issuing such instruments that would mean among other things duty to provide and disclose required information what should lead to improved transparency.

The introduction of necessary regulatory framework and improvement of institutions in general may be induced by deeper financial integration or technological developments but potential size of pension fund market is likely to speed up the process.

Improvements in corporate governance are also necessary in order to protect interests of investors. According to Walker and Lefort (2002), in context of pension funds that make investments in companies, all contributors to the scheme may be considered minority shareholders. Because of potential size of pension funds, their representatives are likely to influence decision making process on a national level. Furthermore, due to their size and ability to coordinate certain actions in connection with pursuing their interests in owned companies a free-rider problem, common among minority shareholders may be reduced.

As the market develops and asset accumulation grows after pension reform, new financial expertise and specialization is required to adequately manage increased volumes. Management practices for handling securities of stock market would probably differ from those for managing banking system and are likely to complement each other. This requirement is further reinforced by probable emergence of new financial instruments as the gains to financial innovation grow together with capital market. For transition economies it means searching for expertise abroad if available.[5]

From broader perspective, pension reform and introduction of pension funds per se can take place under various (macroeconomic) conditions which participate in development of capital market. The set up of whole system codetermines whether funds boost the capital market or not. Adequate macroeconomic conditions differ from country to country but certain common underlying features tend to be similar. Identifying these conditions may enable us to better comprehend causalities of pension funds induced capital market development. Although some institutions/conditions need to be set prior to pension reform, others are evolving in the process of pension funds establishment. The most important are the following ones.[6]

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[5] Pension Reform in Chile took place in 1981 and available expertise for funded pension reform was rather limited at that time.

[6] Concurrent conditions as presented by Eduardo and Fernando (2002)

- Macroeconomic stability in a market environment

  Capitals markets operate as intermediaries of funds from various sources. Therefore well functioning credit market, non distorted fundamental prices, stable exchange rate and price levels are needed. It is also argued that pension reform itself can contribute to macroeconomic stability by easing economical and political pressure imposed by pa-as-you-go system as the reform requires substantial fiscal adjustment.

- Progressive capital control liberalization

  The extent to which restriction on capital flow freedom contribute to capital market development is debatable, but it is likely that the relationship is negatively correlated.

- Adequate regulation and competition in the financial services industry

  Too strict regulation of pension funds may greatly undermine their contribution to capital market development as well as limit competition in the sector.

- Property rights, bankruptcy legislation and investor protection

  Well defined ownership rights are to be present not only in connection with pension funds. Weak investor protection would overcharge securization for fund seeking firm thus undercut development of capital market.

- Privatization of state-owned companies

  Privatized, formerly state owned companies may be able to search for funding on capital market and that way boost the trading volume. This effect could be enhanced by pension funds participation

- Adequate tax incentives

  Development of any financial instrument greatly depends on tax incentives. It is a debatable question to what extent should saving through pension funds be tax favoured. Setting optimal taxation patter for pension fund is one of the key issues for pension reform and its contribution to capital market development.

Although the importance of these prepositions for financial market development may differ in their contribution to the process, undermining some of them may have severe implication for the efficiency of the market as a whole. During the evolution of capital market they complement each other and as they require further detailed description, for the scope of this paper I will pay attention to those closely related to pension reform, especially in connection with pension funds, to show what may support or on the other hand prevent positive effects of pension reform on capital markets.

From the perspective of pension funds I will focus primarily on regulation and taxation as they are in my opinion pivotal to the success of pension reform in terms of capital market development. Regulation controls the investment possibilities of pension funds which on the other hand influences development of certain financial instrument. Also regulation may control foreign investments and thus manage the extent of financial integration with the rest of the world.

Importance of taxation arises from incentives to save for retirement via pension funds especially in a case of voluntary nature of the scheme. If taxation of pension funds is not privileged to other forms of saving or is even tax disadvantaged than accumulation of assets of fund may not be sufficient to exercise any change on capital markets. This is true also for taxation of various financial instruments used by pension funds. Over taxation may by an obstacle in development of certain instruments weather pension saving is mandated or not.

3.1 Pension funds

This section describes means and link though with a funded pension reform can contribute to the capital market development. Funded pension reform goes hand in hand with creation of pension funds which in turn can have an overriding effect on the evolution of capital markets.[7] This section discusses the impact of pension funds on demand for capital market instruments, innovation, market structure, volatility and the overall development of capital markets. The impact on capital market development may differ from country to country especially concerning Anglo-Saxon financial model in some areas compared to countries with different financial structure. Although in long-term Anglo-Saxon modes of financing are likely to prevail as pension funds develop in countries that are in a process of implementing or undertaking pension reform on funded basis. Later in the chapter follows assessment of regulatory and taxation practices of pension funds as these elements have a significant impact on the operation of the funds.

3.1.1 Saving, Demand for Capital Market instruments

First, let us have a look at a way demand for capital market instruments is being created, following that potential accumulation of large assets by pension funds would require proper financial instrument to invest in.

There are several ways in which investors can influence demand for capital market instruments. Starting by increasing the total supply of saving, by influencing the rest of personal sector's portfolio distribution between bank deposits and securities and though institution's various portfolio choices.

When considering structure of savings, as argued by Smith (1990), effects on the supply of long-term funds are probably more important than effects on total accumulation. He suggests that institutionalization has a significant but not major effect of on total personal saving following that increased saving through institutions is largely offset by declining discretionary saving.

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[7] "Pension funds are defined as means whereby assets are accumulated to cover or provide collateral for pension benefits, in which context they act as institutional investors involved in management of assets on the capital market." (Davis (1998) p.5)

The main channels which could lead to an effect of funding on saving are taxation provisions and credit rationing. However the effect on saving of tax concessions that raise the return on pension saving is uncertain. For target savers it will lower saving, even if it encourages others to consume more in retirement through higher saving. The effect on saving that is present may rather result from liquidity constraints on (young) individuals who are unable to borrow in order to offset obligatory saving via pension funds early in the life time (see Davis (1995)).

It can be expected that even in a liberalized financial system, liquidity constraints will affect lower income individuals particularly severely, as they have no assets to pledge and less secure employment. That is why compulsory pension saving will tend to boost their overall saving in substantial manner. On the other hand saving by higher income households may be boosted by tax incentives which raise the rate of return to saving above certain level.[8]

The effect of pension saving on personal saving may be offset at national level by the impact of tax subsidies to private saving. However a shift from defined benefit to funded defined contribution would probably have a major effect on saving, given that the previous system has been shown substantially to suppress saving in many countries.

Abstracting from the likely increase in saving and wealth the prospects of financial growth in pension funds arise from differences in behavioural pattern from the personal sector that would otherwise hold assets directly. Pension funds' portfolios vary widely, but in most cases they tend to hold greater proportion of long-term assets compared to households (see Munnell and Yohn (1992)).

On the other hand, household sector tends to hold larger ratio of liquid assets than pension funds which could be partly explained by households' shorter time horizons. Meanwhile, following long-term nature of liabilities pension funds may focus on long-term assets yielding higher return. Yet pension funds also have a comparative advantage in compensating for the increased risk by pooling across assets whose returns are imperfectly correlated. The implication is that a switch to funding would increase the supply of long-term funds to capital markets as argued Davis (1998). Impact on

[8] The suggestion follows that up to a certain level of income, saving is of a target nature, which means to assure a minimum standard of living at retirement. This target level may be diminished by higher rates of return generated by tax concessions. It is only beyond a certain level of wealth that households are freer to reallocate resources so as to increase retirement consumption beyond this minimum level. Such saving will be sensitive to interest rate in the normal way, as individuals substitute future consumption for current consumption. (Bernheim and Scholz (1992))

reduction in bank deposits would be present as well, even if saving and wealth do not increase, as long as households do not increase the liquidity of the rest of their portfolios to offset growth of pension funds.

The consequence of these portfolio changes is that securities are in higher manner held by large, informed, risk-averse investors with low transaction cost. This is especially true for Anglo-Saxon countries (UK, USA) with lower portfolio regulation where adjustment to a change in returns is in general swift. In a presence of adequate information and proper fund managers' incentives, an efficient allocation of funds and accurate valuation of securities should imply. Davis (1986) in his study shows that the results differ for countries where transaction costs are high and portfolio regulation is strict (Germany, Japan, and Canada). The adjustment to change in returns is rather slow and fund allocation is undermined caused also by poorer information.

Finally pension fund induced supply of long-term capital market instruments may lead to a lowering the yield differential between bonds and equities thus making insurance of equities cheaper relative to bonds than was the case prior to pension funds creation.

3.1.2 Innovation

Development of pension funds has been closely related with process of financial innovation, presenting of new financial instruments and mostly has greatly stimulated demand for immunization strategies (matching assets to liabilities) based on long-term bonds. Duration matching as an investment strategy to immunize pension liability has stimulated innovations of financial instruments such as collateralized mortgage, zero coupon bonds or guaranteed income contracts[9] (especially in the USA or Canada) to match pension fund's needs. Increased interest in immunization strategies also facilitated risk sharing by contributing to innovation of markets for index options and futures.

On the other hand there is a suggestion (see Bodie (1990)), that fixed duration securities have little role in terms of household utility maximization as they are unable to hedge against the inflation risk to future consumption and instead of using immunization instruments they would just diversify, seeking to maximize return for a

[9] guaranteed income contracts offered by life insurers

given risk. The only difference arising would be in a case of tax free pension plan; there would be preference for the least tax advantaged securities such as corporate bonds.

3.1.3 Volatility of markets

Influence of pension funds on market volatility is still relatively in a realm of hypothesis and empirical research into this field is being done continuously. One possible source of pension funds induced volatility could by a regular performance check against the market as a consequence of principal-agent problems in fund management relation. Stein (1990) argues that interest of fund managers to perform at least at a level similar to "average" fund performance may lead to herding effects. Other reasons for herding might include generally available information to pension funds about each others' trade or fund managers could react to information they receive at the same time causing substantial portfolio shifts simultaneously.[10] On the other hand, herding may lead to desired effects on capital market. It could speed up adjustment towards equilibrium prices or correct irrational investment beliefs of individual investors.

Interview based empirical research of Hovel and Cozzini (1990) suggests that herding may be important for domestic as well as international markets. The development of markets like stock index futures and a growing proportion of allocated global assets by pension funds have stimulated considerable increase in short-term cross-border equity flows. Although trading with futures is a way for investors to reduce risk, the focus of funds on small number of leveraged instruments can lead to market deterioration and frequent changes in asset prices. The suggestion to prevent undesired market development is that international regulatory entities should tighten supervision of international security flow.

Another feature that could affect capital market behavioural may be the maturity of funds. The volatility may increase with fund's maturity as it causes fewer inflows to rebalance the portfolio as well as the need for shifts from equities to bonds in portfolios which in large volumes are potential destabilizing factors.

Volatility is more likely to occur in smaller countries or counties with lack of large domestic institutional sector such as pension funds that could help to stabilize

[10] For example reaction to news about market crash or another significant event.

markets by equalizing the effects of wholesale moves in or out of the market by foreign investors. Lack of such a sector may by one of the reason for relatively volatile markets in continental Europe, see Table 3.

Table 3.Volatility of equity prices (st. deviation of monthly price changes) 1963-1993 (%)

Country	1963 - 9	1970 - 9	1980 - 9	1990 - 3	1963 - 93
Germany	3.2	3.3	4.4	4.2	3.8
USA	2.6	3.8	3.7	2.9	3.4
France	3.8	4.1	5.2	4.7	4.5
UK	3.2	7.2	4.3	3.8	5.2
Japan	3.5	3.9	3.3	6.0	4.0

Source: Davis (1995)

3.1.4 Pension funds and Banking system

Raising activity of institutional investors like pension funds or corporate treasures in a wholesale money market represent a competition for banking institutions in providing resources to corporations. Growth in pension funds accelerated development of long-term funding and other investment instruments that are better suited for companies' needs. Developments in banking sector in US at the end of 1980s suggest that competition among banks and pension funds was further enhanced by large government deficits, privatization, improving trading technology and deregulation of domestic securities market (see Davis (1995)).

Banks facing these new challenges were forced to focus on an off-balance sheet activities and fee earning strategies in order to optimize their earning and share under these conditions. Enforcing their position in previously successful segments (e.g. mortgage lending) and concentrating mainly on high risk borrowers was the way how to maintain profitability.

Bodie (1990) points out that higher risk lending and operating on unfamiliar markets also increases risk to banks. If banks want to protect from risk adequately then risk evaluation should by accurate. Such protection strategies should include sufficient reserves to cover loan losses or in case of insufficient information about borrowers some quantity rationing about credit provision. Finally diversification as a tool for reducing idiosyncratic risk should be applied in a reasonable level. This should level the

risk for the banks with the market risk in a maximum extent possible. If in some cases major losses should occur that would suggest inaccurate risk pricing or quantity rationing. The reasons for this could rise from accurate risk pricing ex ante, but unexpected developments generating losses ex post, intended inaccurate risk pricing to gain competitive advantage or errors in credit assessment.

The role of banks in a market along with developed institutional investors like pension funds can be seen in various contexts. Fist, although there may be an excess capacity in banking sector, but there will be a need for depositary institutions making loans at fixed terms. On the other hand there are arguments (see Munell (1986)) that all banks' roles can sufficiently by substituted by institutions such as pension funds, life insures and others operating via securities markets. The evidence is supposed to be securitization of personal loans, the development of corporate banking and treasury operations, the ability of securities to serve many corporations and others.[11]

Still there are areas where banking system seems to be in advantageous position. For example in providing resources to small firms where they seem to be more successful in overcoming asymmetric information compared to security market intermediation.

3.1.5 The Development of financial systems

Pension funds evolved in countries with different level of securities market development. Financial model in the US where the capital market is the major source for corporate funding, contrasts with the setup of continental Europe. This implies that the contribution of pension funds to capital market development varies country to country. There also arises question of which comes fist as especially in the US the securities market is already well developed and under this conditions pension funds have arisen. Table 4 shows capital market situation with respect to pension systems in selected countries.

Pension funds per se could have foundation in loans or property investment but their greatest comparative advantage is in the capital market. Trading and risk management are handled more efficiently in capital markets where transactions costs are lower (see Davis (1995)). If for example one of the incentives for development of

[11] This is particularly evident in Anglo-American countries.

protection in retirement is income equalization, demographic or social changes, this may in a case of well developed capital market lead to expansion of funded schemes. In a system where banks play major role countries might incline to more generous social security scheme.

Table 4.Capital markets in countries with pay-as-you-go and funded pension systems

		Pay-as-you-go systems				Partially funded systems		
	year	France	Germany	Italy		Netherlands	UK	US
Stock market capitalization (% of GDP)	1995	32,6	23,9	19,3		72,1	121,6	95,2
	1998	68,1	50,9	47,5		153,5	168,2	144,9
	2000	111,8	67,6	72,3		174,3	183,8	153,3
Assets held by institutional investors (% of GDP)	1995	77,7	45,3	32		154,5	164	151,9
	1998	107,3	66,1	79,6		193,2	203,6	192
Assets held by pension funds (% of total assets of ins. investors)	1998	N/A	5	5		58	38	37

Source: Borsch-Supan, Koke, Winter (2004) p.29

In private funded schemes the assets are being built up while they are maturing and this stimulates the development of securities market[12] and may increase market efficiency which contrasts with pay-as-you-go scheme where an immediate transfer to those who have not contributed is likely prevail.

Concerning real returns, pension funds should contribute to development of equity markets which in turn are being seen as favourable in providing risk capital for companies. Such a provision further diminishes dependence on banks' funding. As seen on Table 5, certain level of correlation between equity market capitalization and the size of pension funds is present.

[12] This effect is partially offset if agents reduce security holding or are saving differentially in case of funded and pay-go pensions.

Table 5.Pension funds and capital market capitalization

Country	Assets as percentage of GDP	Equity market capitalization as a percentage of GDP
USA	51	74
Germany	3	25
Japan	5	93
Canada	32	45
UK	60	99
Netherlands	46	42

Source: Davis (1995)

The question remains what should force pension funds to focus on equities. Lusser (1989) stresses flexible accounting rules and lesser portfolio regulations. Guaranties for shareholder rights are also needed in order for pension funds to hold equities willingly. On the other hand a dominant pension fund sector should ensure that shareholders maintain adequate treatment.

However experiences in some countries do not support ideas that there is a direct relation between pension funds and equity market development even in a condition of appropriate regulation. That is true especially in a case of very risk-averse strategy of pension funds.

3.1.6 Cost of capital reduction for firms

Iglesias (1998) argues that fully funded pension system may lead to a reduction in cost of capital for firms. This effect should arise from the accumulation of financial savings instead of savings of other types. In an absence of financial intermediaries private savings can take form of non financial equity.

From another point of view presented by Walker and Lefort (2002), lower cost of capital may arise from other reasons; namely lower direct cost of issuing securities, lower term/liquidity premium and lower risk premium.

As the capital market develops and the number of securities is rising as well as new ones may arise, cost of securities issuing tends to be lower what in the end results in reduction of capital cost. An alternative look at this point follows rather indirect approach in explaining low cost of issuing securities. If issuers are issuing large amounts of securities for which they have a buyer, they are probably satisfied with the required rate of return otherwise they would not issue such securities. In addition

potential lack of investment alternatives by pension funds may reflect rates of return which would be lower in time of insufficient investment possibilities.

When considering lower liquidity premium, time horizons of pension funds tend to be longer than those of households or firm in terms of investments in financial instruments. In contrary to a short-term nature of household and firms'[13] investments, pension funds are more willing to invest in instruments with longer maturity because on aggregate level large portion of their portfolio does not need to be liquidated in short-term horizon. From this the introduction of pension funds should contribute to lengthening of average maturity of financial securities causing decrease in liquidity premium.

Finally, lower risk premium should arise from an increasing average risk tolerance of the capital market. The reasoning behind this statement lies within an assumption that as pension funds administer members' savings, absolute volatility is not expected to have a direct effect on the welfare of managers which would be more willing to accept higher risk.

All this could be enhanced by wider possibilities of financing alternatives as the number of financial instruments is likely to grow due to demands of developing capital market. If a firm is able to obtain an optimal mix of financing sources, in long run "residual losses" of issuing securities may decreases because of more efficient risk-sharing mechanisms.

Reduced cost of companies' financing via equity and long-term debt financing may further lead to more productive capital formation if of course allocation of funds is directed to the most profitable uses and adequate shareholding monitoring of the investment projects is available.

3.1.7 Financial market integration

Obstfeld (1994, p.35) shows that integrated capital markets allow for higher growth via better risk sharing mechanism: *"international risk sharing can yield substantial welfare gains through its positive effect on expected consumption growth."*

[13] Firms whose operation is not in financial business make usually short-term investments into financial securities.

Table 6.Gains from International financial Integration, as a percentage of wealth

North America	South America	Central America	East Asia	non-East Asia	Northern Europe	Southern Europe	Asia
124,5	238	299.1	22.6	478.4	61.1	98.8	463.4

Source: Obstfeld (1994) p.34

From a different perspective, since pension funds may become large relative to the size of domestic capital market, they would likely use their position also in cross-border investment strategies to improve their asset allocation. Of course this improvement in financial integration needs to be supported by legislation following that many transition countries prohibited pension funds' investments in foreign securities in early stage of their pension reform.[14]

For cross-border investment to be effective, institutional environment needs to support sufficient level of transparency, liquidity and better protection of minority shareholders. If pension funds in a country evolve without evident difficulties, it is likely that the above requirements would evolve along with them as the investors' environment develops.

3.1.8 Liquidity, transaction costs, price volatility

Increased liquidity supports investments with long-term horizon because investors can easily sell their share before the maturity should such a need arise.

"...more liquid stock markets -- markets where it is less expensive to trade equities -- reduce the disincentives to investing in long duration projects because investors can easily sell their stake in the project if they need their savings before the project matures. Enhanced liquidity, therefore, facilitates investment in longer-run, higher-return projects that boost economic growth." (Levine and Zervos, (1998), p.1)

Higher possibility of long-term investments contributes to economic growth as more investment projects can take place at one time. Together with economies of scales and improved methods of handling increased transactions, transaction costs are likely to decrease.

[14] Pension reform in Chile took place in 1981 but pension funds were not really allowed to invest abroad until 1994.

Expected decline in price volatility should arise from wider base of investors like pension funds in creation of more adequate analyses and better access to information. From this, security prices should fluctuate more closely to fundamental values.

Another approach explaining decrease in security price volatility presented by Walker and Lefort, (2002) is based on the time dimension of pension reform. Correlation of security returns worldwide can be partially explained by variation in required risk premium. If domestic pension funds' risk tolerance is considered constant in time than making transactions based on changing risk premium can be advantageous for funds (Purchasing securities with high risk premium and selling in the opposite case.) This way price volatility would be lower thanks to pension funds' cross-border trading.

3.1.9 Implications of Pension Funds for Financial Structure

Growth of pension funds can affect financial system in a more elementary level. Countries of continental Europe usually have strong dominance of bank sector with strong relation between banks and corporations with privileged information unavailable to other investors. This is sometimes seen as an advantage that gives firms accessibility to long-term financing for investments and having banks as a last resort support in a case of difficulty. On the other hand the drawbacks like questionable allocation mechanism, preference for insider control, informal rather than rule based system in financial relations are apparent right away. Davis (1993) argues that if regulation of pension funds in European counties would be optimally set and funds would be willing to invest in equity, their independence from banks might weaken banks' position and the financial system could lead to convergence towards the "Anglo-Saxon" model.

If the effect of this presumption is found to be strong enough then the influence on corporate finance could be enormous. Equity holders would by seen as the real owners of the companies, compared to current state when they "share" the ownership with creditors and other stakeholders. Firms would be under pressure of higher dividend payments, grater information provision, improving managerial efficiency, equal treatment of shareholders and others. For successful implementation of these measures the pension funds would require laws common in Anglo Saxon counties, i.e. take over codex, insider information restrictions, minority shareholder protection or bankruptcy laws to protect creditors in unfavourable circumstances.

Strong pension fund sector may allow access to funding for firms that have trouble in finding resources in banking sector or on the other hand may help reduce cost of loans. Many firms in continental Europe are already adopting standards of Anglo-Saxon pension funds in order to gain access to international equity financing. Most Countries are developing their own regulations in this area but growing influence of pension funds should speed up the legislative process.

Pension funds are likely to enable large enterprises to access securities financing but small firms will be probably still dependent on banks' resources. The degree to which pension funds are able to substitute banks' role remains questionable though. Inclination towards securities market financing would require changes that would weaken banks' leading position in resource lending arising from privileged information and ability to control firms. On the other hand banks' position could be to certain extent protected by ownership structure even in a case that pension funds would really induce changes leading to dominance of capital market funding. That would be in a situation when the majority of pension funds is managed by banks thus the characteristics of Anglo-Saxon system would not be fully introduced. However, strong competition from the USA would probably deteriorate even this potential situation.

To summarize, this chapeter illustrated through what means may funded pension reform contribute to developments on financial markets. Although the contribution of saving though pension funds to saving at national level is not always obvious (more on this in the next chapter), the long-term nature of pension saving alters the structure of saving composition. Funds are searching for investment opportunities for their accumulated assets which facilitates introduction of new financial instruments or enhances usage of the existing ones usually with higher maturity. New financial instruments or pension funds' investments into equity may be advantageous for companies as their reliance on banks is likely to get lower. This applies primarily to large corporations as they have better preposition to attract investors. The reliance of small companies on banks is expected to remain unchanged. Further, cost of capital for companies may be lower arising from lower risk and liquidity premium.

Potential large size of pension funds may facilitate cross border investments thus improve financial integration which may further contribute to capital market development and economic growth.

For positive effect of pension funds on financial structure to appear, proper regulation and taxation is required. Next chapter highlights taxation and regulation from rather theoretical point of view with some examples of practical approaches worldwide.

4 Taxation and regulation of pension system

4.1 Taxation of pension system

Taxation of pension funds influences their behaviour in a sense of their investment strategies and their operation or the market in general. Optimal setup of taxation may speed up the process of financial innovation and substantially contribute to capital market development.

Taxation of funds used for retirement purposes usually differs from other types of saving. The idea is to stimulate people to adequately save for retirement. Preferential tax treatment for pension funds can have a major impact on patterns of asset accumulation and on capital markets. Lack of tax advantage may be a reason for negligible development of pension funds in certain countries. There are alternative tax regimes for pension funds to consider. Thinking of a tax as a feature that distorts incentives, searching for the best tax regime that causes the least distortion is an important issue here.

4.1.1 Regimes for taxation of pension funds

As presented by Dilnot and Johnson (1993), taxation of pensions may occur at three stages i.e. when contributions to the scheme are paid, when investment income is earned and when retirement benefits are paid out. Combination of these three gives a rise to taxation following two distinct principles, the "expenditure tax" and "comprehensive income tax" respectively. In the former the post tax rate of return equals the pre tax rate and consumption is taxed at the same rate now and in the future. Expenditure tax regime can further be divided into subcategories of "taxing contributions only" and taxing "benefits only" where when asset returns are left to accumulate tax free, the outcome of taxation should be equivalent. This however might not always be true stating that taxation in "taxing contributions only" will be lower than in "benefits only" because of tax deferral, following that progressive taxation will be lower on lower post retirement income and pre tax rather than post tax income is available for investment when deferment is taken into account.

On the other hand "comprehensive income tax" regimes where investment income is taxed as well as contributions or benefits the income is taxed regardless of its source. Saving is seen just like another commodity; consumption, thus "comprehensive income tax" maintains neutrality between these two. However the drawback of this regime is that it tends to reduce incentive to save by rendering pre tax rate of return above post tax rates. Besides that a problem with inflation may occur. If capital gains are taxed in an index manner and income is not, there will a distortion towards assets providing capital gains.

4.1.2 Proper taxation of pension funds

As noted earlier the objective is to choose taxation with lesser negative distortion effect together with the aims the governmental body is reaching for. The choice between income and expenditure taxation lies within two distinct options the optimality is being searched for. It is either between consumption and saving or between consumption at different points in time. If saving for retirement is not perceived like a "standard" commodity but like an intermediate good that represents future consumption the consumption and saving approach seem to be more appropriate. From this the "expenditure tax" model is likely to be more suitable for pension funds as it taxes consumption at the same rate regardless of time and keeps the equality between pre and post tax returns. Inflation and other difficulties with "comprehensive income tax" model mentioned above support this view.

Although "expenditure tax" regime appears to better suit taxation needs of pension funds, in its purest form it does not favour saving for retirement compared to other types of saving. The question remains whether saving for pensions should be favoured or not. There are more arguments for supporting pension funds in means of taxation, i.e. to assist people to save enough for retirement, to raise general level of saving and finally that pension funds are superior to other types of financial institutions.

The fist argument suggests that people are myopic and are not generally able to assess their needs in retirement or are prone to moral hazard assuming the state would take care of them even if they do not save. Also other types of saving are more attractive to individuals as they can usually be de-cumulated when needed or used as

financial collateral in contrary to long-term pension saving.[15] Study of Diamond (1977) shows that people in the USA really do not save sufficiently for their pensions when the incentives are not strong enough. Pension funds tax advantages or exemption may be substituted by compulsory saving but this approach is likely to create distortion in scheme members' utilities as it restricts choice options.[16]

The second argument that saving through pension funds raises aggregate level of saving in economy is ambiguous. Governmental incentives to support pension saving may induce downward shifts in other aspects of personal saving. Tax incentives for saving through pension funds causing higher yields may boost aggregate saving if the substitution effect from present to future consumption of the higher returns exceeds the income effect which on the other hand reduces saving. Yermo (2005) argues that myopic savers and those well enough to consider retirement consumption a luxury good would be influenced in terms of pension saving by such stimuli, but for those who are already saving equivalent amount to support themselves in retirement there will be an income effect but no substitution effect and their saving will decline.

Survey carried out in the US and UK suggest that growth in funded pension schemes is being only partially offset by declines in other components of personal saving. For example Study of Munnell and Yohn (1992) suggests that for every unit increase in pension fund assets there is an increase in personal saving of about 0.35 while the public cost caused by pension funds tax incentives is offsetting the benefit on a national level to about 0.2. The imperfect offsetting is most probably caused by deficiencies in capital market and individual borrowing constraints.

As to the superiority of pension funds as another argument to support saving via this channel the argumentation is rather vague. Pension funds themselves are often run by other financial institutions so the relevant line of reasoning could be made on basis of pension funds' provision of long-term funds to the capital markets, improving management of corporate finance[17] or help in economic development as such. On the other hand their lack of ability in providing funds for small firms due to illiquidity and lack of marketability of small firms' shares is major flow in this argument. Although

[15] Saving via pension funds is usually carried out by long-term contractual annuities with limited adjustment options.
[16] In practice compulsory funded pension saving can be found in more countries with two-three pillar pension system, especially in courtiers formerly based only on PAYG system.
[17] Growing importance of pension funds in equity investments and thus administrating better control over corporate management.

this may be true also for other institutional investors it may by particularly disadvantageous for pension funds in countries with dominance of bank sector which has comparative advantage regarding this issue.

In general pension funds tend to be given preferred tax treatment in many countries with funded pension scheme. This supports accumulation through pension funds both for employees and employers[18] but on the other hand also creates distortion between other types of saving. Considering arguments for pension funds preferred tax treatment stated above and taking into account people's limited rationality about future retirement needs is this paternalistic behaviour of government rather desired.

4.1.3 Taxation of pension funds in practice

Governments follow policies that should encourage reliable savings for retirement by households though various tax incentives. In the United States these include IRAs or 401(k) plans for retirement saving and various preferential tax treatments for selected accounts (life insurance products) in other countries. Although this is undoubtedly a positive trend, sometimes complexity of tax schemes and their frequent changes work in opposite direction than initially intended thus hampering the promotion of long-term saving and introducing new financial instruments.

As argued by Visco et al. (2005), very common obstacle in continuous saving by pension funds has been a funding level limit bringing tax disincentives or even penalties to funds that have become overfunded. This was very noticeable in late 90s as capital markets worldwide performed extremely well and so did pension funds; their overfuding lead to "contribution holidays" as over-limit saving was discouraged in terms of taxation. Lack of sufficient asset build-up left many pension funds more sensitive to market decline at the end of last century.

[18] Funding for pensions by employers becomes more economical; employees enjoy tax deferral in saving.

4.2 Regulation of pension system

Regulation of pension system is a very complex matter that requires careful approach at its implementation. First few paragraphs deal with regulation of financial markets from a wider perspective considering its pros and cons. Further on follows assessment of pension funds' regulation and its influence on funds' performance.

Market failures are the major economical justification for public intervention in their behavioural. Lack of Pareto optimality in stock prices requires adequate regulation to overcome difficulties with key market failures in this sector like information asymmetry, externalities and monopoly. Overcoming information asymmetry is especially difficult and costly for a "common" user of financial services. The risk of exploitation and fraudulent behaviour is lesser of a problem for wholesale users, e.g. pension funds in dealing with investment banks which have more resources and higher interest in obtaining relevant information. Certain protection against unfair treatment comes from the objective of financial institutions to build up and retain good-will but this attribute although important; its impact is rather limited. Therefore availability of detailed information about accounting and other financial flows is required.

Apparent potential externality in financial markets is a risk of run on banks when a bankruptcy of one bank leads to failure of others. As argued by Davis (1995) this is caused either by credit linkages among banks or "general" fear of depositors that other banks may be in difficulty as well. As regards pension funds due to a long-term nature of provided services they are less prone to such externality but there are others that pension funds are exposed to on a larger scale. Especially externalities from failure of pension funds in context with the state acting as a guarantor charging insurance premium that is unrelated to risk or as a provider of pensions to those who miss them. Above all positive externalities of pension funds like improving certain macroeconomic indicators or in particular contributing to capital market development may encourage governments to support their development.

Finally the tendency to create strong (monopoly) market position as another market deficiency is in case of pension funds particularly relevant in case of mandated contributions. In such a case and without proper regulation employers offering pension funds to their employees would be prone to manage funds in accordance with their own interests as well as making tedious vesting rules for their workers. Yet they would

probably want to use pension assets at their discretion regardless of the risk of the bankruptcy or would be reluctant to take care of specific groups in society like disabled, women with small children, young workers and others (see Altman (1992)).

Besides financed based approach to pension funds regulation there could be found other intentions for tighter administration of these institutions. It can be argued that regulation should ensure that tax benefits are not misused and that objectives of equity, adequacy and security of pension arrangements are achieved regardless of financial aspects.

Regulations themselves come with a cost; overregulation may limit provision of private pension saving when contributions are voluntary and undermine competition in case of compulsory saving.

Table 7 shows that strong portfolio regulations offer lower returns than prudent man rules, although with lower volatility. Prudent man rules also have the advantage of flexibility as they can develop through time according to the market needs. Looser portfolio regulation may encourage other benefits to the economy through higher inflow of international or risk capital. Portfolio regulations are prone to political pressures like compulsory holding of governmental bonds. Limitation of international investment unnecessarily tightens pension funds to performance of domestic economy. Its complete prohibition might potentially lead to diminishing returns if domestic investments of pension funds become critically large. On the other hand stiffer regulation could be reasonable in emerging economies with higher market risk, underdeveloped market investment where prudent man rule might lead to undesired volatility and capital movements in funds' performance or to a risk of short-termism.[19]

[19] Short-termism: "Short-term pressures are defined as factors which tend to increase the rate of discount applied and/or which may foreshorten the time limit of revenue and capital investments. Accordingly, short-termism occurs where a firm, or some of its managers, applies an excessive discount rate or a foreshortened time horizon to investments. Revenue investments are particularly susceptible to S-TP because these expenses are charged to the profit and loss account of a period, having been incurred wholly or partly in order to enhance future profitability without affecting current trading." (hed.thomsonlearning.co.uk)

Table 7. Returns on pension funds' portfolios 1967-1990 (%)

	Mean (st .deviation)	Regulation
USA	2,2 (11,9)	Prudent man; 10% self-investment limit for DB funds
UK	5,8 (12,5)	Prudent man; 5% self-investment limit, concentration limit for DC plans
Germany	5,1 (4,4)	Guidelines; maximum 20% equity, 5% property, 4% foreign, 10% self-investment limit
Japan	4,0 (9,4)	Guidelines; maximum 30% equity, 20% property, 30% foreign, 10% self-investment limit
Canada	1,6 (9,8)	Prudent man; tax on foreign assets over 10 %, 7% limit on property
Netherlands	4,0 (6,0)	Prudent man; 5% self-investment limit
Sweden	0,2 (7,6)	Majority to be in listed bonds, debentures, and retroverse loans to contributors
Denmark	3,6 (12,7)	Property, shares, and investment-trust holdings limited to 40 %, foreign assets to 20%; 60% to be in domestic debt. No self-investment
Switzerland	1,5 (6,4)	50% limit on domestic shares, 50% on property, 20% foreign-currency assets
Australia	1,6 (14,7)	Prudent man

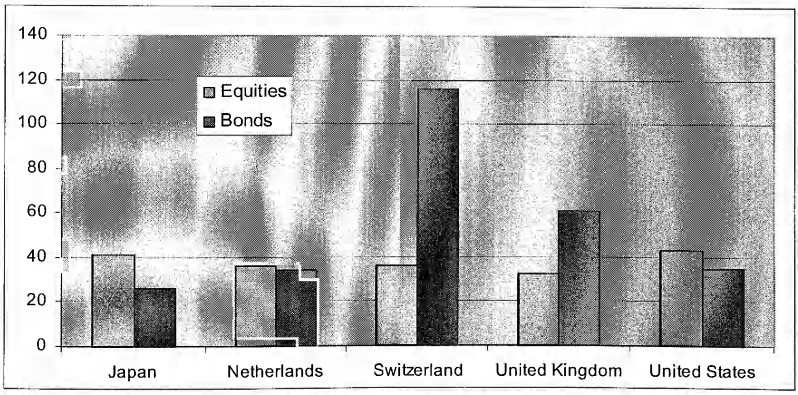
Source: Davis (1995)

5 Recent developments in pension fund industry

This chapter outlines recent developments in pension funds in countries where funded pension scheme is already established, what enables us to better empirically assess contribution of funds to capital market developments. Later on follows a description of new or improved financial instruments that evolved according to investment need of pension funds. A supply of new instruments enriched capital market improving utilities for all market participants.

Due to demographic change it is expected that pension funds' services will continue to grow what requires more focus on appropriate investment strategies and adequate management practices. At present aggregate pension fund assets correspond to 20 and 10 percent of equity and bond market capitalization respectively in most developed countries (see OECD (2003)). Figure 2 depicts their assets holding in relation to the size of domestic markets. Their growing importance not only in these markets creates new challenges arising from changing regulatory and accounting policies and requires more responsible approach to pension funds asset/liability management.[20] As governments need to improve ongoing pension systems to better suit retirement needs the pressure to shift from defined benefit towards defined contribution schemes would be more obvious.

Figure 2.Pension fund holdings in relation to the size of domestic market, 2003 (%)



Source: Visco et al. (2005) p.20

[20] Ensuring that liabilities are covered by sufficient assets at all times.

Despite rather general consensus about importance of pension funds in overcoming ageing problem, their significance differs substantially across developed countries. This is to great extent caused by different approach to pension finance handling within states (Table 8). Especially developed pension funds are found in the United States, United Kingdom, Canada and Switzerland but their importance has been growing with time in other countries as well.

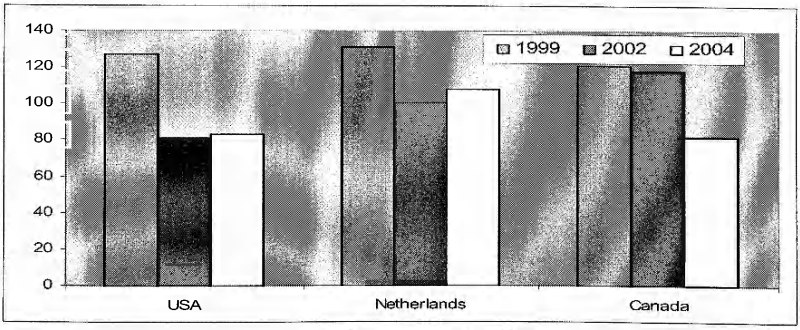
Table 8.Pension fund's importance varies considerably across time and space (pension fund assets in percent of GDP)

	1990	1995	1996	1997	1998	1999	2000	2001		2004*
Canada	29	39	42	44	48	46	48	48		52.1
Germany	3	3	3	3	3	3	3	3		3.8
Italy	3	4	3	3	3	5	5	4		2.6
Japan	12	15	15	16	16	19	19	19		14.2
UK	50	68	69	79	79	88	79	66		65.1
Switzerland	56	-	80	-	98	-	105	114		111.6
US	42	57	61	67	71	74	69	63		95

Source:OECD (2003), *OECD Global Pension Statistics

Magnitude of funds in developed markets raised throughout nineties with rise in equity prices, many countries experienced high increases in funding ratios of defined benefit plans in some cases well above 100 percent (Figure 3). Based on previous performance the calculated projections expected equities to earn sufficient equity risk premium above projected fixed income returns what further boosted investment in this direction.

Figure 3.Declining funding rations of DB plans (%)



Source: Visco et al. (2005) p.22

This continued till the beginning of the century when the equity market worldwide fell sharply and so did ratios of pension funds which became heavily underfunded.[21] At the same time market interest rates widely used as the basis for discounting liabilities fell creating "perfect storm" for pension funds.[22] This was magnified by slow growth of bond assets and a fast growth of liabilities mostly because liabilities' duration was generally much longer. Finally as the equity fall caused underfunding of pension funds, decline of bond return is estimated to have at least as important effect.

Since 2002 when the equity market collapse ended, pension funds did not regain their previous funding level up to date. In 2003 and 2004 equities again experienced relatively strong returns which were largely offset by continuing decline in bond yields.[23] Funds' position has not been eased by scaling back benefits while they were usually restricted to do so because off legal constrains.[24]

Influenced not only by these developments many countries considered a move from direct benefit to direct contribution schemes which more exposes fund participants to market and other risks. Apart from risk redistribution direct contribution schemes enhances funds sustainability and provides flexibility for those employees who seek better transferability of pension benefits. This led to creation of hybrid plans by companies incorporating elements of both DB and DC plans where employer bears responsibility for at least a minimum guaranteed return risk and employee is given a choice of lump sum or annuity pension benefits withdrawal at retirement.[25]

To enable pension funds to level off their funding certain countries reached for short-term measures which should help them to cope with the underfunding problem. For example in the UK government relaxed Minimum Funding Requirement test in 2002, in the United States, the 30 year bond used as a discount factor was momentarily replaced by a corporate bond yield in 2004 and 2005 or in Netherlands were pension funds among others asked to raise contributions to restore their funding ratios.

In effort to keep pension funds in their viable state, changes in accounting practices are being seen as one of the most important factors affecting investment risk and overall performance of pension funds especially in terms of a transition from DB to

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[21] In many cases equity allocations of fund were 60% and more.
[22] Hewit Investment Group (2001) and Custis (2001) in Ignazio Visco et al. 2005
[23] Studies of IMF (2004) show that DB plans of companies in the USA were on average 82 percent funded at year end 2002 and recovered only to 86 percent at year end 2004.
[24] For Example in the UK indexation is in a requirement since 1997.
[25] Benefits may be expressed in terms of an account balance what mimics DC scheme.

DC or hybrid schemes. As a response to changing international accounting standards like "International Financial Reporting Standards" and market based, fair value principles, listed firms now have to include liabilities in their financial statements which may induce greater fluctuations in current assets or liabilities values and hence can substantially alter companies' short-term earning report. From this, companies can search for new investment possibilities mainly in short-term horizon.

Overall, difficulties with underfunding and structural changes in basic nature of pension schemes together with enhanced accounting proposals require managers to cautiously asses pension benefit promise to participants, review investment strategies and put higher focus on overall asset-liabilities management.

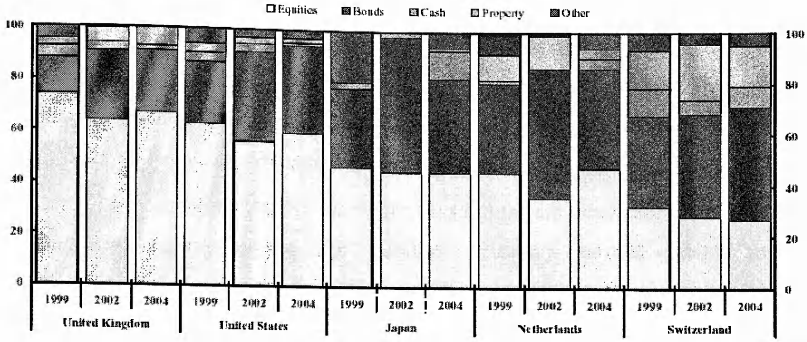
5.1 Implications for financial markets

Changes in regulation and financial accounting in recent years have exposed pension funds to short-term market movement in greater manner than before. As pension funds and their sponsor companies are facing increased volatility in their account statements they tend to adjust their investment strategies in order to "smooth out" the movement in funding levels usually by decreasing investment time horizon. Also regional market characteristics are important in determining investment behavioural of pension funds like for example lack of desired investment opportunities or shortage of certain investment instrument may limit choice for the fund to reach optimal asset allocation.

5.1.1 Bonds vs. equities

In accordance with recent development regarding pension funds and their experiences with equities and bonds investment, there arises a question whether massive shift from equities to bonds in funds' portfolio may have an impact on capital market development. Equities nowadays represent about 50 percent of portfolio composition in many countries (Figure 4). As pension funds and their sponsor companies seek to reduce funding risk and accounting volatility they may be prone to significant reallocations of assets in favour of bonds.

Figure 4. Asset allocation of pension funds, 1999, 2002, 2004 (%)



Source: Visco et al. (2005) p.27

Potential large reallocation of assets in this sense may affect capital markets and asset prices in short-term, although its impact is not easy to estimate following that massive occurrence of such shift is not very likely and can be expected in rather long-term horizon.

Estimates of Morgan Stanley (2004) and Goldman Sachs (2004), suggest that a sudden shift towards bonds would in the United States lead to transitory drop in equity prices of 10 to 15 percent and reduction in yield of U.S. Government bonds of 75 to 150 basis points, while others estimate only one percent decline in equity price and 10 basis points in bonds yield. It is also necessary to point out to recent low level bond yields which are by some analysts (BIS (2005)), partly caused by growing demand for such securities worldwide and this is being demonstrated as a potential influence of pension funds on financial markets.

Likelihood of a massive equities-bonds shift to some extent depends on investment strategy that pension funds managers would be willing to adopt as there is no consensus among investment expert on what optimal portfolio should consist of. According to IMF (2004), advocates of equity oriented investment argue that from a long-term nature of pension funds, preferring equities and their higher risk premium would in long run outweigh risk associated with short-term volatility and in the end provide for higher yield than bonds. On the other hand the argument in favour of bond investment follows that as the pension fund's liabilities represent future flow of payment obligations which are strongly similar to a portfolio of fixed income

obligations; bonds offer the highest certainty that pension funds will meet their agreements. In addition, pension funds and sponsor companies should only be interested in investment that are related to "saving" business and reject opportunities with unnecessary risk. These opinions are getting more popular what can be seen on recent behavioural of funds in many countries.[26] Equities market decline in 2000-2002 might be the trigger to such a development.

Apart from bond and equity suitability debate there are other initiatives towards investment strategies in pension funds that could influence financial systems across countries. In accordance with portfolio investment theory, funds' managers try to diversify across various assets to optimally balance risk and return. This includes rather "unorthodox investments" aiming for less correlated returns such as real estate, private equity and popularity is gaining investment into hedge funds although these investments represent only small part in funds holding in absolute terms.[27]

5.1.2 Financial instruments for pension funds

Pension fund managers face new challenges on a market and focus more on assets liabilities management what creates need for new financial instruments that would help them to deal with longevity, duration, inflation and other risks. Most of these instruments already have their place in countries with developed capital markets although they are still in a process of evolution and some of them might need further adjustment to region specific needs in countries considering pension reform.

Long-dated bond market providing "standard" instrument for pension fund investment remains relatively small compared to the size of pension fund industry of major economies. Although bonds with maturity up to 10 years are quite common, investment in bonds of 30 years and more is rare even in United States which has the most developed long-term bond market. In Europe the situation is similar what could be

[26] To state and example, UK pension fund "The Boots" shifted entirely into fixed income instruments in 2000 from a prior position of holding 75% of assets in equities (European pensions & investment news).
[27] This share represents 10 to 15 percent of aggregate pension holding in USA, but the number of funds including such investments in their portfolio is raising, especially in Japan (from 18 percent in 2003 to 40 percent in 2004 of all institutional investors), Greenwich Associates (2004).

caused by lack of very long dated bonds on this continent.[28] For example 50 year bonds were issued in France and United Kingdom not until beginning of year 2005.

Reluctance of companies to issue these instruments keeps bonds market unbalanced causing relative shortage in most countries (Table 9). This is also true for index-linked bonds, supply of which does not meet potential demand. Governments are aware of rising demand for inflation hedging bonds and some countries have taken concrete steps at supporting or introducing them. For example, Japan issued index linked bonds in 2004 with maturity of 10 years and is ready to endorse this instrument. The situation is similar in Germany where the government issued its first index-link bond in 2005 (see Visco (2005)).

Table 9.Potential demand for long-term and indexed bonds

		Current supply		Potential demand	
		Corporate and gvt. Long-term bonds	Inflation indexed gvt. bonds	Pension fund assets (2001)	Pension fund assets assuming 75 % allocation to bonds as a percent of long-term and inflation indexed bonds
USA	2000	1.143	115		
	2004	1.266	223	6.136	309
UK	2000	144	99		
	2004	241	155	954	181
France	2000	74	12		
	2004	178	92		
Italy	2000	81			
	2004	241	28	47	15
Japan	2000	250			
	2004	427	22	711	119

Source: Visco et al. (2005) p.32

The demand is steep also in countries with mature index-linked bond markets like United States, United Kingdom, Canada or France what goes hands in hand with requests for derivative product that would minimize inflation, interest rate and other risks. To deal with duration matching a swap market may be a good way to enable funds to reach a targeted cash flow profile.[29] Higher liquidity of cash markets for indexed bonds could expand derivative market for hedging inflation.

[28] An exception is Switzerland which has a strong tradition of investing in government bonds of maturity 30 years and over.

[29] Certain investment strategies include full swap portfolio overlay to keep asset-liabilities balanced in term of duration.

5.1.3 Investment instrument for personal pension plans

Pension reforms and changes in the industry are relevant from financial stability point of view especially in a case of growing size of pension funds as well as transfer of risk from government to employees as a result of shift from DB to DC schemes. Apart form noted causes of market volatility (like herding effects) there raises a question whether households are ready to understand and manage higher risk and choice concerning their future pensions.

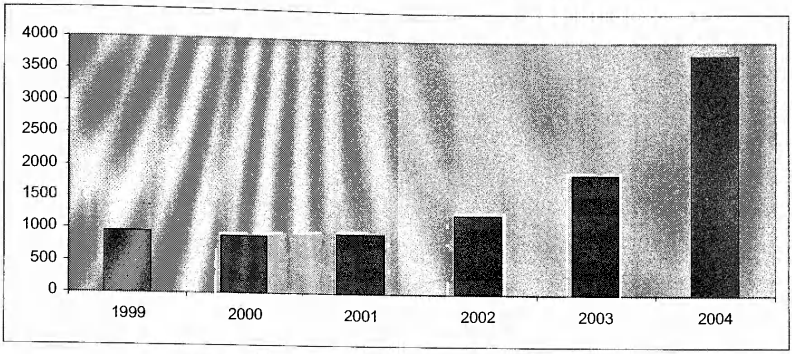
The availability of instrument specially designed to meet saving needs of households is important in diversifying risk although some risks like longevity or risks of "force majeure" are difficult to cover in financial market and active role of government in overcoming them may be required.

Investment products for personal pension plans intended mainly for so called 3rd pillar are being developed primarily in countries with history of DC saving schemes but it is expected that their importance will grow also in countries with recent or potential pension reform. Some of them known in the United States and Western Europe as a "Life cycle" products try to automatically adjust asset allocation to a more conservative profile as a scheme participant approaches retirement age. The idea is to theoretically reduce risk tolerance with the maturity of a product.

Other structured products offering various risk-return profiles became popular mostly in Asia and continental Europe as a response to drop in equity market in 2000-2002. Such products enable participants to take advantage of greater diversification as they offer higher scope of investment. However complex products may complicate households' understanding and assessing overall risk.

Popular, especially in the United States are instrument called "reverse-mortgages" that try to "dissolve" retiree's accumulated wealth in housing (Figure 5) They represent an annuity-like income (see bellow) for a participant. Instruments concerning mortgages are unique in a way that housing represents saving and consumption at once so financial instruments that combine these two features may play important role in retirement saving. One of them could be a hedging instrument against real estate price movement what could facilitate investment by both current property owners and potential buyers.

Figure 5.Reverse mortgages in the United States
(number of federally-insured reverse mortgage loans, fiscal years)



Sources: U.S.Department of Housing and Urban Development

One of the most useful pension financial instruments is annuity which enables participants to convert their pension life time saving into regular retirement payments for the rest of their life in exchange for an initial premium. They can take different form in terms of fixed or variable payment or continuality of payments (whether payments continue after death of an annuitant). Empirical studies of OECD (2005) show that that purchasing and annuity provides a buyer with a substantial welfare gain ranging from 25 to 45 percent depending on a country. The welfare gain arises from a usual behavioural of retirees to keep precautionary saving concerning their remaining life and obtaining an annuity allows them to consume more of their accumulated assets. Despite obvious advantages of annuities for retirees, their availability especially to households is in many countries rather limited. This can be caused by more factors like relative high cost[30], existence of DB schemes that are already annuitised or low level of understanding of such product in general public. Tax disadvantage may be also a discouraging factor and could cause retirees to prefer lump-sum payments. This was for example the case in Belgium and France until 2004 when annuity tax disadvantage was removed in both countries.

[30] High cost may reflect adverse selection as annuitants tend to have higher life expectancy (caused among others by increased welfare) for which annuity companies may require higher price and so discourage general population. (Mackenzie and Schrager (2004))

This chapter focused primarily on pension funds and their influence of capital markets in a field of financial instruments. In addition, it depicted changes that pension funds are facing nowadays in terms of new approaches to management. In the next chapter I will present a case study of Chile which reformed its pension system more that twenty years ago to see how pension reform can contribute to development of financial market in all areas under condition of transition economy.

6 Case study – Chile

A successful implementation of a pension reform is an objective of every country trying to improve their retirement system. As a model example of such success is often cited pension reform in Chile that is a good case study for this paper because it describes reform in a conditions of a very low capital market development. Many transition countries of Latin America and Central and Eastern Europe are implementing Chile's reform experience into their own pension reform intentions because state of national capital markets reflects the position that of Chile prior to the reform.

6.1 Conditions prior to the reform

Chilean pension reform took place in 1981 as a part of economical changes throughout 1970s and 1980s with intention to implement free market forces to the economy. Before the actual pension reform, government liberalized trade and credit markets and reformed its tax system in order to make the reform possible.

The objective was to replace former pay-as-you-go scheme with a private system based on individual funded accounts following defined contribution basis together with the separation of the social assistance element from the mandated saving element of retirement provisions.

The need for reform originated among others in lack of transparency and hazy managerial practices of the former system. The original system was in a need of unification as it consisted of more than 100 different retirement regimes what created great discrepancies among retirement benefits. Together with changing demographics and increased involvement of population in grey and black market economy the system was barely sustainable. In 1955 the system had 12 contributors per retiree; in 1979 it was only 2.5 what led together with a poor management of ongoing pension system to a substantial decline in governmental revenues (see Walliser and Becker (1999)).

By 1980 government ran deficit which in terms of discontinued present value of system's contingent liabilities exceeded gross domestic product. These pressures finally led to a pension reform in 1981 that even nowadays attracts attention.

Table 10.Macroeconomic indicators of Chilean economy (%)

Year	Real GDP growth	Inflation	Unemployment rate	Private saving rate
1970	2.1	34.9	5.7	8.9
1975	13.3	340.7	14.9	-0.6
1980	7.7	31.2	10.4	6.5
1985	3.5	26.4	12	8.7
1990	3.3	27.3	5.7	19.4
1995	8.5	8.2	4.7	20.8

Source: Holzmann (1996) p.2

6.2 *Financing the transition*

To assessing transition costs of a shift towards new pension system requires two important things to consider. Fist one is the way in which claims of the old system are being recognized, second is the financing method for backing up this claims. This could be done either by reducing government spending in other areas, raising/imposing new taxes, selling public assets or borrowing further financial resources.

Chilean authorities were ready to finance transition costs rising from supporting those who did not enter new system or were already retired in three ways. To avoid further indebtedness they preferred raising taxes together with reduction in spending and selling public property. Tax reform adjustments from 1975 presented about half of the income needed for the transition. The other half came from the other two sources and all these measures created a surplus of 5.5 percent of GDP in 1980.

Due to a long-term nature of transition costs it is estimated that the pension reform will not be fully paid out for a few year to come. As Table 11 shows, costs were pretty steep for more than twenty years but are expected to fall in a near future.

Table 11. PR transition costs in Chile as a share of GDP (%)

year	Deficit of Old Pension System[31]	Cost of Redeeming Recognition Bonds[32]	Total
1981	1.47	0.01	1.48
1983	4.58	0.22	4.8
1985	4.27	0.3	4.57
1987	4.35	0.49	4.84
1995	3.10	0.8	3.91
2000	2.57	0.94	3.51
2005	1.84	0.99	2.83
2010	1.19	0.8	1.99
2015	0.8	0.4	1.2

Source: Walliser and Becker (1999) p.18

6.3 Regulation

To overcome initial problems with asymmetric information and moral hazard government introduced a complex framework of investment regulations. To avoid any political misunderstandings the new system has guaranteed a minimum pension income to any worker that contributed for at least twenty years. This promise has the features of direct benefit plan and therefore needs to be taken into account when deciding for investment strategies by pension funds.

The system also incorporates ceilings on domestic and foreign equities. This risk-limiting measure on pension fund portfolios could be to certain extend explained by expectations of population about government's obligation to ensure certain level of replacement rate at retirement. These expectations may arise from the setup of the pension system that replaces defined benefit plan by defined contribution based on mandatory payments, which together with ageing population and its raising voting power makes government listen to such claims. To minimize the risk authorities could also limit investments into high risk securities and order minimum allocation into fixed income securities like inflation-indexed bonds.

Another reason for low ceiling on foreign equities may be explained by an objective of developing domestic capital markets. High amounts of foreign investments by pension funds may have negative effect on exchange rate or jeopardize solvency of a

[31] Deficit - The amount by which expenditures for current pensioners and for those who chose to remain in the old system exceeds the revenues from the payroll tax.

[32] Recognition Bond - A special bond issued by the Chilean government to workers who contributed to the old pension system and joined the new pension system.

country with high level of foreign debt which has been a case of many countries of Latin America.

A bit controversial is a regulation of minimum rate of return imposed on pension funds. The justification for this directive arises in protection of scheme members from their own myopia. Myopia is also main justification for mandatory character of pension system. Further, return requirements causes pension funds to give similar performances what eases their comparisons. As argued by Gill et al. (2004), the justification for easier comparison between funds is not very solid if an alternative approach of pension fund composition is taken into account. Instead of defining funds according to strategic asset allocation which is the case in Chile, funds could have been classified by exclusive investments into broad asset class such as equities, bonds or money market instruments. Fund participants could then choose how much of their assets would be invested in each fund. Pension fund performance would than be determined by manager's skills rather than by the choice of broad asset classes.

From this, performance regulations may be considered as a paternalistic measure of a government aiding employees with the choice. There is also a cost for such a regulation. Limit on portfolio diversification between funds of the same type of different pension fund administrators supports herding in investment strategies and does not encourage active approach towards active managerial practices.

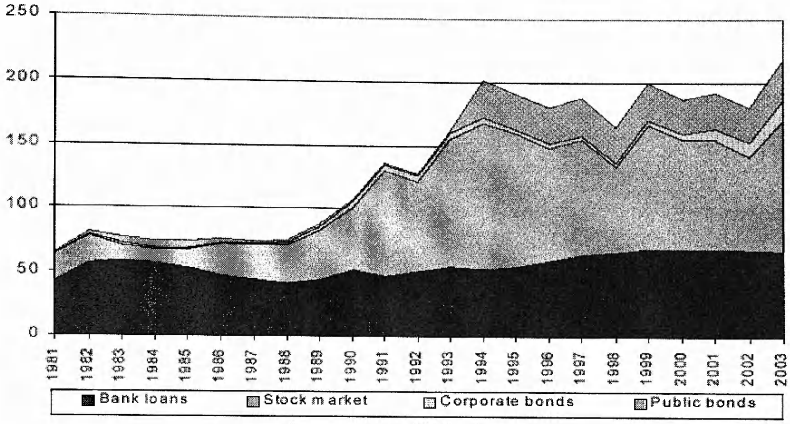
Finally myopia and hence lack of market demand sensitivity to funds' performance and its commissions could also explain the constraints in switching between fund providers. Scheme participants would more likely react to pension funds' marketing campaigns, costs of which are afterwards reflected in higher commissions.

6.4 Capital market development in Chile

Banking sector had been relatively developed prior to the reform as it experienced good increases in growth since mid seventies. Right after the reform also other components of financial market experienced solid jump. But after bank crisis in 1982-83 financial market could not consolidate itself in terms of relation to GDP until 1989 when it regained its level of 1982. Since then capital market experienced high accruals and despite significant fluctuations throughout its evolution, stock market capitalization in 2003 resented 103 percent of GDP from which 47 percent contributed to bonds

market. On the other hand reliance on bank loans have not kept up with growth of stock market and the economy became more market than bank oriented. The ratio of bank loans to total financial assets was 31 percent in 2003. This development was possible thanks to enormous growth of financial system since the reform. In numbers it is growth from 65 percent in 1980 to 217 percent in 2003 in terms of GDP (see Figure 6).

Figure 6. Market capitalization relative to GDP (%), 1980-2003



Source: Yermo (2005) p.31

In contrast with general financial market growth is rather low level of traded volume in main financial instruments. The turnover rate stagnated despite growing capitalization. This has been apparent mostly in turnover of stock market transactions which have been declining throughout eighties and after sudden rise in 1995 (17.5 %) has been declining again close to level of 10 percent. Better off in terms of traded volume were long-term fixed income securities and especially short-term fixed income financial instruments both of which have grown almost in relation to GDP.

Despite the low level of stock market turnover which was most of the time below "development threshold" of 15 percent their increase in capitalization has been a surprise for many experts. Such a development contrasts with other countries of Latin America that reformed their pension systems along Chilean guidelines. Their trading volumes showed high level but also with extreme volatility.

6.4.1 Development of institutional investors

Pension reform brought unique position to pensions funds which from the arrangement of mandatory contributions became the largest institutional investor in the economy. Unlike pension funds in other countries, funds in Chile do operate only in terms of DC plan therefore have no obligation towards scheme members linked to salary or life expectancy indices. The only obligation for pension fund providers is to keep fund's performance within given bonds based on adjusted market average. This regulation alters investment strategies of pension funds in a way partially similar to financial products of mutual funds. Although there is no regulation than should require pension funds to consider retirement obligation in investment strategies, because of differences between pension and mutual funds their behavioural is distinct in the end.

The differences arise from the nature of the market as pension funds operate with members' contributions until they retire and so are not that exposed to capital outflows. Also investment regulations are stricter than in case of mutual funds and finally switching between pension funds providers is in Chile heavily regulated.

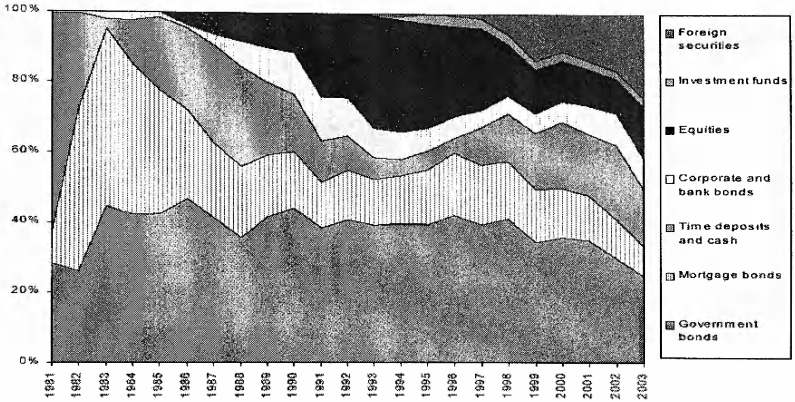
Specific nature of pension funds' investment in the country is a great similarity between investment strategies of available fund administrators arising from the need to reach market average performance and also restriction on investment into various financial instruments since the beginning of the reform. During first five years of pension funds operation on the market only investments into fixed income securities were permitted. This restriction was relaxed in 1985 by permitting of investment into domestic equities although despite opportunity for high equity investment, their ratio in pension funds assets remained low and represented only 13.6 percent in 2003 which could be explained by a decline in equity market in previous two years (Figure 7).

Even lower were the investments into corporate bonds that barely crossed 10 percent level throughout observed period which was way bellow 45 percent ceiling. On the other hand, government bonds always enjoyed good portfolio ratio in pension funds' assets allocation. It fluctuated within more than 20 percent to almost 50 percent interval. Their ratio started to decrease in 1994 when Chilean government first allowed cross-border investment. Investments into foreign securities have become increasing popular

among pension funds and their ratio in funds portfolios has been increasing ever since reaching almost 24 percent in 2003.[33]

Although investments into securities other than government bonds were always regulated by ceiling levels, authorities always reacted quickly to elevate these restrictions whenever such need arose. This was particularly evident in a case of cross-border investment when ceiling of less than 5 percent in 1994 was raised to 20 percent in 2002. As showed by Walker (1993)[34] the only exception appeared when ceiling was blamed for a poor performance of equity portfolio between 1986 and 1990. This restriction prevented mainly bigger funds to investment in some high performance equities causing sub-optimal asset allocation.

Figure 7.Chilean pension fund portfolios, 1981-2003



Source: Yemo (2005) p.17

Overall, pension funds held in 2002 assets of about 56 % in terms of GDP which was far more then were the holdings of two other important institutional investors. Life insurance companies as another important player on the market providing insurance for disabled and annuity services have also accumulated significant portfolio of assets since the pension reform, but because they are still primarily in their accumulation stage they are well behind pension funds in this sense.

[33] The magnitude of cross-border investment was the highest among Latin American countries.
[34] See Walker (1993) in Yermo (2005) p.19

Mutual funds on the other hand experienced very moderate growth throughout last 20 years. The reason follows that investment in mutual funds has not been mandatory and represented only complementary investment service. Also pension funds took over assets invested in mutual fund right after their establishment and the reason why assets in mutual funds did not decline was because pension funds and insurance companies invested in them along with other foreign investors.[35]

Position of banks in the market diminished over the period with the growth of other institutional investors. In terms of assets holding the ratio was 92.5 percent of GDP to 66 percent in 2003. Still banks at the beginning of the reform were largely used as an investment destination for institutional investors when investments in banks' financial instruments presented more than 70 percent of pension funds portfolios which only slowly decreased to almost 30 percent in 2003. The decline was caused mostly by liberation of cross-border investment when foreign securities became more attractive to pension funds administrators.

Table 12 illustrates the importance of pension funds in the marked compared to other financial intermediaries. It shows their dominance in holdings of government and mortgage bonds as well as securities issued by banks.

Table 12.Market ownership by financial intermediary

	Banks	Pension funds	Insurance Companies	Investment funds	All
Public sector	30	48	12	5	95
Mortgage bonds	8	43	30	6	87
Corporate bonds	4	29	37	1	72
Shares	0	8	1	2	11
Time deposits and bank bonds	6	24	4	15	50

Source: Yemo (2005) p.38

6.4.2 Development of financial instruments

Evolution of available and development of new financial instruments has gone hand in hand with investment strategies of pension funds and other market players all within given legal constraints. On national level pension reform greatly contributed to expansion of life and disability insurance industry when at the end of the century it

[35] Investments in mutual fund by foreign entities is regulated though special intermediaries called FICEs.

managed financial assets ten times the amount prior to the reform. This led to development of annuity products and in general created vital environment for long-term instruments.

Interest of investors in corporate bonds as new instruments was very limited right after the reform since investment in government bonds had been the only option. The same goes to investment in equity that was restricted until 1985 what afterwards led to development of this market although pension funds' investment in private equity has always been regulated. Pension funds could participate in these investments though closed-ended mutual funds which were also created to support investments in real estates and other areas.

In support of development of financial instruments a risk-rating industry had to be established as a requirement to rate instrument suitable for retirement saving by authorities.

To deal with claims of potential retirees from both old and new pension system, right with the pension reform "Recognition bonds" were introduced. "A special zero coupon index bond issued by the Chilean government to workers who contributed to the old pension system and joined the new pension system. The value of the bond is based on a formula that attempts to capture the value of accrued pension payments considering, among other things, the life expectancy of workers and the number of years they contributed to the old system. A recognition bond is paid into a worker's pension account when he or she retires." (Walliser and Becker (1999) p.12) Due to asset-liability matching requirements these bonds have been strongly demanded by insurance companies.

Dynamic were also developments in mortgage industry, especially at the beginning of the reform. To satisfy requirements of insurance companies in this area a special kind of mortgage bond, "Mutuos Hipotecarios" was created. It represents low liquid, non-tradable bond with a guarantee of specific real estate property behind the debt. This bond may be complemented by another mortgage bond "Letras Hipotercarias" with higher liquidity and guaranteed by commercial banks thus its trading is not obstructed.

Also liberalization of cross-border investment expanded investments in foreign instruments which are still in field of interest of Chilean pension funds.

6.5 *Indirect effects of pension reform*

Secondary effects of pension reform on financial and other markets may arise from complementary functions of financial and non-financial entities influencing each other throughout development. Close related industries like life insurance, mortgage and banks are likely to be affected the most as their operation is related to that of pension funds. Already mentioned high development of life insurance and disability industry in Chile can be a good example of this process. The same is true for mortgage market that contributed to development of housing and office industry. See high share of investment into mortgage instruments by pension funds and insurance companies (Figure 7).

Long-term nature of pension funds' investment also influences the operation of banks on the market. As the capital market develops companies have more options to finance their projects; that is why a certain level of disintermediation is likely to occur. Therefore banks would be forced to concentrate on short-term investments of individuals or small firms. In a limited manner this has happened in Chile as the Capital marked has developed substantially and development of bank industry stagnated in terms of bank loans (Figure 6). The importance of tradable sector in long-long-term debt has become more important and this is where Chilean banks lost, on the other hand in non-tradable sector of short-term debt banks have defended their position.

Improvement in external debt management through pension funds induced internal resource transfers enabled Chilean government to service its foreign debt without damaging fiscal adjustments by providing domestic source of borrowing without necessity of too high interest rates (see Fontaine (1997)).

Other effects of pension reform can be contributed to foreign investments in terms of creation retail mutual funds and also in deepening foreign currency market that has become more stable. After the reform Chile successfully avoided "three digit inflation", that was quite common in the first half of the seventies.[36]

[36] Inflation in 1973 was 508.4 % and in two consecutive years remained above 300 %.

6.6 *Impact on national savings*

Impact of higher personal saving on aggregate saving is according to various analyses rather ambiguous. This is caused by offsetting savings between private and public sector but the offsetting does not reach perfect correlation (see section taxation of pension funds p.27).

In theory, to evaluate changes in public and private saving we need to take a look at transition costs and assets accumulated in personal retirement accounts. Walliser and Becker (1999) argue that if pension reform had not been accompanied by stricter fiscal policy, transition costs would have reduced public saving by the same amount that private saving increased. The same follows, if individuals had not responded to pension reform by changes in their private savings, the full amount accumulated in retirement accounts would have added to private savings. From this, the maximal increase in national saving would just be the amount of money in retirement accounts.

Under these assumptions, pension reform in Chile would have contributed to increase in national savings of 1-6 % of GDP throughout eighties and up to 9 % of GDP throughout nineties. See Table 13 under "Private saving generated". However, in reality, reduction in public spending did not fully cover transition costs as well as individuals probably reduced other savings in response to increased retirement savings requirements by personal accounts. By assuming that half of the transition costs have been financed through reduced government spending and half of the accumulated assets in pension funds is offset by decreased private saving then the final impact of pension reform on national saving looks completely different. Table 13 shows ("Total saving effects") that the impact had been negative throughout eighties and barely got over 3 % of GDP. These results rather contrast with general belief of pension reform impact on national saving.

Table 13.Pension reform and saving effects in Chile (%)

Year	1981	1983	1985	1987	1989	1990	1991	1992	1993	1994
Total saving effects (net)	-0.2	-1.8	-0.2	-0.2	1.6	3.4	3.2	2.6	2.8	2
Private saving generated	1.3	3	4.4	4.6	6	8.6	8.4	7.7	8.2	7.6
Flows:Net contribution	0.9	1.5	1.5	1.6	1.9	1.9	2.4	2.8	2.4	2.2
Flows: Net saving	0.4	1.5	2.9	3.1	4.2	6.7	6.1	4.9	5.7	5.4
Fiscal costs of reform	-1.5	-4.8	-4.6	-4.8	-4.5	-5.3	-5.3	-5.1	-5.4	-5.6
Deficit coverage	-1.5	-4.6	-4.3	-4.4	-4.1	-4.8	-4.8	-4.6	-4.8	-5
Recognition bonds		-0.2	-0.3	-0.5	-0.4	-0.5	-0.4	-0.5	-0.6	-0.7

Holzmann (1996) p.28

Although in terms of saving the results of reform are not that convincing the evidence of its influence on capital market development is present in a great growth of capitalization, better financial integration, further development of financial instruments and general improvement of investment climate in the country.

It deserves to be noted that whatever the results would be like, improved capital market is only a side effect of pension reform at first place. Its primary objective is to deal with ageing problem and Chile is the lucky one that it did not wait too long to start with the reform. Still, positive results of Chilean pension reform are encouraging for other countries searching for a way to improve their financial systems. That is why in the last chapter I focus on economies of Central and Easter Europe and their approaches to pension reform that also find inspiration in pension reforms of Latin American countries.

7 Pension reform in Central and Eastern Europe

Countries of Central and Eastern Europe like many others have been searching for ways to improve their pension systems in response to population ageing. Many of them burdened with a legacy of vast pay-as-you-go systems have already reformed or are in process of improving their retirement schemes. Because it takes years for relevant results to appear it is not possible to make any assessment about pension reform contribution to capital market development due to very recent nature of the reforms. Therefore this section rather monitors selected countries' approach to pension reform; assuming from preference of funded schemes in reform strategies in most counties, local authorities besides objective of dealing with ageing problem expect a side effect in improving financial system similar to that of Latin America countries.

7.1 The need for a reform

Socialistic priorities in public pension schemes together with ageing problem led to a pension system whose main features were as follows.[37]

- High system dependency ratios
- Low retirement age
- High replacement ratios (in some countries)
- Unfavourable demographic trends and growing financial imbalance (Dramatic decline in birth rates; increasing life expectancy, danger of labour emigration)
- High contribution rates, weak link between contribution and benefits, and limited incentive to comply
- Significant intra-generational and inter-generational inequalities

Pressure towards reform of pension systems arises from very unfavourable demographic lookout for Eastern Europe where population ageing is among fastest in world. It is caused by slightly improving life expectancy but primarily by very low birth rate. The highest number of population above 65 years is in Estonia (15.9 %), Latvia (15.9 %) and Hungary (15.4 %). Gola (2005) suggests that if we set the retirement age

[37] Wagner (2004)

for Eastern Europe to 65 years and allow for some early retirement and insurance for disabled than these countries have to pay pension to each fifth member in the population what extremely burdens national budgets and the situation is about to worsen without proper adjustments to pension systems.

Ageing population leads to higher dependency ratio that may result in breakdown of public budgets. This is a fact that speaks for itself and it seems odd that there are still countries in this region that did not take proper steps towards improvement. Adequate pension reform is inevitable and its postponing only raises its cost.

Table 14.Dependency ratios

Support ratio: (20-59 years)/(above 60 years)			
	2000	2040	difference
Hungary	2.9	1.6	1.3
Poland	3.4	1.8	1.6
Czech Republic	3.3	1.3	2.0
Slovakia	3.7	1.6	2.1

Source: Goliaš (2005)

Furthermore, strong financial pressures caused by transition towards market economy had negative consequences on current pension system and the need for its improvement was even more pressing. Also, as argued by Wagner (2004), effectiveness of linkage between contribution and payouts on an individual level was limited as participants acquired pension rights according to their work history while these rights were financed using payroll taxes imposed on a company. In situation of growing unemployment and extensive shadow economy, collection of contributions became more difficult creating further pressure on governmental budget.

Therefore an alternative of individual pension accounts with transparent links between contributions and benefits was considered a good solution. This was further supported by possibility of higher saving through these accounts as the capital formation in the economy was low and the need for investments high.

Throughout past decade the discussion about pension reform was in European countries pretty robust. As the starting conditions in each post-communistic country differed so did the approach towards the pension reform, which was of course strongly influenced by politics.

7.2 Lessons learned from Latin American countries

The interest of Eastern European countries in pension reforms of either Chile or Argentina arises from similarities of starting conditions prior to the reforms; especially conditions of Argentina reflected those of post-communistic nations in mid 1990s.

As argued by Vittas (1997) one of the most important common features has been large discrepancy between pension system and old-age dependency ratios. Lax condition for early retirement and disability provisions together with low retirement ages and significant evasion contributed to much higher dependency ratio than would be otherwise justified by demographic variables alone.

This has been supported by still increasing pressure on pension system financing and real inability to increase already too high contribution rates. Moreover many Eastern European pension systems suffered from adverse effects of pension indexation and underdeveloped capital market, same as in Argentina.

The most important lesson about pension reform in Chile is that it is possible to implement radical pension reform and that it is technically and financially feasible despite concerns about high transition cost and absence of well developed financial markets. On the other hand Argentine showed that introduction of such a reform is possible via democratic process if there is enough will on a political level.

Another feature is that legislation regarding pension system may develop in time along the needs of the scheme. This shows that if the system is well constructed in basics and moves in the right direction, obstacles can be overcome throughout evolution and faulty setup of pension reform in details needs not to be critical.

The performance of the funded component, the second pillar has also been very promising. The response of private sector has been energetic and the new pension system performed successfully in an uncertain economic conditions. Also problems with evasion have reduced as the likelihood of system abuse declined with change in eligibility requirements and more strict supervision of collected contributions.

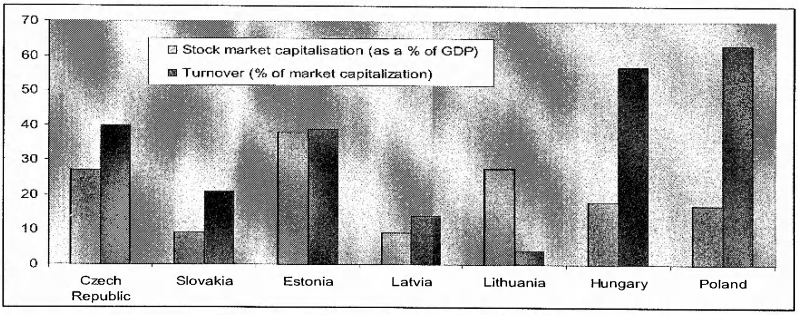
Finally, concerning the strategy of pension reform, introduction of funded pillar as a major part of the reform has been important for the success of new pension system itself. Downsizing the public pillar and supporting the private pension funds in Latin America have brought many positive externalities to the economy from which stimulation of capital market laid grounds for higher economic growth.

7.3 Characteristics of financial markets in transition economies

Countries of continental Europe are preliminary bank based in terms of financial intermediation, the same follows for Central and Eastern European countries but compared to Western Europe the banking sector is relatively small. Despite of socialistic legacy virtually all post-communistic countries were successful in attracting foreign financial investors in restructuring of their banking sector that brought besides capital also expertise and technology into the system. In many countries there is also good potential in developing of mutual, insurance and pension funds especially in those with reformed pension system. When considering new EU member states their position improved with the accession to the Union as western investors were not reluctant to invest in this region despite underdeveloped domestic markets.

Already mentioned dominance of banks in the region goes hand in hand with small equities and bonds market relative to GDP that is in some countries still heavily underdeveloped and illiquid.

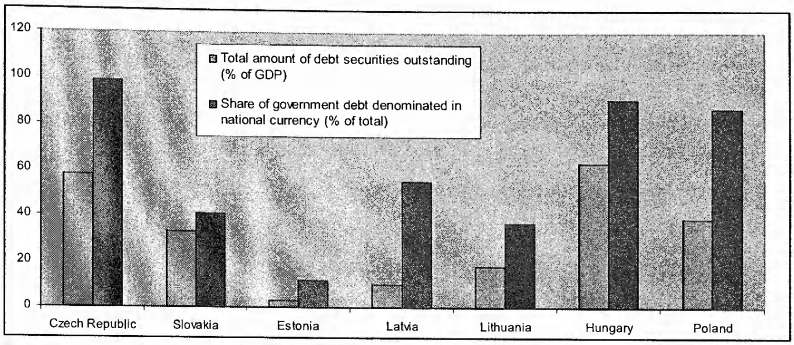
Table 15. Stock market in CEECs in 2003



Source: European commission (2005) p.194

Common feature of bond markets is a great dominance of government issues that represents 80 to 100 percent in most cases with exceptions of Czech Republic, Slovenia and Estonia. Developments in equity markets are still far from desired although with great variations among CEECs with relatively successful capital markets in Poland and Hungary.

Table 16.Bond market in CEECs in 2003



Source: European commission (2005) p.193

In countries that already reformed their pension system contributions to private pillar usually represent 6 to 9 percent of gross wage (Table 18). According to financial projections based on size of this contributions an assets accumulation of about 20 to 30 percent of GDP is expected within horizon of 20 years (see Holzman and Hinz (2005)). The question remains what is going to happen with such an amount. Many transition economies have problems with excess liquidity in their current financial institutions. The concern arises from low level of capital market development in this countries and thus low number of listed corporate titles available for investment. Pension funds already available on the market therefore are strongly limited by investments in low yield government bonds and partially in foreign equity but cross-border investment is at current state usually strictly regulated. The only exception is Poland where pension funds have in their portfolio relatively significant share of equities following that their capital market belongs to the most developed among CEECs.

Pension reform brought to these countries the need for development of capital markets instruments, namely corporate shares, long-term bonds, life insurance and mortgage financial products. To keep long-term nature of pension saving even after retirement of participants, countries like Poland and Hungary legislated duty to annuities the assets in due time. This measure prevents potential misuse of the public pillar in a sense that a retiree may quickly spend up his money acquired in a form of lump sump payment. This way he would be eligible for benefits from first pillar that would work as a social safety net for those in a real need.

Experiences of transition economies worldwide show that pension reform is a very complicated process which requires many variables to consider during its design. Important is the ratio of distribution between public and private pillar and sober estimate of revenues from potential pension assets.

What is going to be the potential influence of pension reforms on capital markets is difficult to asses at this stage as sensible results may not be available for a few decades. If the assumption is that impact is likely to be similar to those of Latin American Countries in a favourable case scenario, both bond and equity markets would gain in importance. Fixed-income market may become less dependent on government issues plus maturity of bonds may be prolonged and variably of instrument may rise in both fixed-income and equity market. Long-term financial instruments are among others important for financing large scale investment projects.

In a worst case scenarios if none of these positive externalities are about to occur then at least funded pension reform would fulfil its primary objective in averting old-age crisis. Still as many empirical studies considering pension reform show, at least some positive features in connection with capital market are very likely to arise.

7.4 National approach to pension reform

Most common approach that almost every country has taken was a parametric adjustment of ongoing pay-as-you-go. The objective was to closely link contributions to benefits by their not always popular alteration. Some countries went further in introducing other pillars on funded bases primarily of a mandatory nature. According to pension reform selected a three separate groups of countries can be created.

First one is based on one-pillar pay-as-you-go system, Lithuania and Slovenia; second two-pillar pay-as-you-go and voluntary funded pillar like Czech Republic, though in this case the funded one is of negligible importance, and finally three pillar pension system two of which based on mandatory contributions.

As can be noticed, none of this country has been too radical and has not introduced one-pillar fully funded pension system as was the case in Chile.[38] Therefore potential influence on capital market development may not be as strong as was in the

[38] It needs to be noted that political system in Chile in the time of pension reform did not necessary bear elements of standard modern democracy which resulted in easier pursue of governmental objectives.

case in Latin America but its positive effects are likely to occur. From theoretical point of view multi-pillar system represents diversification of risk, either political (pay-as-you-go) or market (funded scheme). Still under given condition of political difficulty of introducing pension reform, countries that chose multi-pillar might be considered to be in good starting position in overcoming difficulties with ageing problem. Table 17 outlines pension systems in the region up-to-date.

Table 17.Characteristics of Pension Systems in selected CEE countries

		STATUTORY SCHEMES		
	Main reforms	PAYG	Funded	Private pillars
Czech Republic	1993, 1995	Defined benefit PAYG financed from social security contributions	None	Voluntary, tax expenditure subsidized of moderate importance
Estonia	1997	PAYG earnings-related similar to German system	Mandatory fully funded DC (2002), To be administered by private funds	Voluntary, tax expenditure subsidized of minor importance
Hungary	(1994) 1998	Defined benefit PAYG financed from social security contributions	Mandatory fully funded DC (1999), administered by private funds	Voluntary (94) Mutual Benefit Funds, tax expenditure subsidized, moderate importance
Latvia	1995, 1998, 2000	NDC based	Mandatory fully funded DC (2001), administered by private funds	Voluntary, tax expenditure subsidized of minor importance
Lithuania	2003, 3004	Classical PAYG DB w. flat-rate & earnings-related part. Financed from gen. Taxation & social security contributions	None	"Hybrid" voluntary pillar financed with public pension revenues. No fund established yet.
Poland	1998	NDC based	Mandatory fully funded DC (1999), administered by private funds	Voluntary, tax expenditure subsidized of moderate importance
Slovenia	N/A	Classical PAYG DB financed from social security contributions & general taxation	None	Voluntary, tax expenditure subsidized of minor importance
Slovakia	2004,2005	Classical PAYG DB financed from social security contributions & general taxation	Mandatory fully funded DC (2004), administered by private funds	Voluntary, tax expenditure subsidized of minor importance (1996)

Source: Wagner (2004) p.22

7.4.1 Czech Republic

Czech Republic was the first post-communistic country that implemented improvements in public pension system. The adjustments were of a parametric nature of an existing PAYG system. These improvements did not really solve the ageing problem in a long run following that Czech Republic is one of the fastest ageing country in Europe. Introduction of voluntary third pillar have not solve the situation as its importance in pension system is minimal. There is no funded mandatory pillar in the country as potential attempts to its introduction were met with strong political opposition. Although legislative approval for mandatory second pillar was adopted in late 1990s, parliamentary decision in 2002 cancelled mandatory nature of contributions. From point of view of political economy the decision of a parliament is not that surprising as it is rather difficult to implement any reform in country with high public social spending. As pension reform is always unique in its nature and country specific, similarities within Central European region caused some countries to follow a "delaying strategy" to see what at least partial results of pension reform in surrounding countries would look like. This was the case of Slovakia, Slovenia and still is a case of Czech Republic. Authorities always referred to high transition cost of the switch to funded system and together with strong opposition from trade unions that feared that privatization may undermine social insurance network, government never found adequate will to pursue the required change.

This have led to a situation that from countries of Central Europe the Czech Republic so far has done the least to reform its pension system. The problem lies in an insufficient reform of a public pension system as a whole. This system is pretty generous and indexation of benefits to a rise in nominal wages does not ease strain on public finance as in the past nominal wages grew faster than the inflation.

One of the reform proposals for the future is a creation of occupational pension fund tier or systematic change of PAYG system into NDC PAYG. Of course there are numerous advices from analysts and agencies like World Bank or International Monetary Fund that strongly support switch to private mandated pension scheme that may differ in various parameters but the funded philosophy of the pillar is present. Demographic change is hardly evitable as prove many analyses. If a pension system is about to remain in equilibrium under present conditions within few decades, pension

contribution would have to rise from current 26 percent to 44 percent in year 2030.[39] This shows that pension system is hardly sustainable for years to come which together with high contribution rates might undermine economic growth.

7.4.2 Poland

Pension reform in Poland has been more aggressive. Government has substantially rebuilt former pay-as-you-go system together with introduction of another two funded pillars one of them on a mandatory basis. The first pillar is based on so called notional accounts that try to mimic behavioural of funded accounts but still represent PAYG system. This way contributions are closely linked to benefit rights that slightly improves transparency and protection against political influence. No interest accrual is being added to the account as the assets are only virtual. NDC accounts are created for each worker what closely links pension benefits to the size of these accounts at retirement which in the end awards those that remain in the force for more years and vice versa.

Even more importance deserves introduction of the second fully funded pillar which is the centrepiece of pension reform in Poland. It runs on defined contribution principle so the benefits at retirement depend only on accrued contributions and performance of this account on the market. It is characterised by quite high contribution ratio, second highest within selected countries (Table 18).

Table 18.Pension scheme contributions, % of gross earnings

Country	PAYG	FF	FF introduction
Hungary	22	6	1998
Poland	12.22+13	7.3	1999
Latvia	18	2	2001
Estonia	16	6	2002
Slovakia	9+6+4.75	9	2005
Czech republic	24.35	0	/

Source: Goliaš (2005)

Private pension funds in these pillars are "open" that means participants are free to choose any pension funds available o the market. Regulation of funds arises among others from controlling of required rate of return. Minimal relative return of a fund is set

[39] Ministry of Finance of Czech Republic

to a) half of the average return of pension funds in a country if the return is more than 8 % p.a., b) if the average return is bellow 8 % then minimal return of a particular fund can be 4 percentage points bellow that average. In a case that the minimal return is no met it needs to be levelled off by assets in reserve fund. If reserve in this fund in not sufficient then pension provider is obliged to go bankrupt. All loses are in this case coved by state guarantee funds, this is similar to other CEE countries.[40]

7.4.3 Hungary

Hungary as well followed multi-pillar model in pension reform, similar to Poland but the fist pillar is not transformed into NDC, only parametric adjustment were made especially in terms of prolonging retirement age.

The funded component requires contributions of 6 % of gross wage. There are two types of guarantees that the participants will be fulfilled in terms of their benefit rights. One ensures a minimum level of pension income if they participate for sufficient years and another that would guarantee at least a minimum rate of return. The performance and investment regulation is being monitored by Hungarian Financial Supervisory Authority.

Table 19 shows evolution of portfolios in Hungarian pension funds monitoring high ratio of government securities and only slightly growing share of foreign assets.

Table 19.Portfolio Composition of pension funds (% of total), 1998 – 2004

	1998	1999	2000	2001	2002	2003	2004
Cash	10.8	2.8	1.3	1.1	3.3	0.7	0.6
Time Deposits/CDs	3.5	0.3	0.1	0.1	0.7	0.4	0.5
Government securities	76.7	83.4	77.6	80.0	68.0	69.9	72.7
Direct Equity	6.6	9.8	14.8	11.6	8.9	9.3	7.8
Corporate and FI Bonds	1.7	1.7	2.3	3.0	4.2	3.0	1.7
Investment notes	0.3	1.7	2.6	2.3	7.1	7.2	8.2
Other	0.4	0.3	1.3	1.9	7.8	9.5	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Est. Total Equity	6.8	11.2	16.7	13.4	14.6	15.1	14.4
Est. Foreign Assets	3.5	5.6	8.3	6.7	7.3	7.5	7.9

Impavido, Rocha (2006) p.9

[40] Hedbávný (2003)

Redistributive elements were removed from the system, with the intent of tightening the link between contributions and benefits, in both the unfunded and funded components. It was envisioned that a social assistance program would evolve to address the needs of poorer elderly (Palacios and Rocha (1998)).

7.4.4 Differences in need for the reform

The support for a pension reform by public in democratic countries is important for the success of the whole project. If population expresses a desire for a change politicians should respond but in connection of pension reform the situation is slightly different as the need for change should arise primarily from political circles because the reform addresses the problem that is about to arise in the future. To explain different perception of pension reform by public in relevant countries we need to look at performance of pension systems and capital markets throughout nineties.

Pension systems in Czech Republic, Hungary and Poland were quite similar at the fall of communism and operating on PAYG basis. Differences began to gradually emerge throughout the transition to market economy.

High unemployment in Poland caused social problems that led to generous pension payments meant to move older workers out of labour force. Also attitude of government towards population had always been rather accommodating than suppressing and authorities usually responded to social distress by increasing generosity of a system. This led to a situation when pensions rose from 7 % to over 15 % of GDP between 1990 and 1994. Similar developments were to certain extent present also in Hungary with pension reaching 11 % of GDP (see Roberts (2000)). This created great strain on governmental budgets that ended up in deficit. Partial improvements into pension system resulted in wide differences in pension benefits for pensioners with similar working history. Together with high taxes to cover for increased public spending that even accelerated unemployment. Population in both Poland and Hungary started to perceive ongoing social insurance system as not adequate and unfair. The same was true for the governments that saw ineffectiveness of the pension systems and the support for pension reform has been fairly strong in these two countries.

Opposite approach followed Czech government that kept pension spending under control, partially because of better starting conditions. Low unemployment did not

require measures forcing elderly out of labour force and raising benefits did not occur as well. This enabled pension system to run a surplus until 1997 when first problems with finances started to appear but due to political inactivity in promoting pension reform to the public, its support form citizens remains low and most of them considers current PAYG system to be in good shape (Table 20).

Furthermore, developments in capital markets in these countries contributed to the way people perceive financial institutions as a whole. Problems with transition intransparencies in financial sector were common throughout whole region but Poland and Hungary dealt with the problem much sooner than the Czech Republic. The differences were marked in corporate governance or stock market developments where Czech Republic has been few year behind what in the end undermined confidence of public in financial institutions. This can be seen on the behavioural of voluntary funded pillars which in Czech Republic remain low stating the lack of trust as the primary reason for not participating.[41] Quite opposite has been conditions in Hungary where voluntary pension funds quickly gained on popularity and funds themselves were strong lobbyists for pension reform. The position of Poland is difficult to asses as their voluntary pillar was not available prior to major pension reform but good performance of pension funds currently on the market support the view of high confidence of polish population in these institutions.

Table 20.Support for funded Pillar (%)

	Hungary	Poland	Czech Republic
Funded	65	68	22
PAYG	21	16	65

Source: Roberts (2000) p.35

To summarize, in Poland and Hungary general public has been in favour of pension reform as people were pessimistic about future of pay-as-you-go system. Also confidence in capital market and its institutions further strengthened the support. On the other hand overconfidence in PAYG system and lack of faith in financial institutions created strong opposition against pension reform in Czech Republic.

[41] Survey from 1998 showed that lack of trust in funds was either first of second most important reason for not investing among 60 % of respondents (Roberts (2000))

7.5 Transition costs

Creation of the second mandated pillar causes high transition costs appearing in several ongoing decades. In case of multi-pillar pension reform it is important to adequately set the size of the funded pillar. When younger generation is putting their pension saving into the new funded pillar the deficit in pay-as-you-go is increasing. From this point of view the size of funded pillar should be limited both in financial terms and number of participants. On the other hand management costs of private pension plans tend to be substantially higher and low number of participants would only contribute to raising cost. The choice depends on the speed of the reform and above all on the means of financing the reform. Some post-communistic countries finance their pension reform by privatizing state owned property either by selling via capital market that is e.g. in Poland satisfactory regulated or direct selling as is the case in Slovakia where the capital market is still in embryonic state. Of course parametric adjustments to first PAYG pillar also represent substantial improvement to government budged. Adequate prediction of cost of reform is an important element during pension reform design.

According to the International Labour Organisation (2001), transition costs of pension reform for Central European countries are expected to range from 0.5 to 2.5% of GDP over several decades.

7.6 Pension funds and outlook for the future

Central and Eastern Europe represents a great potential to attract investors in many areas. Introduction of pension reform and pension funds in general further supports improvement of investment climate as new legislation and enhanced monitoring is likely to occur. Due to small size of CEECs economies it is possible that most of pension funds are going to be backed by foreign multinational providers what may bring new managerial expertise to the country.

To approximate development of pension funds in this region Allianz Group Economic Research (2004) presented its study monitoring their growth until year 2010 under two case scenarios (see Table 21 and Table 22). In order to estimate the specific market potential in these Eastern European countries the analyses focused on regulations of the second and third pillar pension schemes.

Table 21.Pension assets under management, projections(Bn. EUR)
Worst case – 5 % rate of return

Country	2002	2010e	Net increase	CAGR p.a.*
Czech Republic	2,3	8,8	6,5	18%
Estonia	0,0	1,1	1,1	66%
Hungary	3,2	21,8	18,6	27%
Latvia	0,0	0,7	0,7	76%
Lithuania	0,0	0,3	0,3	52%
Poland	7,8	73,7	65,9	32%
Slovakia	0,1	3,2	3,1	50%
Slovenia	0,1	1,2	1,2	40%
Total	13,5	110,9	97,4	30%

* Cumulative Average Growth Rate
Source: Allianz Group Economic Research (2004)

Table 22.Pension assets under management, projections (Bn. EUR)
Best case -7 % rate of return

Country	2002	2010e	Net increase	CAGR p.a.
Czech Republic	2,2	17,6	15,4	30%
Estonia	0,0	1,4	1,4	72%
Hungary	3,2	26,3	23,1	30%
Latvia	0,0	0,9	0,9	81%
Lithuania	0,0	0,4	0,4	40%
Poland	7,8	94,5	86,7	37%
Slovakia	0,1	4,3	4,2	56%
Slovenia	0,1	2,4	2,3	52%
Total	13,4	147,8	134,4	35%

Source: Allianz Group Economic Research (2004)

According to this Predictions Poland will remain the dominating pension market in the CEE region. Accumulating between EUR 74bn to EUR 95bn by 2010, the Polish market will account for over 60 % of Assets under Management of CEE pension funds. Hungary and the Czech Republic trail behind with EUR 22-26bn and EUR 9-18bn respectively.[42]

These three countries together will cover 95 % of the expected market volume. However, as these three countries also account for 80 % of the population and 80 % of the region's GDP, this does not come as a surprise. The Baltic States are just too small to accumulate a large amount of pension assets in spite of their successful pension reform and subsequent anticipated high growth rates – as in Estonia for example. As

[42] For Czech republic only prediction of development in voluntary funded pillar is included. Potential pension reform with mandatory funded pillar is likely to show even more favourable results.

Slovenia is lagging behind in the pension reform process, only the Slovakian pension reform, that has recently started, could kick-start a smaller, but interesting market.

Another projection of pension funds evolution even further into the future is presented by Holzman and Hinz (2005). The projection covers only funded mandatory pillar therefore predictions for some countries are not included.

Table 23.Projected pension fund assets in 2020 as a percentage of GDP

	2002	2020
Hungary	5.2	31
Estonia	1.9	20
Croatia	3	25-30
Poland	4.4	33
Latvia	1	20

Source: Holzman and Hinz (2005) p. 261

Table 24.Pension fund assets in 2002 as a percentage of GDP in Selected countries

	2002
Canada	47.6
Denmark	28.6
Netherlands	99.6
Portugal	13.4
Switzerland	125.5
United States	56.9
Chile	56.3

Source: OECD (2005) p.193

For the sake of comparison I included pension funds assets holdings in selected developed countries (including Chile) in 2002 (Table 24). It shows that size of pension funds in CEECs in fifteen years would be closing to those of western world nowadays.

If these predictions stand ground then pension funds are expected to accumulate enough assets that would be ready to for investment in domestic and international markets. If the regulation and taxation of funds in these countries is not contra productive throughout the evolution path, then nothing stays in a way of pension funds' contribution to capital markets development.

8 Conclusion

In the first part of this thesis I referred to demographic changes that lead to sustained pressure on public budget in terms of raising dependency ratio within pay-as-you-go pension scheme. This pressure leads to the need for pension reform in many countries that search for ways to make their ongoing retirement social security sustainable. Although there are various proposals to pension reform, either parametric improvement to PAYG scheme or introduction of Notional Accounts, many countries prefer introduction of funded accounts when reforming their system. In this type of pension system population is saving for its retirement via individual accounts with contributions accumulating throughout their working life. Funded pillar is also recommended by World Bank (1994) as a central component in their multi-pillar pension reform proposition.

The main objective of this paper was to show how pension reform can contribute to capital market development. Because of the primary focus on funded pension scheme the influence on financial markets was characterised by operation of pension funds on the market. Introduction of pension funds may induce substantial changes in various areas of the economy. Fist change concerns saving and although the influence of pension funds on saving at national level is ambiguous as one type of saving is offsetting other[43], the saving structure is likely to change towards savings with longer maturity. This is caused by long-term nature of pension saving per se. Investment strategies of pension funds increase demand for new or improved financial instruments, especially of a prolonged maturity like bonds or mortgages. Availability of long-term funding may have a positive effect on challenging investment projects like infrastructure and others. Furthermore if the regulation and taxation of funds is not disincentive than there is a positive chance that they would become sufficiently large in relation to domestic market. As argued by Davis (1993), in context of countries of continental Europe that would mean availability of funding for companies by other means than by bank's provision. Independence of companies from banks might weaken

[43] Munnell and Yohn (1992) suggests that for every unit increase in pension fund assets there is an increase in personal saving of about 0.35 while the public cost caused by pension funds tax incentives is offsetting the benefit on a national level to about 0.2.

banks' position and the financial system could lead to convergence towards the "Anglo-Saxon" model.[44]

Besides changes in saving structure, introduction of new financial instruments and higher capitalization in general there are other positive effects of pension funds on financial market like improved transparency and liquidity as new legislation and control of a new system is required. New sources of funding are likely to lower cost of capital for enterprises what further increases utility of population in the economy. Last but not least, possibility of cross-border investments improves financial integration what further strengthens the integrity of financial market of the country.

A case study of Chile deals with pension reform and its contribution to development of capital market. It is a great example how funded pension reform can substantially improve capitalization of the economy. In numbers, capitalization hipped from 65 percent in 1980 to 217 percent in 2003 in terms of GDP and there is still potential for further growth. Saving for pensions also helped complementary industries like disability insurance or mortgage business together with development of adequate financial instruments. As presented by Holzman (1996), despite not convincing effect on national saving the change in structure of saving changed in accordance with expectations towards long-term financial instruments. Finally improved capitalization and better investment climate attracted foreign investors that contributed to creation of mutual funds that represent another positive element in financial markets. To conclude, Chile have dealt with ageing problem successfully while at the same time have enjoyed sound Capital market which development has been greatly supported by adequately selected pension reform.

This paper in its final chapter outlined pension reforms in Central and Easter Europe and discussed development of pension funds in the near future. In spite of a very recent date of most of the reform no real conclusion about their contribution to capital development could be made so far. Still according to presented projections of pension funds growth in this region, the size accumulated assets in them should be in fifteen year horizon around 30 percent of GDP. This number is close to the size of assets in pension funds of economies with developed funded pension systems nowadays. If these projections come true, the accumulated assets could be sufficient enough to induce positive influence towards capital markets.

[44] Under the assumption that pension funds would be willing to invest in equity.

To sum up, there are link through which funded pension reform can contribute to development of capital markets either by accumulating assets by pension funds available for further investments or in term of innovation of financial market in overall.

Finally, each pension reform is country specific and thus it is not effectively possible to setup a model reform that would be suitable for every country in every detail. Important challenge for a government reforming its pension system is to search for adequate means of regulation and taxation that would support reform's positive influence to financial market and above all allow for pension reform to be successful in dealing with ageing crisis.

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Master Thesis

Influence of pension reforms on capital markets

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IES 2005/2006

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The creation of fully funded, privately managed pension systems may have significant positive direct effects on savings, growth, and welfare. However, the indirect link, via capital market development, may be as important. The aim of this thesis is to show how pension reforms with various setup conditions (macroeconomic stability, taxation, regulation, property rights, etc) can contribute to capital market development or on contrary can cause its malfunction. Look at experience with reforms in many countries enables us to compare and evaluate such a development.

H1: Is there any connection between pension reforms and capital markets? If so, how strong is the relationship, its influence?

H1: What pension reform setup contributes to optimal CM development, if any?

Searching for PR & CM relationship might lead us to searching for optimal PR to boost capital market. The question is whether such a universal pension reform exists following its high country specific nature.

- Pension system and its potential reforms
- Pension reforms vs. capital markets, links
- Consequences of pension fund induced capital market development
- Positive or negative impact of reforms on capital market development
- Optimal reform (Concurrent Conditions - macroeconomic stability, taxation, regulation)
- Secondary effects on the financial system's structure and other markets

Prague
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Abstrakt česky	Táto práca sa zameriava na dôchodkovú reformu a jej prínos k vývoju kapitalového trhu. Dôraz je kladený na reformu s dôchodkovým sporením na vlastný účet čo znamená zavedenie dôchodkových fondov. Práve cez ich pôsobenie na finančný systém je vplyv dôchodkovej reformy prezentovaný. Ďalej je znázornený vplyv dôchodkovej reformy na kapitálový trh v Čile ako modelový príklad.
Abstract in English	This paper discuses pension reform and its contribution to capital market development. Focus is being put on pension reform based on funded accounts what involves establishment of pension funds. Thorough these funds and their impact on financial system is the influence of pension reform presented. In addition, an influence of pension reform on capital market in Chile is included as a model example.

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