

to focus our attention on the emerging market countries' experiences trying to present the possible consequences from different perspectives. We start from the very general outlook at the process of pension reforms in the emerging market countries underlining the differences in regulations regarding foreign investments. Then, we move to the core issues discussing firstly the potential diversification benefits that may be obtained by adding the foreign assets into the OPF portfolio. In the next step, we move in our dispute to the problem of OPF externalities affecting the process of financial market development and state's macroeconomic conditions. In many debated points there is no clear answer about the prevailing results of the OPF investment policy change, hence, in the concluding part we indicate the desired directions of further research.

2. Some Facts Regarding Pension Reforms in the Emerging Market Countries

Society's ageing was the main reason that pushed some of the countries around the Globe (in the 80s' mainly Latin America states, and from the end of the 90s' Central and Eastern European countries) towards serious reforms of the their pensions systems. Previously established distributive PAYG (Pay As You Go) pension system have been replaced usually by a mix of three pillars. The first pillar, traditional one, usually has a distributive character and is managed by the government. The second pillar, created by private pension funds, is based on a funded scheme. The third pillar, also of capital character, is always voluntary. Our attention is focused on the second pillar issues, hence we will not develop the characteristic of the overall system.

The second pillar is usually mandatory and is financed by a significant share of the overall pension contributions.

Table 1: Pension contribution rates in the CEE countries (as on mid-2007)²

Country	Overall Pension contribution [%]	1 st pillar contribution [%]	2 nd pillar contribution [%]
Bulgaria	23,00	18,00	5,00
Croatia	20,00	15,00	5,00
Czech Republic	28,00	28,00	-
Estonia	22,00	16,00	6,00
Hungary	26,50	18,50	8,00
Latvia	20,00	10,00	10,00
Lithuania*	23,70	18,20	5,50
Poland	19,52	12,22	7,30
Romania	27,50	25,50	2,00**
Slovakia	18,00	9,00	9,00
Slovenia	24,35	24,35	-

*voluntary 2nd pillar ** fixed or gradually increasing

Source: Chybalski (2011)

Therefore, managing large portfolios of assets, pension funds have become the meaningful institutions of the financial markets. It cannot be surprising that governments impose several regulations regarding the pension funds assets allocation policy, as this may have serious consequences for the future pensioners and country's macroeconomic conditions as well.

² As the financial crisis emerged in 2008, most of the countries reduced the contribution to the second pillar moving the saved funds to the first pillar in order to support the worsening tax revenues. In some of the countries, this shift is declared to be only temporary. (Chybalski, 2011)

Table 2: The maximum investment limits on foreign assets for mandatory pension funds in the selected CEE countries (% of assets)

Country	Foreign investments
Bulgaria	15%
Croatia	15%
Estonia	No limits for EFTA and CEFTA countries
Hungary	30%
Latvia	No limits for EFTA and CEFTA countries
Poland	5%
Romania	No limits for UE and EEA countries
Slovakia	70%
Slovenia	No limits for OECD countries; however, due to the regulation stipulating that 80% of assets must be denominated in the same currency as liabilities, there is an effective 20% limit on non-Euro investments

Source: Chybalski (2011)

As we see the differences regarding the limits on foreign investments (Table 2) are substantial among the analysed countries. Let's discuss the factors that might have led to such cross-country varying outcomes in this area.

3. International Diversification Benefits for Pension Investors

The most important conclusion from the Markowitz (1952) seminal paper states that when assets returns are not perfectly correlated, diversification benefit (reducing portfolio risk while keeping the return constant) can be achieved. Hence, every rational and risk averse investor should seek for uncorrelated assets, as they offer a kind of investment "free-lunch". Because of this reason a special attention should be paid to foreign investments, having different country specific risk drivers comparing to domestic assets. However, at least two issues need a deeper analysis in order to provide a better assessment of the international assets usefulness for pension investors.

First of all, in the last years numerous empirical studies reported diminishing diversification benefits resulting from foreign asset allocation. The debate regarding international assets' diversification potential has intensified since 70s', when some of the countries began abolishing their capital controls. In the early studies international diversification of the equity portfolios was believed to deliver the desired diversification results (Grubel 1968; Levy and Sarnat 1970). However, since then the world has become the "global village" and the degree of international interdependence in various areas from culture to economic relations has dramatically increased. Numerous studies noted rising business cycle dependence among the different countries (Artis and Zhang, 1995; Artis et al., 2009) and perhaps the most frequently discussed causes are foreign trade deepening (Baxter and Kouparitsas, 2004) and capital accounts liberalization (Imbs, 2003). Rising business cycle correlation led to higher international equity returns co-movement, therefore resulting in a reduced diversification potential (Sinquefeld 1996; Babecky et al. 2010, Niemczak 2010, Kurach 2011). Mixed results have been also obtained in case of bond markets. In one of the early studies Levy and Lerman (1988) analysing the data from 1960-1980 period found an internationally diversified portfolio of bonds to be superior in terms of risk adjusted return relative to an international portfolio of equities. Later Solnik et al. (1996) and Capiello et al. (2003) identified an increased co-movement of bonds returns. Capiello et al. (2003) additionally noted that after introduction of the Euro, a structural break was identified resulting in a near perfect correlation of bonds' returns among the EMU membership countries. Using the updated dataset Baele (2004) et al. confirmed the large convergence among the EMU membership countries bonds' rates.³ Finally, in one of the recent studies Hansson et al. (2009) verified the degree of co-movement between the three different groups of international debt assets: developed countries treasury

³ Recent financial turmoil (the so called "sovereign debt crisis") reversed the convergence process, but so far we cannot be sure if this change is a kind of persistent one.

bonds, emerging market sovereign debt and corporate bonds. The authors finally concluded that the diversification benefits from international bonds' investing diminished over last years. Nevertheless, from the perspective of a developed country investor, the emerging market treasuries still offer some risk-reduction potential.

The discussed studies do not take into account the specific features of pension fund investments, however. As Reisen (1997) states the investor's degree of risk aversion is negatively correlated with the per capita income and pension benefits. Consequently, the emerging-market pensioner is perhaps more risk-averse than his colleague from a developed country and he should put a higher weight on foreign assets from developed countries which are usually characterized by a lower volatility. The laboratory experiment run by Sinha (1992) shed also some empirical light on a relationship between the degree of risk aversion and age. Sinha (1992) confirmed an intuitive argument that older people are more risk averse, so the pensions portfolios of older investors should be designed to protect the accumulated wealth rather than to maximize the expected return. There exists a group of studies on international asset allocation challenging the problem of varying risk aversion. Baxter and King (2001) applying the perspective of a US investor found that rising degree of risk aversion leads to a higher weight of risky assets in pension portfolio, but the share of the risky portfolio invested in domestic (US) assets is quite insensitive to the level of risk aversion⁴ and falls between 66 and 77 percent, depending on the particular international portfolio under consideration. Hence, the diversification potential of international risky assets from the US perspective does not seem to be large. Pfau (2011), on the other hand, examined the diversification potential from a perspective of the emerging market investor, with a degree of risk aversion equal to five (conservative investor). Analysing the longest time series available for that moment (starting at different dates from 1988-1998 and ending in 2006 for all 26 countries), he found highly cross varying optimal share of international assets ranging from 99,78% for a Chinese investor, while Colombian, Hungarian, Polish and Turkish investors did not seem to require any international assets to improve their risk-return trade-off.

Secondly, the phenomenon of "home-bias" (insufficient international diversification comparing to international portfolio theory prediction) has been broadly identified. Understanding the motives of the observed phenomenon may prevent overinvesting in domestic securities and consequently improve the mean-variance trade-off.

Sercu and Vanpee (2007) distinguish the potential explanations of home bias into five large groups, where the main attention is focused on: hedging domestic risk, implicit and explicit costs of foreign investments, information asymmetries, corporate governance and transparency, and behavioral biases.

If purchasing price parity (PPP) does not hold and investors around the world consume different baskets of goods, they will also tend to hold portfolios varying by a component designed to hedge inflation risk (Adler and Dumas, 1983). This investments solution may work only if the domestic stock returns and inflation rates are positively correlated. The empirical studies verifying this relationship find stocks and bonds as rather poor inflation hedgers (Summers, 1981; Li, 2002), hence this hypothesis does not seem to explain the observed home bias.

Additional costs that follow cross-border investing (taxes, transaction costs) have been noted as possible determinants of overinvestment in domestic assets by Black (1974) and Stulz (1981). Cooper and Kaplanis (1994) estimated the costs of holding foreign equities rather than domestic equities to be, at most, 1-2% annually. Then, they estimated the level of costs required to make the actual equity portfolios of investors optimal, given the diversification benefits available. Cooper and Kaplanis (1994) estimated, on average, 4,3% per annum, concluding, that actual costs cannot fully explain underinvestment in foreign securities and probably the restrictions placed on the investors (e.g. allocation limits) may be the important home bias drivers.

⁴ According to the standard Markowitz model with a risk-free asset all investors hold the same risky portfolio, however, more risk averse investors put a lower weight on risky assets.

Information asymmetry arising between domestic and foreign investors is another popular hypothesis. In the empirical studies, the actual portfolio holdings (or differences in assets allocation between actual portfolio and the one optimizing risk-return trade-off) are regressed by the information asymmetry proxies. These proxies are e.g. the physical distance between two countries (Portes and Rey, 2005), language or religious differences (Grinblatt and Keloharju, 2001) and “economic distance” as measured by air fares or phone rates data (Coval and Moskowitz, 1999). The estimated coefficients of the information asymmetry variables, were found to be statistically significant in the mentioned studies.

Corporate governance and transparency are also the issues related to information asymmetry problem. Different accounting standards and poor legal protection of minority shareholders make foreign investment less attractive (Pagano et al., 2001; Porta et al., 1999). On the other hand, as Gelos and Wei (2005) point out, even the governance on a country level may affect the international capital flows.

Last, but not least, the behavioural finance approach may shed some light on home bias issue. Being aware, that particular heuristics may play an important role in the decision-making process, economists try to implement the recognized psychological effects into the portfolio asset allocation practice. Fellner and Maciejovsky (2003) employing the controlled experiment methodology, prove that social forces, triggered by group affiliation, drive underdiversified and domestically biased portfolio allocations. In their study this behavioural factor may be as important as the well-established information asymmetry paradigm. Morse and Shive (2011) found that patriotism motives lead investors to hold mainly the domestic assets. When the local investors perceive to have an information advantage over the foreign ones, they also tend to misjudge their ability in forecasting the performance of domestic assets, hence overinvest in the assets that seem to be familiar for them. This so called *overconfidence bias* has been confirmed by Kilka and Weber (2000) and Karlsson and Nordén (2007).

The broad range of possible explanations of the observed overinvestment in domestic assets makes the home bias phenomenon really puzzling. Being unable to indicate the main driving force, we should expect that actual portfolios of the pension funds will always exhibit some degree of international underdiversification. On the other hand, the standardization of corporate governance practices around the worlds (e.g. applying the International Financial Reporting Standards), development of communication technologies or globalization in general should reduce the size of the discussed bias.

4. Financial Development and Macroeconomic Conditions

It is widely believed that fully funded pension systems can produce external effects that stimulate financial market development by raising the supply of long term funds, strengthening the efficiency of funds allocation and improving the country's financial infrastructure (Davis 1995). As Reisen (1997, pp. 1176) points out, to verify this belief, at first a few questions must be answered:

1. How important is financial development for economic growth;
2. How firm is the evidence that funded pensions contribute to financial development and to higher domestic savings;
3. Are localization requirements necessary in a developing-country context to capture the externalities?

Financial system that fulfils three crucial functions *i.e.* mobilizes savings, reduces the information asymmetry between borrowers and lenders and provides the tools of risk management seems to be a necessary condition of economic growth. This conclusion has a long tradition in the history of economics and has been confirmed by the numerous theoretical studies (Bagehot, 1873; Schumpeter, 1911; Roubini and Sala-i-Martin, 1992). As Claus et al. (2004) point out, the services provided by an effective financial system should support economic growth via two main channels: capital accumulation and technological innovation. The enhanced capital accumulation is mainly due to

lowering costs of channelling funds between borrowers and lenders and reallocating funds to the most productive uses. Technological advance, on the other hand, benefits from the diversification possibilities offered by a well-developed financial system. Diversification allows savers to obtain the desired level of exposure to highly innovative firms, which are usually very risky, hence enables financing activities of this kind. Summing up, financial sector should play a causal role for real sphere growth.

Patrick (1966) noted, that causality between financial development and economic growth may actually run in both directions. This point of view, where the creation of financial institutions and markets leads to a growth in a real sphere was labelled by Patrick (1966) as the *supply-leading hypothesis*. He proposed also a competing hypothesis, *i.e.* the *demand-following*, where financial development is a passive response to the demand for financial services from investors and savers in a real economy. As Patrick (1966) noted, the causal role of financial sector better describes a situation in the underdeveloped economies and further economic growth usually reverses the causality direction. In fact, *supply-leading* system has two functions: to transfer resources from traditional (non-growth) sectors to modern sectors, which further accelerates economic growth and to promote and stimulate an entrepreneurial response in these modern sectors. Hence, the supply leading hypothesis matches the situation of the emerging economies and this conclusion has been confirmed in empirically by Calderon and Liu (2003), Kiran et al. (2009).⁵

It is really hard to discuss the empirical link between pension funds assets and financial development, as the empirical literature with cross-country comparisons is really scarce due to the country-specific differences in pension fund regulations and limited pension assets data comparability (Reisen, 1997). Consequently, the broad belief of a plausible impact of pension funds assets on financial development is mainly based on the theoretical considerations and particular countries' experiences.

Even if we assume that pension assets do support capital market development in the local economy, still it is unclear if abolishing the restrictions on foreign investments will lead to a significantly higher share of foreign assets in pension funds portfolios. In case of Poland, where the regulations restrict foreign assets to overall 5% portfolio weight, at the end of 2010 OPF reported only 0,7% share. The reason of so low exposition to foreign assets are rather complex. The fund managers indicate that this may be due to legal conditions prohibiting using derivatives by OPFs to hedge currency risks. Poor perspectives of economic growth outside Poland, especially in the Eurozone countries, play also some role in assets allocation decisions (Popiołek, 2011).

The macroeconomic conditions can be altered after removing the maximum limits on foreign investments mainly in two ways (Roldos, 2004). First, and perhaps the most evident effect is a possible exchange rate depreciation resulting from a sudden shift in asset allocation towards foreign securities. Cheaper domestic money, on the one hand, improves the competitiveness of the exported goods but, on the other hand makes imported goods more expensive, which may further create an inflationary pressure. As Roldos (2004) states this exchange rate effect was observed in Chile (20% depreciation of peso) after increasing the limit from 2% by end-1997 to 12 percent by end-1999 and in Canada (10 percent depreciation of the Canadian dollar), where the limit was raised by 10 percentage points to overall 30% share in the period from January 2000 to January 2002. Later, in 2005 after a similar policy shift a significant depreciation of local currency was also observed in Peru (Carmona, 2006). Secondly, pension funds' accumulation of foreign assets provides a natural supply of foreign exchange hedge for entities that borrow in foreign currency, thereby contributing to a more balanced international position. Summing up, at first glance it looks as there is some kind of a trade-off between exchange rate stability and international diversification opportunities. Modern financial engineering can actually realize both targets at the same time.

⁵ The empirical results of other numerous studies verifying these hypotheses have been summarized in Levine (1997) and Wachtel (2001).

Merton (1990) proposed equity swaps as a way of gaining an international equity exposure, when capital controls are established. This solution can be also employed to eliminate the currency effects when pension funds are allowed to invest abroad. To sketch the idea of equity swap Bodie and Merton (2002) provide the following example:

Suppose that small-country pension funds that already own the domestic equity were to enter in to swaps with a global pension intermediary (GPI). In the swap, the total return per dollar on the small country's stock market is exchanged annually for the total return per dollar on a market-value weighted-average of the world stock markets. This exchange of returns could be in a common currency, dollars, as described or adjusted to different currencies along similar lines to currency swaps. The magnitudes of the dollar exchanges are determined by the 'notional' or principal amount of the swap to which per dollar return differences apply.

In case of the emerging economies a regulatory effort and further development of a local stock markets is needed to implement this solution into life, hence this solution is still only a kind of theoretical one.⁶

It is also worth to mention the problem of assets bubbles that may arise if the maximum limits on foreign investments are rather low and the local security markets are not deep enough. Surprisingly, this issue in case of the emerging economies seems to be overemphasized as the empirical research does not support this view. Voronkova and Bohl (2003) did not identify any significant impact of OPFs trading on security prices in Poland and research made by Walker and Lefort (2002) actually proved that pension funds had a stabilizing effect on security prices across a sample of 33 emerging countries. Bebczuk and Musalem (2009) concluded that even though pension fund assets in the emerging countries were growing relatively to the size of their financial markets the average share of pension fund assets in the sum of market capitalization and bank deposits amounted to 16,0 percent in the emerging countries and 21,7 percent in the developed countries in 2006–07 years. Therefore, in most of the emerging economies increasing the limits on foreign investments should not be motivated by the need of establishing a safety valve for an excess demand for the financial assets because this does not seem to be the case.

5. Summary and Concluding Remarks

In this study we were trying to present the complexity of the possible consequences resulting from a shift in the pension funds' asset allocation policy. Definitely, expanding the opportunity set by adding the foreign assets increases the potential diversification gains. However, we cannot be sure how large these gains can be. It is also an open question if hedging the currency risk increases the diversification gains. Jajuga et al. (2004) postulated to enable the OPF hedging currency risk by using the FX derivatives. It is undisputable, this solution would expand the set of tools for a risk management process. However, some of the studies demonstrate, that from a perspective of the emerging market investor hedging currency risk may actually diminish diversification benefits of foreign investment (Kurach, 2012). Definitely, this issue needs further reconsideration.

We should also not forget that OPF provide a substantial flow of funds that enables budget deficit financing.⁷ A significant shift towards foreign assets would be a kind of bad dream for a ministry of finance as it would push up the interest rate on treasury debt. For this reason some of the market commentators (Ożóg, 2011) suspect Polish government will establish a new benchmark for OPF with a low weight of foreign assets. In such conditions, investing abroad much higher share

⁶ Further discussion in Carmona (2006).

⁷ As for the end of February 2012, the OPF share in the treasury bills and bonds issued domestically, reached 23,1% (121.435,28 mln of 525.850,50 mln PLN in total). <http://www.mf.gov.pl/dokument.php?const=5&dzial=590&id=4848> (access on 30th April 2012)

comparing to the one established for a benchmark portfolio, would be quite risky for the OPF, hence, it would be also quite unlikely.⁸

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⁸ Establishing the minimum guaranteed return (like in Polish case) that pension funds must fulfill leads to mimicking asset allocation policy and consequently low dispersion of returns among pension funds (Olivares, 2006).

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