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Ageing, Pension Reforms and Capital Market Development in the New EU Member States and Other Transition Countries

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Abstract

We present new data on asset allocations of mandatory pension funds in the new EU member states and in other transition countries. Our comparative national data presents a unique opportunity to compare pension reform progress across these countries from a capital market perspective. Our main finding is that in a number of new EU member states and other transition countries, under-diversification of assets threatens to undermine the impact of multi-pillar reform on fiscal sustainability.

1. Introduction

Many transition countries have undertaken extensive pension reforms in the last decade, often introducing a multi-pillar model as advocated by the World Bank in its seminal 1994 report *Averting the Old Age Crisis*.² The decision to reform pension systems in this way has been motivated by the need to attain long-run fiscal sustainability in the face of rapidly ageing societies. Other, auxiliary goals include the development of domestic capital markets.

Rapid accumulation of mandatory savings raises the question of how these funds should be invested in order to optimize the risk-return trade-off. Diversification is crucial, yet it is often hampered by extensive restrictions on investments. Drawing on national sources we present new

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² The multi-pillar model consists of a mandatory pay-as-you-go “first pillar”, a mandatory funded “second pillar” (in essence, an individual savings account), and a voluntary funded “third pillar”. In 2005, two more pillars were added: the tax-financed safety-net and other, mainly non-financial, means of support (World Bank, 2005).

comparative data on asset allocations of the mandatory pension funds in the new EU member states (excluding Cyprus and Malta) and other transition countries.³ We show that in a number of cases mandatory savings are seriously under-diversified. Moreover, domestic government bonds dominate many portfolios, raising doubts regarding the impact of multi-pillar reform on fiscal sustainability.

The new EU member states as well as other transition countries embraced pension reform in response to shrinking and ageing populations. The total population of all transition countries is projected to shrink by 15 percent by 2050 (UN, 2005). The old age dependency ratio is projected to increase from the current level of less than 20 percent to nearly 40 percent by 2050.⁴ The new EU member states fare the worst, with a projected total population decline of 20 percent by 2050, compared to 13 percent for the other transition countries.

Fertility rates are considerably lower in the transition countries than in comparable low income countries. Using a sample of 49 emerging market countries, we regressed fertility rates on log per capita gdp and included a transition country dummy.⁵ This approach, while admittedly naïve, shows that the transition countries are a class apart: the coefficient for the TC dummy is -0.92 (p -value 0.000).⁶ This translates into almost one child less per woman in transition countries compared to other countries at similar income levels.

³ The countries under review are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, FYR Macedonia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Serbia and Montenegro are examined jointly. Throughout the paper, we refer to the set of all these countries as the transition countries.

⁴ Old-age dependency ratio: the proportion of the old (65+) to working age (15-64) population. Dependency ratio: the proportion of the old (65+) plus the young (0-14) to working age (15-64) population.

⁵ The selection is based on the IMF's World Economic Outlook. In addition to the transition countries, it comprises Argentina, Brazil, Chile, China, Colombia, Dominican Republic, Ecuador, Egypt, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, South Africa, Thailand, Turkey, and Venezuela.

⁶ R^2 : 0.62. Coefficient on log per capita gdp: -0.31 (p -value 0.002). Intercept: 4.86 (p -value 0.000). We also included an interaction term for the TC dummy and log gdp. The coefficient was zero and not statistically significant (p -value 0.28). Fertility rates: UN projected country average, 2005-2010. Using overall population growth as a dependent variable gives similar results.

Ageing populations hit public finances hard (IMF, 2004). Public pension systems based on the pay-as-you-go (PAYG) principle come under severe pressure as the ratio of pensioners to contributors rises. A joint study by the Economic Policy Committee and the European Commission (hereafter, EPC/EC) estimates the expected impact on public expenditure from changes in pension, health care and long-term care costs for the EU-8 (EPC/EC, 2006).⁷ Slovenia and the Czech Republic have retained entirely PAYG financed pension systems and face the highest increases in age-related expenditure (10 and 8 percent of GDP, respectively). By contrast, Poland, which has already undertaken major reforms of its pension system, is projected to reduce its age-related expenditure by more than 4 percent of GDP by 2050. The driver in each of these cases is pension costs, rather than health care and long-term care (see Nickel and Almenberg, 2006, pp. 9-10)

The EPC/EC expenditure projections may underestimate the challenges faced by the transition countries. The transition countries with the worst demographic projection, such as Russia or Ukraine, are not included. Moreover, the projections are based on favorable assumptions about future labor market developments and the ability of the new EU member states to converge to the economic standards in EU-15 countries. The health expenditure projections focus on the demographic impact, ignoring factors that have contributed to rising levels of expenditure in the past: the availability of new medical technologies, observed high income elasticity of healthcare demand, and increasing relative prices of health-related services.

Institutional weakness aggravates the challenge of ageing populations in the transition countries. Low rates of tax compliance entail low participation rates in public pension schemes.⁸ When a large share of income is not declared, the effective dependency ratios of beneficiaries to contributors in PAYG systems becomes critically high. In 2001, an estimated 63 percent of the

⁷ EU-8: The EU-10 excluding Bulgaria and Romania

⁸ For a broad discussion on the implications of this problem for the EU-10 countries, see Fultz (2003).

Albanian work force did not participate in the mandatory pension scheme (Treichel, 2001)⁹ Incentives to participate are weakened further by unpredictable governance of the pension scheme, exemplified in recent years by *ad hoc* indexation of pensions in many transition countries (for example, Armenia, Belarus, Kazakhstan, and Ukraine). Uncertainty over the future value of pensions makes alternative investments more attractive for unreported income. *Ad hoc* indexation also makes it harder to project future pension liabilities and assess fiscal sustainability.

To cope with the rising strain on social security systems many transition countries have introduced multi-pillar pension reforms. In section 2, we give a summary description of these reforms. A more detailed overview can be found in Nickel and Almenberg (2006). In section 3, we present new comparative data on asset allocations of the mandatory funded pillars. We show that in many of these countries, mandatory savings are seriously under-diversified. Moreover, domestic government bonds dominate many portfolios, raising doubts regarding the impact of multi-pillar reform on fiscal sustainability. Section 4 concludes our paper.

2. Pension reforms in transition

In the communist era, pensions were financed on a PAYG basis through taxes and social contributions, the latter mostly by employers. The link between individual contributions and benefits was weak. Statutory retirement ages were low and early retirement was common. As a result, dependency ratios were high: 30 to 45 pensioners per 100 workers in the late 1980s, compared to 20 pensioners per 100 workers in the large EU countries (Kopits, 1992). The upheavals of the early 1990s put great strain on these pension systems. Revenues declined rapidly, following the contraction of employment and the expansion of the informal sector. Meanwhile, gov-

⁹ In 2001, Albania maintained a contribution rate of 42.5 percent of gross wages. Particularly high rates were also observed in the Kyrgyz Republic (32 percent) and Bulgaria (29 percent). For a discussion of this problem in the early years of transition, see Kopits (1992, pp. 298-302).

ernments used disability and early retirement provisions to compensate for large-scale layoffs. Dependency ratios soared.¹⁰

In response, eleven transition countries undertook major overhauls of their pension systems. Bulgaria, Croatia, Estonia, FYR Macedonia, Hungary, Kazakhstan, Latvia, Lithuania, Poland, Russia and the Slovak Republic all introduced multi-pillar pension systems, combining a scaled-down PAYG system with mandatory and voluntary funded schemes (for a detailed overview, see Nickel and Almenberg, 2006).¹¹

This paper focuses on multi-pillar reforms in these eleven countries, paying particular attention to the funded pillars. In all eleven countries, the reforms took place at the end of the 1990s or later. All countries except Kazakhstan retained a scaled-down public PAYG scheme, linked to earnings.¹² Most have undertaken parametric reforms of defined benefit (DB) systems, changing key parameters of the system such as the retirement age and the relation between benefits and contributions. Five of the eleven (Latvia, Poland, Croatia, Kazakhstan, and Russia) have abandoned DB schemes in favor of notional defined contribution (NDC) schemes.¹³ For details on the timing of reforms, see Nickel and Almenberg (2006).

A central theme of the reforms has been to strengthen the link between an individual's contribution history and expected pension. Minimum required contribution years have been extended and pensions have become more linear in earnings. Although most reformed systems still include redistribution rules such as a minimum pension guarantees or entitlements for certain

¹⁰ Dupont (2004) offers an overview of pension reforms in EU accession countries.

¹¹ Many other transition countries carried out parametric reforms of their PAYG systems. To date, there have been significant reforms in Armenia, the Czech Republic, Montenegro, Moldova, Serbia, and Slovenia, and minor reforms in Azerbaijan, Bosnia and Herzegovina, Kyrgyz Republic and Turkmenistan.

¹² In Kazakhstan, accruals to the old PAYG system ended overnight when the mandatory funded pillar was introduced in 1998. The government continues to recognize previously earned PAYG pension claims.

¹³ Russia has retained elements of its old defined benefit pension system, through the basic portion component of its first pillar, which awards a pension dependent only on age and disability.

periods of non-contribution (unemployment, maternity leave), these are typically covered by the government budget, making redistribution more transparent.

In transition countries, one of the reasons for partly shifting the payment of contributions from employers to employees and for strengthening the link between contributions and entitlements was to facilitate contribution collection. Many countries have experienced significant non-payment problems not only due to illicit employment but also due to low willingness to pay. In reformed systems, pensions depend closely on contributions paid (NDC) or on declared earnings (DB), strengthening incentives to declare earnings.

In order to build confidence in the new scheme, reforms have limited the scope for discretionary changes, in particular *ad hoc* indexation. Automatic indexation limits the possibilities for governments to reduce the real value. Moreover, strengthening of the weight of inflation indexation has a beneficial effect on long-term sustainability. Pension benefits develop in line with inflation but are decoupled from wage developments, which can increase at a higher rate.

In most countries, the replacement ratios provided by the public pension systems have been lowered. In DB schemes, this has been achieved not only through lower accrual rates but also by longer minimum contribution years.¹⁴ In NDC schemes, the decline in replacement ratios will be the result of a declining labor force and an increasing life expectancy.

Statutory retirement ages were raised in all the reforming countries, yet remain lower than in the “old” EU member states. Incentives for postponed retirement have also been introduced. In the new pension systems, early retirement usually entails reduced benefits.

The aforementioned countries introduced both mandatory funded pension pillar and voluntary private schemes alongside their reformed PAYG system, allowing part of pensions to be financed with capital accumulated in pension funds. PAYG arrangements are especially vulnerable to demographic shifts because any additional burdens are borne by current workers. Introducing a fully funded element reduces the exposure of the overall pension system to this risk.

¹⁴ Accrual rate: the ratio of pension entitlements to reference earnings, per working year, in a DB system.

Most reforming countries have offered a choice of staying in the reformed PAYG scheme or switching to the multi-pillar system.¹⁵ On average, about two-thirds of eligible labor market participants are taking part in the mixed system. In some cases - notably, Poland and Hungary - the numbers joining the new scheme greatly exceeded expectations.¹⁶

3. Impact on capital markets

Introducing a mandatory pillar has a direct effect on the allocation of savings. Compared to individual citizens, insitutional investors are more likely to invest in capital markets. In addition, regulation usually requires the funded pillars to invest a large share of assets domestically. As a result, a larger share of savings enter domestic capital markets, raising the demand for securities in general and fixed income securities in particular (Boersch-Supan and Winter 2001). Table 1 shows that assets under management in the mandatory pension funds are growing rapidly. By 2006, assets in the mandatory funded pillar on average amounted to 3 percent of GDP.

¹⁵ For new entrants into the labour market, participation is usually mandatory, whereas the oldest workers have often been excluded.

¹⁶ By 2002, 93 percent of the Polish labour force had switched. The projection was 50 percent.

Table 1. The volume and structure of assets under management in second pillar pension funds

	Second pillar introduced	Assets under management as of Dec 2005, million USD	Total assets as percentage of nominal GDP 2005	Percentage of assets in foreign currency	Asset allocation by category as percentage of total assets				
					Bank deposits	Bonds	Stocks	Investment funds	Other
CEB									
Estonia	2002	375	2.8	90.0	4.0	48.0	37.0	9.0	2.0
Hungary	1998	5.717	5.2	5.3	1.0	81.5	7.7 not available		9.8
Latvia	2001	138	0.9	28.4	30.4	50.3	6.6	12.8	0.0
Lithuania	2004	147	0.6	80.6	1.0	62.0	9.0	28.0	0.0
Poland	1999	26.394	8.7	0.9	3.8	63.7	32.1	0.0	0.4
Slovak Republic	2005	283	0.6	4.3	80.8	10.9	7.8	0.0	0.6
SEE									
Bulgaria	2000	266	1.0	1.5	17.0	75.3	7.0 not available		1.7
Croatia	2002	1.924	0.8	11.0	4.1	79.0	3.9	9.8	3.2
CIS									
Russia	2002	6.128	0.8	0.0	16.8	82.6	0.6	0.0	0.0
Kazakhstan	1998	4.849	8.6	7.5	19.5	70.5	9.8	0.1	0.2
Total/Average		46.222	3.0	22.9	17.8	62.4	12.1	7.5	1.8

Source: EBRD/National sources..

Low levels of capital market development, coupled with severe restrictions on investments, hamper efficient portfolio diversification in many of the transition countries. The countries with the most severe limitations on investment in foreign securities are Croatia (15 percent of net assets), FYR Macedonia (20 percent) and Russia (20 percent).¹⁷ The increased risk is borne by the workforce. Above some threshold, the development of pension funds and capital markets become mutually reinforcing (Vittas 1999). Below this threshold, the increased risk is simply not warranted by the contribution to the development of capital markets.

The exposure to foreign currency-denominated assets differs greatly between the countries (Table 1). The greatest international diversification is in the Baltic countries, where capital markets are small, governments are issuing little or no debt, and euro adoption is a medium term objective. In the other countries, there is little international diversification. In Russia, 89 percent

¹⁷ For full details on investment restrictions, see Annex 1 in Nickel and Almenberg (2006).

of assets are ruble –denominated. The remaining 11 percent consists mostly of foreign currency-denominated Russian government bonds.

Domestic government bonds in general are a highly prominent investment category in a seven of the eleven countries, raising doubts about the efficacy of multi-pillar reform.

Table 2: Allocation of assets between different bond categories

	Bonds as % of total assets under management at end-year 2005	of which (in percentage points)			
		Domestic govt	Foreign govt	Domestic corporate	Foreign corporate
CEB					
Estonia	45.6	0.1	26.1	4.2	15.2
Hungary	81.5	73.5	0.3	7.0	0.7
Latvia	50.3	29.2	3.5	7.1	10.5
Lithuania	62.0	9.9	45.9	2.8	3.4
Poland	63.7	62.5	0.0	0.5	0.6
Slovak Repu	10.9				
SEE					
Bulgaria	75.3	55.6	0.5	18.3	0.9
Croatia	79.0	73.1	1.7	3.7	0.4
CIS					
Russia	82.6	82.0	0.0	0.6	0.0
Kazakhstan	70.5	32.8	4.1	32.5	1.1

Source: EBRD.

Replacing the implicit obligations of a PAYG scheme by explicit obligations in the form of bonds might be beneficial if it is harder for governments to renege on explicit obligations. Converting implicit PAYG debt into GDP-indexed government bonds has been suggested as a strategy for improving the sustainability of PAYG systems with large deficits (Robalino and Bodor, 2006). If the bonds are subsequently traded, this may facilitate the transition to a funded system. Nonetheless, tables 2 suggests that asset allocation can undermine funded pillars, which in some cases simply amount to an exchange of tax contributions today for claims on future fiscal revenues. In Russia, more than 80 percent of assets are invested in Russian government bonds, and the figure is rising. In Hungary, Poland and Croatia domestic government bonds constitute more than 90 percent of fixed income assets held by the pension system. Kotlikoff (1999) terms this an “elaborate shell game”, in which mandatory savings amount to little more than a PAYG system in disguise.

While potentially offering higher returns from investments in financial assets, the transition from PAYG to funded pensions also entails increased risk on behalf of the insured. While increased risk can be mitigated through the design of the insurance scheme (Miles and Timmermann, 1999), evaluating the welfare gains of social security reform requires an assessment of the risk-return trade-off (Mora, 2005, Krueger and Kubler, 2006). Under-diversification exacerbates the problem of increased risk. Shah (1997) shows how in a standard Markowitz portfolio choice framework, excessive restrictions on investment of pension fund assets ‘bend back’ the efficient frontier, thereby lowering the rate of return for a given risk level. In theory, regulation could be designed so as to maximize the probability that portfolios are allocated optimally. In practice, however, it is highly unlikely that regulators will be able to do so in a satisfactory manner, compared to fund managers allocating investments in the absence of such constraints (Shah, 1997).

The regulation of pension funds can also provide perverse incentives for fund managers. In Poland, the large share of assets invested in government bonds appears to be more than a transitory phenomenon. In fact, the Polish mandatory pension funds have maintained the same proportion (almost two-thirds of assets) of government bonds since the inception of the system in 1999 (Kominek, 2006, Nickel and Almenberg, 2006).¹⁸

4. Conclusion

The demographic projections for the transition countries are a major cause for concern. The combination of increasing longevity, depressed fertility rates, and net outflow of migrants, is leading to shrinking and ageing populations. In response, many transition countries have undertaken extensive pension reforms in the last decade, often introducing a multi-pillar model as advocated by the World Bank.

¹⁸ Kominek (2006) finds strong indications of herding in the investment behavior of pension funds associated with the Polish mandatory funded pillar, and links this to the penalties for underperformance (relative to the group) imposed by the Polish pension fund regulator.

The introduction of fully funded pillars has led to a rapid accumulation of mandatory savings. This raises the question of how these funds should be invested in order to optimize the risk-return trade-off. Diversification is crucial for these funds, yet it is often hampered by extensive restrictions on investments. We have presented new comparative data on asset allocations of the mandatory pension funds in the new EU member states and other transition countries. The data shows that in many of these countries, mandatory savings are seriously under-diversified. Moreover, domestic government bonds dominate many portfolios, raising doubts regarding the impact of multi-pillar reform on fiscal sustainability.

In recent years, advocates of multi-pillar pension reform have become less unequivocal in their support. Multi-pillar reform is no longer the at the peak of fashion. In the light of our findings, this might not be such a bad thing.

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