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THREE ESSAYS ON SOCIAL SECURITY, PUBLIC PENSION FUNDS PERFORMANCE EVALUATION AND POLISH MANDATORY PENSION FUNDS SYSTEM

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Chapter 1

Social Security in Theory and Practice: An Essay*

ABSTRACT

Understanding the role and functions of social policy and social security systems is a key point for a discussion on reforms of the retirement systems. In this essay I describe the subject and range of social policy in the modern welfare state. The work has a descriptive character and aims at presenting basic issues between social security, social policy and social insurance. In the first part I provide a discussion on the welfare state's definition and its structure; then I refer to the notion of social policy and present ideological foundations for social security development. Also, a typology of social policy regimes is presented. The essay also deals with the concept of social security, discusses its definitions, origins and discusses development. I go over the discussion concerning classical assumptions underlying the social security concept and present some recent major challenges that make the review of social security construct necessary. Some terminology and institutional differences between the US and European framework are presented as well. Part three analyses the issue and origins of various risks faced by society. Those social risks are described along with the social risk management issues that are at heart of current approach to social policy. The last part shortly deals with the functions of social security with a focus on social insurance as its main tool.

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1. SUBJECT AND RANGE OF SOCIAL POLICY

1.1. Introduction

Pensions and old-age protection issues are characterized by and firmly related to the concepts of welfare state and social policy. Socio-economic factors (mainly ideology, tradition and level of economic development) influence the way the welfare state is constructed and the scope of its social policy. Therefore, before starting any pension-related discussion, it seems essential to define above concepts, or at least try to outline their common meaning. I will also describe shortly their contents.

1.2. Welfare state: definitions and structure

Barr (1992, p. 742) points out that it has been extremely difficult to define what actually "the welfare state" is and that even for some classics like Richard Titmuss, this term still represents an "indefinable abstraction" (Titmuss, 1968, p. 124). Barr (1992, p. 742) concludes that the term "welfare state" refers to four main state's activities, that is: cash benefits; health care; education; and food, housing and other welfare activities (benefits in kind).

According to Briggs (1961), the welfare state is characterised as a state that exists for three main purposes: to guarantee to a family some minimal level of income, to provide some safety mechanisms against social risks (inability to gain income while sick or old) and to keep some equality concerning social service. Therefore, the welfare state is:

> "a state in which organised power is deliberately used (through politics and administration) in an effort to modify the play of market forces in at least three directions – first, by guaranteeing individual families a minimum income irrespective of value of their work or property; second, by removing the extent of insecurity by enabling individuals and families to meet certain "social contingencies"… and third by ensuring that all citizens without distinction of status or class are offered the best standards available in relation to a certain agreed range of social services" (Briggs, 1961, p. 222 quoted in Harris (2000, p. 4)).

Harris himself describes the welfare state as an "overall network of support" (Harris, 2000, p. 4). A state can be referred to as *being* a welfare state or *having* a welfare state. The second option seems to be applied for states with only "residual" welfare services; namely the ones like USA or Japan that offer only some basic safety net (Harris, 2000, p. 5, italics in original). There exists also a dual definition; either the welfare state is characterised by its functions or by its mechanisms (institutions and procedures) that are

developed to achieve those functions (Mishra, 1984, chapter 1; quoted in Harris, 2000, p. 5).

The fundamental roles of modern state are much more than merely the basic state protection of individual rights (internal security achieved by law and police and external security created by national defence). In addition to this role, Holcombe (1999, p. 101) enumerates also: public production, regulation, redistribution and stabilization.

The welfare state can be therefore conceptualized in its strict (social goods and services, providing and organising social security systems) or wider version (expanded by non-budgetary actions of the state aimed at improving the social welfare, particularly by redistribution and regulation mechanisms like progressive taxes, minimum pensions, wages, or control of rents and prices).

The welfare state is undoubtly an evolution of the State, a response to increasing demand for social economic safety yet (especially in its wider context) also a result of increased wealth of society and economic possibilities of developed states accomplished during decades of economic growth after the Second World War. Not surprisingly, the welfare state concept concerns mostly the well-developed countries. A particular example of this mechanism is Singapore – a well-being patrimonial state that has emerged from nothing within the lifetime of one generation.

I might thus think of the welfare state as a social institution (typical for developed countries) which produces, organises, distributes and regulates social goods and services (institutional dimension) and which is responsible for providing people with some commonly agreed level of those goods and services to protect families and individuals against social contingencies and to stabilize the socio-economic environment (functional dimension). This responsibility can be based on the citizenship notion (that is the state is responsible for well-being of its citizens) or more broadly on ethical grounds (the state should provide at least some basic level of protection to all its residents). The difference is not so trifle if we consider the globalization and unification tendencies (vide European Union) and the problem of immigrants or "Gastarbeiters").

Each country has its own design and rules for welfare benefits; however one may give a general outline as follows (Barr, 1998, pp. 7-9). The social state benefits can come in cash or "in nature" (i.e. goods and services). The later concern mainly health protection, education and housing. Cash benefits cover two main categories. The first is social insurance related to benefits that are awarded regardless of wealth or income (means-tests) but on the basis of either previous contributions or a specified contingency (unemployment, marriage, reaching a specified age etc.). The second class includes non-contributory benefits (i.e. contributions are not required) that might come

either in form of universal benefits granted on the basis of a specified contingency (but again, without means-testing) or social assistance conferred upon the basis of an income or wealth test. Social insurance includes therefore contributory reimbursements like: unemployment, sickness, disability benefits, retirement benefits (pensions) and non-contributory payments like: income support, other income-related benefits and child-related benefits.

The welfare state, as any other social institution in the area of economic policy, should serve three main objectives that Barr (1998, p. 9) describes as: efficiency, equity and administrative feasibility. This much for the "positive" part of the welfare state problematic; however as any social institution also the welfare state is adherently rooted in the ideological issues ranging from whether such an institution is needed at all to degrees of its size and rules of operation.

1.3. Definition and role of social policy

Defining what social policy is also creates considerable problems. In general, the term "policy" can represent "a definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions" (Merriam-Webster's Online Dictionary). It is natural to assume that social policy deals with social goals and choices that have to be done. Usually social policy is associated with state provision of some basic welfare services (health, housing, social services, education, pensions, unemployment etc.) aimed at increasing social welfare, that is, the well-being of all members of the society. However, similarly to the concept of the welfare state, wider definition of social policy may encompass also some other services that develop the society's well-being (like transport, economic development, law and order, telecommunication etc.) and it may even include the general policy-making (that is economic policy) and regulation from the state aimed at improving living conditions. Mishra uses such broad definition in which social policy "refers, in a generic sense, to the aims and objectives of social action concerning needs as well as to the structural patterns or arrangements through which needs are met" (Mishra, 1977, p. x).

Social policy is associated with satisfying some basic or higher needs, defined as the lack of something without which one cannot be either fully human, autonomous (the fundamental physiological and safety needs, as defined by Maslow) or a member of society (some higher-criterion needs like belonging and love, esteem, self-actualisation that can be achieved via providing social and political rights, right to work and to be a member of society).

There are several competing theories concerning the society and origins of social policy (for a detailed discussion see: Vic and Wilding, 1976). Functional theories, either sociological (order theories) or political (pluralist theories) emphasise social policy as an inevitable and naturally evolving tool for solving social conflicts, pursuing of common interest and avoiding conflict harmful for the society (see Vic and Wilding, 1976, pp. 3-6). Therefore social policy is a product of social and economic changes, not a product of intellect or reformers. However, the weakness of such approach is that social policy is perceived as "inevitable" or "functionally necessary" and that that there is a causational assumption about its "neutral" or "generally beneficial" consequences (Vic and Wilding, 1976, pp. 7-8). Theories of conflict (sociological) and elitist (political) both underline that the conflict is a central issue in society being a natural product of achieving consensus between different social or political groups in society. Thus, social policy is "primarily the result of the constant attempts of various groups in society to improve or redefine their situation vis-à-vis these other groups." (Vic and Wilding, 1976, pp. 18).

Although existing from early times, social policy as a science emerged from economics in XIX century. Modern social policy[1] started to develop during industrial revolution in England and Germany as a new social class of workers emerged. As a science, social policy investigates sources and social costs of economic growth. It "(…) explores the social, political, ideological and institutional contexts within which welfare is produced, distributed and consumed" (Erskine (1997, p. 19).

The main aims of social policy include providing every member of the society with equal rights, minimum standards and opportunities and protection against social contingencies. Although these purposes already do assume some redistribution, a state can also declare an intention, as a part of her social policy, to smooth income and welfare inequalities. Esping-Andersen postulates that social policy should "emancipate workers from market-dependence" and to "minimize the importance of market-generated income" (Esping-Andersen, 1990, p. 26), therefore weakening the advantage an employer has over an employee.

De Neubourg and Weigand (2000) propose a definition of social policy as "the social management of risks" (De Neubourg and Weigand, 2000, p. 17) and discuss its active role. Such policy should not limit itself only to the ex-post measures (state interventions motivated by efficiency and equity grounds), but should also apply some

[1] Historical development of social policy in the UK and USA is presented by Barr (1998) in chapter 2. Other positions related to history of the welfare state: Ashford (1986), Flora (1985-86), Flora and Heidenheimer (1981).

prevention course. They emphasise that, particularly in modern economies, social policy should not operate only with the direct management of risks, by providing goods and services that would satisfy social needs, but rather it should focus on providing the *means* to get access to the fulfilment of these needs. In other words, social policy should enable individuals a full and free access to housing and utilities, to food, to health and sexual reproduction, to social participation and "*the basic mechanism* (italics in original) that guarantee the fulfilment of these needs", that is an access to income. In the case of modern developed economies, there are two focal areas, to which such an entry should be granted: labour market ("as the main income-generating mechanism") and education ("as the main source for future income") (De Neubourg and Weigand, 2000, p. 9).

The main areas of social policy include labour, retirement, housing, health, educational, demographic, family, cultural, environmental and immigration issues. Usually, provision of security, both in terms of physical protection and human rights "is not defined as a part of social policy" (De Neubourg and Weigand, 2000, p. 9).

1.4. Ideological foundations of social security

The shape of the welfare state and its social policy is definitely determined by subjective perception of values. Nicholas Barr presents an interesting two-stage approach to analysing social policies (Barr, 1993, p. 4). According to him, social policy deals with two types of questions. The first question concentrates on social policy aims and has normative or ideological (subjective) character, while the second question is about the methods of this policy and represents purely technical (objective) element. The first stage of policy making is moved by economic interests (class or group "rent seeking") and moral values ("a social value lag", Vic and Wilding, 1976, p. 20).

Relating to the second stage, one might question the pure objectivity of method choices. In real terms, even this phase is strongly influenced by political and socio-economic factors shaping, or at least quite strongly defining the range of, possible solutions (an example is political economy of pension reforms).

The social policy of the state aimed at providing welfare involves the state's intervention in economy which is achieved by fundamental tools of taxation and legislation. They usually implicate reduction of personal property and freedom; thus an ideology is needed to justify this action upon some set of commonly shared values. However, such values have unavoidably political character.

Several mainstream ideologies propose different role of state and extent to which state should intervene in the economy (for detailed discussion of these issues see Barr,

1998, pp. 44-64, also Vic and Wilding, 1976). Those ideologies have a direct impact on how the issues of private property, taxation, redistribution, regulation and public production are perceived. Knowledge of underlying doctrine helps also in assessing some particular solutions and reforms (for instance, pension systems).

Libertarians (represented by natural-right libertarians like Nozick and empirical libertarians like Hayek and Friedman) propose that state should perform only fundamental safety function (produce certain public goods) and should not intervene in the market as it might reduce the total welfare of the society. They motivate it also on moral grounds as any of state activities infringe individual rights for freedom. Substantial state intervention is socially disruptive, wasteful in resources, promotes economic inefficiency and obliterates individual freedom (Barr, 1998, p. 47).

Utilitarians (like Beveridge, Keynes and Galbraith), on the other hand, assume that even thought the capitalistic system is the most efficient one, it also creates some costs (poverty, inequality) that can and should be ameliorated by state (Barr, 1998, p. 48). Therefore, there exist some areas where public policy can improve social welfare (although not all of those actions are Pareto-efficient). Moral justification for state's involvement is given in Rawls' theory of justice.

Democratic socialists support the welfare state and either see it in terms of common consensus, or treat it as a useful but transitory stage to creating socialism. Radicals, like Marx, argued that the welfare state is an instrument of capitalistic oppression (class conflict theory). Marxists accuse social policy of emphasising technical, administrative attempts to solve what are essentially political issues. (Vic and Wilding, 1976, p. 13). Some more moderate socialists see the welfare state as a tool acting in the interest of ruling class (elitist theory) but also – to some extent – the workers themselves (Barr, 1998, p. 63).

Table I-1 Basic ideologies and their values.

Shionoya (1998) argues that the current crisis in the welfare state is caused not only by economic and demographic factors and that it should be analysed also in the context of ideological background. In modern countries, not only free-market but also a market for medical services or pension system do play important social and economic roles. Therefore, the welfare state as a whole (that is social policy and its institutions, mainly social security) "must depend on certain moral values that articulate and justify the body of policies, rule and practices of social security" (Shionoya, 1998, p. 1). He reasons that one must know these principles to be able to control legitimately the welfare state. Since the moral values are of very subjective matter, it is natural that people should work out compromise and base the welfare system on commonly shared principles that emerge in

the process of social agreement. Without those moral principles it is easy to succumb. The author states further, that "[m]oral principles rather than mere fiscal considerations are needed to restructure the welfare state in the developed countries" (Shionoya, 1998, p. 1). Of course a unanimous agreement is impossible as "[n]o society can accept all forms of value systems and behaviour. Social problems of this type are part and parcel of life in society" (Vic and Wilding, 1976, p. 18).

1.5. Types of social policy and their role in modern society

Based on the ideologies presented above, scholars have worked out various typologies for existing welfare states. Though such delimitation naturally concerns clear cut-off "ideal" types, it helps to understand particularities of each country social protection, for instance pension systems, and gives some ideas with regard to possible reforms.

One of the most popular typologies is a three-model created by Titmuss (1974) who distinguishes between three types: residual model (public assistance model), motivational or merit-oriented model and institutional model (c.f. Rymsza, 1998, pp. 29-31). In the first type, market and family are the main providers of social needs; social assistance is available only as a temporary measure in case the first two sources fail. The second model is achievement-driven and its social policy is treated as an additional, assistant element to economic policy. Within this framework, help from the state is conditioned on individual performance, which strongly supports any kind of insurance with actuarial equivalence between payments and benefits. The last model is based on strong public redistribution. Social policy here is an integral tool for achieving social cohesion, with redistribution taxes and programmes aimed at income equalisation. The social goods and services are provided on the basis of needs.

In his seminal study of modern welfare states, Esping-Andersen (1990) proposed three types of "regimes", being particular constellations of social, political and economic arrangements, constituting specific types of social policy (cf. Rymsza, 1998, pp. 29-31, Herman, 2003, pp. 8-9). Social protection is measured by its degree of "de-commodification" (Ebbinghaus, 1998, p. 7) which "occurs when a service is rendered as a matter of right and when a person can maintain a livelihood without reliance on the market" (Esping-Andersen, 1990). Also, "[…] Esping-Andersen stresses the redistribution function of social policy, in particular, whether universal citizenship rights correct market inequalities" (Ebbinghaus, 1998, p. 7).

The first model prefers selective social-assistance programs with strict targeting at lowest income individuals. The liberal political tradition implies that the state's

involvement should be limited to a minimum so as not to create negative labour incentives and limit individual choice. The social right to receive public help is based on the notion of citizenship; however a beneficent must pass the mean test and often suffers from stigmatization. Close to this model are the Anglo-Saxon countries (see Table I-2).

The conservative model is based on paternalistic state conservatism, Catholic tradition and corporationism that attribute rights to social services and goods on the basis of contributions. The main tool of social policy is the mandatory system of occupational private insurance backed by the state's social insurance. Such a system reveals tendencies for keeping the social status quo. Originating from Germany, the conservative model spread over the Europe and became to be known as the "continental" model. With regard to it, Ebbinghaus (1998, p. 9) proposes a separate class ("Latin particularistic-clientelist subsidiarism") for continental Latin welfare states of France, Italy, Spain and Portugal arguing that – in contrast to Germany – these countries introduced compulsory social insurance much later.

The third type of welfare state regimes, the social-democratic model is based on the ideology of socialism and strives for equal society and social safety however historically it is an extension of notion of T. H. Marshall's (1950) social citizenship (Rymsza, 1998, p. 35). The universal level of benefits according to social-democrats should be much higher than the liberal basic needs (Esping-Andersen, 1990, p. 7). This model best describes the Scandinavian countries.

Marshall's (1950) concept of social citizenship consists of three forms: civil, political and social rights. Lemke (2001) observes that each of them developed gradually, first civil rights (for instance: freedom of speech, religion, the integrity of body) being a product of the 18th century French and American revolutions, next political rights (voting rights, citizenship, political participation, political representation) that developed at the end of the 19th century and finally, social rights (basic support and income or rights to welfare) emerging in the second half of the 20th century (Lemke, 2001, p. 7). Another classification of rights (Birchall, 2003) distinguishes between claim rights (implying duties on other people, for instance for social security benefits), liberties (like free speech, personal freedom, freedom of religion), powers (ability to perform some actions, examples are driving licence, parent rights, ownership rights) and immunities (exempt from some duties, legal obligations, laws etc.).

Table I-2 Welfare state regimes and social policy implications: Esping-Andersen model.

In light of the above discussion it is interesting to ask how developed countries in Asia, particularly Japan should be categorised. It seems to me that, although Japan's low

public spending on social security might indicate the liberal model strong occupational relations speak in favour of the conservative model. To some extent, Japan features Titmuss' residual model in the public segment in connection with official public programmes, while it is conservative with reference to the private occupational sector. The difference is that in the Japanese context, the basic institutions providing social support are family and company. Such a description quite clearly reflects a construction of Japanese pension system (modest public flat component and quite generous occupational part). However, the current status of family has been undermined by demographic, sociological and economic changes (increasing unemployment and lingering perspectives for the life time employment). Economic difficulties affect the position of company. All those factors increase uncertainty and are likely to change the current system. Also, current social security structure will perhaps have to switch from pension-oriented to more healthcare-oriented one.

Personally, I would be inclined to support the welfare state understood as a composition of a) pragmatic expenses derived from the state's natural function of preserving law and order and b) ideology-based expenses aimed at providing some minimum level of safety for the state citizens as a natural result of social contract. In my view, citizens should, in return to their tax payments and other services granted to the state, be given some equivalent right to safety in the case of personal misfortune. Therefore, my perception of the right to the welfare is derived from the mutual rights and obligations binding all the members of the society (social contract) and perhaps locates somewhere between, but closer to, conservative and socio-democratic models.

Some more technical typology of social policies can be created on the basis of particular solutions. The welfare state can be mandatory vs. discretionary, can offer selective benefits and services (available after passing some requirements, for instance means test) or universal ones (available to all those who need them). Also, there may exist some quasi-contractual or mutual benefits that are universal but only after having earned these rights. Social insurance is such a case. Of course each solution has its pros and cons. For instance, a universal model creates social solidarity, promotes altruism and is easy to administer, however is expensive and also there are some problems with proper targeting the potential beneficents. More selective programmes are cost efficient, perhaps more difficult to administer (targeting issue), potentially stigmatising and therefore, creating low take-up problems. Constructions based on mutual contracts offer some positive features, however is hard to apply in societies with strong income inequalities.

2. SOCIAL SECURITY AS AN ELEMENT OF MODERN STATE AND A DOMAIN OF SOCIAL POLICY

Social security represents an essential part of the welfare state: "The social security delivers a key element of the complex and highly regulated network of conditional support provided by the state to citizens who lack the financial or physical means to meet their basic needs." (Harris, 2000, pp. 4–5). Social security is also a domain of social policy which, together with economic policy and more recently environmental policy, contributes to a somehow more general concept of well-being. However, what exactly is social security?

2.1. Discussion on the definition of social security

As many other social-related concepts, this one is neither clearly defined. Any attempt must probably end as a functional definition rather than an objective one. Each country has its own system that is based on its nationality, values, socio-economic situation, tradition, politics and etc and as this background varies between countries, so the mechanisms and rules for social security. Each ideology shapes roles and functions of social security being probably one of the most important sources for the divergence of definitions. With regard to the applicability of the same social security solutions in different countries, the general conclusion is that, "[a]s long as societies differ in their cultures and value, it is unlikely that social welfare provisions in any two countries will be the same, either in form or in spirit" (Chow, 1987, p. 39 quoted in Sanders, 1997, p. 3).

There is neither universal object that may serve as a designate, nor a definition in the international law (cf. Pieters, 2000, p. 1). However, there is some intuitive knowledge about the social insurance and this, I suppose, probably evolves from some common need of protection and generally shared views and fundamental values.

The English expression "social security" appeared for first time in the Social Security Act of the United States, enacted in 1935. However, at that time, some European countries were already run social insurance programmes as an element of their social security systems. Social security at the time of its implementation was understood in USA as "a system of guarantees to individuals against loss from major and minor catastrophes arising from social, political, and economic institutions and practices" (Gagliardo, 1949, p. 10). Its functions reflected (and still do) the liberal ideology of minimalist involvement of the state:

> "One important difference is that social security systems are designed to provide incomes that will maintain a minimum standard of living when earnings are interrupted rather than to supplement regular

earnings or to make up the entire loss, or nearly the entire loss, suffered. (Gagliardo, 1949, p. 15).

and as quite picturesquely described by Edwin E. White - a scholar of those times cited in Gagliardo (1949), to those who believed in social insurance (c.f. further points discussing the differences in terminology between USA and Europe), as the main mechanism of the system:

"[…] social security means not a feather bed, provided at public expense, but a net to catch those who fall, or rather, a floor which will assure all Americans in all contingencies of life a minimum of income sufficient for an existence in accordance with prevailing concepts of decency. Anything above such a minimum, the citizens individually must still provide for themselves through private insurance and other savings" (Gagliardo, 1949, pp. xviii-xix, introduction).

In 1950 the Japanese Advisory Council on Social Security described social security systems as "(…) the systems to enable every citizen to lead a worthy life as a member of cultured society" with provision of "countermeasures against the causes for needy circumstances including illness, injury, childbirth, disablement, death, old age, unemployment and having a lot of children by implementing economic security measures through insurance or by direct public spending" (MHLW, 1999, section 2). This definition, therefore, underlines the techniques and programmes (plural form "systems") and presents a detailed list of typical social risks (cf. point 3.).

One of the most important documents is 102 Convention (ILO, 1951) of the International Labour Office ratificated by 40 countries (as of November 2003) which specifies minimal norms in social security. The ILO definition is based on instruments and it understands social security as a response to the people's need for the widest security (Pieters 2000, p. 2) rather than as a set of various mechanisms that serve achieving this security. It provides a minimum income (safety-net) as a direct financial assistance to specific groups unable to earn income adequate for their needs (Saunders, 1997, p. 4).

A short and concise non-instrumental definition, that is the one enumerating some situations for which the state provides or should provide protection against human damage, is presented by Pieters (2000, p. 2) who describes social security as "the body of arrangements shaping the solidarity with people facing (the treat of) a lack of earnings (i.e. income from paid labour) or particular costs). Some other definitions focus on such functions as risk protection, lifecycle smoothing, income redistribution and mutual assistance based on social solidarity:

"Social Security in developed countries typically combines three different elements: income tested social assistance designed to relative poverty, social insurance concerned with the provision of security and the spreading of income over the lifecycle, and categorical transfers directed at redistribution between

specific groups" (Atkinson, 1989, p. 16).

Atkinson (1989, p. 99) attributes dual meanings to social security, as an objective of government policy and as a set of policies, while Titmuss stresses the functional aspect and defines social services produced by social security "based on common aims, rather than the mechanisms designed to achieve them" (Harris, 2000, p. 15). Similar definition of social security is provided by Saunders (1997). In his view,

> "[s]ocial security refers to the design and implementation or encouragement of activities intended to meet the basic needs of vulnerable individual and groups in society by guaranteeing their physical survival and by protecting them against unforeseen risks against which they are unable to protect themselves" (Saunders, 1997, pp. 2-3).

According to this definitions, three basic ideas should be emphasised: possibility to identify needs relatively easily; possibility to identify cases where those needs are not met, either with regards to the needs themselves or the social classes; and in the end possibility to "design, legislate, implement and deliver (or otherwise encourage) social security arrangements to meet those needs" (Saunders, 1997, p. 3). Saunders emphasises that "(…) *social security is an end rather than a means*" (Saunders, 1997, p. 3, italics in original), that is, that it should be based on particular goals and needs rather on particular strategies or techniques.

With regard to the organisational structure, social security may include: social insurance[2] only (USA equivalent, see further discussion about the terminology differences), social insurance and social assistance (definition in the UK) or social insurance, social assistance and health protection (Rymsza, 1998, p. 7). This wide definition is applied also in Poland. Singular form ("ubezpieczenie społeczne" which reads as "social insurance") underlines a particular technique or institution of social security while plural form ("ubezpieczenia społeczne" – "social insurances") refers to a whole system, comprising of various programmes (Rymsza, 1998, p. 20).

The term "social security" in the European Union encompasses the social solidarity concept and "reflects a common social and economic commitment towards its recipients, particularly the unemployed" (Harris, 2000, p. 15) based on the already discussed social citizenship. This social solidarity provides a legitimization for a redistribution system operating either horizontally (intergenerational redistribution/solidarity) or vertically (income redistribution/citizenship solidarity). It also corroborates the idea of insurance equivalence meant as risk sharing between the insured, and not the strict actuarial equivalence between contribution and benefit (cf. Rymsza, 1998, pp. 20-21).

[2] It is characteristic that the word "social insurance" is a title of Gagliardo's (1949) book describing American social security system.

Very closely related is the term of "social protection" understood as "public measures to provide income security to the population" (Holzmann et al., 2003, p. 5). In many cases their meanings are simply the same. However social security may be characterised as a comprehensive mechanism typical to developed countries but "less applicable to new areas such as community, micro and area-based schemes" (Ortiz, 2001, p. 657). In its report on social protection in Asia and Pacific, scholars from The Asian Development Bank classify social protection as

> "the set of policies and programs designed to reduce poverty and vulnerability by promoting efficient labor markets, diminishing people's exposure to risks, and enhancing their capacity to protect themselves against hazards and interruption/loss of income. The policies and procedures included in social protection involve five major kinds of activities: labor market policies and programs, social insurance programs, social assistance, micro and area-based schemes, and child protection (Ortiz, 2001, p. 657).

Therefore, social protection can be seen as a extension of the modern social security (environmental policy, new approach to labour markets, programmes fighting with social exclusion and negative demographic effects etc.), particularly in developing countries that have to deal with traditional set of problems but also some issues characteristic for their economic and socio-demographic situation (environmentally-safe growth, child protection, local and civic initiatives, micro-loans, education, anti-discrimination issues etc.).

2.2. Why social security emerged?

Historically, social security as an institution had functioned in Western countries much before a common, yet indefinable name for it appeared. Initially, the basic sources for protection in local societies were family and local groups. However, the Industrial Revolution caused mass migration to the urban areas and changed the socio-economic conditions. Transport difficulties greatly weakened the workers' links with the extended families in the rural areas, while some new types of risks (industrial accidents, sickness and disabilities as occupational income interruptions, old-age protection for salaried groups and diminished agriculture families). Consequently, it created a need for new system of protection that would be based more on the society as a whole rather than on the basic structure of society that is family and/or the local help.

The first social protection organised by state was introduced in Europe. In 1883 Bismarck established a first national health scheme with benefits from the state obtained on the basis of individualised, salaried work. The Economic Crisis of 1930s gave an incentive in the USA to create a national protection system, at least at the minimal level.

Such safety net was introduced by the Social Security Act in 1935. New Zealand enacted its social security law in 1938 being proposed as a model by the International Labour Organization in its report of 1942 (MHLW, 1999, section 2). The United Kingdom introduced its social security system as a result of famous Beveridge Report of 1942. In comparison to the occupational-focused Bismarck approach ("earnings-related contributions giving entitlement to earnings-related benefits"), the Beveridge proposal concentrated on poverty relief as a main function of the system (Barr, 1998, p. 34). Social protection (shakaihoshō, "社会保障", in Japan as an official concept appeared in its Constitution in Article 25 promulgated in 1946 (MHLW, 1999, sections 1 and 2). In the case of Poland, first social protection systems existed already before the First World War at the territories (partitions) occupied by Germany and Austria[3] and were developed on the basis of the Bismarck model after regaining independency (Rymsza 1998, p. 108).

2.3. Assumptions underlying social security concept

Recent socio-economic developments create new challenges to social policy and call for re-evaluating its premises. During the post-war period, the developed states gradually stepped aside from the social security's original framework of providing minimum conditions. Many new benefits originated and most of them are nowadays much above the minimum. In particular, the relative meaning of standard level of poverty, health and cultural requirements has changed, creating higher financial strains on the system.

Another issue is that, some forty of fifty years ago, the non-working periods in peoples' lives (education, retirement and to some extent occasional brakes in employment) were short in comparison to the working phase. However, nowadays societies require much longer time of schooling. Increasing life expectancy seriously amplifies the problem of support for the frail old population that is mainly in the pension provision and long-term care areas (cf. Bovenberg, 2002, pp. 183-206 for pensions and MHLW, 1999, Vol. 1, Chapter 3, Section 1; Reinhardt (2002, pp. 235-262) for health care); however there are also some less acute issues which relate to social inclusion. Since the length of non-occupational life period has increased there is a need for higher savings able to finance it. Current ways of financing seems not to be able to deal with this task anymore. All this issues need to be taken into consideration while proposing particular reforms.

The fundamental assumption underlying modern social security is the link between

[3] The history of social security in Poland is presented in Szubert (1987).

entitlement to benefits and an individual and paid labour. There have been several changes in the labour market and industrial relationships in the developed countries. People tend to have more diverse job careers; they do not work for only one-two companies during their lifetimes any longer. Also, some jobs do not represent classical employment contracts (outsourcing, part-time jobs).

A further serious problem is the assumption of full employment (Scherman, 1999; Shepherd, 2000). During the after-war growth period there were no great problems with unemployment. However, nowadays even the developed countries face relatively high unemployment. Shepherd (2000) states that the rising cost of social security is partly caused by "inequality of opportunity" and by "a huge and growing difference in incomes of rich and poor people". Further, the author accuses the capitalistic industrialisation which creates negative socio-economic changes by promoting smaller families negatively influencing the family relationship, contributing to increasing speed of society ageing and leading to "people existing to the edges of society" (Shephard, 2000). In my opinion it is rather tricky task to answer what the causes of socio-demographic changes are and whether they are independent to the growth of economy or whether they depend on the formula of economy. Nevertheless, even though I do not agree with Shephard's general line of casual reasoning (it is hard to argue that alternative economic systems would produce economic growth *and* avoid somehow natural changes in family structures, whatever negative they are; also it is a tricky question to link socio-demographic changes *only* to the formula of economy[4]), the outcomes certainly call for changes in social security design. Further, one can consent with the author's remarks that modern government, due to inclination for lowering costs of social welfare, are interested in promoting an informal welfare and that it is due to their liberal agendas that make them reluctant to pay for social security.

Discussing the family issues, one must observe that its structure has changed and that the reference model of the "classical" family (that is one consisting of working male, non-working wife and two-three children) used at the beginning of implementation of social security "is becoming less and less representative" (Scherman, 1999, point 3.3.3). Not only the working obligations distribution within male-female has changed, but also the employment prospects became tougher and less secure. Therefore, the mechanism under which the male is a bread-winner and a "gateway to various security measures" (Scherman, 1999, point. 3.3.3.) via derived rights must be revised.

The assumptions that lie behind the system are changing and social security is

[4] Such changes seem to be inevitably linked to the overall economic level of life and to the cultural changes, to which economic factors contribute only partially.

expanding its coverage and level of benefits which causes a natural evolution of the definition itself. However, the broader the definition, the more difficult it may be to distinguish this term from other techniques of social protection (Pieters 2000, p. 2). Scherman (1999) observes that "modern social institutions mainly developed during periods of almost continuously high levels of economic of growth" and therefore the societies used to make decisions that concerned shaping their social policies on the assumption of constantly increasing resources. Due to economics problems and demographic changes, this does not necessarily be the case in the future.

Consequently, especially in the context of developing countries, mechanical copying of "classic" rules underlying security system may not work. Even if all assumptions would be met, there may still exist disparate social risks. Pieters (2000, p. 2) argues that "(…) it has little sense to use the concept of social security for societies which did not (yet) introduce paid labour and/or where the work of the individual worker is only seen as a non identifiable part of the activity of the larger group". He insists that it does not mean that such societies do not need any social protection. For instance, some modern African countries have different conditions (no regular or official work, no employment, more extended family structure, families living on benefits of one member etc.). In such countries, there is no much sense to rely on cash benefits, since the workers are not paid and the capitalistic economy is reduced to the barter (Pieters, 2000, p. 5). Kasente (1998) discusses a gender problem in Africa, where most woman work, but have no relation with social security as their work is not paid or is just part of the grey economy. Shepherd (2000) emphasises the problem of food and water supply which is another reason why the ILO definition of social security is not applicable to most Third World countries.

2.4. Critique of the current social security framework

All these facts lead to a somehow natural critique of social security in its current state. Pieters (2000, p. 5) claims that the social security is "passive" in this context that the social risks specified by traditional branches do not respond to the current problems and also that the assumptions underlying the social security concept must be changed[5]. Therefore, the European legislations (ILO's definition) "do not serve anymore the purpose they were made for" (Pieters, 2000, p. 5) and the ILO definition is needed to be viewed from the current standpoint, "(…) which does not lead to the same conclusions as when it was first established" (Scherman, 1999, point 4.3).

[5] Pieters discusses the assumptions of the standard family, but the issues discussed in the previous section are also of relevance.

2.5. Social security models in Europe

One can distinguish two main types of social security regimes in Europe depending on whether there exists a strong relation between paid contributions and earned benefits (Conde-Ruis and Profeta, 2003). A system where such relation is strong there is low intra is called “Bismarckian”. The strong link implies that there are bigger differences in benefits and, due to proportionality between premiums and benefits, there is less intra-generational redistribution. Examples include Germany, Italy, France or Poland and are characterised by high replacement rates. The second type is called “Beveridgean” and features quite flat benefits with contributions proportional to earnings, therefore implying stronger redistribution within the same cohort. This category includes countries like the UK or the Netherlands (Conde-Ruis and Profeta, 2003, p. 4).

With regard to inter-generational redistribution one can speak of social security highly redistributing income (usually financed by the Pay-As-You-Go system) and of less redistribution nature (usually financed by fully-funded method).

2.6. Social security in the US and Europe

As mentioned already, there are quite important differences in the scope of social security systems (cf. MHLW, 1999, Vol. 2, Part 1). The UK version represents the income security consisting of pensions and child allowances. Actually, similarly to the whole Anglo-Saxon liberal model, the equivalent name should be rather “welfare state”. For instance, Nicholas Barr (1992, 1998) does not use the expression “social security” but rather terms such as “social policy” or “social services” which possess some wider range of meaning. In France social security covers social insurance (sickness insurance, old-age insurance) and old-age protection but does not include social assistance (cash benefits to the needy), social services or minimum income level security systems. All those elements together are labelled as “social protection” (MHLW, 1999, section 2). Germany, as mentioned, represents the continental concept with social insurance, social compensation and social support adding up to social security.

The biggest distinction exists between the European and American terminology. Americans use the expression “social security” to refer only to the retirement provision obtained under the OASDI programme (Old Age, Survivors and Disability Insurance, Martin 2000), while the term “social insurance” refers to social security. However, the U.S. Social Security Act includes some other programmes as well (unemployment insurance, health services, disability services, medical services for elderly and so on).

The very early tendency in US to use term “social insurance” in its social security context can be illustrated by a definition given by Dr. Rubinow in his work “Social Insurance” in 1915:

"Social insurance is the policy of organized society to furnish that protection to one part of the population which some other part may need less, or if needing, is able to purchase voluntarily through private insurance." (Rubinow (1934 , p. 508) quoted in Cohen, 1934).

Probably, due to its central point and little alternatives, social insurance was understood rather not as a tool of social security, but the concept itself being

> “(…) a relatively inexpensive form of insurance, devised by the State to guarantee the wage earner and his dependents a minimum of income during periods when, through forces largely beyond his control, his earnings are impaired or cut off.” (definition by Abraham Espstein, quoted after Rubinstein (1934, p. 508) in Cohen, 1934).

with typical security functions aimed at protecting

> “(…) the worker and his family against the economic emergencies resulting from the temporary or permanent loss of a job through unemployment, sickness, invalidity and old age and against those other emergencies which arise from the death of the breadwinner, the illness and burial of a member of a family, the birth of a child or the burden of supporting a large family.” (ibidem).

The differences derive not only from purely terminological grounds. All documents and discussion concerning the Social Insurance Act of 1935 used the expression “economic security”, so was the name of the committee [on social security] appointed in 1934 by President Roosevelt (Martin, 2000, footnote 9). However, “economic security” had narrower meaning (c.f. MHLW, 1999, section 2) and the initial intention of the legislators was to create a whole system of social security:

> “Those who selected the title of the Social Security Act of 1935 had far greater aspirations for the phrase. It was chosen over its major rival, “economic security”, as the appropriate umbrella for a number of programs quite disparate in structure and focus: (1) federal grants-in-aid for three categories of state-administered public assistance—Old Age Assistance, Aid to the Blind, and Aid to Dependent Children; (2) a complicated tax-incentive scheme encouraging state-financed unemployment compensation programs combined with grants-in-aid for their administration; and (3) the totally federal Old Age Insurance Program.” (Martin, 2000).

Martin (2000) expresses an opinion that the main cause for the change of the perception of the “social security” phrase in USA must be attributed to the fact that each programme had to go through different agencies, congressional committees and, in effect, they were given legislation processes. Therefore, each part of the Social Security Act of 1935 “had such different political dynamics that they shortly developed independent direction” (Martin, 2000) and became unrecognisable for the public as a

part of one common project.

2.7. Social security as a human right

Social security is perceived as a human right which brings serious consequences[6]. Already in 1948 Article 22 of Universal Declaration of Human Rights stated that "Everyone, as a member of society, has the right to social security (…)" (quoted in Pieters, 2000, point 2). The Declaration states further, that this membership of society should give the person a right to participate in the organisation and resources of the State, and guarantee his or her economic, social and cultural rights that are essential for the person's dignity and free personal life.

Furthermore, the UN Covenant on economic, social and cultural rights of 1966 once more acknowledges in its Article 9 the "right of everyone to social security and social insurance" (quoted in Pieters, 2000, point 2).

As pointed out, the international minimum standards of social security are set by the ILO Convention 102 which generally insists on providing replacement rate of 40% after 30 years of contributions (Fultz, 2002, p. 13, footnote 6; c.f. ILO, 1952). Many constitutions in the world recognise social security as a human or fundamental right (Pieters, 2000, point 2), for instance Japan in its Article 25 (MHLW, 1999, section 2).

At the European level standards were set higher by the Council of European Code of Social Security and its additional Protocol of 1964, with its later revised version (that is not in force due to lack of ratifications, Pieters, 2000, point 2). Even though the welfare rights vary between countries, these social rights are "deeply embedded in all European countries" and included in the European Union law "in the "Charter of Fundamental Rights" adopted at the Nice summit in 2000" (Lemke, 2001, p. 7).

It should be mentioned that such an approach is fiercely attacked by liberals who claim that attaining unconditional and uncritical rights to the social services can result in excess demand for them, wasting resources ("free price") and, in effect, in people's dissatisfaction (Vic and Wilding, 1976). A situation where people, denied access to services, may feel robbed or deprived can lead to social disruption. A radical conservative writer, Enoch Powell claims that "translation of a want or need into a right is one of the most widespread and dangerous of modern heresies" (Powell, 1972, p. 12, quoted in Vic and Wilding, 1976, footnote 25). Such views, however, are hard to be put into practice, both on ideological and practical grounds. I would rather refer to it as some warning of possible distractions caused by too uncritical granting rights without

[6] For instance reforming of pension fund systems aimed at limiting expenditures, can encounter strong opposition that uses human rights as a powerful legal background.

necessary economic analysis.

3. SOCIAL SECURITY AND SOCIAL RISK MANAGEMENT

In this paragraph I discuss shortly social risks, their characteristics and social security actions aimed at managing social risks.

3.1. Definition and sources of social risk

A risk can be understood quantitatively, as the possibility of occurrence of a certain event or qualitatively, as the event itself. Conventionally, as "risky" are labelled those outcomes that may bring negative consequences[7]. One should also distinguish between the concepts of risk and uncertainty; the former is of objective nature and "can be analysed mathematically" (Brown, 1999, p. 3) by assigning probabilities to the different possible outcomes; the later refers to those events whose probability of occurrence cannot be assessed and thus, whose likelihood for occurrence has more subjective character. In the economic context, risk can be loosely identified as a situation when the future outcome of someone's activity (for instance value of investment, labour income etc.) negatively differs from the expected value.

Social risk can also be defined as an event ex ante, that is, as a prospect that the quality of life may decrease or ex post as a realized event, particularly in the context of salaried work; in this meaning any social risk refers to

> "the lack of income from paid labour affecting those people who do not (or no longer have to) work due to old age, incapacity for work or unemployment; the passing away of one's wage-earning partner; the particular costs related to the upbringing of one's children; the need for (a coverage of the costs pertaining to) medical care; and the lack of the means necessary for a decent existence" (Pieters, 2000, p. 2).

Naturally, for most people in modern economies, salary work is the most popular of getting resources for living. However, we can extend this income maintenance context to all markets in general and also to non-market natural social groups offering support – that is family, friends and local societies. The definition in Neubourg and Weigand (2000, p. 11) is similar; however they do not mention social groups while describing social risks as "the risk not or no longer being able to rely on either markets or the family to secure the satisfaction of the main needs".

Consequently, social risks are basically linked to the concept of economic security and I would consider social risks as possible events undermining security of an individual, both in the economic (narrow definition) and the welfare (wider definition)

[7] Although from a purely statistical point of view, a risk does need to be a negative result.

context. According to Rejda (1999, p. 2), economic security is “a state of mind or sense of well-being by which an individual is relatively certain that he or she can satisfy basic needs and wants, both present and future”. Thus, such a relative notion is very subjective and depends on the individual’s perception, wealth, character, attitude, experience, social environment etc. Economic security consists of two layers: the first is the economic security as the ability of satisfying needs; the more general reflects some general stability of life-cycle incomes and living conditions.

Brown (1999, p. 4) stresses the actuarial underpinnings of economic insecurity as the inability to exactly predict future values of “variables such as rates of earnings, investment income, inflation, labor force participation (or unemployment), mortality and divorce”. He enumerates causes of economic insecurity related to: mortality, health status, job security (unemployment and changes in labour market), inflation, retirement, divorce (financial independence) and dependants (upbringing, education). Recently, those sources of risks have been greatly increased by globalization of economies (c.f. Holzmann et al., 2003, p. 3).

Particularly pre-retirement actions are very complex and – due to the long horizon and rather unpleasant dimension of age and death – enhanced by consumer’s ignorance, thus creating a natural tendency for myopia and underestimation. It seems reasonable that the state should take up the task of designing and implementing (yet not necessarily managing) some social schemes dealing with old age and other social risks.

Social risks can be viewed in more material context (income insecurity, inability to satisfy basic needs), however, they may also be defined very widely, including social exclusion and psychological costs[8]. For instance, Zuckerman (1979) provides a psychological definition of social risk that I would associate with “higher”, not “material” needs; in such a context, a social risk is "[t]he estimated likelihood of being embarrassed, shamed or humiliated or of experiencing a loss of valued affection or respect of others".

3.2. Typology of social risks

Social risks can be classified according to various criterions. Holzmann and Jørgensen (1999, p. 9) propose three basic delimitations, that is, the depth, width and frequency of the loss. Catastrophic risks are those characterised by low probability yet huge potential damages; non-catastrophic risks have opposite characteristics.

[8] The notion of poverty is, particularly in developed countries, a relative concept. There may be a situation where individuals, even though being able to satisfy their basic needs suffer from social exclusion and to lead a “decent life”. Such exclusion can occur in the context of not being able to fulfill their cultural, spiritual or civic activities.

Depending on the range of affected households in a society, the risks can be labelled as "idiosyncratic" (or covariant risks), affecting individuals or single households, and "covariant" shocks hurting all wide groups or whole population. Finally, conditional on their occurrence, risks can be single or repeated.

Neubourg and Weigand (2000, pp. 11-13) classify social risks according to the range of population to be affected by the risks. The first group consists of universal risks, shared by everybody (but not necessarily of the same probability), life-cycle risks (shared by some specific age or life-stage groups) and categorical risks (also called class- or group- risks) typical for certain socio-economic groups, for instance some profession or men-women. The second set includes incident, lifetime and intergenerational risks.

A more comprehensive typology of Holzmann and Jørgensen (2000, pp. 6, 12) is presented in their work on Social Risk Management.

Table I-3 Typology of social risks

3.3. Main branches of social security as responding to social risks

As already mentioned, social security can be viewed as a one of three possible ways of managing social risks. While social security uses a set of public arrangements, the other two categories focus on informal activities or market-based solutions (Holzmann et al., 2003, pp. 7-8). Naturally, such typology is quite sharp; for instance one can observe strong tendency for social security "privatization" taking place in recent years. By this term I mean here state's attempts to use market mechanisms and private operators as main providers of publicly organised, supervised and often – guaranteed – system (vide the concept of individual retirement accounts and the Chilean pension system).

Both the ILO's Convention 102 and the European Code of Social Security list nine branches of social security (c.f. Pieters, 2000, p. 3; c.f. ILO, 1952). Adding some description of social risks one may arrive at the following list of social security benefits: old-age (risk of running out of resources after retirement), invalidity (injury, risk of accident and permanent inability to work) and industrial accidents, sickness (illness, risk of temporal or permanent inability to work) and medical care (risk of health expenditures, deteriorating health and diminishing working abilities), survivorship (risk that family members will have no resources to live after the death of breadwinner particularly important for the traditional family structure of two children and a non-working wife), maternity (risk of additional expenses and inability to work), family assistance (risk of additional expenses), unemployment assistance (risk of temporal or

permanent inability to find work, plus additional expenses for searching for a new job).

Pieters claims that "this enumeration clearly reflects the structure of social security systems as they existed in the Western World after the Second World War" (Pieters, 2000, p. 4). Additionally, the legal structure of the minimum specified by the ILO or European documents is not suited to the modern reality. Those requirements are "tested only with respect to the standard beneficiary, which is still defined as a man with a non working wife and two children" (Pieters, 2000, p. 4). Consequently, Piers (2000, p. 4) suggest that the new social security approach should "take into account the broader diversity of family units" and be more concerned about the gender equality in the labour market.

3.4. Social risk management

As already mentioned in section 1, de Neubourg and Weigand (2000) opt for more active social risk management. Such an approach should be aimed not only at meeting the needs caused by occurrence of risks, but also, or preferably, at making sure that individuals have a fee access to the areas where they can fully fulfil their needs. (de Neuibourg and Weigand, 2000, pp. 9-10). For instance, such a policy should enable households to cope with risks by providing them an opportunity to "sell" their labour at the market[9].

The main reasons for taking up social risk management can be presented as follows (c.f. Holzmann and Jorgensen, 1999, pp. 7-8). First, it is poverty that not only deepens the vulnerability to risks but also can be regarded as one of their causes; therefore creating a vicious cycle. Second, managing risks brings about consumption smoothing for individuals and Pareto-improved welfare for society as it helps to keep income stable and more predictable during all stages of individual's life-cycle and creates more stable environment for all members of society. The third reason focuses on improved income equity aimed at finding a balance between assuring equal opportunities and equal outcomes (elimination of drastic income differences). Be as it may, the ideological foundation of this premise (especially vertical income distribution) is somehow accepted in most of developed countries; however the level of preferable action is, obviously, different in various countries. The last reason can be described as an economic development-driven factor and sees social policy tools as an instrument that can contribute to economic stability and growth.

Holzmann et al. (2003, pp. 6-7) classify social risk management into three main

[9] For instance, one typical response of households to increased financial pressures is initiation or increase of work by housewife's (see Horioka et al, 2002).

strategies. The first group, prevention (or preventive) strategies, is used ex-ante and is meant to increase income and (or) reduce probability (variance) of occurring adverse risks. Preventive strategies include some elements of economic policy (for instance active labour policy, macroeconomic policy, environmental policy, human investments – education etc.). Social protection tools involve typically interventions aimed at improving labour market and skills level. The second group, risk mitigation actions, is based on ex-ante actions aimed at reducing the impact of future negative events. Usually such actions comprise of instrumental and temporal asset diversification and of risk pooling. Risk mitigation strategies may result in costs for the expected income (for instance insurance premium or alternative costs due to lower risk-return profile). Hedging can also be viewed as an insurance activity. Coping strategies are the third field of risk management. They are launched ex-post and are designed to relieve the impact of negative events. Coping can comprise of "individual dissaving, borrowing or relying on public or private transfers" in the form of charity or non-contribution programmes, i.e. means-tested transfers or public works (Holzmann et al., 2003, pp. 6-7, 8; c.f. also Holzmann Jørgensen , 1999, p. 9).

4. AIMS, METHODS AND TECHNIQUES OF SOCIAL SECURITY

4.1. Functions of social security

The role of social security is based usually on equity and efficiency grounds and - in more modern context – also acts as a tool of active social policy (social risk management) used to provide means to satisfy needs and to reduce dependency. Therefore, the main tasks of social security can be presented as follows (c.f. MHLW, 1999, section 3). The first function boils to mitigation and coping functions, therefore to dealing with the factors that can create situations of need (illness, injury, childbirth etc.) either through insurance techniques (social insurance) or by direct public spending (social assistance). The second issue is to ensure the minimum level of living by providing some kind of "safety net"; this function though still important, was most essential at the beginning of social security systems. The final role concentrates on economic and social stability and promoting economic growth. It is because, to some extent, social security, via its payments, can be seen as a shock absorber that helps to sustain aggregate demand during recession. More generally it is a tool for developing human capital and therefore it contributes in a long run to economic development.

The ILO' functional definition of social security enumerates compensation of income loss, promotion of health and sickness prevention, creation of living conditions enabling realisation of common needs with particular support for elderly, handicapped and children (Scherman, 1999, point 4.3).

A common feature of social security is the need for income redistribution, both in the horizontal (between the rich and the poor) and vertical (between generations) context. To some extent, there exists also an inter-temporal redistribution for individuals themselves; saving for retirement is one of such examples. Redistribution can be achieved both via tax or social security systems. Nowadays there are various opinions in the perspective of old-age protection about whether the pension systems should perform the income redistribution tasks. While talking about traditional pension systems one is used to take their redistribution function for granted. However, there is no particular need for the "classical" PAYG old-age system to be redistributive in its nature. It can work without this, just performing the temporal transformation of resources that is the content of the intergenerational contract between the successive generations. The particular choice depends on social agreement; however it is also severely limited by pension system's current economic situation.

4.2. Social insurance: a basic tool

Social security can make use of several basic instruments. These are: "the family, voluntary arrangements of different kinds, private insurance, social assistance, mandatory saving plans, and social insurance" (Scherman, 1999, point 2.2). The way these, sometimes alternative to each other, components are put together in a particular country, is a political process. It is so because the degree and way the State intervenes influences the economic and social environments.

However insurance tends to one of the most convenient mechanisms of social management strategies aimed at risk-mitigation (cf. Holzmann and Jørgensen, 1999, p. 16, Table 1). Some informal or personal insurance actions cover for instance marriage, family or community arrangements. Formal (provided) solutions that can be mandatory provide insurance for unemployment, old-age, disability, survivorship, or sickness risks, belonging to the catalogue of social risks. At any rate, the mechanism of insurance has the distinctive features of collective social action aimed at immunization of risks thanks to common risk pooling.

There are several important motives for using social insurance by the state. The first group of the reasons is based upon the nature of the insured risks. Forss et al. (2000, p. 15) argue that "[s]ocial risks cannot be defined or calculated solely on the basis of individual risk". Some of them, like for instance unemployment, inflation, congenial, chronic or any serious diseases (c.f. Barr, 1998, p. 125), cannot be properly handled with market or society-based solutions. Such risks may be too prohibitively expensive for an individual (if no risk pooling is provided or if arranging such a pool encounters problems due to group size, information costs and/or rational ignorance that all together prevent the Coarse theorem from working). The other possibility is that such risks may simply be uninsurable because of problems with estimation of probability[10] (c.f. Forss et al., 2000, p. 8) or/and due to catastrophic or universal (mass) character. In the later case even with a risk pooling the risks cannot be diversified away as they affect too huge part of population at the same time and may be linked up with overall economic situation (for instance unemployment).

The second group of the motives relates to the "information failures" (Barr, 1998, p. 124). Due to problems with asymmetric information such phenomena as adverse selection and moral hazard may occur (c.f. Forss et al, 2000, p. 8, Arrow, 1963, p. 961). Adverse selection is an ex ante problem which occurs when the insurer is unable to

[10] In such a case, the "risk" is rather an "uncertainty" – see section 3 on social risks definition. In effect, "(…) social insurance, in sharp contrast with actuarial insurance, can cover not only *risk* but also *uncertainty* (Barr, 1998:126, italics in original).

differentiate price/premiums according to risk levels due to lack of information. Thus, adverse selection involves a tendency for insuring lower-than-average quality risks, which results either in rising a probable threat of insurer's insolvency or, if insurer tries to counterweight his lack of information by charging higher-than average premiums. Moral hazard can be described as a lack of incentives from the point of insured to behave prudently ex post (i.e. after concluding the contract), which results in increased loss occurrence that has to be met by insurer. These information issues hinder the market mechanisms. If not provided any alternative, the society's well-being incurs a loss:

> "The non-existence of markets for the bearing of some risks in the first instance reduce welfare for those who wish to transfer those risks to others for a certain price, as well as for those who would fin it profitable to take on the risk at such prices" (Arrow, 1963, p. 946).

To some extent, social insurance is motivated by collective social policy goals (Forss et al., 2000, p. 16) and by collective consumption of public goods. Forss et al. argue that in fact "(…) any insurance contract can be interpreted as a process of public good provision" and emphasise that "[t]he key concept is collectivism, linking several agents to a shared value, in this case risk protection." (Forss et al., 2000, p. 13).

Because of the market failures and their inability to deal with uncertainties so many social institutions were created working with assumptions much different from the market-driven private insurance (cf. Arrow, 1963, p. 967). Comparing to private insurance, social insurance is characterised by quite loose actuarial relation (equivalence) between premiums and benefits and by compulsory participation (cf. Barr, 1998, p. 125) which makes this direct relation unnecessary (Swan, 1947, p. 345). Of course, the compulsion has several other functions such as avoiding myopic behaviour, free raiding or eliminating information problems. Usually, it is difficult to assess the real cost of the schemes and the state acts as a monopolistic carrier of services (Gagliardo, 1949, p. 20).

Applied to retirement provision, social insurance programmes are typically government-run pay-as-you-go plans. Risk is shared even more broadly than in private defined benefit plans. The costs of adverse outcomes can be borne by the retiree (through reduced benefits), by current workers (through higher contributions), by the taxpayer (through tax-funded subsidies), and/or by future taxpayers (through subsidies financed by government borrowing) (Barr, 2002, p. 2; Barr 2000, p. 6). The premium-benefit in-equivalency results in income redistribution. However Forss et al. (2000, p. 9) notice that most redistribute income over the individual life cycle (especially in the case of pensions), rather than between households. Even such

redistribution between individuals can be seen as a form of insurance in the long run (Arrow, 1963, p. 964). The reason is that when the premiums are paid based on the total group risk rather than subgroups or individuals; such redistribution guarantees in a long run an insurance against changes of personal characteristics.

4.3. Social insurance effectiveness

Risk pooling, redistribution mechanism and large scale participation enhanced by compulsion give social security much higher capacity to deal with uncertainties. However, there are still necessary conditions to be met. In general, the risks must be "insurable", that is, their probability must be lower than one and their occurrence pattern should be statistically independent. This is why insurance technique works pretty well when it comes to the old-age risk but does not show good efficacy in solving the problems of labour market during periods of economic decay affecting the whole working population.

4.4. Sources of financing social security

In general, the sources of financing social security correspond to the methods that are used. The main sources include: insurance premiums, pay-as-you-go transfers (intergenerational contract), trust/programme funds and their gains from accumulation (investment gains, dividends and proceeds), surcharge on income tax or general taxes, mutual insurance funds and private insurance companies, borrowing and private charity. Each method of financing has its effect on the economy, capital markets, budgetary situations, labour decisions etc. In a wider context, the social security can be financed by reduction in benefits, namely, directly by beneficiaries.

Swan asserts that, due to taxing power of government, there is no need for separate and self-contained reserves (Swan, 1947, p. 345), however also warns that the government "cannot practicably create a reserve in any form except its own obligations." (Swan, 1947, p. 348).

The experience of social security expansion and politically motivated false "generosity" of the systems created serious financial imbalance and put strong strains on public resources. This explains current popularity of funded pension schemes, perceived to offer bigger transparency and an immunization from political risk. However, usage of general revenues can be only justified when a large part of the population is covered by a particular programme (c.f. Swan, 1947, p. 347). With regard to social insurance schemes, the author argues that since they offer benefits only to those who contributed, such framework can be financed either via pay-as-it-goes or

there can be a reserve plan (Swan, 1947, p. 347). In my view, financing via insurance has the advantage of offering a transparent relation between premiums and benefits. It also provides some service at a specified "price". Whatever the real price might be, it still limits the negative effects of "giving away" for "free" the services; a typical free rider's phenomenon in the systems' where social services are provided at no or almost zero cost for a particular member. Naturally, those transfers must be paid back from the general resources and the final cost borne by the very individual might be, due to extensive over-usage, much higher than within a real price framework. Insurance mechanisms provide also incentives for risk-evasion and promote risk awareness and cautiousness in the society.

With regard to basic protection offered by the state Forss et al (2000, p. 6) emphasise that there exists widely supported belief that it "(…) should be financed by non-contributory arrangements, e.g. from general tax revenue" and that such solution would easily respond to the social need for basic protection and some general citizen rights guaranteed by law in many countries (cf. Forss et al., 2000, p. 6). They postulate self-financing and long-term financing as preferable methods to avoid "short-time political myopia" (cf. Forss et al., 2000, p. 17).

4.5. Future of social security in Europe

The future of social security in the world (and particularly in Europe) will be definitely dictated by increasing need to create incentives for longer work and higher women's participation in labour market; cutting state expenses and creating more self-made-man approach (vide concept of active social policy). The developing countries will have to attack the gender inequalities and create system not necessarily linked only to explicit labour contract.

In the European context, Scherman (1999, point 3.4.9) emphasises the role of social solidarity and taking care of some particular types of families that are prone to fall into poverty. The scholar indicates also three problems present in European social policy, namely, the demography and need to keep the fiscal discipline of EMU, the more labour-oriented solutions for the Union and the enlargement process. In the area of pension protection, many authors call attention to the problems of unification of national rules and portability of accrued pension rights. Current pension solutions create a considerable obstacle to the increasingly mobile labour market; also there exist a strong problem with labour costs and the economic competition both in the international and internal European context.

Bearing in mind the problems above, it seems very likely that be tendency towards

public “retrenchment” (see Weaver, 2003) will continue and that the role of the state in social security provision will be decreased.

It seems to me, that the welfare systems offered by the state will be further limited. Current trends (particularly in the field of pensions and health provision) suggest more private schemes and higher role of stock markets. Such changes will be dictated by growing individualism, more sophisticated financial market but also by the need of developed countries to lower the costs of labour, especially in the less sophisticated industries. The globalisation offers therefore advantages, but can also trigger the run for downsizing the social facilities that have been achieved so far. The example of the US comprises a strong example for creation more competitive and less patrimonial economic systems.

Chapter 2

Performance Evaluation of Public Pension Funds:

The Reformed Pension System in Poland*

ABSTRACT:

The Polish public pension funds initiated their activity in 1999. This is the first study that carefully examines their performance with the use of the Sharpe and Jensen measures. It is shown that pension fund managers did produce additional value due to active management. Thus, unsatisfactory overall results for the public pension system cannot be attributed to the inefficiency of the investment process. The performance of funds is compared with possible investment alternatives that existed at that period. We use the F-test to examine significance of abnormal returns for the whole industry and to test whether some funds persistently outperformed others. The study analyses possible benchmarks for evaluation of the Polish funds and calculates a dividend-adjusted WIG20 index. It also provides some information about funds portfolio holdings, their asset allocation and clustering around the median manager. The study finds that the biggest funds are slightly more aggressive in their asset policy, probably due to lower susceptibility to the performance penalty imposed by the regulator.

Journal of Economic Literature Classification Numbers:
G-23 (Pension Funds; Other Private Financial Institutions)
H-55 (Social Security and Public Pensions)

Keywords: performance evaluation, pension funds, pension reform

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1. INTRODUCTION

In April 1999 Poland introduced a new second pillar[11] of public retirement system[12]. Currently 16 private administrators are managing 16 public pension funds. Net total assets of the system (end of November, 2003) are approximately 11 billion USD with 11.39m individual accounts. This paper is the first to carefully examine the performance of these funds[13].

We use standard performance evaluation methodologies that have been applied in numerous studies of mutual funds in the US, the UK, Japan and a number of other countries. Two measures are used. The first, Sharpe's ex-post ratio (Sharpe, 1994) provides information about the relative reward-risk profile of the funds and is compared to the Sharpe ratio of the Polish market. The second measure, a two factor Jensen Measure (1968, 1969) is calculated as the intercept of the multiple regression of the individual fund returns (net of the risk free rate) on the net returns of the Polish market portfolio and the net return of a bond portfolio.

The study examines monthly pension fund returns over the period of 1 April 1999 – 29 August 2003. During this time the returns of the pension funds outperformed the market benchmark returns. The industry's average real rate of return exceeded 8% p.a. and a two factor Jensen Measure ranged at 3.2% p.a. We examine whether there is an evidence of differential performance across funds with a joint F-test (as in Grinblatt and Titman (1989). F-tests confirm the evidence of the existence of superior portfolio managers in the pension industry (F1 test) however give no support for hypothesis that some pension funds persistently outperformed others (F2 test).

With regard to investment portfolio holdings we observed that the pension funds followed quite conservative asset allocation policy (60-70% in bonds, 20-30% in stocks) perhaps due to state regulations concerning investment limits and because of the minimal required rate of return. We find that the biggest funds tended to invest slightly

[11] According to commonly used World Bank (1994) terminology, pension system can be divided into three pillars. First two pillars are mandatory and managed by state (financed by payroll taxes) and by private institutions (financed by individual savings in pension funds), respectively. The third pillar is assumed to be voluntary and usually managed privately (individual accounts, insurance and investment products). For more detailed description and discussion about pension fund typologies see OECD (2001).

[12] The reform concept is presented in Chlon et al. (1999) and Chlon-Dominczak (2002). For more detailed description of public pension funds and a discussion of current problems see Chlon (2000) and Stanko (2003a) discuss notional-account PAYG system (first pillar).

[13] The system in Poland draws heavily on the well-known Chilean model (Acuña and Iglesias, 2001) that has been applied in other Latin American countries (Devesa-Carpio and Vidal-Meliá, 2002) and is being considered in some other European countries.

more in stocks than the average which can be interpreted as their lower susceptibility to penalty paid each time if a fund's return falls below the minimal required rate of return. Further, the variability (calculated as interquartile ranges) of fund's asset allocation was decreasing over time which suggests that the funds' asset allocation strategies become more and more similar. This effect is probably caused by regulations and by progressing market concentration. In general we find out that pension funds were more concerned about possible downfalls than about potential opportunities to gain higher returns. The paper examined the benchmarks available in Polish market and proposed some candidates appropriate for performance evaluation. Our study found no effect of size of pension funds on their performance.

The structure of the paper is as follows. Next section presents previous studies on pension funds performance. Our data is described in Section III. Section IV compares funds' results with other investment opportunities that were available in Poland during the researched period. Section V explains our methodology in more details, while section VI discusses empirical findings. The last section concludes.

2. PREVIOUS STUDIES

Up to the author's best knowledge, so far there has been no research into Polish pension funds that uses finance theory to evaluate abnormal returns (alphas). The supervisory body, Committee of Insurance and Pension Fund Supervision) released a report on investment policy of fund administrators (KNUiFE, 2003), discussing period of 2000-2002. Some issues of monthly and quarterly bulletins by KNUiFE on the results of the pension funds are also available. However, these include only calculation of internal rate of return, the weighted average rate of return and mandatory minimum rate of return, specified by law. In 2002 the pension funds representative body, Chamber of Pensions Fund Administrators issued a short commentary (IGFE, 2002) that presented the results of industry in comparison to other investment vehicles.

Numerous recent international papers discuss the problem of pension funds performance and measurement, but these funds differ in their nature and legislation environment from the public fully funded pension frameworks that were introduced in Latin America and recently, in Central and Eastern Europe. Mittelstaedt and Olsen (2003) in their newest study on Chilean pension system use the Sharpe ratio and the multi-factor Jensen alpha to conclude that "the pension returns are consistent with the overall riskiness of the Chilean economy" and that there is no possibility for abnormal returns in the future. Barrientos and Boussofiane (2001), applied the DEA (Data Envelopment Analysis) method and found out that the pension fund management

market in Chile suffers from significant inefficiency. This study attempts to bring some insights on how the pension fund work in the European context.

Blake and Board (2000, p. 552) examine the UK private pension funds and find that the average fund underperformed the market average by 0.45 percentage points per annum, before deducting any fund management fee. Another UK study into over 2000 segregated pension funds by Thomas and Tonks (2000, p. 17) during the period 1983-1997 found that most of the funds are "close-trackers" to the FT-All Share Index and that their average outperformance was significantly different from zero, around one half of a percentage point per year. The average selectivity alpha and the average timing parameters were both negative (Thomas and Tonks, 2000, p. 14). Also, Blake et al. (2001, p. 15) present evidences that the funds' results are very close to the benchmark and on average slightly underperform it. Blake et al. (1999) found a stock selection negative and the average market timing very negative.

There are relatively many studies into the American pension funds. Ippolito and Turner (1987) researched over 1500 US ERISA-based pension funds during the period of 1977-1983, and Lakonishok et al. (1992) examined 769 defined benefit funds in 1983-1989. Both studies conclude that, on average, the pension managers significantly underperformed the passive management style (represented by S&P index). Lakonishok et al. (1992) relates the average underperformance of 1.3% annually to the agency problems ("window-dressing"). A study of Coggin et al. (1993) on a random sample of 71 US equity pension funds during 1983-1990 found a significant positive selectivity and negative timing. Christopherson et al. (1998), using conditional performance evaluation framework evaluate 261 manager portfolios over 1980-1996 to the Russell 3000 benchmark and find that the average manager outperforms the Russel by 0.72% per annum.

3. DATA

3.1. Source

The sample covered in the analysis ranges from the beginning of June 1999 till the end of August 2003 and is the most comprehensive one. The system started in April 1999, but it was not before June 1999 when the majority of the funds launched their operations in the market and gathered enough premiums to invest.

In this paper, we use a new, more detailed data set with the closing daily data on pension funds unit prices that was provided courtesy of Committee of Insurance and Pension Fund Supervision. Corresponding stock and bond market data was retrieved from the Internet site of the economic journal "Parkiet" (www.parkiet.com/dane).

The Merrill Lynch Polish Government Index (GOPL) was given courtesy of Mr. Phil Galdi from Merrill Lynch. Mr. Janusz Zieliński from the National Bank of Poland provided the data on Treasury Bills yields for the secondary market. The data concerning Polish mutual funds investing in bonds are from financial pages www.money.pl and www.tfi.hoga.pl.

3.2. Data description

We employ continuously compounded monthly rates of return. The assumption was that an investment starts in the morning of the first working day of month and ends in the morning of the first working day of the following month. Therefore, the closing values of the last trading day were used.

The returns from an investment in the stock market were calculated with the use of WIG and dividend-adjusted WIG20 indices (Warszawski Indeks Giełdowy, Warsaw Stock Index). WIG represents a total return index that includes dividends and pre-emptive rights. WIG20 consists of 20 blue chips, however in its original shape it does not account for dividends. As the pension funds are obliged by law to follow investment limits and the pension managing companies invest heavily in blue chips equity described by WIG20 index, this index is of much interest to our study. To allow for direct comparability of pension fund and market returns it was necessary to create a benchmark that would account for the dividends. We computed two versions: value-weighted (V20) and equally-weighted (E20) index (Appendix).

For bond market returns, the Merrill Lynch GOPL and MFUND indices were used. The former is a proxy of profitability from investing in Polish government bonds and reflects accrued interest income. The latter index is the arithmetic average of the returns of the biggest three mutual funds investing in bonds and money instruments. It serves as another benchmark and reflects in particular the pension fund's strategy of preserving the portfolio's accumulated value.

In the case of missing data, an artificial time-weighted data was computed; they do not exceed 2.0% of all input values, though.

3.3. Distribution and statistical properties of return and indexes

There are 942 monthly returns for 21 pension funds during the 51-month period of 1 June 1999 – 29 August 2003. Almost all (88% of all survived funds) of monthly returns for the pension funds are normal at 1% significance level. The monthly returns for stock and bond markets are normally distributed, while the mutual bond market and treasury bills are not.

As the data revealed heteroskedasticity, White (1980) heteroskedasticity-consistent covariance matrix estimators are employed. The investment results for pension funds are highly correlated with one another (most of them above 0.85), suggesting existence of common return generator factor or factors.

The augmented Dickey-Fuller and Phillips-Peron unit root tests for all fund, stock and bond excess returns, as well as for the averages, rejected the hypothesis of non-stationarity.

4. PERFORMANCE VS. ALTERNATIVE INVESTMENT VEHICLES

Currently, there are 16 funds out of all 21 funds that started their activity. Interestingly, all of the discontinued funds entered the market later (May-September 1999) than most of their competitors. Two of them had returns higher than the industry average, two others slightly underperformed it and only one was doing considerably worse (Stanko (2003b): p.5 and Table 1) at the time of their discontinuation. Out of the discontinued operators all but one were hardly known to the public at the beginning; the recognized one was performing much better than the market at the time of its termination. The most recent discontinued fund (Ego in December 2002) performed similar to the market average.

Table II-1 Survivorship bias issue.

The attrition rate amongst the funds was the highest (almost one-fifth) in 2001 (Table II-1) as a direct effect of market concentration process. However, the overall average attrition rate is not much higher than the one for the mutual funds in US equal 4.5% yearly (Dahlquist et al., 2000, p. 8). Using the Dahlquist et al. (2000) method, we computed a direct measure of the bias as a difference between the return on an equally-weighted portfolio of all the funds that existed and the return on equally-weighted portfolio of the survived-funds. These differences are very small; even in 2001 when most of the funds left, the difference in performance between all funds and survived ones was a mere 0.07% p.a. For value-weighted portfolios the differences are higher (indicating potential higher performance of the bigger funds) but still not substantial.

It is therefore logical to assume then that performance was not the only reason for mergers or acquisitions that took place in the market. Rather, most of the discontinued funds had started their marketing campaigns too late. Having failed to achieve an economically sound fragment of the market they were forced to quit. The probable explanation lies in the economies of scale and timing of the marketing campaign and the number of initial customers. There seems to be no evidence indicating that the changes

in the market were caused by choices of the consumers. Thus, as long as the inferior investment skills are not the main cause for funds' disappearance from the market, the problem of survivorship bias[14] should not have any effect on the performance evaluation.

Table II-2 presents some basic information on survived pension funds. The geometric annual real rates of return for the survived funds are quite diverse. The best funds earned around 10% p.a. in real terms, while the worst one achieved half of it. First two funds managing the biggest parts of national pension savings have also wealthier,-than-average, members. These managing companies are branches of leading international insurers that had already recognizable trademark in Poland and stable clientele from the middle class. For instance, 22% of all insured are members of the Commercial Union fund; however this fund administers over 28% of all savings. Only for the PZU fund, a national insurer, this relationship is opposite.

Table II-2 Basic facts on Polish pension funds (as of 29 August 2003).

An inspection of tables II-2 and II-3 reveals that during most of the investigated period it was a wiser strategy to follow the bond markets than to invest in the stock market. The pension industry nominal average (13.9% p.a.) was comparable with the Merrill Lynch Polish Government Bonds index (14.2% p.a.) and the three biggest mutual funds investing in bonds and money instruments (12.9%). The pension funds present themselves better in comparison with mutual funds, especially those investing in shares (equity, balanced and growth funds) and retirement funds (Table II-3).

Table II-3 Pension funds vs. other investments. The investment results for the period 1 June 1999 – 29 August 2003.

5. METHODOLOGY

This section discusses the methodology for testing whether the pension funds' active management creates some additional (compared to passive investing) value for the system members. Since the market is very new, the data series are short. This limits severely the range of possible models of performance evaluation, particularly the conditional evaluation framework[15].

[14] Survivor effect is a problem when the evaluated performance is (usually) biased upside "due to exclusive focus on those institutions that survived throughout the evaluation period." (Davis and Steil, 2001). For this topic see for example Brown et. al. (1992), Garcia and Gould (1993) and Elton et al. (1996).

[15] For conditional models based on returns see Ferson and Schadt (1996); models employing portfolio holdings are presented in Ferson and Khang, (2002). Daniel et al. (1997) introduce characteristic-based benchmarks. Also, there exist numerous other methodologies employing: style analysis (Sharpe, 1992) ordered mean difference (Bowden, 2000), seemingly unrelated assets (Pastor

5.1. Sharpe ex-post measure

The ex-post Sharpe ratio illustrates effectiveness of achieved investment return with regard to the risk taken. It is calculated as:

$$\frac{r_i - r_f}{\sigma_i}$$

where $r_i - r_f$ is the differential return, i.e. a difference between a return earned by a fund during a period and the return earned on a risk-free (usually represented by Treasury Bills) and σ_i is the historic variability of this differential return (Sharpe, 1994).

5.2. Unconditional market model

Our study uses a basic Jensen's measure (Jensen, 1968, 1969) being the intercept in a regression of the time series of excess returns (above the 52-weeks Treasury Bills rate):

$$\tilde{r}_{it} - r_{ft} = \alpha_i + \beta_{im}(\tilde{r}_{mt} - r_{ft}) + \tilde{\varepsilon}_{it}$$

where: r_{it} is the return of the i^{th} fund at the period t and r_{ft} is the risk-free return at the period t, r_{mt} represents the return of the benchmark market portfolio and β_{im} is the fund's beta, that its systematic risk. The tildes denote random variables. The returns in this paper include brokerage, service, depository and asset management fees. They do not include the up-load payment, though[16].

As Cesari and Panetta (2002) remark, the Jensen's alpha can be treated as an unbiased performance measure if the manager of portfolio (fund) possesses security-specific information but no timing information. When the manager achieves successful timing, the measure is usually biased downward (Cesari and Panetta, 2002).

In the context of available data, the stock market indices (WIG, V20, E20) were used as proxies for the market portfolio. It is hoped that as the pension market grows a new

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and Stambaugh, 2002), stochastic discount factor (Farnsworth et. al, 2002), Bayesian performance (Baks et al., 2001) and flows (Del Guercio and Tkac, 2000).

[16] According to the Polish law, the up-load fees are deducted before contributions are calculated into investment units. Investment costs are calculated every working day. The fee for management (equal to monthly maximum 0.05% of accumulated assets) is calculated alike; however, the deduction takes place on the month's last working day. Therefore, the monthly returns are not affected, as they are calculated on the basis of last days of the succeeding months (the consequences of fee payment cancel out).

pension-oriented index will be created. This question is beyond the scope of the paper and is discussed further in Stanko (2003a).

5.3. Unconditional two-index model

The portfolio structure of pension funds is an important issue in their performance evaluation. As opposed to the heavily researched mutual funds, the pension funds hold also considerable amounts of bonds and other interest-bearing instruments. The Polish pension funds have invested around 65-70% of their assets in bonds and only 25-30% in stock. According to the modern portfolio theory, bonds should be treated as a part of risky portfolio. Usually, due to data availability and frequency, it is the stock market index that represents risky assets. The value of the beta shows the sensitivity of the fund's return to the return of the stock market benchmark. However, the monthly returns from the bond instruments (represented by GOPL) are lowly correlated with stock; merely 0.20 (correlation with WIG index), 0.16 (with WIG20/V20 indices) and 0.11 (with E20 index).

The risk measure for bond instruments is probably better associated with the duration term. Since such data is not directly available, the solutions might be as follows. One may try to regress the two-index model and to estimate the parameters. Alternatively, as in Elton et al. (1993), one first regresses the bond returns against the stock exchange index and then uses such orthogonalized index to measure marginal return contribution to the stock index (i.e. the part of the returns that are uncorrelated with the main stock index). Some scholars (c.f. Blake et al., 1998, p. 15; Blake and Timmermann, 2002, pp. 179-183) use the multiple-index Jensen regression arguing in other paper that such approach "is likely to be more appropriate for the aggregate portfolio" (Blake et al., 1998, p. 5).

We consider the following two-index model:

$$\widetilde{r}_{it} - r_{ft} = \alpha_i + \beta_{im}(\widetilde{r}_{mt} - r_{ft}) + \theta_{im}(\widetilde{r}_{bt} - r_{ft}) + \widetilde{\varepsilon}_{it}$$

where: r_{it} is the return of the i^{th} fund at the period t and r_{ft} is the risk-free return at the period t, r_{mt} and rbt represents the returns of the benchmark (stock and bond) market portfolios and β_{im}, θ_{im} are the fund's betas for stock and bond investments, respectively. The tildes denote random variables.

In the case when funds investments are mainly concentrated on specific subgroups of securities the market model and the two-index model might not describe properly a fund's investment strategy. Cesari and Panetta (2002) propose the five-factor model estimated by maximum likelihood method. However, in the context of Poland most of

the investment in stocks is concentrated in blue chips and national bonds, therefore two-index model should suffice.

5.4. Asset allocation benchmark

A synthetic index At represents investment returns from strategic asset allocation portfolio at time t, employed by a pension fund. The investment portfolio structure during last three years has been roughly 30% of stock and 70% of bond.

$$\widetilde{r}_{it} - r_{ft} = \alpha_i + \beta_i(\widetilde{A}_t - r_{ft}) + \widetilde{\varepsilon}_{it}$$

Blake and Timmermann (2002, p. 110) argue that the strategic asset allocation is a risk decision, not the investment one and is usually determined by maturity structure of the anticipated liability cash flows. However, strategic asset allocation benchmark can act as another composite benchmark for Polish funds. It can also give some insights about the size of abnormal returns associated with asset allocation decision. We employ the benchmarks being combinations of stock (WIG, E20) and bond (GOPL) indices.

6. EMPIRICAL RESULTS

6.1. Sharpe Ratios

Table II-4 presents the Sharpe for Polish stock and bond markets, pension funds and other investment vehicles during the period of 1 June 1999 – 29 August 2003. The calculation period is appropriately reduced in cases when a fund or instrument existed for shorter time. The ratio was calculated on the basis of monthly continuously compounded returns.

The ratios are negative for discontinued funds and for those survived funds that started later than the competitors (Panel A.). Also, the Sharp ratios for Polish stock market (WIG, V20 and E20 indices) are negative due to long-lasting bear market at the stock exchange. This fact is confirmed by high ratio values for bond and money-market instruments (MF3 mutual bond average and GOPL bond indices). In general, Sharpe ratios for survived funds are positive but low. The median fund achieved ratio equal 0.05 (Panel B). During the bear market, funds experienced total returns lower than Treasury Bills yields. The absolute values of the Sharpe indicator are small because during the period, the Treasury Bills and bond index returns were comparable. Even for the best fund (0.123 Polsat), the value is considerably lower than the historical Sharpe ratio for the American stock market of around 0.5. The best results achieved the bond and money mutual funds (0.266 for Skarbiec Obligacji fund, 0.145 for the MF3

average).

Table II-4 Sharpe ratios.

According to this composite measure, the best performance was achieved by the smallest fund, Polsat. Sampo - the medium-sized fund – ranked third followed by the biggest market players (Nationale Nederlanden, Commercial Union and PZU). Funds that initiated their operations later than the others performed the worst (Pekao, Kredytbank) or below the median (Allianz).

Stanko (2003b, Table 5) reports that during period of June 1999 – March 2003 the rankings achieved by Sharpe and Treynor ratios were essentially the same which implied that the pension fund portfolios were well diversified.

Sharpe ratio does not quantify the value added due to active management, however enables direct comparison of the funds. The abnormal returns measured by alpha (next section) give this information, however, due to funds' different risk exposures does not provide direct comparability.

6.2. Alphas

Table II-5 presents OLS estimates of the Jensen's alphas for the whole industry. An arithmetic average of all fund's returns was used to represent the industry's results. Panel A shows the Jensen's alphas for all 13 funds that operated on the market within last four years. The estimates for various models range between 3 and 4.8 per cent per annum. Except models with WIG index, all alphas are significant at 5%. The funds' active management has created an additional value comparing to the results that would have been obtained by a passive investment in stock and bond indices[17].

Table II-5 Pension industry performance: Jensen's alphas.

Panel B shows outcomes for a wider sample of survived funds (16). The group incorporates three funds that started their activity later. The number of monthly observations is shorter (48 instead of 51) and that is probably the reason (along with lower investment efficiency itself) why the estimates are slightly less significant. The estimated alphas are around 2.4 – 4 per cents and are lower than that in Panel A. It may suggest that the investment efficiency of the latecomers was lower.

Panel C demonstrates results for a variable number of funds present at the market during the whole period of 51 months. Their alphas are significant and are a little lower than the first group (Panel A) but higher than the second group (Panel B). The values

[17] However, these are the alphas that do not take into account the possible higher costs and fees that one must pay for such a superior investment service: "In this case, we can expect to observe abnormal performance only by examining gross returns, which do not have transaction costs, fees, or other expenses subtracted from them." (Grinblatt and Titman, 1989, p. 393).

vary between 2.8 and 4.5% per annum. To disentangle which group: late-starters or discontinued funds had this detrimental effect on the industry's alpha, we re-run the Panel C regression but for the period corresponding to Panel B sample (Sept 99 – Aug 03). The alpha estimates become lower which suggests that it were the discontinued funds whose abnormal returns were worse. This finding somehow confirms the results from table II-1, where we have reported that (for value-weighted portfolios) the survived group performance was slightly better than all funds. However, the direct comparison is not possible: due to short series of observations the estimates for the survived latecomers and for the discontinued funds alone are not significant and are not presented here.

A few of the models revealed autocorrelation; in such cases the autoregression AR error models were used. For instance, a first-order serial correlation of error term would result in the following model:

$$\widetilde{r}_{it} - r_{ft} = \alpha_i + \beta_{im}(\widetilde{r}_{mt} - r_{ft}) + \theta_{im}(\widetilde{r}_{bt} - r_{ft}) + \widetilde{\varepsilon}_{it}$$

where

$$\widetilde{\varepsilon}_{it} = \rho\varepsilon_{it-1} + \widetilde{v}_{it} \quad \text{and} \quad \widetilde{v}_{it} \sim \mathrm{N}(0, \sigma_{it}^2)$$

Once the general boundaries for the alpha values have been drawn, it is interesting to see how the funds were performing on the individual basis. This information is presented in table II-6. Depending on the model, there were around 5-7 significant alphas at the 10% significance level in the case of models using WIG or V20 indexes and 14 in the case of the E20 benchmark. Significant alphas obtained from WIG models (1, 4) are scarce and the values are lower than those estimated from V20 (2, 4) or E20 (3, 6) models. V20 models bring five-six significant estimates and they are lower than alphas from E20 model. The latter produces numerous results, most of them significant at 5 or 1% level.

Table II-6 Individual pension funds performance: Jensen's alphas.

6.3. Benchmarks

Based on the estimates from tables II-5 and II-6 we can provide several remarks concerning the benchmarks.

Firstly, there are not many significant alpha estimates when the WIG-based models are used. One may draw a conclusion that either only few funds managed to beat the benchmark or that this benchmark is not the most appropriate for evaluation pension

funds. As a matter of fact the correlation between WIG and survived group returns is 0.88, while for the V20 and E20 benchmarks this relationship equals 0.93 and 0.92, respectively. The nature of pension fund investment law (Stanko 2003a, p. 7-8; 10) and local stock market conditions favour the blue chips:

> "[…] most of the pension fund assets are invested in the biggest stocks. Due to specific features of our stock exchange [for instance: low liquidity for smaller stocks – author] and its limited capitalization, such a process is inevitable. Large investor is somehow bound to several or twenty big stocks. Most often, such choice means the companies that belong to WIG20 index. Amongst the biggest (in value terms) investments of the OFE [open pension funds – my comment.] there are practically only those companies that belong or have belonged recently to this index" (KNUiFE, 2003, p. 42, my translation).

Next, even though the WIG20-based benchmark should work better for performance evaluation purposes one can notice a substantial discrepancy between alpha estimates obtained with the use of value- and equally weighted benchmarks. In comparison to the V20 model, not only the estimates from the E20 models are higher but there are more significant. Such outcomes may suggest that one of the benchmarks (or both) is not efficient. To further examine these benchmarks, we calculated the ordered mean difference (OMD) schedule as in Bowden (2002, p. 20). We found out that the OMD values for the V20 index against the E20 benchmark are positive over the entire range of E20 values (Figure II-1); therefore V20 should be preferred to the benchmark by any risk averse investor (Bowden, 2000, p. 196).

We may therefore expect that the funds indeed followed the value-weighted investment strategy and allocated their resources according to the size of the available stocks. Alpha can be interpreted as a return that comes from the sources unexplained by the market model (its factors). Since the alphas for the E20 benchmark are consistently higher than those for V20 one might conclude that the pension managers tilt their portfolios more towards big stocks and that the value-weighted benchmark closer represents their investment decisions.

The third issue concerns the bond market factors. For any model, estimates using the MF3 benchmark provide slightly lower estimates than when using the GOPL index. MF3 consists of bond and money-market investments, therefore it may be a possible reason for lower alphas – during the researched period most of the time the stock market was bearish. The GOPL index has also better statistical characteristics[18] and better

[18] Contrary to MF3, the GOPL returns are normal. The correlation between MF3 and GOPL is only 0.64; standard deviations 0.05 and 0.17, respectively. GOPL is also more correlated with the V20 index (0.17) than MF3 (0.01).

represents the "pure" bond market.

Figure II-1 Ordered mean difference for V20 benchmark.

A direct comparison between funds is not possible because the portfolios have various levels of systematic risk (betas). A higher alpha usually means that the manager took more unsystematic risk by using private selection information to invest more in particular shares. Results in table II-6 confirm that the performance evaluation derived from the models employing CAPM is sensitive to the benchmark (Roll 1978). Table II-7 compares Sharpe and Jensen's measures for top performing funds. The results are in accordance with Grinblatt and Titman (1994, p. 431) conclusions that "(…) different measures generally yield the same performance scores".

Table II-7 Top pension fund's performance: Sharpe and Jensen's measures.

Following Grinblatt and Titman (1989, Table 2, p. 407), we tested whether performance is different across the individual funds. Table II-8 calculates F-statistics for the joint hypothesis that abnormal returns of all individual funds are equal to zero (F1) or are equal to each other (F2).

The joint hypothesis that all alphas are equal to zero is rejected for all 21 funds, all 16 survived funds and the group of 13 survived funds that initiated their operations before 1 June 1999. The hypothesis is not rejected in the case of 3 funds that survived but started their activity later and for the group of 5 discontinued funds. The results with the use of MF3 benchmarks are similar.

The second hypothesis assumes all abnormal returns to be equal to each other is not rejected (the only exclusion is the discontinued group).

Therefore, the outcomes of table II-8 provide evidence of the existence of superior portfolio managers, however they performance does not statistically differ. The industry wins the market by 2.5-3.0% p.a. with the top funds performing at 4-5% p.a. level. We also computed the annualised interquartile range following approach of Blake et al. (1998, p. 10-14) for raw annual continuously compounded returns and V20-GOPL model alphas. The interquartile range shows the difference between top 75% and 25% results. Return's range equal 165 basis points (bp), which is roughly 12% of the value-weighted survived group portfolio, and provides evidence that returns clustered around the median value. Findings of the F2 test are in some way supported by low value of interquartile range for alphas (survived group) – only 114 bp, therefore suggesting that similarity of abnormal returns.

Table II-8 Performance of individual funds: F-test.

6.4. Asset allocation

Table II-9 presents information about alphas from the 0.3V20-0.7GOPL asset allocation model. The alphas from the asset allocation benchmark show results of the pension administrators' decisions concerning the long-run risk profile of their managed portfolios. As discussed, the V20 benchmark seems to be more appropriate for the evaluation purposes. The difference between abnormal returns obtained from the V20-GOPL and asset allocation benchmarks range between 0 – 1 % p.a. (Pioneer is an exception and as a discontinued fund, its result should be treated with scepticism). With regard to all survived pension funds, this difference equals 0.73%. The abnormal returns from asset allocation represent 65-100% of total abnormal returns for individual funds and over 70% for the average.

Table II-9 Abnormal returns from asset allocation and from two-index models – comparison.

6.5. Holdings

Figure II-2 illustrates the typical asset allocation structure of the Polish pension funds for three main categories as a percentage of their investment portfolios. The figure provides data for 16 survived funds. We can observe, that from the beginning of 2000 (i.e. after the initial market creation phase) the values have been quite stable; around 60-70% of the portfolio was invested in Treasuries (bonds and other instruments guaranteed by State or Central Bank), 20-30% was allocated in shares of the companies listed on the Warsaw Stock Exchange and roughly 2-8% were kept as bank deposits. The time averages for all those categories were, respectively 67.2% (bonds), 25.3% (stocks) and 4.9% (deposits). The other categories (described under the Table II-10) are not significant and do not exceed 5% of total investments. The investment portfolio represents over 97% of total net assets. Table II-10 provides more detailed information on the size and structure of invested assets.

Table II-10 Pension fund holdings: asset allocation and assets' value.

Figure II-2 Average asset allocation as a % of investment portfolios (all survived funds).

Historically, the biggest three funds (Commercial Union, Nationale Nederlanden and PZU) have had slightly higher stock exposure when compared to the average or median of the survived funds group (Figure II-3). This finding somehow confirms the effect of the government-imposed performance evaluation framework: funds with bigger market share have much stronger impact on the value-weighted industry average and, in the consequence, face lower probability of penalty payment that is required

whenever a fund's yearly return occurs to be lower than the minimal required rate of return (calculated on the basis of the industry average, Stanko, 2003a).

Figure II-3 Average stock allocation (as a % of investment portfolio): all survived funds vs. the three biggest funds.

Next figure provides some insights on the variability of stock and bond allocation in the survived funds group (Figure II-4). This variability over last four years has decreased substantially, perhaps as an effect of market concentration process and market regulations. The absolute variation is higher for bonds than for stocks which may indicate that funds are more concerned about a potential downfall caused by higher-than-average exposure in stock and are less concerned about a loss of profitable opportunities in the bully market that occurs whenever the fund acts too conservative (high allocation in bonds). This "asymmetry" effect may indicate serious regulatory disincentives for taking excessive risk in the peer-benchmark market and low competitive pressure. As a matter of fact, savings of participants are "bound" to the market (no outflow possible as a reaction to unsatisfactory results) and participants themselves are reluctant to frequent membership changes due to transfer costs.

With regard to the relative variability between the first and third quartile, there is a band of +/– 8% of the average in the case of bonds and +/– 3% of the average in the case of stock. Therefore, the asset allocation strategies amongst the funds are quite similar to each other.

Figure II-4 Asset allocation variability amongst survived funds: interquartile ranges (%).

The final issue we researched concerned the effect of the pension funds size on their returns. The value-weighted average for all survived funds during the period was 13.32% pa, while the equally weighted rate of return was 13.09% pa. Therefore the three biggest funds have been performing slightly better; the negative effects of the investment institutions size are yet (if at all) to be visible.

7. CONCLUSIONS

The paper is the first performance study of the Polish public funds managing individual saving accounts. The sample consisted of all survived funds and the effect of survivorship bias is not significant.

The funds gross investment results have been very encouraging with an average real rate of return exceeding 8% p.a. Since the pension industry as a whole wins with the market benchmarks and other available investment opportunities, the unsatisfactory net returns for pension funds' members must be ascribed to the overall regulatory and

organizational flaws affecting the pension framework (Stanko, 2003a).

The pension industry and almost half of the existing funds have produced significantly positive results. The survived funds tend to have had similar abnormal returns, though as a whole their performance has been significantly different from zero (F1-test). Those funds that started earlier experienced higher abnormal returns. However, F2-test gives no evidence that some pension funds have been consistently outperforming others. The industry asset management results perhaps could be even better if some of the system-built problems were limited.

The Sharpe ratios and Jensen alphas have produced similar rankings; however the results were sensitive to benchmarks chosen. We have considered possible benchmarks for the public pension funds in Poland and concluded that amongst the available market indexes the most appropriate ones seem to be: the blue chips WIG20 index and the bond market GOPL index represented by the Merrill Lynch Polish Government Index. In particular, the OMD measure prefers the V20 index over the E20 one which indicates that the Polish funds are following the weight-strategy aimed at imitating the structure of WIG20 index.

The Polish pension funds have applied conservative stock-bond mix strategies. The three biggest funds have tended to be slightly more aggressive than the average; the fact to be accounted for the performance evaluation framework and impact of incentive issues. In general, managers' investment strategies did not deviate considerably from the median manager; the difference has even shrunk over the time as a possible effect of market concentration process.

In our study we did not find any significant relation between the size of the fund and its performance, however, due to steady growth of local stock market saturation this might become an issue in the nearest future. We did not address the market timing due to relatively short data series. For the same reason we did not employ the conditional performance evaluation models.

Chapter 3

Polish Pension Funds: Does The System Work?

Cost, Efficiency and Performance Measurement Issues*

ABSTRACT:

The paper assesses the Polish pension system's efficiency from the point of view of the individual fund member. After over three years of functioning, the savings accumulated with the pension funds only slightly exceed the total premiums that have so far been paid. The study shows that the system is not cost effective and that the incentives produced by the fees and the peer-based performance measurement frameworks have a detrimental impact on active investment management. The low net results from the second pillar are also caused partly by the relatively low share of the funded component of the retirement premium. It is shown that considerable cost improvements can be obtained by immediate corrections. However, more fundamental changes in the system are suggested. In particular, the fee structure should be rearranged to create better motivation for active management. To achieve this, the penalty institution of minimal required rate of return should be abandoned. Furthermore, the investment limits should be reconsidered to allow for greater diversification and accepting higher long-run risk to overcome the capacity problem of the local stock market. This study shows that the evaluation of funds should employ an external index to avoid herding and to allow long-run investment strategy for retirement purposes. Several possible candidates for benchmarks are proposed.

Journal of Economic Literature Classification Numbers:
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1. INTRODUCTION

Funded pension schemes are becoming a key point for modern economics and economic policy. Increasing demographic pressure combined with the need for reforming the existing ineffective and politically vulnerable systems bring about the current trend for privatising the welfare state and using capital market-based solutions in the old-age provision.

Poland is one of the first countries to launch a fully funded pension fund system as a part of its public pension system. It has been almost four years since the individual account system was introduced. Although to a great extent based on the Chilean model, the Polish solution attempts to avoid some of its weaknesses. Most of the European countries are currently considering their pension reform strategies and are facing similar problems, especially the demographic ones. Therefore, the Polish system has a lot of insights to offer.

The extensive performance analysis by the Superintendence of Pension Funds (UNFE, 2000) is already out of date and differs in various aspects due to its administrative angle. This paper is a part of the first wide evaluation research of the Polish system. In his performance evaluation research, Stanko (2002, 2003) presents facts concerning the positive efficiency of pension fund investment. This part analyses recent features and the overall efficiency of the fully funded pension fund pillar from the participants' point of view. It contributes to the literature by proposing certain improvements in cost and public performance framework. Most of these suggestions are closely related to the state's overall economic and social policy and more specifically, to the design of the pension funds system.

The paper is organized as follows: section 2 briefly sketches the Polish retirement system, section 3 investigates current issues concerning the pension fund market, and section 4 provides an analysis of performance evaluation results and the costs of the system. The problems of the state's performance monitoring and its consequences are discussed in Section 5.

2. POLISH PENSION SYSTEM

2.1. Reform[19]

Pension reform in Poland followed the World Bank (1994) proposal to balance the system's redistribution and insurance tasks by establishing the three-tiered old-age security framework. The change concerned people who were younger than 50 at the time the new system was introduced (January 1, 1999). Those below 30 had to join the reformed scheme. Persons in the age bracket of 30-50 were given an alternative to choose either the new system or stay within the old one. However, once taken, such a decision was irrevocable. The reform did not affect some social groups covered by other social insurance schemes, i.e. farmers[20], priests, police or military personnel.

The previous state system was partly reformed and is now referred to as the first pillar. The two other pillars are individual accounts (the second pillar of public pension funds) and private or occupation pensions (the third pillar). The retirement age is 60 for women and 65 for men. Due to financial strains, social security premiums in all pillars are subject to taxation at the moment of payment.

The new system is supposed to bring in some quality improvements. The main ones include a tighter relationship between pension and contributions, removal of earlier entitlement to pension benefits, creation of an individual saving mechanism that encourages a prolonging of the contributory period and late retirement and removal of privileges for certain professional groups within the pension system.

A brief summary of the current Polish pension system is presented in Table III-1.

Table III-1 Current pension system in Poland.

2.2. Pension pillars

The social insurance premium remains high. It is equal to 46.62% of gross monthly salary with an upper income ceiling of 30 average monthly salaries. The pension related premium is 19.52% of gross earnings. The bigger part (12.22% of gross earnings) is allocated to individual accounts in the first pillar, while the rest (7.3% of salary) is

[19] Details of the pension reform are described, among others, in Chlon, Gora, Rutkowski (1999) and Gora (2001).

[20] This is a numerous social group. The farmers belong to the Kasa Ubezpieczenia Rolniczego (Farmers' Insurance Office). At the moment there are 1.9m retirees. Almost 1.5m working farmers are subject to mandatory insurance. However, only 1.05m of them pay premiums. The system is financed principally by the state or, in other words, by other social groups. Premiums cover only less than 5% percent of the system's expenditures; the rest being financed in the form of direct transfers from the budget.

transferred to pension fund accounts in the second pillar. Other social security risks covered by the system are: disability (13.00% of gross earnings), sickness (2.45%) and industrial accidents (0.97% - 3.86%). While employee and employer pay pension and disability premiums in equal parts the employee pays the sickness premium and the employer finances the disability risk. National health insurance (paid by the insured) is equal to 8% of personal income before tax[21] (that is gross earnings minus all social security premiums). There are four main legal Acts that regulate the reformed pension system[22]:

Act on the social insurance system dated 13 October 1998 (reform);

Act on retirement pensions and other benefits from the Social Insurance Fund dated 17 December 1998 (first pillar);

Act on organisation and operation of pension funds dated 28 August 1997 (second pillar);

Act on employee pension programs dated 22 of August 1997 (third pillar).

Two out of the three pillars are mandatory. The first pillar is the Pay As You Go (PAYG)[23] system run by the state-owned Social Insurance Institution (Zakład Ubezpieczeń Społecznych, ZUS). It has been organizationally reformed and now operates on the notional account[24] basis. The ZUS registers all work-related information. It also acts as a central collector of social security premiums and transfers contributions to individual accounts in the second pillar.

The notional account balance is indexed in line with the inflation rate plus 75% of real wage bill growth. That is why the rate of return is the same for all insured. Accumulated assets are used at retirement to buy a life annuity.

The first pillar acts mainly as a redistributive and insurance mechanism and it provides the safety net for all citizens. It is assumed that the main part of future retirement benefits will come from the funded component. However, since the premiums paid into the first pillar are still considerably higher than the fully funded premiums, the first pillar component is going to be the most important for a long time[25].

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[21] The premium has been raised recently by 0.25%, however one can deduct from the personal income tax only 7.75%.

[22] The current law documents are listed in KNUiFE, Quarterly Bulletin 2/2002.

[23] PAYG is the system, where the current contributions of the employed are used to finance the pension benefits of the current retired. It is therefore a system, which uses a form of contract between the generations.

[24] Within such system, each individual account is credited with some theoretical points to represent contributions paid by the insured. The points are subject to growth at the rate decided by the government regulations. However, the notional accounts do not actually contain cash, stock, bonds or other securities.

[25] This fact is not recognized by most of the insured. Some commentators are worrying that the

The real values of pensions from all three pillars are expected to increase. At the same time, there will be a decrease in the replacement ratio (expressed as a percentage of the wage before retirement).

The second pillar represents public pension funds run by private managing companies who invest savings of system participants in the capital market. In the event of the death of the account owner, the resources are not lost[26]; half of the assets are paid into the spouse's pension account while other beneficiaries inherit the other half. Upon retirement, the accumulated capital is used to purchase a life annuity from a retirement company. The detailed regulations concerning that particular life insurance entity have yet to be decided. First payments are expected to take place in 2009 but detailed regulations have still to be issued.

The current number of opened accounts in the pension funds is 11.2m (end of January 2002) with some 2m "inactive" accounts[27]. These are the associates who have never paid or do not pay their premiums mainly due to unemployment (currently 18.7%[28]). Therefore only 9.2m accounts are active. However, this number is perhaps even lower since on average there were around 8.53m transfers per month in 2002[29].

Even though the second pillar is expected to be an effective vehicle for pooling pension savings, the benefits from the first pillar will still be the most important source of retirement provision. Due to fiscal considerations[30] it has not been possible to free up more resources from the PAYG tier.

The market of pension funds represents a mixture of state (whose role involves supervision and guarantee), public (savers) and private entities (managing companies). The funds themselves resemble loaded semi-mutual funds whose investment portfolios have (or should have) a structure typical for the pension saving purpose and whose investment behaviour is limited by investment constraints imposed by the state and common sense prudent man[31] rules. State bears particular responsibility in the area of

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future pensions from the funded scheme will fail expectations and that it will be the cause of political and economic problems.

[26] As opposed to the first PAYG tier.

[27] KNUiFE, monthly data and Quarterly Bulletin 3/2002.

[28] January 2003 www.stat.gov.pl (Polish Official Statistics).

[29] Author's calculations (http://www.zus.pl/images/ofe/excel/of021230.xls).

[30] Premiums directed to the second pillar are invested in the capital market and cannot be used for financing the retirement benefits of current retirees. Therefore, a switch to the fully funded system creates an immediate budgetary deficit. This is the reason why the premium for the first pillar is still dominating.

[31] There is still no legal source for trust or prudent man law except that of commercial and civil codes. Some interesting discussion on these issues in the American context can be found in Del Guercio (1996), where the author argues that the prudent-man law has distorting effects on institutional investing.

regulation, as it is the state that makes the participation in the system mandatory.

The third tier of social insurance is, according to World Bank (1994) suggestions, a domain of individual thrift and cautiousness. Contributions are paid on an after-tax basis and pension benefits are tax exempt. Under the Polish regulation it is possible to save for additional retirement benefits either via individual savings or via occupational retirement schemes.

Private saving comes in several forms; the most popular vehicles are mutual funds and life insurance policies. The freedom of savings is not supported by any tax preferential system. As a matter of fact, a government plans to introduce 20% tax on capital and interest incomes from 2004.

There are four legal entities for occupational plans: the corporate pension fund, the mutual pension fund, group life insurance, group life insurance in a life insurance company or in a mutual insurance society. The first two legal entities are more capital-based solutions, while the other two are predominantly of an insurance character. However, once employer and employees decide on the occupational pension scheme it can be run only in one of those legal forms[32]. At the end of February 2003 there were 200 corporate pension schemes.

3. POLISH PENSION FUND MARKET

3.1. Market structure

The reform started on 1st January 1999, but the fund system itself started officially on 1st April 1999[33]. However, it took several months before the funds set out their real activity. Firstly, the public had several months to take a final decision about their access to the system and to choose a particular fund. Furthermore, the initial number of participants and accumulated assets had been too small to start the real investment activity.

Most of the Polish pension funds had started their activity by June 1999. Initially, licenses were given to 15 fund administrators. Three others joined in September 1999 and by October 1999 all 21 fund administrators were operating. Despite intensive

[32] Such limitation obviously comprises a barrier for development of occupational schemes. Firstly, it constrains the freedom of choice amongst the workers. It also creates a huge obstacle for pension mobility. If an employee switches to another company where a retirement scheme is different, they will be compelled to either resign from the previous agreement (with considerable loss to their assets due to premature liquidation) or refrain from entering into the company's plan (with another opportunity cost).

[33] The delay was caused by above-mentioned long-lasting problems with the implementation of software for the Social Security Institution database. Anecdotic enough, many commentators linked the intentions of the system designers with the start of the system on the April's Fool Day.

efforts by the supervisory body Urząd Nadzoru nad Funduszami Emerytalnymi, (UNFE, Superintendence of Pension Funds), to prevent mergers and acquisitions, four of the pension funds have already disappeared from the market. The Pekao fund absorbed three others; Epoka, Pionier and Rodzina on 9 April 2001, 23 July 2001 and 10 December 2001, respectively. The Pocztylion fund merged with Arka-Invesco on 14 December 2001. By the end of December 2002, there were 17 active pension administrators managing 17 public pension funds[34]. From February 2003, there are 16 funds since the Ego fund (overtaken by Skarbiec) finished its activity. This number will surely decrease in the future as the funds that are too small to operate with profit will have to withdraw from the market.

By the end of January 2003, (almost four years after the funds started) the accumulated assets of pension funds have reached 32 billion zlotys (approx. 8 billion USD). This amounts to 29.4 % of total capitalization of the Warsaw Stock Exchange and to 4.15% of the 2002 Polish GDP[35]. According to the recent information from Warsaw Stock Exchange (2003, p. 16) the estimated investment in stock by OFE at the end of 2002 amounted to 8.18 bln PLN which translated into over 7% of stock exchange capitalization. The economic importance of this class of institutional investors is rapidly increasing as their net assets have been growing recently by some 0.3bn USD which translates to annual growth of 2.8 bn USD. Some persons voice their opinion that the portfolio limits with regard to the foreign investment should be either abandoned or considerably limited. Otherwise there is the danger of saturation of the domestic capital market in the not so distant future.

On 1 April 2002 UNFE was replaced by Komisja Nadzoru Ubezpieczeń i Funduszy Emerytalnych (KNUiFE, Committee of Insurance and Pension Fund Supervision). It became a new supervisory body for both insurance and pension fund sectors.

A characteristic feature of the Polish pension fund market is its relatively high concentration (Table III-2 and Figure III-1). One can distinguish four categories of funds with the first two dominating. The biggest two funds have half of the market. The next two are also big, for they constitute another quarter of the market. Hence, the Polish market is even more concentrated than the UK one, where the top five management houses administer over 50% of the voluntary individual pension assets with as high as 80% in 1998 (Blake and Timmermann, 2002). The other 12 funds are severely sandwiched within the remaining quarter of the market. They can be labelled

[34] The Polish pension law envisages that one operator can manage only one fund.
[35] Own calculations based on data from: www.money.pl/emerytury (pensions), www.gpw.com.pl (stock market) and www.stat.gov.pl (Polish Official Statistics).

either as small (seven funds having less between 2 and 4 per cent) and very small (another five funds with shares lower than 2%, making up a total of seven percent). Such a situation represents an oligopoly market.

Table III-2 Net assets and the market structure of the pension funds.

Figure III-1 Structure of the Polish fund market according to net assets.

Contrary to one's expectations, the companies who have the biggest market share are not the biggest institutions with respect to their capital bases. Table III-3 demonstrates that their own capitals are relatively small. The administrators with the highest four share capital positions are ranked 7th, 12th, 13th and 8th respectively places in the net asset ranking. This suggests that the rationale used by the public for choosing the fund was not based on the size of the managing company[36]. As a matter of fact, the historical perception of these financial institutions has been more important. Their advantage was that they had already been recognised by most of the Polish public in the 1990s. Further, the biggest funds launched broad and costly marketing campaigns. Therefore, the previous presence of some institutions, plus marketing were the decisive factors in the process of attracting clients to new pension funds.

Slow mobility of the insured between the funds (for instance 0.8% in 3rd quarter of 2002[37]) represents another feature of the system. Changes of membership are expensive as the law imposes some financial consequences for those who change before the two-year period[38]. Regardless of good intensions, this impediment on mobility must be assessed rather critically since it does not contribute to competition of the system.

Table III-3 Comparison of Polish pension fund administrators according to their share capital.

3.2. Investment limits

The funds operate under the investment limits specified by Polish law (Chapter 15 of the Bill of 28 August 1997). Table III-4 introduces the main rules. The most important constraints concern the stock and bond investments. Funds are allowed to invest up to 60% in stocks. Maximum of 40% of assets may be hold directly in stock and up to another 20% indirectly through the use of mutual funds. In the later case (indirect stake holding), the pension manager does not receive management

[36] The capitals of managing companies have not changed considerably since 1999.

[37] Author's calculations based on KNUiFE, Quarterly Bulletin 3/2002.

[38] That rule originates from negative Chilean experiences in this matter. The Polish legislator tried to avoid the "marketing war" and frequent, economically irrational switching of membership between funds induced by promotion campaigns. As a rule, the insured have a right to change their pension fund every two years. If such a decision is taken earlier, the member has to pay a transfer fee that decreases as the time approaches the next two-year period.

compensation for them.

There exist some bounds for a single investment. In the case of investment in closed or mixed investment funds, the ceiling is 2%. This value is higher (5%) for investments in open funds.

The above regulations put a constraint on the pension funds in their indirect stock exposure since the mutual fund industry's assets in equity-related styles (balanced, shares, closed, growth) currently amounts to only 10%[39] of the pension assets. The limits for investments in single security or abroad are 5%.

Table III-4 Investment limits.

In the opinion of the author, the Polish pension funds should be allowed to invest more in international instruments when the covariance between the returns in Poland and foreign markets is negative. Foreign investments offer an opportunity to reinsure and facilitate the problems of limited capacity of the local financial market. In the case of positive but low covariance, investing overseas still has some sense because it provides a diversification against political and spatial risks (for example weather cataclysms). Investing abroad brings, of course, the exchange risk. However, there is no other solution to the problem of domestic market saturation. Moreover, Poland will joint the EC before long and the currency problem will be considerably offset.

Another problem concerns not only the quantitative limits but also a restriction for the instruments the funds can invest in. This issue is particularly important due to local financial markets' relatively low size and development. Liquidity restrictions contribute to high market valuation, while the current situation does not encourage new companies to enter the stock exchange. Some prospective companies are not listed on the stock exchange (or even withdrew from public trading) and pension funds are loosing the opportunity to invest. Also, pension funds still are not allowed to invest in real estate instruments, private equity or venture capital.

The problem of foreign investment limits concerns both the supervising agency and policy makers. It is difficult, for political reasons, to accept a situation where domestic savings go elsewhere and finance foreign economies even though this can reduce the overall risk and improve the system's efficiency. Another problem relates to the public and the way they may perceive such an action (Feldstein-Horioka's (1980) domestic bias). It seems that from a purely organisational perspective, pension funds can easily and quickly implement the strategy. Most of the administrators are foreign-based companies and they certainly have a good market research at their headquarters. However, due to current law provisions, the costs of overseas operations are borne by

[39] Author's calculations, based on http://tfi.hoga.pl/tfi_rankingi.asp; end of January 2003.

the administrator and not by the fund. This is perhaps another major factor impeding a switch towards international investments.

The recent bear market and built-in system disincentives (discussed in the following sections) have shaped the current stock-bond asset allocation to about 30:70 ratio. It is much lower than the investment limits permit. However, it seems that the maximum equity-bond asset allocation ratio implied by the law is too strict especially if some systematic barriers for more active management are removed. On the one hand it is obvious that the system, especially at its infancy stage, should be well guarded. However, the long-run character of the retirement saving process questions the feasibility of stock limitations especially if the system deterrents are removed. With high system costs it seems impossible to achieve a decent replacement rate unless more investment in equity is allowed. It appears again, that the needs for budgetary financing was the main motive for constructing the 60:40 maximum asset allocation rule which is, nota bene, an exact opposite to the common allocation strategy followed by the American corporate pension funds.

This suggests that the primary reason why stock investment is limited by investment law is not for safety considerations but rather the state's desire to make pension funds invest a considerable part of their assets into Treasury bonds and other Government debt instruments. Current legislation creates a stable and predictable demand for Treasury Bills from institutional investors and makes financing of the state deficit cheaper and more operational. However, the cost of this is indirectly borne by citizens, especially the young[40]. Enforced investment in "safe instruments" lowers the expected rate of return of their pension portfolios and in effect endangers future pensions. The potential benefits of lower taxes due to the reduced cost of financing the state deficit debt are quite illusionary as the state taxes and expenses are usually difficult to moderate. In addition, the cost of asset management becomes much higher in relation to the overall risk profile of managed portfolios (section 4).

3.3. Current problems

One of the most serious problems of the market relates to the scandal surrounding the computerisation of the ZUS office. Even though the contract was concluded well

[40] One can distinguish between market assets and human labour assets. In the case of the young, the expected value of income from labour is high. Thus, the risk-return profile of their investments (represented as a mix of risk free and risky assets) can and usually should be more aggressive in the earlier stage of the process of saving for retirement. For more discussion on the role of labour income component for optimal portfolio choice see for instance Bodie (2002) and Davis and Willen (2000) or Jagannathan and Kocherlakota (1996).

before the start of reform, the computer system has not been completed yet. The recording and transferring of over 6 million payments per month between employers and funds without a properly working information system seems to be a doomed task. An immediate effect was that part of the contributions paid in by employees stuck somewhere in the system with the result that the pension fund administrators did not receive a considerable fraction of the payments.

The state-run ZUS have had to pay penalty interest and consequently resorted to borrowing money from the commercial banks. Beside the cost of commercial loans, the ZUS also had to pay a penalty interest for transfers that it did not complete on time. By the end of June 2002 this quota amounted to 101.7m PLN (around 50m USD) which was almost 0.5% of all the premiums paid into the system by that time. The penalty interests were and still are very expensive (21% for the period May 1999-October 2000, 30% for the period November 2000 – December 2001 and 20% for 2002). The ZUS even now is sending only around 82% of current premiums and it has still not transferred to the funds around 9 bn PLN (including overdue interest)[41]. The cost of reform has not only become higher but also the pension funds have had to adjust their financial strategy to the irregularity of transfers. This has had an adverse effect on their liquidity positions and definitely lowered the results of their active investment management.

Another important issue are dead accounts. Many of the participants applied to more than one fund as a result of malpractice during the enrolment campaign. Others signed contracts unaware that they simply could not join the system. In effect, pension funds suffer from some void or non-working accounts. The ratio of such accounts was around 23.7% in 2000 with a slight decrease to 20.6% in 2001 and 18.1% in 2002 (end of December)[42]. That means that roughly 2m accounts have never received any contributions. The highest fraction of non-working accounts was around 56.1% (Polsat) and 47.8% (Ergo-Hestia), while the lowest ranged at 7.4% (ING) and 4.9% (CU)[43]. For instance, the cost of inactive accounts in 2000 for the whole industry amounted to 20 m PLN (around 5m USD, Wojciechowski, 2002).

One more problem that the pension funds have begun to face is a high concentration of their investments in the stock market. A steady requirement for assets from the funds can, in light of foreign investment restrictions, distort the supply and demand balance in the long run. The pension funds hold currently around 17-18% of the stock market's

[41] Source: Chamber of Pension Fund Administrators, January 2003; estimates for the end of 2002.
[42] ING fund (www.ing.pl) and KNUiFE, monthly data from December 2002 (http://www.knuife.gov.pl/pteofe/rynek/dane/dane1202.xls).
[43] KNUiFE, monthly data from December 2002.

free float and twice as much in the case of some blue chips[44]. The small size of the stock market in comparison to constantly growing pension assets creates a problem with corporate governance[45]. Additionally, funds invested solely in Poland can create the effect observed in Chile where an artificially high demand from domestic pension funds triggered the foreign investors to close their investment positions. They resold their portfolio holdings to the Chilean pension funds at attractively high prices[46].

The barriers to foreign investment by the Polish funds are not only constituted of the current 5% ceiling. The costs of overseas operations are borne by the fund administrators while the domestic operation costs are transferred to the funds themselves. Such a situation creates a strong disincentive to opening positions in foreign instruments. In addition, the current pension law does not offer clear regulations and ways to treat the exchange rate risk[47].

3.4. Overall investment result of the system

Comparisons of total premiums (plus penalty interest) that have been paid into the system with the accumulated assets lead to quite pessimistic conclusions. While there was over 23.6bn PLN (in nominal terms) paid so far by the members, the total assets of the funds at the end of June 2002 comprised of 25.1bn PLN[48]. During the first three years of functioning the system obviously created the economic deficit in real terms. The system produced the result of a nominal 6.17% rate of return (or roughly 7.4% if one accounts for the fact that premiums are transferred once a month to the funds). In real terms the rates are – 17.23% and – 16.36%, respectively. This result is a big disappointment for the participants and reform makers. The system lost with the most naïve passive investment vehicles like bank deposits or Treasury Bonds. For instance, bank deposits brought at that time amounted to roughly 40% (for PLN) and around 12% (for USD - appreciation effect included). A more sophisticated strategy for retirement saving based on investment in Treasury bonds would have earned around 51% percent while 1-year Treasury Bills would have earned even slightly more (52.2%)[49].

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[44] The Warsaw Voice, 3 March 2002, No. 9, www.warsawvoice.pl/v697/Business06.html.

[45] That is, the situation when a company's majority stakeholders use their voting rights to achieve goals not in line with the company and/or minority holders' interests.

[46] Source: Mr. Chełchowski (a member of the Board of Directors in the Credit Suisse Life & Pensions PTE S.A.), Chamber of Pension Fund Administrators, Bulletin 3/2002.

[47] Source: Mr. Mikuc (a member of the Board of Directors of the Allianz managing house), Chamber of Pension Fund Administrators, Bulletin 3/2002.

[48] Source: www.emerytura.hoga.pl.

[49] Calculations are based on the following sources: National Bank of Poland (bank deposits and inflation rate), Merrill Lynch Bank (GOPL index) and Internet sites (www.hoga.pl, www.money.pl, www.parkiet.com; bond mutual funds returns).

Therefore, it is obvious that there is something wrong with the system. There are two main areas where one should seek an explanation. It might be the case that the investment process is not efficient for several reasons. One of the possibilities is that the managers possess low investment skills. This issue is researched in Stanko (2002, 2003) and the results are briefly presented in the next section. Another explanation may be more general flaws implied by the system's design. Such distortions can concern cost and efficiency issues or built-in agency problems and disincentives (performance monitoring, compensation system, level of competition). The cost and compensation system is a subject of the next section while the performance and competition issues are discussed in section 5.

4. COST EFFICIENCY OF THE INDIVIDUAL ACCOUNTS RETIREMENT SYSTEM

4.1. Investment performance evaluation of pension funds

Stanko (2003, Table 9) reports the funds' abnormal returns achieved during period between 1 June 1999 and 31 March 2003. Almost half of the funds (5) revealed abnormal returns[50] significant at 5% level, one at 10%. The industry's annualised alphas were also significant. For 13 funds that were present during all the period researched, the industry average alphas ranged between 2.7-2.8%. The best funds had higher abnormal returns (3.0-3.5%) with the top one of 6.0%. The variation of the cross-sectional alpha distributions, measured by the interquartile range[51], was computed. For the funds that were present during all the period, the variation of the cross-sectional raw excess returns was lower than the variation of the cross-sectional excess returns. It indicates that the unconditional performance models used were able to detect the abnormal performance.

However, the annualised interquartile ranges were very narrow, both for excess returns (0.62%) and alphas (0.77%). Such a clustering around the middle values suggests that the pension managers were inclined to follow the median manager. Blake et al. (2001) report the same effect for the UK pension funds.

Consequently, pension funds do produce additional value during the investment process and one cannot blame the pension funds' investment efficiency for the system's overall result. However, the clustering effect suggests that the long run results in the

[50] Abnormal return is the difference between the realized and expected return. The later is calculated on the basis of a market model that assumes that all the public information is reflected in the price of the security. Therefore, the non-zero abnormal return indicates positive or negative investment skills of the manager who uses additional, private information for her management decisions. Abnormal return is related to taking a diversifiable (non-market or idiosyncratic) risk.

[51] That is, the difference between top 75% and 25% results.

future might be better if the investment policy is changed. The reason for the system's unsatisfactory rate of return, experienced during last three years, therefore must be attributed to the state's overall regulatory framework. Blake et al. (2001) link the funds' performance to the incentive effects of the fee structures, the performance evaluation environment and the degree of the industry concentration.

An additional important issue is that the financial claims offered by the pension systems (PAYG or fully funded) can hardly be directly comparable with the returns from other investment vehicles[52]. While the "ordinary" financial claims might offer higher returns and can be managed freely, they are market contingences. Moreover, moral hazard, free raider or ignorance issues, not to mention the bad luck element, might endanger saving for retirement. The pension systems eliminate those problems[53] although at the price of the liquidity and sometimes, lower future returns.

4.2. Cost of the system from the perspective of the insured

Information about alphas is of primary concern for the pension administrators and for the managers themselves. It enables them to measure and compare the efficiency of the investment management. Thus pension fund trustees mainly use this as a measure of management performance. However, an efficient investment does not necessarily imply an efficiency of the overall process of saving for retirement. The efficiency for the insured is the net rate of return on pension fund investment. It is the rate achieved on investment reduced by administrative charges (Chlon, 2002). However, one should also add opportunity costs caused by the system. The latter are the system-built costs and costs due to sub-optimal investment portfolios. The following subsections provide more detailed discussion.

4.2.1. Charges

There are two main categories of costs that define the economic efficiency of retirement accumulation. The first comprises of the charges paid directly by the insured. The second consists of the costs borne by pension administrators. These are the operational costs and system costs. The fund administrators' expenses usually have an indirect effect (via charges and reduced assets to be invested) on the results of pension fund members.

With respect to the fees imposed on fund members, Blake and Board (2000) remark: "there is an ongoing debate as to whether personal pension plans deliver investment

[52] I thank Midori Wakabayashi for pointing out this problem.

[53] Bad luck might be partially eased by the insurance (redistribution) feature of the retirement framework.

returns high enough to justify these charges". The same issue applies to the publicly mandated pension funds.

Charges can be categorized mainly as those based on contributions and those charged on accumulated assets (Blake and Board, 2000). The first type can involve up-load (entry) fees that may or may not be related to the size of contributions as well as regular charges that, again, may depend, on the contribution amount. Within the second group there are charges based on either the intermediate value or the final value[54]. Hence, the fees can be levied either on the flow of funds or on the account balance. The former method is popular in Latin American countries while the latter is widespread in Europe and the USA. Other solutions are possible. For instance the Mexican system has commissions based on the real rate of return although this approach does not apply to all of the funds (Sinha et al., 1999).

The Polish system of individual accounts belongs to the retail-type market. Characteristics of such a system are the direct relationship between insured individuals and a fund (James et al., 2001) as well as the free choice of a fund. In the institutional market there is an intermediary that aggregates individual contributions; the institutional investors are competing for management of huge money blocks. According to James et al. (2001) such a solution is twice as cheap as the retailed one. However, there is less choice and transparency and a greater danger of political influence.

Figure II-2 presents the route of premiums in the Polish system. The contributions are sent once a month from the employer to the state entity (ZUS), which keeps records of social insurance contributions for each individual. The ZUS allocates part of the premium to cover each type of social risk. The premium designed for old-age protection is split between the state repartition scheme (first pillar, approx. 63% of pension premium) and the pension fund scheme (second pillar, approx. 37%).

Figure III-2 Flow of premiums and costs incurred during the retirement saving process.

The cost of transferring premiums to the pension funds is currently 0.8%[55] of their total value. Such a high charge seems to be hardly justified especially when it reduces already low results of future pensioners. The ZUS agency has still not sent some of the premiums to the funds (subsection 3.3). It represents an additional burden for the society as a whole because the arrears have to be ultimately met from the pockets of taxpayers.

[54] In the Polish system there are no explicit exit fees. However there is a hidden switch fee embedded in the charge (see section 3.2).

[55] The fee is decided every year in the budget law. In 1999 there was no charge, in 2000 it was 0.6% and during last two years it reached its statutory maximum of 0.8%.

The fund administrators impose front-loaded fees ranging between 6.5% and 10% of the premium. During the last three years the average was approximately 8.5%. Given that the longer the membership, the lower the fees, the average charge should be approximately 6.84% after 5 years, 6.8% after 10 years and 5.8% after 20 years of participation[56]. According to the recent news[57], the government intends to limit these charges considerably.

As an illustration, one might assume that for new money entering the fund, the up-front fee should not drop the one-year net investment result below risk-free rate[58], that is:

$$x(1-E)(1+R)(1-M) \geq x(1+r_f)$$

where:

x = premium,

E = entry charge,

R = investment return net of investment costs,

M = management fee,

rf = risk-free return net of investment costs.

Therefore,

$$E \leq 1 - \left[\frac{(1+r_f)}{(1+R)(1-M)} \right]$$

and for the recent situation with the funds earning on average 15% p.a. and a risk-free rate of 10%, the maximum bound is equal to:

$$E \leq 1 - \left[\frac{(1+0.1)}{(1+0.15)(1-0.006)} \right] = 3.77\%$$

If the initial fee brings down the two (three) year net return to a risk-free rate, the bound values are 7.4% and 10.89% respectively.

The argument against the current level of up-loaded charges becomes stronger when one analyses the structure of portfolio holdings. Stock or other instruments that are commonly believed to require high investment skills comprise merely 25-30% of all

[56] Author's calculations based on emerytura.hoga.pl.

[57] The Polish government is considering now decreasing the up-front fee to a max. of 2.5%. In exchange, the asset management fee would be increased from 0.05% to 0.083% per month but not more than to 15 m PLN (PAP, Polish Press Agency).

[58] Of course, there is no particular reason for the first year investment return to be at least equal to risk-free rate. In fact, there may be cases when the first few years' return produced by a new stream of money entering the retirement account generates much lower returns. With the long-run investment it is the final return on the assets that counts. However, the above illustration gives some idea as to what the higher bound for entry-fees should be if the returns from the assets do not change considerably each year.

investments. Bonds comprise over 65% while Treasury bills and bank deposits represent several percent of pension portfolios. Whereas it might be argued that such an asset allocation strategy is a response to current market prospects, there is still no justification for the level of charges. Either the investment limits should be relaxed so that the majority of assets could be invested in stock or the charges should be lowered. Otherwise clients are overcharged since the mandatory savings make it impossible for them to resign from such costly investment services. Had there been no compulsory participation they could have replicated the low-risk holdings relatively easily via much cheaper individual investment (naïve or index investment) while retaining in the pension account only a voluntary equity portfolio.

The costs related to the investment activity (brokerage fees, services, bills for depositary) and the remuneration for asset management are calculated and deducted directly from the assets of the fund. Typical brokerage fees at the Polish market for institutional investors (transactions from 0.5 m PLN) can be estimated roughly at 0.27% for stock and 0.09% for bonds operations[59]. The administrators of the fund charge the asset management fee at its maximum level of 0.05% of net assets per month i.e. 0.6% per annum. With the pension portfolio structured at 30:70 (shares/bonds) the asset management fee is comparable to prices of services that the large investment banks offer for wealthy individuals. For instance, CitiCorp charges its clients 0.8% for managing the WIG-related 10m PLN portfolio. In the case of bond portfolios the prices are 0.25% (inflation-linked) and 0.4% (no-linkage), respectively. The Polish mutual funds charge around 1.75% and 0.8% p.a., respectively (with upfront fees equal to 1% and 0%).

It seems that the management fee is acceptable[60] though there is still room for improvement because the pension fund administrators have clients with a potentially long membership and constantly growing assets. Furthermore, customers have few funds to choose from. Mandatory savings represent a huge flow of assets and competition between the operations is much lower than in the case of numerous mutual funds that must fight for voluntary deposits. As previously mentioned, the pension market is ten times bigger than the mutual one and it is growing much faster.

Chlon (2002) uses 2000 Polish data to estimate that the up-front and management

[59] Information of Citi Bank on typical commissions of its brokerage partners (www.citibank.pl/poland/corporate/polish/hanza/oakcyjne.htm).

[60] The typical annual management fee for the UK is 0.5% (small pension funds), 0.25% (fund of 100m USD) and less then 0.01% (very large pension funds) per annum (Blake et al., 2001, pp. 6, 20). The annual UK management fee for the median size of the Polish fund of 183 m USD should be roughly 0.15% of assets. However, the scale of assets and development of the institutional investors market is much higher in the UK than in Poland, which implies a lower cost of financial services.

charges reduce the rate of return by approx. 0.88%. The cost of administrator charges in Poland is comparable to the Latin American systems and is closer to the lower boundary (Chlon, 2002). However, Chlon (2002) does not provide information about the effect of overall systematic costs on the net rate of return.

As will be seen in the next subsection, the charges could be considerably reduced if one cut down the costs of the system. James et al. (2001) assess that a one percent reduction in administration fees reduces accumulation and pension by 20%. There is also an alternative way of huge cost reduction which is, however, rather theoretical as it would require fundamental changes. Choosing an institution-based retirement system would result in a framework with costs approximately half as much as in a retail market (James et al., 2001).

4.2.2. System-built costs

The level of charges is driven by the level of competition (profit margin for financial institutions) and by the environment designed by the state. The costs are shouldered on the insured, though not directly. In general, the cost structure of the Polish retirement system consists of two main subsystems. The first represents the financial intermediaries' operational costs which mainly cover start-up investments, record-keeping and communication expenses, investment costs and marketing expenditure. To a certain extent, the pension providers have an influence on those costs. However, their actions are restricted by existing legislation and regulatory framework. The biggest item here is related to marketing expenditure. In 2001, acquisition of new clients plus advertising expenses amounted to 32.8% of total operating costs[61].

The second group consists of mandatory costs and is of more interest as it is the state that defines the costs and at what level they must be borne (Table III-5). The main positions include fees for the central collector (Social Insurance Institution, ZUS), system guarantees, supervision, information disclosure and opportunity costs of minimum required rate of return. Furthermore, choosing the risk level appropriate for a person's age and personal situation is practically impossible. This issue will become more and more important as the members approach their retirement age. Although Polish law permits creating "B-type" pension funds with lower risk profiles, the system remains highly inflexible to various levels of personal risk aversion, age, wealth or occupational income. It seems reasonable to argue that at least a few different investment styles within a pension fund (but not necessarily separate institutions) should exist. This would allow the people to change the investment mix as they approach the

[61] KNUiFE, Quarterly Bulletin, 4/2001.

retirement age or their "endowed exposure[62]" changes.

As a final remark, one can point out a systematic problem concerning the percentage of contributions channelled to the funded pillar. Due to economic constraints only 20% of social security or 37% of pension-related premiums are invested in the capital market. James (2000) observes that small accounts result in higher costs per assets and lower net returns and therefore lower pensions. Small accounts are inevitably suffering from relatively high or even economically prohibitive, transaction costs (Lucas, 2001). This is the situation in Poland where the average monthly premiums (beg. of Apr 2002 – end of January 2003) ranged between 66-105 PLN (approx. 16-26 USD) with an industry average of 89 PLN (approx. 22 USD)[63].

Table III-5 System-built costs.

4.2.3. Possible cost reductions

Some commentators and representatives of the industry voiced their concerns about the cost level. In 2001, the Chamber of Pension Fund Administrators issued a document in which they argued that it was possible to cut down the expenses of the system by 57%. Although this number is questionable in the context of the conflict of interest between the pension administrators and the public, it is obvious that still a considerable part of the expenses could be avoided quite easily. Chlon (2002) discusses the administrative costs and the potential cost reductions in detail.

There are several areas where one could seek cost improvements. The first applies to up-front fees. As the initial phase of the expenses (related to entering the market and the marketing war) are over, there is more possibility to lower these charges even at the cost of increasing asset management fees. Not only would it increase the accumulation rate in the near future but it would also bring some positive incentives for more efficient management. As a matter of fact, the government has recently put forward a proposal for such a change.

The system-build costs should be reconsidered as well. Following the previous argument, there is no particular need for keeping the guarantee allowances at the current level. The fee charged by the Social Security Institution is just another levy imposed on already highly taxed individual savings. The idea of a main collector was to create a solid information database framework and also to ensure a higher coverage rate. However, at the current stage the service quality is low whereas the charge imposed by ZUS reduces individual savings to be invested in capital market in a considerable way.

[62] Defined as a quantity invested in the risky assets to minimize variability of consumption (Davis and Willen, 2000).

[63] Based on KNUiE monthly data (http://www.knuife.gov.pl/pteofe/rynek/dane/index.html).

The effect on future retirement benefits is strong. A reduction of just 0.1% in the fees would increase accumulations and pensions by 2% (James, 2000).

The supervisory-related costs might be successfully reduced if the frequency of detailed reporting to the KNUiFE were changed. At the moment, funds are required to provide exhaustive information on a daily basis. It is quite doubtful whether such a flow of information is really needed and whether the supervisory body actually does make use of this data. Of course, less severe data requirements should be carefully balanced with the potential risks of weakening supervisory efficiency and public information disclosure. Nevertheless, weekly reports for instance, should be sufficient.

The report-keeping and communication expenses would be lowered provided that the funds did not have to use registered mail letters when communicating with their members. The regular mail is three times cheaper and does not require collecting of unaccepted letters[64]. The pension law requires funds to send the annual reports to all account holders even though, on average, 18% (in some cases 57%) of the accounts are inactive.

Finally, the opportunity costs might be lowered if an action aimed at establishing proper benchmarks and performance evaluation rules is taken. Currently the minimum required rate of return creates a short-term investment horizon, herding around the results achieved by the biggest market players and lower competition (section 5.3). This issue is closely related to the properly functioning mechanism of built in incentives charges. The Polish system should employ more ex-post performance incentives and should also be focused on competing with costs instead of the promises of (ex-ante) performance results. Blake and Board (2000, p. 545) provide an excellent remark:

> "A scheme with charges levied principally on contributions offers the fund manager little incentive to achieve good performance, and places all of the risk of underperformance on the client"

4.3. Incentive effects of the fee structure

4.3.1. Linear performance contracts

Along with the cost issues, the incentive effects of the fee structure are equally important. Blake and Board (2000) claim that the front loaded charges (where the fees are paid before the service is delivered) do not usually provide the best incentives for the service provider to produce additional value. According to these scholars the back-loaded remuneration (paid after the service is delivered) serves this purpose better. In their study on UK pension funds, Blake and Timmermann (2002, p. 117) conclude

[64] One might wonder whether the regulation was not intended to bring some profitable services to the state-owned post monopoly. Other financial institutions (like banks or mutual funds) do not have to use registered letters.

that the fee structure seems to discourage active management. The same problem affects Poland.

The difficulty lies in the linear nature of fees specified by performance evaluation contracts and in the relative strength of incentives and risks. The incentive for investment executives to apply active management and thus increase the assets value, is quite weak. The additional reward to be obtained in the case of successful management is around two full orders of magnitude smaller than the base fee itself (Blake and Timmermann, 2002, p. 117). The same applies for Poland. The fee is a product of the ex-post return and the management fee that the fund administrating company receives. Since the investment returns are subject to random deviations it is quite probable that the ex-post return might be negative. Stock returns are usually non-normal (leptokurtic) with skewed distribution tails and this fact indicates that the sporadic extreme results may lead to considerable losses. That is why there is not much motivation for the administrator to undertake a very active policy. The expected marginal disutility due to possible failure increases much faster than the expected marginal utility due to increased management rewards. A spectacular failure can lead to the loss of a job at the level of investment manager. For the administrating company, bad returns would create an outflow of clients (in the Polish case) or a loss of mandate (in the British case). Blake and Timmermann (2002, p. 118) conclude therefore that: "the probability of relative underperformance due to bad luck outweighs the prospective benefits from active management for all but the most certain security selection or market timing opportunities." The managers try not to push their luck and this effect is even strengthened by the penalty payment existing in the Polish performance measurement system (section 5.2).

The issue of proper incentive mechanisms is important since they may alleviate the agency problems between managers and affiliates. Ross (1989) states in his theory that the magnitude of agency conflicts is inversely related to the level of institutional transparency and that the performance itself is proportional to the level of institutional transparency.

4.3.2. Performance-related incentives

Blake and Board (2000) argue that providers should compete on the basis of charges rather than on past investment performance. Their reasoning is based essentially on the non-testability and non-sustainability of superior performance. In the Polish context an additional reason is that the investment results are quite similar due to herding behaviour.

A proper fee structure should eliminate the tendency towards keeping close to the

index via creating incentives for managers to apply active management and to deviate from the benchmark. The fee should include a base part that covers the fixed expenses and a variable part that is a reward for beating the target. Blake and Timmermann (2002, p. 122) propose such a solution (existing currently in the UK specialised funds industry) and suggest that it is crucial to apply a fee rate that is symmetric around the target to avoid the excessive risk taking:

$$Performance-related\ \ fee\ in\ \ period\ t = \max[0, f_1(g_t - g_t^*)V_t] + f_2V_t$$

where:

f_1 = the proportion of the fee in relation to the difference between the realized performance g_t and benchmark (target) g_t*,

f_2 = the base fee to cover the fixed expenses,

V_t = the value of the fund in period t.

Section 5.4.3 proposes an asset allocation index that might serve as a yardstick (gt* in the above equation). The framework can work properly only if disincentives caused by current measurement regulations are removed.

5. PERFORMANCE MEASUREMENT REGULATION ISSUES[65]

5.1. Introduction

Public pension systems ought to be carefully designed and supervised to make sure that their purposes are met, the economic consequences appropriate and the individual members given some basic protection. Even in the case when the retirement provision is "opted out" from the hands of the state and is operated by private entities some sort of supervision is still needed. Usually the state's involvement is more than marginal[66].

The Polish financial market is relatively new and consumers' knowledge of insurance products and capital market mechanisms has still to be improved. Further, since membership in the scheme is mandatory, there are more expectations towards the state to ensure that the system functions properly. The same applies to state guarantees; their potentially substantial costs invoke stronger regulation. Important elements of this framework are: performance measurement, minimal required rate of return and the benchmark.

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[65] Published as Stanko D. (2004), 'Performance Measurement Regulation Issues in New Polish Pension System', Osaka Economic Papers, 53(4): pp. 78-88.

[66] For instance, as the UK history shows, the self-regulatory framework can fail even in the affluent societies that are relatively more market-educated (vide Maxwell scandal in 1991).

5.2. Current benchmark

Poland applies a system of performance measurement similar to that of some Latin American countries. The results of pension managers are compared to the industry's average return (AR). The AR is calculated every three months as an arithmetic average of individual funds weighted by their market shares during the period. The market shares are arithmetic averages of initial and final values and represent the proportion of all the pension assets that was under the management of a pension administrator[67]. Consequently, the AR measure is a peer-group index. Another important performance facility is the minimal required rate of return (MR) calculated as the lower of two values: 50% of AR or AR reduced by 4%. Both measures are determined every three months and use the results of the past two years for their calculations.

According to the pension law, those fund administrators whose investment results are lower than the required minimum have to pay the difference to their affiliates. Therefore, all members of the system can be sure that their rate of return will at least be equal to the MR. Pension administrators must make up the difference from their reserve funds (1.5% of accumulated assets). If those assets are insufficient the managing company has to use its own capital. In the case of insolvency, the fund is taken over by another fund, the administrating company is liquidated, and the Treasury takes over outstanding obligations.

Until now, only one administrator managing the Bankowy fund has had to compensate the difference. Three payments worth in total 14m USD were the consequence of a relatively aggressive stock investment policy that proved to be costly when the market collapsed.

The creators of the system hoped that such a performance framework would make the system more competitive and at the same time, safer for the clients. It turned out, however, that it has produced some rather perverse effects which are described in the next subsection. It seems that a continuation of the assessment system in its current shape may seriously threaten the retirement income security of the members.

5.3. Drawbacks of performance measuring system

5.3.1. Misleading information

The asset-weighted benchmark can be misleading For instance, the administrator of

[67] There is going to be change in the calculation formula (c.f. KNUiFE Monthly Bulletin 11/2003). From April 2004 the maximum share of each fund will be bound to 15%, even if its real market share is higher. Such change should to some extend ameliorate the impact of big funds. However, the biggest three funds will still have almost a half of the impact on the market's average (3 funds x 15%).

Bankowy (the only one that has experienced lower than MR results) generated for the period 1 June 1999 – 29 June 2002 a return of 43.4% (Stanko 2002, Table 7). There were other six funds with lower results. However their operators did not have to make any supplementary payments. Consequently, the running industry average represented by AR does not describe the general picture of managerial skills well. The average can produce completely deceptive results, as the hypothetical result in Figure II-3 shows. In this example, the manager who experienced a lower than average result in the first period still has to pay the penalty during the next periods even though her cumulative results are higher than the market. Thus, the entry values used for calculation can be distorted either by local market price changes or by managers themselves.

Figure III-3 Potential deceptive interpretation of AR.

The first problem relates to the frequency and time span with which the industry performance measure is computed. Under the initial framework, the assessment period covered only two years. Moreover, the quarterly frequency of such calculations forces the managing houses to follow short-term strategies to avoid the penalty payment. The managers concentrate on three-month investment strategies to make sure that the current results do not fall down below the average. According to a recent change, starting from April 2004, the assessment period will be extended to three years and each evaluation will take place every six months (c.f. KNUiFE, Monthly Bulletin 11/2003, p. 4). However one hardly can consider such changes to be satisfactory. Even under the reformed framework, the pension fund operations will be likely to abandon the long-term strategy so important in the process of retirement accumulation. That might still led to opportunity costs for the members of the system. Blake and Timmermann (2002, p. 123) suggest that the assessment frequency should correspond to the speed with which the market anomalies are corrected. One may infer from their example, that this horizon is somewhere between several and ten years. Since the Polish financial markets are not so much efficient, the minimal span for the evaluation horizon and frequency should be longer with an economic cycle of perhaps 5-7 years.

Lakonishok et al. (1991) provide some evidence on the second issue of "window-dressing". The fund administrators take short-time actions aimed at temporarily improving their results and portfolio structure. Though not officially documented, one should expect that such a phenomenon does also occur in Poland.

5.3.2. Herding

Another effect of the performance evaluation framework and incentive fees (subsection 4.3) is herding around the mean manager. Blake and Timmermann (2002, p.

117) conclude that: “The relative performance evaluation provides a strong incentive not to underperform the median fund manager”.

They also notice that in the presence of a peer-group median or peer-group distribution measures, fund manager behaviour is likely to be distorted. In effect, a target that uses a group’s median will create an outcome very close to this median. Not knowing what the median fund manager result will be at the end of the period makes managers stick to one other so as not to deviate from the final result. That is why the results are not much higher than those obtained from passive investment strategies. This is also a reason why an external benchmark should be used (Blake and Timmermann, 2002, p. 122).

Stanko (2002, 2003) also demonstrates that the Polish fund managers have a tendency to cluster around the median outcome. The interquartile range values (showing the difference between the top 75% and 25% results) computed for returns and alphas during the period of 1999-2003, were very narrow and quite narrow respectively. For raw monthly returns, the range was around 62 basis points (0.62%). That is approximately a distance of +/- 5.4% of the average return. The interquartile range for empirical alphas of around 77 basis points translates to a deviation of +/- 6.74% of the average individual alphas. It is so, because within the AR framework the safest strategy is to imitate the portfolios of the biggest participants. Therefore, such action minimises the risk of return’s deviation below the industry’s weighted average. The big funds (representing almost 75% of the market) have theoretically more freedom in deciding their risk profiles. However, in the game where nobody knows future returns it is still better to adapt a low-risk strategy to minimize the probability of penalty payments. Every three months, when the next “beauty context” approaches, the players can immunize their portfolios against the MR risk by increasing their holdings of more stable and predictable instruments like bonds and treasury bills. Consequently, the funds can “lock-in” the returns to make sure the final result will not fall below the current average.

The industry’s weighted average becomes the actual benchmark portfolio which the fund managers prefer to stick to. The strategy of following the benchmark portfolio, even though this exposes them to some risk (such as lost opportunities or capital losses due to not revised exposure in stocks), will never cause them regret this (Clarke et al., 1994). In the Polish conditions the regret from not sticking to the benchmark is enhanced by the penalty payments in the case of negative deviation. Keeping with the median manager immunizes managing companies from the MR risk and the investment managers are protected from regret and the threat of being fired as a consequence of

taking on higher-than-average risks. The legislation induces a two-layered agency problem; namely the conflict of interests between the customers and the owners of managing houses. Another type of conflict has an internal character and concerns the owners of managing houses and the fund managers.

5.3.3. Costs

The market weight in the AR formula strengthens the herding effect and increases the opportunity costs. The system achieves the local optimum from the point of view of the managing houses. However, from the view of long run saving its global equilibrium is sub-optimal (short time and conservative investment strategy). The misleading information may cause wrong consumer choices. Finally, the guarantees[68] of the minimal rate facility are illusionary as it is the client, after all, onto whom the cost will be passed in the long run. The cost of insurance deposits will be transferred onto customers (as any other tax imposed on the suppliers where the demand is inflexible)[69].

5.4. Benchmark proposals and their application for the performance incentives

5.4.1. Improvements of the current framework

The existing evaluation system can be improved by introducing several changes. To begin with, the frequency of assessment and time horizon should be extended. Announcing every one or two years the average return that is calculated over the span of several years should probably minimize distortions of the investment behaviour. Such a change, however, cannot be performed now since the market history is only 3.5 years old.

The formula for the minimum required rate of return might be changed also by widening the deviation band to allow greater variation around the average and therefore, more active investment.

The Polish supervisory body enumerates some other possibilities (UNFE, 2000 and KNUiFE Monthly Bulletin 11/2003 for details of recent improvements). The benchmark for a particular fund could be a weighted average of other funds' returns (i.e. with exclusion of the fund's weight). However, due to market concentration, such a proposal would not solve the problem of high weights of the big players. They still would have a

[68] This insurance feature is already embedded in the Reserve Fund. The cost of insurance provided by the MR institution is also spread over all clients. However, its distortion effect on investment behaviour is stronger than in the case of the ordinary moral hazard typical for insurance solutions.

[69] The recent change (starting in April 2004) alleviates this problem substantially because the fund administrators will not be obliged any more to put aside 1.5% of premiums as the insurance deposits. Instead they will have to pay insurance premiums equal to 0.3-0.4% of their net assets into the Insurance Fund (c.f. KNUiFE, Monthly Bulletin 11/2003).

big impact on such a market average. Therefore such a revision would not considerably change the behaviour of funds, particularly the small ones. Another alternative is a simple arithmetic average. However, this might be influenced by some extreme values experienced by few funds with minor market shares and therefore, is not a viable option either.

5.4.2. Market indices

It seems that the optimal solution is to abandon current regulations and to introduce a new, external benchmark. Such a benchmark would not create distortional effects typical for relative performance measures. The benchmark ought to reflect the universe of assets that the fund managers can invest in, as well as the main legal investment restrictions that they face.

Blake and Timmermann (2002, p. 113) suggest that the benchmark should possess a "cap" character. Thus, that the index should recognize the portfolio restrictions that are placed on single investments. The issue is of particular importance in Poland where the pension assets are growing relative to the capital market capacities and where a single investment cannot exceed 5% of the stock market capitalization. Consequently, the individual weights for the index should not be higher than this value.

However, the pension fund portfolio is a mixture of wide range of assets and (as opposed to mutual funds) it should not be evaluated with the use of a single stock index representing (usually) only the equity part and additionally limited to the shares with the highest market capitalization.

Nagorniak (1982) shows that even the most common S&P index is not appropriate for gauging a performance, and proposes a "complete index" that would include all risky assets (stocks, treasury bills, corporate and government bonds, real estate etc.). Therefore the highest correlation between the return generating process and the index is obtained.

5.4.3. Asset allocation index

For a more practical usage, one can use the (operationally easier) multi-index benchmarks (Elton et al., 1993) to calculate the portfolio's total average rate of return consisting of returns from stock, bonds and some other main investments (Treasury Bonds). Immediate candidates for the benchmark are, therefore, the Warsaw stock index WIG20 (blue chips index) and a bond index. Since there is still no official market index for the latter, investments in bonds might be represented either by foreign investment bank indices (for instance Merrill Lynch GOPL), or by some market proxy of returns

achieved by the biggest main mutual funds specialised in bond investing (Stanko, 2003).

The WIG20 index seems to be a good candidate for stock pension investments; however it possesses a serious flaw. As a price index it does not include the dividends effect. Thus, some monthly returns calculated on its basis are seriously underestimated (particularly in the spring and summer seasons when most of dividend payments occur). The under-estimation of returns is especially substantial in the case of the equally-weighted index. In Chapter 2 I calculate both (equally- and capitalization-weighted-) versions of the WIG20 index that include the dividend payments. Chapter 2 supports the candidacy of the Merrill Lynch GOPL index which in the best way describes the Polish bond market.

In the case of a new synthetic benchmark one needs to answer what the weights should be for each class of investments (stocks, bonds, deposits). One potential solution is, in my opinion, a framework within which the pension administrators declare their individual long-urn asset allocation ratios against which they will be assessed. Alternatively, the Committee of Insurance and Pension Fund Supervision could use the information about current fund holding so that to compute the weekly average structures for each pension portfolio[70] and to use those weights for calculating the final weighted return over the measured period. The office should not disclose this data so that not to influence the funds' behaviours and to give them greater freedom in deciding on their individual short-term asset allocation strategies. Under such a scenario, the funds should publish their strategic asset allocation profile and any major changes. It would give the public a chance to choose a fund that meets their individual preferences with regard to their risk aversion.

Such solutions seem even more appropriate in light of Blake and Timmermann (2002, p. 110) suggestions that the strategic asset allocation should be viewed as a decision of fund trustees taken with regard to risk and not as an investment decision itself. This means, that it is the fund trustees that specify the long-run investment profile of the fund and its risk exposure. The manager is severely limited in his investment decisions as he has to meet the long-run outlines. Therefore, the proper assessment of managerial skills should focus on the tactical asset allocation (timing and stock selection) results judged against the strategic asset allocation benchmark. In the case of "classic" defined contribution funds it is their liability structure and maturity that affect the investment risk profile of the portfolio. In the current Polish conditions, the asset

[70] Currently, the Polish supervisory body obtains daily information concerning funds' investment activity and the structure of their portfolios. For the purposes of benchmark calculations, weekly or perhaps monthly average holdings should suffice.

allocation styles of various funds have a tendency to converge. It is so because they are predefined by the state (investment limits) and, indirectly, by the biggest market players (their impact on the weighted industry average). It would be worthwhile considering one or several (in the case of varying styles) asset allocation indices as a main or additional (besides the stock-bond one) performance yardstick since they would give more information about the fund's tactical allocation skills (timing and stock selection).

The framework described above would provide the public with information as to what the investment skills of pension administrators are. The second measure, the average weighted rate of return, would indicate the overall investment results. It would be comparable to some wide-economic benchmark like long-term Treasury Bills return, real GDP growth or real growth of benefits from the state-based pay-as-you-go pillar[71]. The investment styles defined by individual asset allocation benchmarks would give clients a chance to choose their preferred investment strategy.

The individual market indexes may not be mean-variance efficient. Roll (1978) shows that there are two possible scenarios. If an index is efficient, then all fund results will lie on the Security Market Line which will make ranking impossible. For an inefficient index there may be different rankings of the funds according to different indices. However, Peterson and Rice (1980) find out that there is a strong similarity of rankings while using various (inefficient) indices. Therefore, the mean-variance efficiency is not so important in the context of comparison of various funds.

An external stock-bond indicator has also more real links with the economy. By following such a benchmark the fund administrators would have to make efforts to adjust to the economic situation rather than to comply with short-time measurement requirements. In line with regret theory, the proper benchmark should be constructed in such a way that managers optimising their tracking errors[72] choose the portfolio, with regard to the long-run pension purpose. That is why the benchmark should be based on some easy to follow, wide economic index or indices, whose components do not change frequently. However such index creates some investment cost issues. The benchmark represents passive investment and does not account for expenses incurred due to active investment, custody fees, research expenses and so on. However, lowering the benchmark by those costs might produce negative effects of churning and cost inefficiency.

The last two indicators that might be used are: the system's rate of return (SRR) and

[71] The last proposal, however, seems politically sensitive, as the direct comparison to the previous system might be a difficult issue if the funded system brings much lower returns.
[72] That is the difference between benchmark and portfolio returns.

reduction in the rate of return (RiY). The former is calculated as:

$$SRR = \frac{Accumulated\ assets}{Total\ premiums\ paid\ in} - 1$$

and indicates the net effect of saving in the pension system. It gives a client his or her individual rate of return and shows the combined effect of all system-hidden or explicit costs and investment efficiency.

The latter (RiY), based on the reduction in yield discussed in details in Blake and Board (2000), is the difference between the hypothetical rate of return that would have been achieved without any costs and the actual one that includes the costs borne by the member. Although the ratio is technically plain, Blake and Board (2000) emphasise that the wide public has some difficulties in understanding it. It seems, however, that such an indicator would be a very good measure of fund's cost-effectiveness and allow, to some extent, cost comparisons between the funds. Table III-6 provides a summary of the main proposals.

Table III-6 Benchmark proposals.

5.4.4. Other proposals

One might also consider peer-benchmarks tailored for the fund sizes. That is to say, for instance, there might be big, medium and small fund indices. However, such a move would not solve the basic problems embedded in the nature of relative performance measures.

Another possibility is to create a mechanism based on some long-run average economic indicator. For instance:

benchmark = min { average stock – bond index }

Some other solutions might use the finance theory framework (unconditional and conditional alphas, information ratios or Value at Risk[73]). However, they would be difficult to implement due to their cost and know-how requirements. Also, the public might find some of those indicators too complicated. Therefore, the information conveyed by them would not be used. Not only the solutions derived from the theory of finance are hardly understandable by the average person but there are also some theoretical problems concerning the asset pricing models and efficiency of the markets.

Nevertheless, whatever the solutions might be, it is worth to remember the excellent observation:

> "It certainly appears to be the case that behaviour soon follows measurement when a performance benchmark is established; very quickly, the benchmark changes from being a tool of measurement to

[73] See for instance: Dowd et al. (2001).

a driver of behaviour" (Blake and Timmermann, 2002, p. 116).

5.5. Compulsory participation and public information policy

In the case of a mandatory public retirement system it is essential to ensure that the information concerning investment results achieved by various management providers is detailed and precise yet simple enough to be understood by the average member. Consequently, a system designer has to face the trade-off between the depth and completeness of information and its transparency. Bearing in mind the complexity of pension and investment issues, one must assume that only the simple measures will be properly comprehended by the public. Thus, either the current framework will be terminated and only basic geometric rates of return will be used or one will introduce some simple external benchmark. The asset allocation indices for each fund will work properly providing that enough education campaigns are organized. Such a solution also has the advantage of making the public aware of basic return-risk relationships.

At the current stage the individual only decides about which fund to join. Therefore, the members do not have much ability to shape their individual risk profiles as the funds' investment strategies are quite similar. If this situation changes a moral hazard problem might become quite serious. A worker may choose, for instance, a very risky portfolio hoping that either the return will be high or the state will bail him out. This issue should be solved by educational campaigns to make people aware of their decisions and potential risks. The safety net the state can offer in this case might consist of the first pillar.

6. CONCLUSIONS

A test of the system's efficiency could be expressed with the question "If you had some extra financial resources dedicated to additional retirement savings, would you put the money into the pension funds or would you choose another investment vehicle?" At the current stage of system development the answer is "no". Even though the system is efficient in the gross return context (positive alphas from the asset management) it does not produce satisfactory net returns. It suffers from cost ineffectiveness and measurement flaws that affect the investment behaviour of the funds. Some of the problems are an integral part of the Latin American system applied by Poland; some represent the obstacles typical for post-communist countries (for instance, the infrastructure problems and high administrative costs, Fults, 2002).

The pension funds charges could be lower, while the results higher. However, not

only the fund administrators should be blamed. More things that ought to be changed lie within the competency of the state. The system's costs embedded by legislation create a highly expensive and ineffective environment where monies of future pensioners are being used for purposes far removed from the retirement goal.

The bureaucratic solutions should be revised carefully since, in many situations new organisations are created not on efficiency or task grounds but rather as an effect of political lobbying or bureaucratic expansion.

There is room for improvement in several areas. Firstly, some immediate savings may be obtained if the system-built costs are removed. Secondly, the regulators should slash the fee level and revise their structure[74]. Building more performance-related incentives should bring a higher accumulation rate for the insured and probably better profits for successful administrators. The next group of changes should cover the performance reporting system. Temporary adjustments may improve its quality. However, in the long run, the peer-group benchmark and minimal rate requirements should be abandoned. The possible benchmarks should be of an external nature and should be related to the general economic conditions. For instance, all funds could announce their own risk profiles and their performance might be assessed against their individual asset allocation indices along with the basic indicator based on the geometric rate of return. The system's reorganization should also attempt to create competition between funds based on costs rather than promises of continuing their historical performance. To achieve both of these aims a new cost-oriented charge structure should be constructed and some educational action must be taken so that the people, having understood the nature of indicators and the role of the fee structure, are able to take informed decisions about their retirement strategies.

One must also rethink the investment limits especially the ones concerning investments abroad. In the long run the insured should be able to choose their individual risk profiles[75]. To also make sure that the future benefits will offer satisfactory rates of replacement, the amount of pension-related premiums should be increased. However, this issue is beyond the scope of social policy and is mainly determined by current fiscal constraints.

The above discussion suggests that the Polish system would have been much more

[74] It might be obtained either by a direct change of regulations or, perhaps more wisely, by reaching an agreement with the fund administrators. The latter would involve the government making some concessions. For instance, raising the maximum management fee and cutting system costs (discussed in 4.2.1).

[75] To avoid uninformed decision problems the state may, for example, specify or advise what minimal percentage of accumulated pension assets must be kept in the low-risk fund after a person approaches the retirement age (say, turns 50).

efficient had the institutional framework been applied. The cost of managing the pooled assets of the insured would be much lower and the competition between the managing houses more rigorous. Therefore, in the context of yet to be solved annuity issues, one might argue that all financial institutions should be allowed to provide the annuities. Creating new, exclusive institutions is going to be very costly. The arguments of safety often result in the expansion of bureaucracy and do not necessarily produce economically efficient solutions since the costs are ultimately borne by the insured.

There should also be some decisions taken with regard to financial risks that are likely to occur during conversion of accumulated assets into annuities. Even though the funded solutions are said to be immune to demographic changes, this immunity may not be perfect. Future generations will be less numerous and it might have an impact on the demand-supply equilibrium in the financial market. Davis and Li (2002) raise this issue and provide some evidence that ageing can lower the market returns. They also argue that one should be careful about realised high historical returns on financial assets. Similar problems apply to the temporal market depressions and the methods used to protect the value of portfolios for those workers who happen to reach their retirement age during an economic downturn and who have to annuitize their accumulated savings. A potential solution to this problem might consist of a gradual decreasing of risky investments from the total portfolio as the member approaches his or her retirement age. Lucas (2001) argues that funding solution can solve demographic pressures only if the new pension system makes a positive impact on private savings. Also, investing in stock can improve risk sharing within and between generations and have a positive impact on the financial markets. However there might be some negative aspects as well. For example, risk-taking, high costs of individual accounts and a deceitful sense of financial security (Lucas, 2001). These issues are beyond the scope of this paper.

The recent developments show that most of the issues discussed in the paper have not been addressed yet. The government bill proposals aim at administrative reduction of entry fees (maximum rates) and do not address the vital issues of performance benchmarks and investing (quantitative and qualitative restrictions). Also, the officials do not take into account difficult economic conditions and specific situation the system operates in (infrastructure and development of capital markets). Some proposals, like recent call for reduction of premiums paid into funds to finance the deficit do not contribute to economic and political stability of the system.

On the other hand, the argumentation of the industry side, while correctly pointing out several sound solutions, is not completely free of misassumptions or interpretations based on their own interest. There has been no agreement so far between the

government and pension fund companies[76]. However, the constructive solutions can only be worked out on the ground of mutual agreement and compromise. The reformatory measures cannot jeopardize trust of investors; however neither should put too much cost on the individual members. One must hope that this difficult agreement will have finally been attained in the nearest future.

The proposals of this study, particularly the ones concerning the benchmark facilities, are obviously not exhaustive. More research, perhaps in collaboration with pension fund administrators, should be undertaken to specify the best possible framework.

[76] See The Open Letter of Chamber of Pension Fund Administrators to Parliamentary Committee of Policy and Family of 8 January 2003 (www.igte.com.pl/indexmenu009.htm).

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APPENDIX TO CHAPTER 2: CALCULATION OF WIG-20 DIVIDEND-ADJUSTED INDEX

Value-weighted V20 index

1. The formula for WIG20 is as follows (Warsaw Stock Exchange, 2003, p. 7):

$$WIG20(t) = \frac{M(t)}{M(0) * K(t)} * 1000 \qquad (1)$$

M(t) - capitalisation of index portfolio at session "t"

M(0) - capitalisation of index portfolio at base date (16 April 1994), equal 136322.9 PLN.

K(t) - adjustment coefficient for session "t" (used to avoid the changes in the index due to changes in portfolio composition)

2. We have manually collected information concerning dividend payouts and the historical structure of WIG20 index. Having the historical index values we could calculate the hypothetical value of adjustedWIG20 index that would have included dividends:

$$\frac{adjustedWIG20(t)}{WIG20(t)} = \frac{adjustedM(t)}{M(0) * adjustedK(t)} * \frac{M(0) * K(t)}{M(t)} =$$

$$\frac{adjustedM(t)}{M(t)} * \frac{K(t)}{adjustedK(t)} \qquad (2)$$

However, since as at the time of "adding" the dividends, the index structure did not change, so adjustedK(t) = K(t) and

$$\frac{adjustedWIG20(t)}{WIG20(t)} = \frac{adjustedM(t)}{M(t)} = \frac{M(t) + cap[dividends(t)]}{M(t)} = \frac{\sum_{i=1}^{20} n_i p_i + \sum_{i=1}^{20} n_i d_i}{\sum_{i=1}^{20} n_i p_i} =$$

$$= 1 + \frac{\sum_{i=1}^{20} n_i d_i}{\sum_{i=1}^{20} n_i p_i} = 1 + \frac{cap[dividends(t)]}{M(t)} = (1 + x) \qquad (3)$$

cap[dividends(t)] – capitalization of dividends decided in month (t)

n_i – number of shares in index portfolio for a particular company on session t

(usually the index weights changes every 3 months, with a change of index participants once a year)

p_i – current (closing) price for a particular stock on session t

d_i- value of dividend per share (if any) decided on session t

x – adjustment due to the dividend effect

3. The continuously compounded returns accounting for the dividend effect were calculated as the old returns plus small adjustment:

$$\ln\left(\frac{\text{adjustedWIG20(t)}}{\text{WIG20(t}-1)}\right)=\ln\left(\frac{(1+x)*\text{WIG20(t)}}{\text{WIG20(t}-1)}\right)=\ln\left(\frac{\text{WIG20(t)}}{\text{WIG20(t}-1)}\right)+\ln(1+x)=$$

$$=\ \text{old returns}+\ln(1+x) \qquad (4)$$

4. For the timing of the dividend we chose the day when the dividend is decided (first "cum dividend" day). The reason for that is that, although physically it is paid around one month later, the pension fund accounting includes dividends on that day. Therefore this day is chosen to assure comparability of returns between market portfolio and pension funds. Also for the same reasons, we used only nominal values and did not calculate the accumulated value on the last day of the month.

5. The new index has not been changed for 32 months out of 51 (no dividend paid out in a particular month).

For few months the effect is particularly strong due to:

- accumulation of dividend payments for few companies in the same months and/or,
- low investment returns from the capital gain part.

The values for the other months have not changed considerably as:

- not all of the WIG20 companies paid out dividends at all,
- some of the companies paid out dividends, however they did not belong to the index when the dividend was decided,
- the timing of dividend announcement varied according to the company, therefore the effect of dividends was even more diluted,
- dividends were relatively low.

Equally-weighted E20 index

1. We used the information concerning WIG20 historical values, structure and

dividend payouts.

2. We calculated equally-weighted dividend-adjusted E20 index as:

$$\ln\left(\frac{\mathrm{WIG20}_{t} - \mathrm{WIG20}_{t-1} + \mathrm{dividents}_{t}}{\mathrm{WIG20}_{t-1}}\right) \qquad (5)$$

t – the session on the last working day in the month (n)

(t-1) – the session on the last working day in the previous month (n-1)

div – the dividend (if any) decided by a company on a session during the month (n).

TABLES

Tables: Chapter 1

Table I-1 Basic ideologies and their values.

Ideology		Values
Libertarians	natural–right libertarians empirical libertarians	individual liberty, ethics
Liberals	utilitarians Rawl's theory of justice	utility maximization justice
Socialists	democratic socialists marxists	equality, freedom, rights and needs fraternity, needs

Source: Based on Barr (1998: chapter 2).

Table I-2 Welfare state regimes and social policy implications: Esping-Andersen model.

Type of welfare Regime	**Liberal**	**Conservative/Corporatist**	**Social Democratic**
Values	Work ethic stigma	Rights according to class and status	Equality, universalism of high standards
Aims	Strengthen market	Strengthen civil society, limit market	Fusion welfare and work, full employment
Social rights	Citizenship	Employment-related	Universal
Welfare provision	Mixed services	Transfer payments	Public services
Benefits	Flat benefits	Contribution-related	Redistribution
Instruments	Means tested assistance	Private insurance backed by state	State = first line of support; high level of benefits
Decommodification	Low	Medium	High
Class implications	Middle class suspicious of state	Class maintained but stabilised	Middle class wooed from market to state
Country example	USA, Canada, Australia, UK	Austria, France, Germany, Italy	Scandinavian countries

Source: Herman (2003) and Ebbinghaus (1998).

Table I-3 Typology of social risks.

	Micro (Idiosyncratic)	Meso	Macro (Covariate)
	◄——————————————————►		
Natural		Rainfall Landslides Volcanic eruption	Earthquakes Floods Drought Strong winds
Health	Illness Injury Disability	Epidemic	
Life-cycle	Birth Old age Death		
Social	Crime Domestic violence	Terrorism Gangs	Civil strife War Social upheaval
Economic	Unemployment Harvest failure Business failure	Resettlement	Output collapse Balance of payments, financial or currency crisis Technology- or trade-induced terms of trade shocks
Political	Ethnic discrimination	Riots	Political default on social programs Coup d'état
Environmental		Pollution Deforestation Nuclear Disaster	

Source: Holzman and Jørgensen, 2000, Box 2: 12, adapted from Holzmann and Jørgensen, 1999, Sinha and Lipton 1999, WDR/Kanbur (2000).

Tables: Chapter 2

Table II-1 Survivorship bias issue.

Market changes	1999*	2000	2001	2002	2003**	1999–2003***
number of funds in the market	15–21	21	21 –17	17	16	
attrition rate (% of 21 sample)	–	–	19.0%	–	4.8%	4.76%
discontinued/merged funds	none	none	four	none	one	five

	Averages of monthly excess returns (pa., %)					
Equally weighted portfolios	1999*	2000	2001	2002	2003**	1999–2003***
survived funds	10.72	−3.24	−8.26	3.77	12.97	3.19
all funds	10.93	−2.94	−8.32	3.75	12.97	3.28
survived fund − all funds	−0.21	−0.30	0.07	0.02	0.00	−0.08
	Averages of monthly excess returns (pa., %)					
Value weighted portfolios	1999*	2000	2001	2002	2003**	1999–2003***
survived funds	9.94	−6.19	1.24	1.30	17.70	4.80
all funds	9.35	−6.53	1.11	1.21	17.70	4.57
survived fund − all funds	0.59	0.34	0.12	0.09	0.00	0.23

Calculation period: 1 June 1999 – 29 August 2003. * from June 1999, ** till August 2003, *** arithmetic average

Source: Author's calculations. Based on the methodology of Dahlquist et al. (2000, p. 8, Table 3).

Table II-2 Basic facts on Polish pension funds (as of 29 August 2003).

	Net assets		Members		Average returns (%, pa)*	
	mln PLN	(%)	thousand	(%)	nominal	real
A. Late starters (funds that started their activity after 1June 1999)						
ALLIANZ	1,125.3	2.67	241.485	2.13	13.82	8.26
KREDYTBANK	256.9	0.61	144.678	1.28	10.99	5.57
PEKAO	678.2	1.61	291.706	2.57	12.30	6.81
B. Early starters (funds that started their activity before 1June 1999)						
AIG	3,601.9	8.55	909.578	8.03	12.46	6.97
BANKOWY	1,276.7	3.03	392.371	3.46	13.83	8.27
CU (Commercial Union)	12,034.9	28.56	2,529.199	22.33	14.43	8.83
DOM	712.9	1.69	242.142	2.14	14.37	8.78
NN (Nationale Nederlanden)	9,509.6	22.57	1,931.495	17.05	16.17	10.49
ERGO HESTIA (previously PBK ORZEL)	812.6	1.93	393.619	3.47	14.01	8.43
POCZTYLION	881.1	2.09	450.153	3.97	12.49	7.00
POLSAT	172.2	0.41	124.607	1.1	16.13	10.45
PZU	5,899.3	14.00	1,839.487	16.24	14.33	8.74
SAMPO	1,230.8	2.92	483.112	4.26	15.62	9.97
SKARBIEC	1,557.7	3.70	618.217	5.46	12.59	7.08
CREDIT SUISSE (previously WINTERTHUR)	1,017.4	2.41	359.752	3.18	13.55	8.00
GENERALI (previously ZURICH)	1,375.3	3.26	377.248	3.33	14.47	8.87
Total (A and B)	**42,142.8**	**100.0**	**11,328.85**	**100.0**	**13.85**	**8.28**

Calculation period: 1 June 1999 – 29 August 2003. For funds with shorter periods of activity, the

calculation period was appropriately adjusted. Discretely compounded rates of return. Average returns represent geometric rates of return. * Market activity: Allianz (48 months), Kredytbank (47), Pekao (49), and other funds (51 months). Distribution of nominal (real) rates of return: first quartile: 14.4% p.a. (10.5%); median: 13.9% (8.3); third quartile 12.6% (7.1). PLN – Polish zloty, approx. 4 PLN = 1 USD.

Source: Author's calculations based on KNUiE Monthly Bulletin 08/2003; some other data from Table 3.

Table II-3 Pension funds and other investment vehicles. Discretely compounded rates of return. Period: 1 July 1999 – 29 August 2003.

Market		Nominal rates of return		Real rates of return	
		whole period	p.a.	whole period	p.a.
Pension funds	Survived (12 funds)	75.88	14.19	42.13	8.61
industry average	All survived (16 funds)	72.83	13.85	39.67	8.28
Equity market	WIG	36.57	7.61	10.37	2.35
	WIG20	10.33	2.34	−10.84	−2.66
	WIRR	41.64	8.54	14.46	3.23
Bond market	GOPL	75.91	14.21	42.16	8.63
Bond mutual funds	EuroOblig	60.39	11.76	29.62	6.29
	SkarbOblig	74.69	14.03	41.18	8.45
	SEB2	67.68	12.93	35.51	7.41
	average (MFUNDS)	67.59	12.92	35.43	7.40
Asset allocation	0.3WIG/0.7 GOPL	64.11	12.36	32.62	6.87
benchmarks	0.3WIG20/0.7GOPL	56.24	11.07	26.26	5.64
	0.3WIG/0.7MFUNDS	58.28	11.41	27.91	5.96
	0.3WIG20/0.7MFUNDS	50.41	10.08	21.55	4.70
Mutual funds*	Equity	43.70	8.91	16.13	3.58
	Balanced	57.49	11.28	27.27	5.84
	Growth	57.17	11.23	27.02	5.79
	Bonds	58.95	11.52	28.45	6.07
	Money	60.71	11.81	29.88	6.34
Av. risk-free rate	12 months Treasury Bills	11.40	2.57	−9.97	−2.44
Retirement funds	Average	65.65	12.61	33.87	7.10
Bank deposits**	USD	12.69	2.85	−8.93	−2.18
	PLN 1month	49.27	9.88	20.63	4.51
	PLN 1 year	45.95	9.30	17.95	3.96
Inflation rate***	CPI	23.74	5.14		

*Arithmetic average return for all funds existing during the period in each category.

** Average rates. Dollar investment includes exchange rate appreciation

*** Geometric average. Recent inflation rates: 0.5%pa (2003), 1.9 (2002), 5.5 (2001).

Description of abbreviations: **WIG** - Warsaw Stock Exchange Index, **WIG20** - Warsaw Stock Exchange Top 20 Blue Chips Index, **WIRR** - Warsaw Parallel Stock Exchange (secondary stocks), **GOPL** - Merrill Lynch Polish Government Bonds Index, **EuroOblig**, **SkarOblig**, **SEB2** - three biggest mutual funds investing in bonds, **MFUNDS** - arithmetic average for the biggest mutual funds investing in bonds, **TB** - Treasury Bills, **Retirement funds** - mutual funds (Citi Senior, Skarbiec III pillar) with retirement profile (third pillar), **USD** - American dollar, **PLN** - Polish New Zloty, **CPI** - Consumer Price Index.

Survived include those funds that operated from 1 June 1999 and that were still in the market (29 August 2003).

All survived includes above position plus late-coming funds that were still in the market (29 August 2003). That position is an arithmetic average of both groups.

Source: Author's calculations based on www.parkiet.com.pl, National Bank of Poland, www.tfi.hoga.pl.

Table II-4 Sharpe ratios.

A. all funds, averages and indices	Sharpe Ratio
MF3	0.146
Polsat	0.123
Sampo	0.112
GOPL	0.105
NN	0.102
PZU	0.073
CU	0.068
Generali (prev. Zurich)	0.067
Ergo Hestia (prev. PBKOrzel)	0.065
all existing funds	0.063
Dom	0.063
survived funds – early starters (12)	0.062
Allianz *	0.054
Credit Suisse (prev. Winterthur)	0.046
Rodzina **	0.040
Bankowy	0.035
all survived funds (16)	0.029
Skarbiec	0.014
Pocztylion	0.012
AIG	0.012
Pekao *	0.007
survived funds – late starters (3)	−0.006
Ego **	−0.019
WIRR	−0.035
Kredytbank *	−0.038
WIG	−0.044
Pioneer **	−0.050
V20	−0.070
WIG20	−0.082
E20	−0.137
all funds	−0.168
discontinued funds	−0.241
Arka **	−0.288
Epoka **	−0.397

B. survived funds	Sharpe Ratio
Polsat	0.123
Sampo	0.112
NN	0.102
PZU	0.073
CU	0.068
Generali (prev. Zurich)	0.067
Ergo Hestia (prev. PBKOrzel)	0.065
Dom	0.063
Allianz *	0.054
Credit Suisse (prev. Winterthur)	0.046
Bankowy	0.035
Skarbiec	0.014
Pocztylion	0.012
AIG	0.012
Pekao *	0.007
Kredytbank *	−0.038

Quartiles	
top	0.123
1q	0.070
2q	0.059
3q	0.014
bottom	−0.038

* funds that started after 1June 1999
** discontinued funds

Calculation period: 1 June 1999 – 29 August 2003, based on monthly differential returns (p.a.). The calculation periods are shorter for those funds that started later (after 1 June 1999) or discontinued their activities.

Description of abbreviations: **MFUNDS** - arithmetic average for the biggest mutual funds investing in bonds, **WIG** - Warsaw Stock Exchange Index, **WIG20** - Warsaw Stock Exchange Top 20 Blue Chips Index, **V20** - dividend-adjusted value-weighted WIG20, **E20** - dividend-adjusted equally-weighted WIG20, **WIRR** - Warsaw Parallel Stock Exchange (secondary stocks), **GOPL** - Merrill Lynch Polish Government Bonds Index, **all funds** - arithmetic average of returns for all 21 funds (calculation period is shorter), **all survived funds** - arithmetic average of returns for all 16 funds that survived, **survived funds - early starters** - arithmetic average of returns for 12 survived funds that started before 1 June 1999, **survived funds - late starters** - arithmetic average of returns

for 3 survived funds that started after 1 June 1999, **discontinued funds** - arithmetic average of returns for all 5 funds that disappeared from the market already, **all existing funds** - arithmetic average of returns for all funds that were in existence in a particular month.

Source: Author's calculations.

Table II-5 Pension industry performance: Jensen's alphas.

Panel A. Survived funds – early starters (13).											
Model	α		t-value	pval	stock factor	t-value	pval	bond factor	t-value	pval	R2
(1) WIG-GOPL	0.0257		1.54	0.130	0.2838	10.77	0.000	0.2249	1.57	0.123	0.864
(2) V20-GOPL	0.0320	**	2.49	0.016	0.2417	18.01	0.000	0.2805	2.76	0.008	0.913
(3) E20-GOPL	0.0473	***	3.40	0.001	0.2263	14.34	0.000	0.3630	3.13	0.003	0.890
(4) WIG-MF3	0.0219		1.48	0.144	0.2846	11.28	0.000	1.1026	3.69	0.001	0.881
(5) V20-MF3	0.0294	**	2.45	0.018	0.2429	17.87	0.000	1.0859	5.51	0.000	0.918
(6) E20-MF3	0.0460	***	3.27	0.002	0.2270	14.27	0.000	1.1292	4.38	0.000	0.879

Sample consists of 13 survived funds (early-starters). Monthly returns 1June 1999 – 29 August 2003 (51 observations).

Panel B. All survived funds (16) including late-starters.											
Model	α		t-value	pval	stock factor	t-value	pval	bond factor	t-value	pval	R2
(1) WIG-GOPL	0.0182		1.01	0.320	0.2742	10.17	0.000	0.2346	1.52	0.137	0.864
(2) V20-GOPL	0.0248	*	1.91	0.063	0.2349	17.41	0.000	0.2890	2.81	0.007	0.919
(3) E20-GOPL	0.0390	**	2.68	0.010	0.2189	13.25	0.000	0.3732	3.04	0.004	0.894
(4) WIG-MF3	0.0156		1.00	0.321	0.2761	10.71	0.000	1.0445	3.54	0.001	0.878
(5) V20-MF3	0.0240	*	1.98	0.054	0.2369	17.28	0.000	1.0190	5.56	0.000	0.920
(6) E20-MF3	0.0399	***	2.75	0.009	0.2205	13.43	0.000	1.0654	4.18	0.000	0.878

Sample consists of all 16 survived funds. Monthly returns 29 September 1999 – 29 August 2003 (48 observations).

Panel C. Existing funds (varying between 13 and 21).											
Model	α		t-value	pval	stock factor	t-value	pval	bond factor	t-value	pval	R2
(1) WIG-GOPL	0.0245	–	1.59	0.119	0.2669	11.16	0.000	0.2127	1.65	0.105	0.864
(2) V20-GOPL	0.0303	**	2.43	0.019	0.2265	17.73	0.000	0.2660	2.75	0.008	0.907
(3) E20-GOPL	0.0448	***	3.45	0.001	0.2125	14.87	0.000	0.3428	3.23	0.002	0.888
(4) WIG-MF3	0.0209	–	1.53	0.132	0.2677	11.71	0.000	1.0448	3.72	0.001	0.881
(5) V20-MF3	0.0279	**	2.37	0.022	0.2276	17.65	0.000	1.0322	5.07	0.000	0.912
(6) E20-MF3	0.0435	***	3.31	0.002	0.2132	14.60	0.000	1.0708	4.31	0.000	0.876

Sample consists of the varying number of funds that existed in the market during 1June 1999 – 29 August 2003.
Monthly returns 1 June 1999 – 29 August 2003 (51 observations).

All regressions estimated with the With Heteroskedasticity-Consistent Standard Errors & Covariance technique. Arithmetic average performance of all funds (equally-weighted portfolio). ***, **, * represent significant per-annum estimates at 1, 5 and 10%, respectively.

Source: Author's calculations.

Table II-6 Individual pension funds performance: Jensen's alphas.

	Two index models with GOPL			Two index models with MF3		
	(1) WIG	(2) V20	(3) E20	(4) WIG	(5) V20	(6) E20
Discontinued funds (19–26 observations)						
ARKA	−0.0167	−0.0148	−0.0055	0.0065	0.0095	0.0208
	(−0.56)	(−0.68)	(−0.24)	(0.21)	(0.03)	(0.68)
EPOKA	−0.0618	−0.0626	−0.0542	−0.0442	−0.0439	−0.0312
	(−1.41)	(−1.52)	(−1.41)	(−0.90)	(−0.95)	(−0.70)
PIONEER	0.0734 **	0.0710 *	0.0789 **	0.0858 **	0.0767	0.0887 **
	(2.09)	(1.82)	(2.07)	(2.00)	(1.67)	(1.97)
RODZINA	0.0453	0.0402	0.0482	0.0510	0.0467	0.0538
	(0.58)	(0.50)	(0.61)	(0.61)	(0.55)	(0.64)
EGO	0.0257	0.0313	0.0563 ***	0.0236	0.030165	0.0565 ***
	(0.81)	(1.64)	(3.57)	(0.73)	(1.55)	(3.11)
Late starters (48–49 observations)						
ALLIANZ	0.0272	0.0341	0.0460 *	0.0215	0.0299	0.0434 *
	(0.93)	(1.43)	(1.74)	(0.83)	(1.40)	(1.81)
KREDYTBANK	−0.0096	−0.0020	0.0084	−0.0066	0.0024	0.0152
	(−0.42)	(−0.11)	(0.39)	(−0.31)	(0.13)	(0.75)
PEKAO	0.0092	0.0150	0.0296	0.0087	0.0161	0.0324
	(0.41)	(0.76)	(1.63)	(0.41)	(0.80)	(1.66)
Survived funds (51 observations)						
AIG	0.0104	0.0168	0.0297	0.0070	0.0142	0.0286
	(0.52)	(1.02)	(1.61)	(0.38)	(0.92)	(1.56)
BANKOWY	0.0257	0.0354	0.0577 *	0.0168	0.0281	0.0520 *
	(0.66)	(1.07)	(1.71)	(0.48)	(0.95)	(1.71)
CU	0.0263	0.0325 **	0.0474 ***	0.0243	0.0318 **	0.0480 **
	(1.47)	(2.15)	(2.89)	(1.45)	(2.03)	(2.63)
DOM	0.0273	0.0331	0.0492 **	0.0265	0.0336	0.0512 **
	(1.29)	(1.56)	(2.35)	(1.24)	(1.47)	(2.12)
NN	0.0427 *	0.0486 ***	0.0675 ***	0.0393 *	0.0485 ***	0.0670 ***
	(1.83)	(4.14)	(3.21)	(1.83)	(3.08)	(3.19)
ERGO HESTIA	0.0244	0.0296	0.0424 **	0.0205	0.0267	0.0405 **
	(1.23)	(1.60)	(2.19)	(1.16)	(1.60)	(2.25)
POCZTYLION	0.0156	0.0200	0.0360 **	0.0134	0.0171	0.0344 *
	(1.06)	(1.14)	(1.92)	(0.89)	(1.02)	(1.87)
POLSAT	0.0449 **	0.0506 ***	0.0661 ***	0.0408 **	0.0477 ***	0.0645 ***
	(2.64)	(3.32)	(4.38)	(2.46)	(3.12)	(4.22)
PZU	0.0218	0.0262	0.0386 **	0.0189	0.0243	0.0376 *
	(1.29)	(1.46)	(2.20)	(1.30)	(1.29)	(1.90)
SAMPO	0.0331 *	0.0377 *	0.0503 **	0.0310	0.0245	0.0501 **
	(1.71)	(1.89)	(2.53)	(1.64)	(0.84)	(2.25)
SKARBIEC	0.0169	0.0241	0.0400	0.0105	0.0188	0.0361
	(0.61)	(1.06)	(1.56)	(0.40)	(0.86)	(1.47)
CREDIT SUISSE	0.0216	0.0303	0.0443 **	0.0180	0.0268 *	0.0420 **
	(1.48)	(1.56)	(2.33)	(0.73)	(1.73)	(2.32)
GENERALI	0.0259 *	0.0321 **	0.0480 ***	0.0228	0.0302 **	0.0474 ***
	(1.71)	(2.40)	(3.50)	(1.59)	(2.08)	(1.47)

Monthly continuously compounded gross rates of return. Numbers in brackets represent the White heteroskedasticity-consistent t-values. ***, **, * represent significant per-annum estimates at 1, 5 and 10%, respectively. A few models were estimated with an autoregressive error term (e.g. AR(1)) to correct the autocorrelation problem (in such cases the number of observations was reduced).
Source: Author's calculations.
Note: Estimates of Panel A differ slightly from results in Stanko (2003b, Table 8) due to newer, more accurate data set.

Table II-7 Top pension funds' performance: Sharpe and Jensen's measures.

	Sharpe		Jensen
Polsat	0.123	Polsat	5.06
Sampo	0.112	NN	4.86
NN	0.102	Sampo	3.77
PZU	0.073	–	–
CU	0.068	CU	3.25
Generali (prev. Zurich)	0.067	Generali	2.59

Jensen's alpha in % per annum; V20-GOPL model.
Source: Author's calculations.

Table II-8 Performance of individual funds: F-test.

	GOPL					MF3				
	all funds	all survived funds	early starters	late starters	discontinued funds	all funds	all survived funds	early starters	late starters	discontinued funds
F1 test all alphas equal to zero: alpha (1) = alpha (2) = ⋯= alpha (n) = 0										
WIG	1.81*	1.71*	2.01*	0.40	2.06	1.54	1.49	1.76*	0.32	1.66
	(0.014)	(0.004)	(0.018)	(0.750)	(0.090)	(0.057)	(0.097)	(0.046)	(0.813)	(0.149)
V20	2.92**	3.27**	3.82**	0.88	1.82	2.5**	2.88**	3.35**	0.87	1.30
	(0.000)	(0.000)	(0.000)	(0.454)	(0.115)	(0.000)	(0.000)	(0.000)	(0.456)	(0.270)
E20	5.42**	5.91**	6.83**	1.94	3.81**	4.71**	5.27**	5.99**	2.19	2.91*
	(0.000)	(0.000)	(0.000)	(0.126)	(0.003)	(0.000)	(0.000)	(0.000)	(0.092)	(0.016)
F2 test all alphas equal to each other: alpha (1)= alpha (2) = ⋯ = alpha (n)										
WIG	0.73	0.39	0.25	0.51	2.06	0.54	0.38	0.29	0.36	0.70
	(0.798)	(0.981)	(0.995)	(0.601)	(0.090	(0.952)	(0.985)	(0.990)	(0.696)	(0.323)
V20	0.96	0.56	0.37	0.72	2.10	0.59	0.50	0.41	0.49	0.62
	(0.505)	(0.908)	(0.973)	(0.488)	(0.085)	(0.921)	(0.942)	(0.960)	(0.616)	(0.404)
E20	1.09	0.54	0.36	0.64	2.99*	0.61	0.46	0.36	0.42	0.66
	(0.352)	(0.917)	(0.977)	(0.528)	(0.021)	(0.910)	(0.960)	(0.975)	(0.655)	(0.290)

P-values for each set of alphas estimated with various models. **All funds** – all 21 funds, **all survived funds** – 16 survived funds, **early starters** – 12 survived funds that started their activity before 1 June 1999, **late starters** – 3 survived funds started their activity after 1 June 1999, **discontinued funds** – 5 funds that disappeared from the market

* Significant at 5% level. ** Significant at 1% level.

Source: Author's calculations.

Table II-9 Abnormal returns from asset allocation and from two-index models – comparison.

Fund	alpha from V20/GOPL model		asset allocation benchmark			
			0.3V20/0.7GOPL		0.3E20/0.7GOPL	
CU	3.25	**	2.84	**	4.56	***
NN	4.86	***	4.48	***	6.46	***
Polsat	5.06	***	4.25		5.88	***
Sampo	3.77	*	3.77	**	5.27	***
Credit Suisse	3.03		1.98		3.49	*
Generali	3.21	**	2.92	**	4.76	***
Ego**	3.13		2.26		4.86	***
Pioneer**	7.10	*	4.23		5.42	
survived funds (13)	3.20	**	2.59	*	4.3	***
all survived funds (16)	2.48	*	1.75		3.44	**
exisiting funds (variable)	3.03	**	2.47	*	4.08	***

All funds – all 21 funds, all survived funds – 16 survived funds, existing funds – all funds that were in existence at a particular time

* Significant at 5% level. ** Significant at 1% level.

Source: Author's calculations.

Table II-10 Pension fund holdings: asset allocation and assets' value.

end of	Asset allocation* (% of portfolio)			Assets** in PLN m			Total
	Bonds	Stocks	Deposits	Bonds	Stocks	Deposits	portfolio***
May-99	–	–	–	1.4	0.1	0.2	1.9
Jun-99	65.78	11.09	19.68	2.4	0.7	0.6	4.1
Jul-99	75.38	10.56	8.97	48.6	6.5	0.9	56.9
Aug-99	80.78	10.49	3.45	201.6	30.3	2.1	235.7
Sep-99	82.04	8.68	4.05	658.0	66.8	10.7	737.3
Oct-99	80.47	11.45	2.64	969.6	143.5	15.7	1,138.8
Nov-99	75.30	17.37	3.98	1,231.1	370.6	31.5	1,647.8
Dec-99	61.23	27.73	3.80	1,147.9	641.5	44.6	2,158.3
Jan-00	66.49	28.28	2.38	1,845.0	894.0	45.7	2,819.5
Feb-00	60.40	33.05	3.62	2,038.6	1,204.8	130.2	3,424.6
Mar-00	62.01	32.92	2.08	2,538.6	1,349.5	54.3	4,067.2
Apr-00	66.73	27.31	3.35	2,941.8	1,276.6	96.1	4,410.3
May-00	67.58	27.43	2.89	3,427.9	1,473.7	145.0	5,094.4
Jun-00	64.43	30.33	3.32	3,712.1	1,807.1	145.8	5,726.9
Jul-00	59.83	31.14	6.69	3,897.7	2,004.8	346.5	6,305.5
Aug-00	60.38	30.71	6.49	4,288.1	2,107.6	369.2	6,835.6
Sep-00	62.84	29.23	5.14	4,841.3	2,090.6	166.1	7,203.5
Oct-00	59.75	29.27	8.07	4,923.9	2,093.7	550.7	7,689.7
Nov-00	61.10	30.59	5.73	5,410.0	2,521.7	446.6	8,495.7
Dec-00	58.49	34.65	4.66	5,817.5	3,139.9	194.0	9,258.6
Jan-01	58.51	33.24	5.88	6,430.2	3,344.3	497.3	10,385.2
Feb-01	63.35	29.61	5.15	7,155.0	3,157.4	309.8	10,717.6
Mar-01	63.06	28.62	6.46	7,582.1	3,204.8	465.0	11,379.5
Apr-01	61.97	29.15	7.20	8,103.2	3,499.1	503.1	12,192.7
May-01	63.21	28.96	5.45	8,419.9	3,937.5	430.0	12,955.2
Jun-01	65.46	26.19	5.95	9,008.4	3,624.4	398.1	13,233.6
Jul-01	67.94	24.27	5.57	9,378.6	3,565.8	554.9	13,658.3
Aug-01	66.27	22.94	8.52	9,832.1	3,611.6	903.6	14,521.9
Sep-01	69.19	21.81	6.94	10,317.4	3,551.0	783.3	14,821.1
Oct-01	67.14	24.91	6.06	11,441.1	4,656.7	736.2	17,018.2
Nov-01	69.25	23.18	5.44	12,172.8	4,855.7	654.6	17,927.6
Dec-01	69.20	23.80	4.31	12,624.8	5,250.8	535.1	18,815.4
Jan-02	66.71	27.04	4.00	13,498.0	6,647.3	604.1	21,140.3
Feb-02	66.94	27.37	3.39	13,665.6	6,561.6	505.4	21,169.7
Mar-02	66.55	26.97	4.25	14,338.1	6,788.9	754.7	22,381.7
Apr-02	65.26	27.39	5.08	14,538.5	7,124.8	664.2	22,869.9
May-02	64.73	29.12	3.92	15,080.5	7,574.7	508.1	23,742.6
Jun-02	66.69	26.32	4.76	16,044.7	7,053.5	711.5	24,433.3
Jul-02	69.83	24.61	3.33	16,874.2	6,574.4	460.5	24,573.3
Aug-02	69.43	24.26	4.02	17,612.2	6,994.3	517.1	25,843.9
Sep-02	70.29	22.12	5.25	18,394.7	6,755.2	773.6	26,694.3
Oct-02	70.39	24.47	3.00	19,626.0	7,637.7	415.6	28,497.5
Nov-02	70.32	25.21	2.31	20,318.5	8,122.2	353.6	29,677.4
Dec-02	68.63	25.56	3.96	20,694.7	8,187.2	803.1	30,487.5
Jan-03	68.94	25.33	3.85	21,278.8	7,840.1	1,089.7	30,812.7
Feb-03	68.37	24.29	5.50	21,712.0	7,831.4	1,513.6	31,661.6
Mar-03	69.60	23.69	4.99	22,992.1	7,867.4	1,343.6	32,799.4
Apr-03	69.90	23.95	4.07	23,845.3	8,189.3	1,198.8	33,904.2
May-03	70.42	23.74	3.83	25,147.8	8,640.8	1,016.2	35,505.0
Jun-03	71.44	24.15	2.20	26,297.0	9,327.4	674.5	37,025.6
Jul-03	69.60	26.12	2.19	26,834.2	10,546.7	625.0	38,713.8
Aug-03	66.08	27.79	2.30	26,879.1	12,740.5	573.0	41,196.6

* all 16 survived funds, ** all funds that existed in the market, *** investment portfolios. Investment portfolios consist of: bonds (Treasuries), stocks, bank deposits, stocks quoted at the over-the-counter market, National Investment Funds (mass privatization funds), Mutual funds' investment certificates, Mutual funds' investment units, Publicly traded local government debt instruments, Non-publicly traded local government debt instruments, Publicly traded non-government debt instruments, Non-publicly traded non-government debt instruments, Publicly traded debt instruments of companies listed at the stock exchange, Non-publicly traded debt instruments of companies listed at the stock exchange, Other instruments (i.e. derivatives for hedging purposes). Investment portfolios constitute around 97-98% of total net assets. PLN – approx. 4 PLN equals 1 USD.
Source: KNUiFE and author's calculations.

Tables: Chapter 3

Table III-1 Current pension system in Poland.

	1st tier	2nd tier	3rd tier
Management	state	private	private
Participation	mandatory	mandatory	voluntary
Financing	pay-as-you-go (PAYG)	funded	funded
Benefit formula	notional defined contribution	defined contribution	defined contribution
Responsibility	safety net	means for retirement	individual cautiousness
Current status	main source of pension benefit	additional source of pension benefit	marginal source of pension benefit

Source: Author, based on UNFE information.

Table III-2 Net assets and the market structure of the pension funds.

				market share	
Rank	Pension fund	PLN m	USD m*	a fund	accumulated
1	Commercial Union	9,126.83	2,281.71	28.6%	28.6%
2	ING NN	7,081.65	1,770.41	22.2%	50.7%
3	PZU Zlota Jesien	4,511.69	1,127.92	14.1%	64.9%
4	AIG	2,731.32	682.83	8.5%	73.4%
5	Skarbiec Emerytura	1,223.06	305.76	3.8%	77.2%
6	Zurich	1,069.56	267.39	3.3%	80.6%
7	Bankowy	981.40	245.35	3.1%	83.7%
8	Sampo	929.85	232.46	2.9%	86.6%
9	Allianz	853.53	213.38	2.7%	89.2%
10	Credit Suisse (prev. Winterthur)	775.88	193.97	2.4%	91.7%
11	Pocztylion	668.41	167.10	2.1%	93.8%
12	Ergo Hestia (prev.PBK Orzel)	564.49	141.12	1.8%	95.5%
13	DOM	550.71	137.68	1.7%	97.3%
14	Pekao	528.73	132.18	1.7%	98.9%
15	Kredyt Bank	218.66	54.67	0.7%	99.6%
16	Polsat	129.92	32.48	0.4%	100.0%
	Total	**31,945.69**	**7,986.42**	**100.0%**	**100.0%**

* 1 USD equals approx. 4 PLN

Source: Author's calculations based on KNUiFE (http://www.knuife.gov.pl/pteofe/rynek/dane/dane0103.xls).

Table III-3 Comparison of Polish pension fund administrators according to their own capital as of end of August 2002.

Rank	Administrator	PLN m	USD m*	%
1	Bankowy	260.0	65.0	11.65%
2	Ergo Hestia (prev.PBK Orzel)	222.2	55.6	9.96%
3	DOM	221.0	55.3	9.90%
4	Sampo	212.4	53.1	9.52%
5	ING NN	200.0	50.0	8.96%
6	PZU Zlota Jesien	200.0	50.0	8.96%
7	AIG	150.0	37.5	6.72%
8	Zurich	145.5	36.4	6.52%
9	Credit Suisse (prev. Winterthur)	125.0	31.3	5.60%
10	Kredyt Bank	119.2	29.8	5.34%
11	Polsat	108.0	27.0	4.84%
12	Commercial Union	99.8	25.0	4.47%
13	Allianz	73.5	18.4	3.29%
14	Skarbiec Emerytura	68.8	17.2	3.08%
15	Pekao	18.1	4.5	0.81%
16	Pocztylion	8.0	2.0	0.36%
	Total	**2,231.5**	**557.9**	**100.00%**

* Approximate value (1 USD = 4.0 PLN)

Dark-shadowed administrators are those whose funds manage the biggest net asse
Light-shadowed ones are the funds who are in third and fourth positions in the net asset ranking (c.f. Table 2).

Source: Author's calculations based on http://emerytura.hoga.pl.

Table III-4 Investment limits.

Instrument	Investment limit as a % of net total assets
Banks deposits and securities	20
Equity (stock exchange)	40
- secondary and third markets jointly	10
- third market	5
Public non-listed equity	10
National Investment Funds	10
Certificates of closed and mixed mutual funds	10
Investment units of opened mutual funds	15
Municipal bonds:	
- publicly traded	10
- non-public	5
Bonds issued by other institutions:	
- publicly traded	10
- non-public	5
Public corporations bonds	5
Foreign investment	5

Source: Based on Chapter 15 of the Bill from 28 of August 1997 on organisation and functioning of the pension funds.

Table III-5 System-built costs.

Position		Current cost
Central collection via ZUS	⇒ transfer fee	0.8% of contributions
	⇒ database problems ("dead" an accounts)	20 m PLN (2000), decreasing over time
Guarantees	⇒ Reserve Fund	1.5 % of contributions
	⇒ Guarantee Fund	0.1 % of contributions
Supervision	⇒ UNFE	0.14% of contributions
	⇒ penalties & legal expenses	approx. 8 m PLN*
	⇒ ınsurance Ombudsman	0.01% of contributions
Information disclosure	⇒ reports to supervisory	-
	⇒ reports to public and members	registered letters – 23 m PLN (2000)
Min. rate of return & incentive system	⇒ opportunity costs (shorter investment horizon, herding	-
No risk-profiling	⇒ opportunity costs (risk exposure)	-
Low level of funded contribution	⇒ high fixed costs of the system	-

* based on KNUiFE

Source: Based on KNUiFE Bulletins, Wojciechowski (2002) and Chlon (2001).

Table III-6 Benchmark proposals.

Table 6 Benchmark proposals.

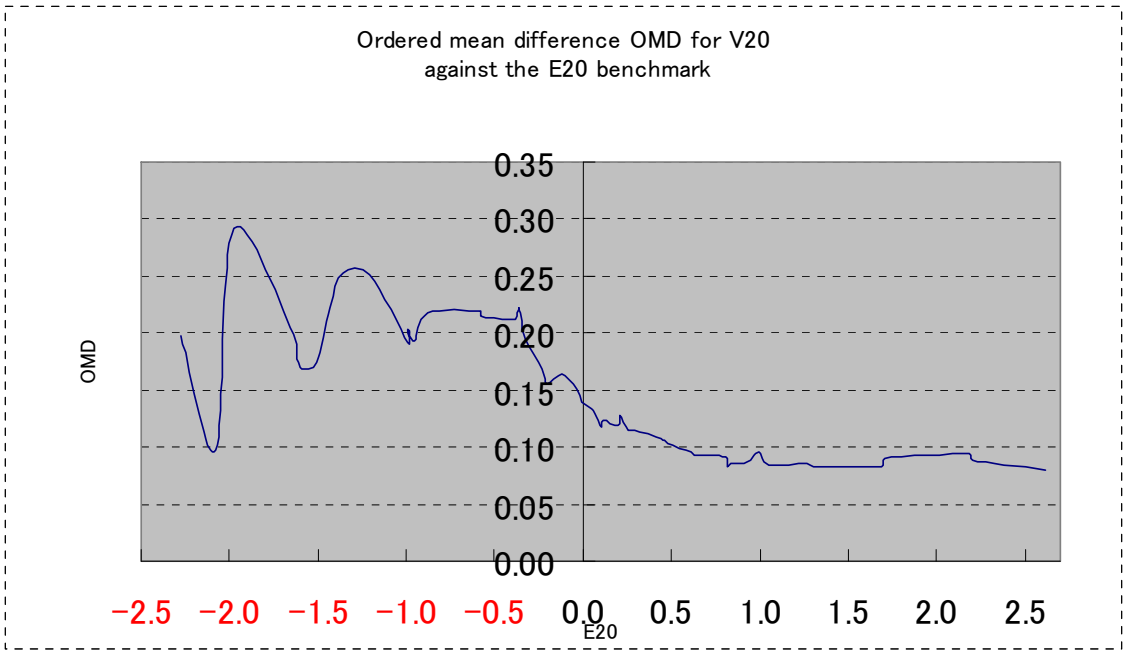
Benchmark	Construction	Function
Total funds universe	Universe of assets allowed by pension law to invest in (equity, bonds, TB, foreign investments, etc.).	To present a comparison of all possible investment for the pension industry.
	Returns on each asset category is capped by investment limit values and multiplied by assets market	More technical character, however relatively easy for the clients to use, especially for funds comparisons.
Individual asset allocation index	a) Declared by a fund (what is the percentage structure of a fund's portfolio)	To allow a risk-level choice. To present fund's risk profile and performance (market timing and stock selection).
	b) Actual index (a portfolio structure calculated on the basis of actual portfolio holdings)	Both types of indexes cannot be used to direct comparisons of funds with various risk levels. However useful fund's risk-reward indicator for the clients.
Average weighted rate of return	Geometric linked rates of return.	Simple index to present an overall investment return in comparison to other investment vehicles.
System's rate of return	Accumulated assets / Total premiums paid	To present system's return for an individual member (especially in comparison to the PAYG alternative).
Reduction in the rate of return	Difference between the hypothetical (no costs) and actual (costs) rates of return achieved by a fund.	More technical character, however relatively easy for the clients to use for cost-effectivness comparisons.

Source: Author.

FIGURES

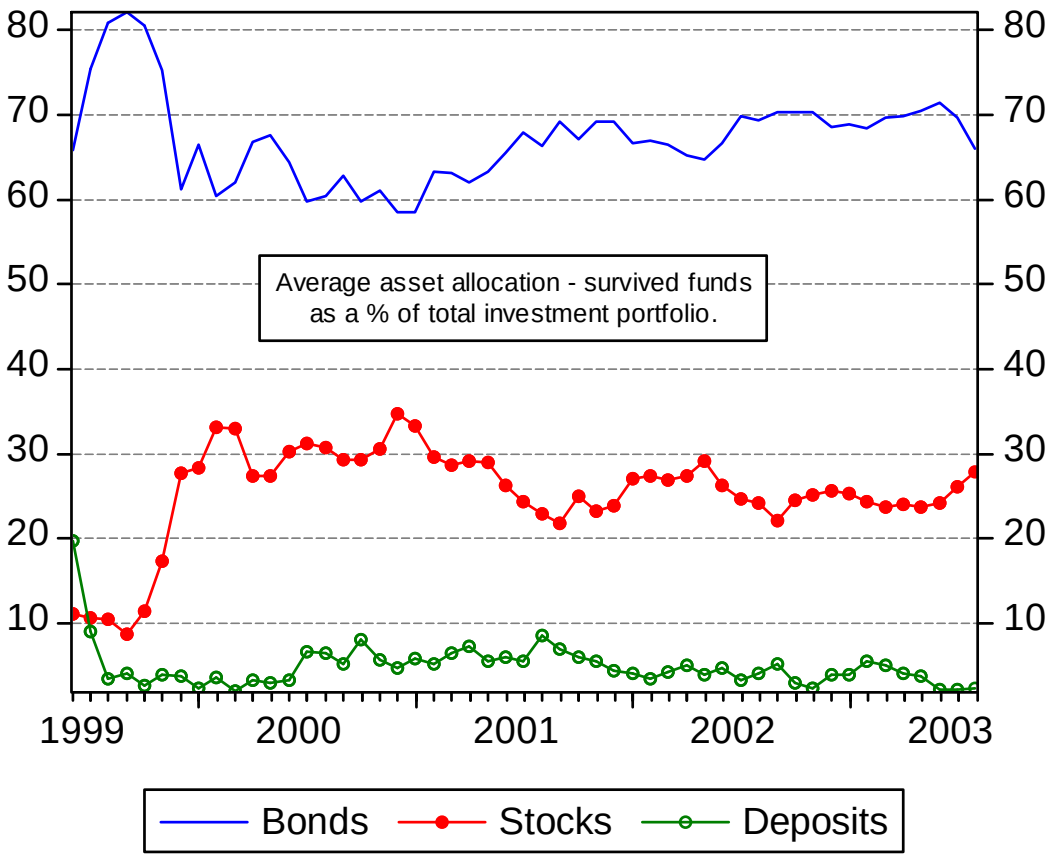
Figures: Chapter 2

Figure II-1 Ordered mean difference for V20 benchmark.



Source: Author's calculations based on Bowden (2002), p. 20.

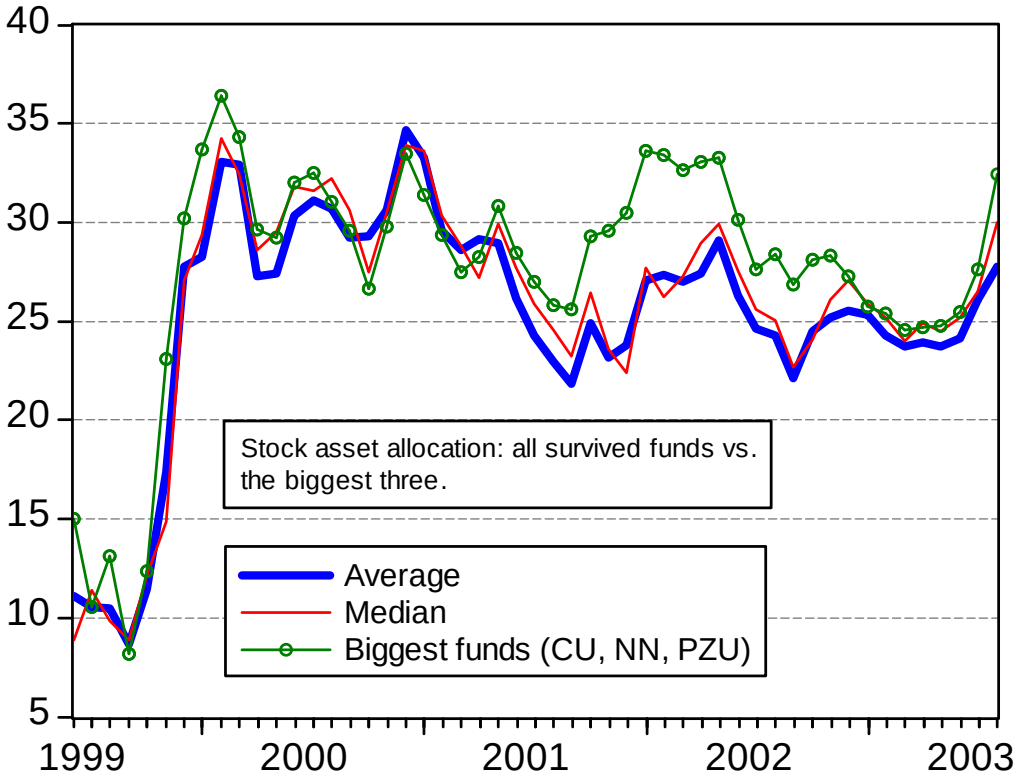
Figure II-2 Average asset allocation as a % of investment portfolios (all survived funds).



Monthly data: 1 June 1999 – 29 August 2003. All 16 survived funds. Arithmetic average.

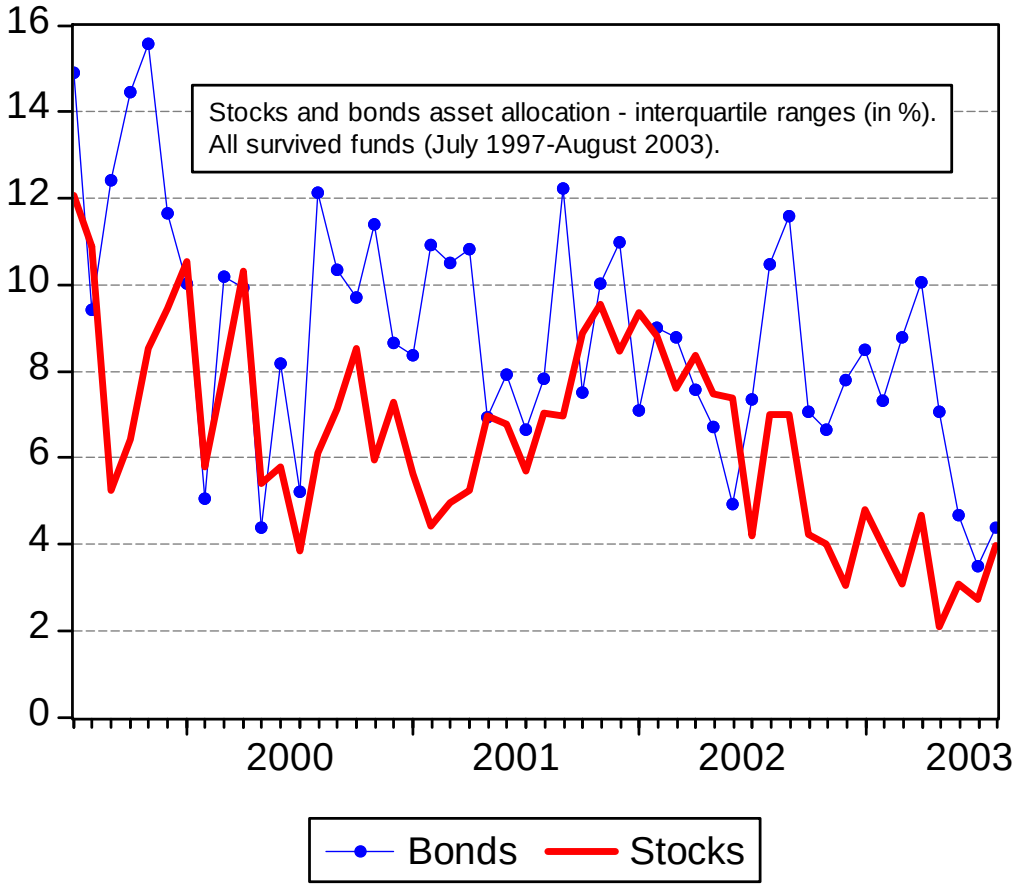
Source: Author's calculations.

Figure II-3 Average stock allocation (as a % of investment portfolio): all survived funds vs. the three biggest funds.



Monthly data: 1 June 1999 – 29 August 2003. All 16 survived funds. Arithmetic average and median. The three biggest funds represent 65% of the market in terms of their net asset value: CU (Commercial Union), NN (Nationale Nederlanden), PZU (Państwowy Zakład Ubezpieczeń).
Source: Author's calculations.

Figure II-4 Asset allocation variability amongst survived funds: interquartile ranges (%).

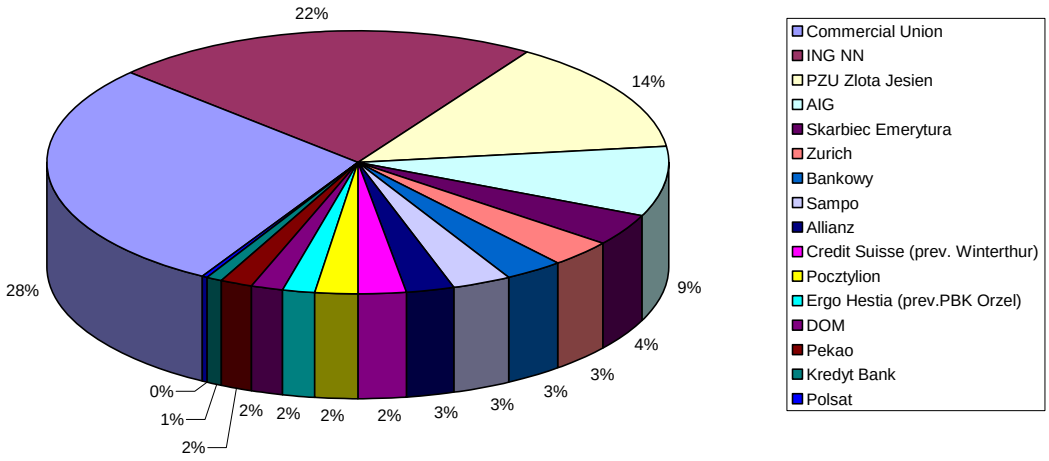


Monthly data: 1 July 1997 – 29 August 2003. All 16 survived funds.

Source: Author's calculations.

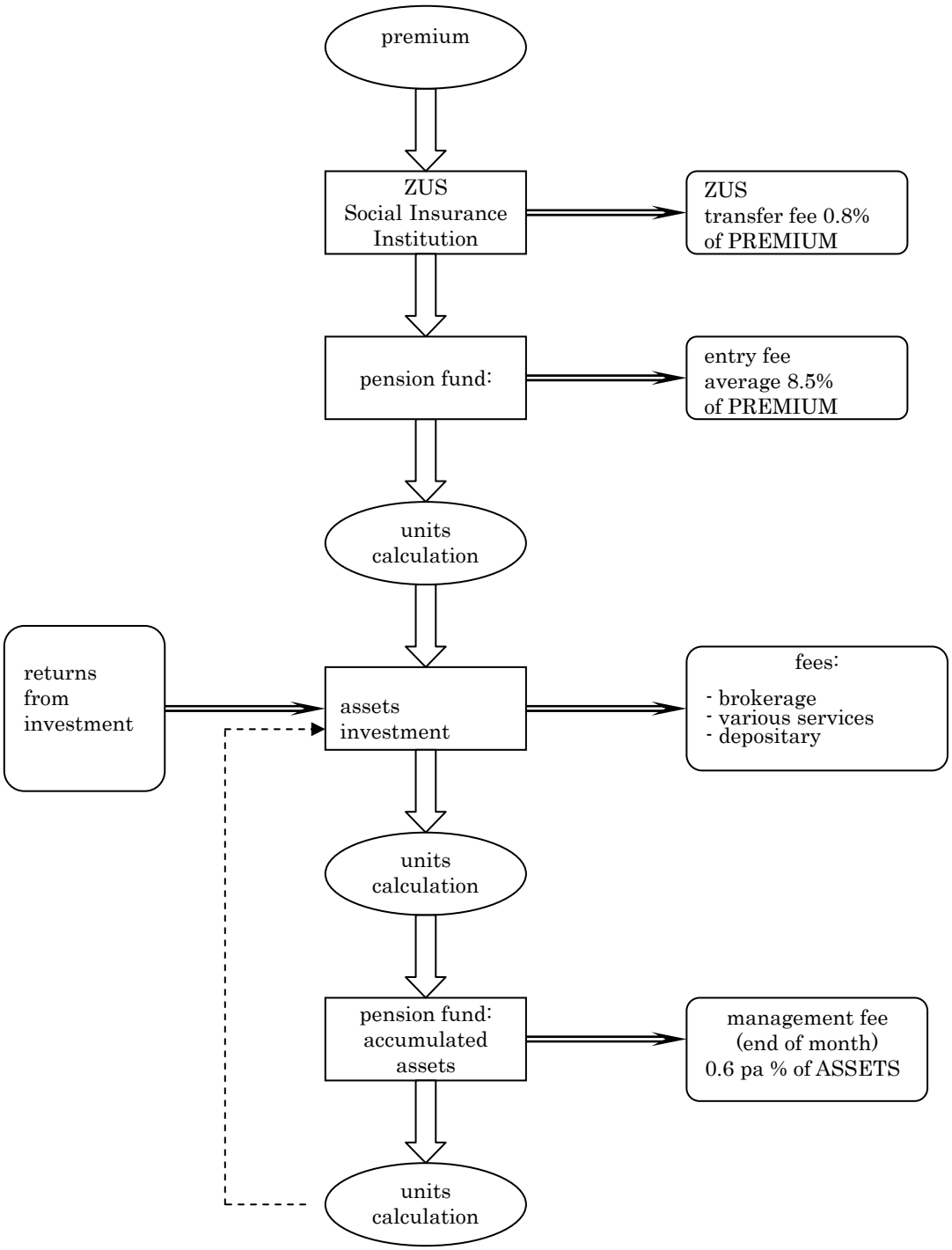
Figures: Chapter 3

Figure III-1 Structure of the Polish fund market according to net assets (%, end of January, 2003).



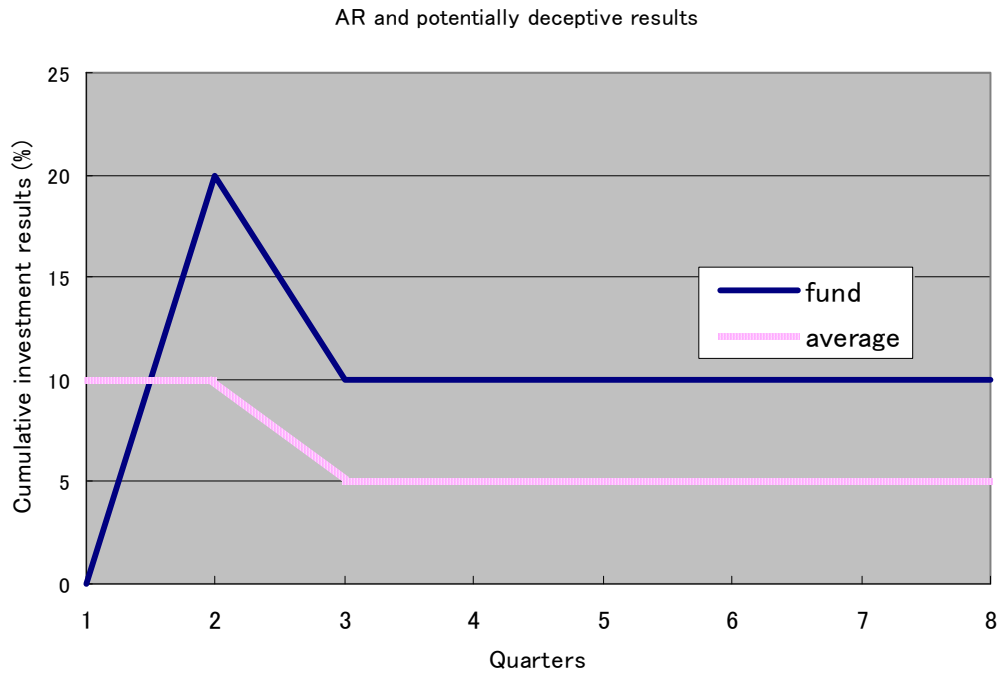
Source: Author's calculations based on KNUIFE (http://www.knuife.gov.pl/pteofe/rynek/dane/dane0103.xls).

Figure III-2 Flow of premiums and costs incurred during the retirement saving process.



Source: Author's compilation.

Figure III-3 Potential deceptive interpretation of AR.



Source: Based on IGTE Bulletin, 3/2002.