ASSESSING PENSION SYSTEM REFORM: THEORY AND EMPIRICAL EVIDENCE

A Thesis submitted to the Faculty of the Graduate School of Arts and Sciences of Georgetown University in partial fulfillment of the requirements for the degree of Master of Public Policy

By

Stipica Mudrazija, B.S.

Washington, DC
April 18, 2006
Abstract

In recent years many countries around the world have either undertaken or started seriously considering a pension reform. Those countries that reformed their pension systems opted for markedly different reforms with respect to the degree of their privatization. Due to its importance, this process attracted the attention of many policy analysts who tried to explain its underpinnings. This study builds on the body of literature, and in particular studies done by Brooks and James (2001) and Brooks (2002). It reassesses their findings, but also expands on their work by including more observations of reforming countries due to widespread pension reforms in years since their studies. Also, this study introduces several new explanatory variables, and gives due attention to demographic factors that have been neglected in the relevant literature in recent years. The findings mostly corroborate Brooks and James’ results that path dependency, regional influence, and implicit pension debt are the most important explanatory factors for pension reform decision and the degree of pension privatization. It also confirms the findings of the majority of relevant papers that savings rate is not an important determinant of either of the two outcomes of interest: pension reform and the degree of pension privatization once reform is undertaken. In addition, this study finds demographic factors do not play an important role in the decision to undertake a pension reform or the degree of pension privatization, which defies conventional wisdom.
Table of Contents

Introduction.........................................................................................................................1

Literature Review..............................................................................................................5

Data and Methods...........................................................................................................18

Results.............................................................................................................................33

Model Limitations..........................................................................................................48

Policy Implications...........................................................................................................50

Conclusion.........................................................................................................................57

References.........................................................................................................................59
List of Tables

Table 1: Overview of the estimated models .........................................................32
Table 2: Descriptive analysis of the full sample ..................................................33
Table 3: Means of independent variables for reforming and non-reforming countries...35
Table 4: Reforming countries ..............................................................................37
Table 5: Estimation of the likelihood of privatization ...........................................38
Table 6: Estimation of the degree of privatization of pension system ....................44
Introduction

During the 1990s reforming public social security became one of the most discussed topics in the public policy arena. Unsustainable social security programs, and public pension system in particular, made policy makers aware of the necessity of changes in order to address this pending crisis. At the time both policy makers and scholars started paying attention to the example of Chile, which privatized its pension system in the early 1980s. Ever since reform, Chile enjoyed positive economic performance with steady GDP growth and an increased savings rate. Many, including the World Bank, concluded that there is a causal relationship between Chilean-style pension reform and economic performance. In fact, the World Bank started promoting a (partial) privatization of public pension systems and the introduction of the so-called three pillar system. This system consists of:

- the first pillar, a downsized successor to the old pay-as-you-go system where current workers’ pension contributions and taxes are used to finance current pensioners’ benefits,
- the second pillar, a mandatory fully funded component of the pension system where each participant has an individual account and pension benefits are based on the contributions to this account and the returns on the investments of these contributions, and
• the third pillar, a voluntary fully funded component, which refers to additional contributions each participant can make to her or his individual account in order to increase the future pension benefits.

The three pillar system has been a particularly popular way of reforming pension systems in those countries in which the World Bank has an extensive presence. These countries include many developing countries, and especially transitional countries that were transforming their economies from centrally planned to market oriented. Transitional countries were significantly influenced by advice and assistance from international (mainly financial) organizations during that process.

The strongest argument used to justify the necessity of undertaking a pension reform has been a global trend of aging. For the developed countries this trend has been a reality for some time now, whereas population projections show that a majority of the developing countries (including China and India as the most populous countries in the world) will face a similar problem in decades to come. This will inevitably put an enormous strain on the existing public pension systems considering their design and the level of promised benefits. In addition, some countries used the argument of boosting financial markets and increasing savings as an additional gain from the pension reform. All of these and other factors contributed to the ever increasing appeal of undertaking a pension system reform as a way of preserving the system for the generations to come and increasing overall sustainability of public finances. On the other hand, there was a widespread fear among people that their future pension benefits would be significantly
lower than under the old system, and also that they would be exposed to the uncertainties of financial markets. This has resulted in a significant political opposition to reform proposals as well as in the clear split between pro-reform oriented parties and politicians and those who oppose it.

There are two goals of this paper. The first one is to determine what factors are significant for explaining countries’ decisions to attempt a pension system reform. The second goal is to analyze the relative importance of different factors in explaining the degree of pension privatization undertaken by countries that opted to reform their pension systems. Broadly speaking, the analysis focuses on the three groups of factors: economic (e.g. savings rates, government spending and existing implicit pension debt), political (e.g. political system fragmentation and international pressures), and demographic (e.g. old-age dependency ratio\(^1\)). In addition, this paper may be useful in predicting what other countries might undertake similar pension reforms and the degree to which they privatize their pension systems.

The findings show that path dependency, regional influence, and implicit pension debt are the most important explanatory factors for the pension reform decision, as well as the degree of pension privatization. The results also confirm the findings of the majority of relevant papers that savings rate is not an important determinant of either of the two outcomes of interest: pension reform and the degree of pension privatization once reform is undertaken. Finally, this paper finds demographic factors do not play an

\(^1\) Old-age dependency ratio is a ratio of people aged 65 and above to people aged 15-64.
important role in the decision to undertake a pension reform or the degree of pension privatization, which defies conventional wisdom.
Literature Review

This paper examines the relevance of various factors underlying the decision of countries to undertake a pension reform, and conditional on making such a decision, the degree of privatization of the reformed pension system. The literature on this topic has been relatively abundant in recent years, but it is mostly concentrated on a limited number of factors or sometimes even just one factor. In addition to examining the contributions made in the literature dealing with the issues of particular interest for this paper, due attention has to be given to the literature dealing with the questions of whether the old-age security reform should take place and what its design should be. This literature is important as it gives a very good background in terms of the relevance of the issue of old-age security reform, as well as the controversies surrounding it. Moreover, this literature introduces and/or questions the importance of the main factors that are being explored in this paper. Therefore, reviewing it can help in explaining what motivated proponents of the old-age security reform as well as in giving an overview of policy analysts’ arguments in favor and against the reform.

Just two decades ago pension reform was not a topic of interest for policy analysts and practitioners, but things have dramatically changed since. Although everything started in Chile, which (partially) privatized its pension system in the early 1980s, it took more than a decade for policy analysts around the world to start exploring the Chilean reform. This lack of interest in the Chilean experience is attributed to the fact that Chile was a military dictatorship when it undertook a pension reform. A dramatic shift in this
attitude happened after Chile’s democratization and opening up in the 1990s as the new
democratic government remained committed to the pension reform. Initially neighboring
countries, and later on many countries around the world, started considering a (partial)
pension system privatization as a possible solution to the looming crisis of the old-age
security system.

The advantages and disadvantages of pension system reform

Reforming old-age security systems has become a high priority on the agenda of
many governments around the world. As many of them opted for some kind of reform, a
heated debate has developed, both in the political arena and among policy analysts, about
the usefulness of such reform. In the mid 1990s the scene was dominated by the World
Bank. The blueprint for almost all pension reforms, with a notable exception of many
OECD countries that introduced pension reform, is *Averting the Old Age Crisis* (World
Bank, 1994). This volume basically introduced all the important elements of pension
reform that have been advocated by the World Bank ever since. These elements have
been implemented in many, mostly Latin American and Central and Eastern European
(CEE), countries. The World Bank pension reform proposal is motivated by the trend of
aging in the world, and consequently deteriorating old-age dependency ratios (ratio of
people aged 65 and above to people aged 15-64). Experts from the World Bank believe
that this would inevitably result in increasing problems of sustainability of old-age
security systems around the world under the existing pension arrangements. Generally,
this proposal comprises three key components or “pillars”. The first pillar maintains a downsized successor of the old pay-as-you-go system. The second pillar creates a mandatory fully funded component of the pension system. Finally, the third pillar introduces a voluntary fully funded component of the pension system. Although the proposal noted many potential economics gains, the impetus behind it was the looming demographic prospects of fewer and fewer workers supporting increasing numbers of retirees.

The ideas expressed in *Averting the Old Age Crisis* were further advanced by the study of the first country to reform its pension system, Chile, which pointed to the correlation between (radical) pension reform and subsequent positive economic performance. Findings on Chile suggest that the reform increased long-term growth rates by eliminating the incentive for operating in the informal sector (Corsetti and Schmidt-Hebbel, 1995), as well as by increasing productivity and investments in capital (Holzmann, 1997). On the other hand, the effects of the reform on the savings rate were never as clear. In Chile’s case Corsetti and Schimdt-Hebbel (1995) find that the reform induced the observed growth of savings rate, while Holzmann (1997) finds that Chilean reform reduced savings. The main difference between the two studies is in the way each study disaggregates national savings data. Holzman’s approach is consistent with the System of National Accounts, while Corsetti and Schmidt-Hebel take a simpler division on public and private savings. Also, the econometric model used by Holzmann is more elaborate and refined, which might be an argument in favor of his findings. Finally, Samwick (2000) finds mixed evidence of the correlation between savings and pension
reform with a weak (marginally significant) positive correlation for Chile, and either no
correlation or negative correlation in four other reforming countries (Switzerland, United
Kingdom, Papua New Guinea and Gambia). The possibility of increasing the savings rate
and achieving higher long-term growth rates by adopting multi-pillar reform was
reemphasized by James (1997 (a), 1998 (a)). At the same time, though, it has been
recognized that the new system may be faced with the problem of high administrative
costs and inappropriate regulation of financial markets (James, 1998 (a)). Finally, the
possibility of simultaneously increasing the equity of pension systems while improving
their efficiency was an especially appealing finding for many would-be reformers (James,
1997 (b)).

By the late 1990s, as an increasing number countries implemented pension reform
and the first results began becoming apparent, there was more and more criticism of the
proposed course of reform. In addition to the already questioned hypothesis of defined
contribution plans\(^2\) causing higher savings rate in Chile and several other countries,
similar results of no correlation between savings and the pension reform were found for
the U.S. and the OECD countries (Bosworth and Burtless, 2004). In addition, some
models showed the possibility of high transitional costs being so large that they basically
wipe out any possible gains from the reform (Miles and Timmermann, 1999).

\(^2\) A defined contribution plan defines how much the participant, and perhaps her employer, will contribute
to her individual account, without specifying what the benefits will be at retirement. This plan requires that
an individual account be set up for each participant in the plan, and the contributions are based on a
percentage of participant’s income specified in the plan, rather than her expected retirement benefit.

A defined benefit plan promises the participant a specific monthly benefit at retirement based on formula
that takes into account earnings and years of service.
Nevertheless, the strongest attack came as a theoretical questioning of the supremacy of defined contribution schemes over defined benefit ones (Orszag and Stiglitz, 2001). This attack took form of pointing to different situations where a defined contribution scheme might be either preferred or equally acceptable as a defined benefit scheme. This argument has been taken to the extreme with the claim that the choice of defined contribution versus defined benefit pension schemes is essentially of second order importance in comparison with the effectiveness of government (Barr, 2002). This implies that the focus on the pension reform design has been exaggerated when compared with its actual potential of contributing to the solution of the problems facing the old-age security. These claims were vigorously opposed by Holzmann, James, Borsch-Supan and Valdes-Prieto (2001) on the grounds that although most of the critiques are theoretically possible, they did not prove valid in reality. It should be noted, though, that all of these “attacks” are not against the reform per se. Actually, they also call for addressing the present problem and recognize the problem of sustainability of old-age security system, but they do question the particular design of the reform as proposed and propagated by the World Bank.

**Exploring pension reform determinants**

By the end of 1990s, and especially from 2000 on, research on pension reform shifted from the debate over the need for reform and its most appropriate design, to the study of the conditions that caused some countries to reform while others did not. It has
shifted to address the issue of the degree of privatization of pension system and its determinants. Many of these studies, though, focused just on a single group of factors explaining pension reform, while just a few of these shift to take a more comprehensive approach of exploring all possibly significant factors contributing to pension reform and its extent (James and Brooks, 2001; Brooks, 2002; Simmons and Elkins, 2004; Brooks, 2005). Interestingly, many researchers like Scharpf, Nay, Orenstein, Boeri, Grindle, Muller, Mesa-Lago and others started looking at different political factors as a cause for the positive or negative decision on undertaking a pension reform.

**Political Factors**

One interesting finding has been that though globalization means that (developed) countries face increasingly similar economic challenges, they are still so different that there is not a single type of welfare state that would be the most appropriate for all countries (Scharpf, 2000). This represents a strong argument against the quest for “one-size-fits-all” policy. In addition, this argument has been reinforced by the fact that even those countries that did reform, like so many in Latin America, opted for markedly different models of reform, depending on their particular pre-reform economic and political conditions (Mesa-Lago, 2001). Nevertheless, the level of economic globalization is still found to be potentially valid as an explanation for the retrenchment in pension systems (Garrett, 2001). The measurement of the level of economic globalization examined in Garrett’s study is defined as the difference in the speed of trade growth in
different countries. Garrett’s findings are further strengthened by the results showing that trade (as a proxy for international pressure) is positively related with the adoption of private pension reform (Brooks, 2005).

A popular notion has always been that the less democratic a government of a certain country is, the more likely is a substantial reform of the old-age security. This has been mostly based on the theoretical expectation that the number of veto players is much more limited in non-democratic regimes. That argument has been supported by the comparison of several democracies in Latin America with Chile in the time of reform, where the reforms in democratic countries were either more modest or didn’t happen (Kay, 1999). Further support has come from a quantitative analysis of the relationship between the level of democracy and the likelihood of pension reform for the sample of all countries that did any pension reform (Brooks, 2002). Gallaso and Profeta (2003) came to similar conclusions for European countries, as they observed that delegating pension policy to the European Commission could facilitate reforms due to the inherent characteristic of lesser accountability of that supranational body. On the other hand, Nay (2003) found that when some influential veto players are opposing the reform, they are more likely to be successful in preventing it from happening in less democratic countries. This argument has been developed focusing on several (democratic) European countries alone (Austria, France, Germany, and Italy), so it is hard to make generalizations on a global level. Nevertheless, this finding underscores an important point. It is likely that the increased likelihood of undertaking a pension reform in a less democratic country is just a special case of a general rule, which would be that any (political and economic) decision
is easier to be made in a less democratic country. Although this seems as a subtle difference, it is actually very important, because it implies that the likelihood of pension reform is not necessarily higher in less democratic countries. It is higher only if the influential veto players in those countries are either favoring or at least not opposing such a reform. Otherwise, less democratic countries would actually be less likely to undertake a pension reform. Therefore, it seems that the correct interpretation of the findings by Kay (1999), Brooks (2002), and Gallaso and Profeta (2003) is that the less democratic a government of a country is, the more likely this government is to achieve its political agenda. When this agenda includes a pension reform, the likelihood of undertaking such a reform will be higher in comparison with democratic countries.

The other political factor that has been given significant attention is peer dynamics. Essentially, this factor shows how policy diffusion is facilitated by influential regional models. This explanation is supported by all studies quantifying the contribution of individual factors to the pension reform decision (James and Brooks, 2001; Brooks, 2002; Simmons and Elkins, 2004; Brooks, 2005). It is further reinforced by the comparison between policy diffusion in the historical case of the introduction of pension system at the end of the 19th century and throughout the 20th century. This historical experience shows how the number of countries deciding to introduce a pension system in any region of the world decisively grew after one or several dominant countries in the region decided to introduce it (Orenstein, 2003). Orenstein finds evidence that the policy diffusion of pension reform in recent years follows the same pattern with the influential regional models playing a decisive role in the proliferation of pension reform. Finally,
Boeri (2003) find that CEE (Central and East European) countries, and among them the new EU members in particular, are likely to opt for social models similar to those in the EU.

Another political factor recognized unequivocally as important for both the decision of undertaking an old-age security reform, as well as for the particular model of reform is the role of different actors and interest groups on the political scene. In this area there are many different actors to which more or less attention has been given like international financial institutions, neoliberal economists and business representatives, who all support the reforms, while trade unions, left-wing parties, social security bureaucrats and some other groups represent the most vocal opposition to the reforms (Grindle, 2001; Mesa-Lago and Muller, 2002). A centralization of the political system measured either by the strength of the president for Latin American countries (Madrid, 2002) or by the level of party fragmentation in the legislative branch of power on the global level (James and Brooks, 2001; Brooks, 2002; Brooks, 2005) is found to be positively correlated both with the decision to undertake pension reform and the degree of pension system privatization. The World Bank emerged as the most important actor on a global scale. The strength of the World Bank’s influence has been found both in theory and in the first empirical studies of pension reforms to be positively correlated with the pension reform decision and the degree of pension system privatization. There is agreement about this in all the literature analyzing pension reforms, and some of the literature gives it a central place (Queisser, 2000; Madrid, 2002; Mesa-Lago and Muller, 2002; Madrid 2003).
Path dependency, which in the case of pension system reform refers to the effects of existing/pre-reform pension systems on the design of new systems, particularly their public-private mix, has also been an often cited argument for a pension reform. A positive and significant correlation has been found between the implicit pension debt\(^3\) (as a proxy for the existing size of the old-age security system) and the decision to undertake a reform (James and Brooks, 2001; Brooks, 2002). However, these studies have also found a negative correlation between path dependency and the degree of pension system privatization. These findings have been challenged by Muller (2001), who has found different reform paths in Hungary and Poland compared to the Czech Republic, though these three countries share many common elements in terms of social security systems they have inherited from the communist era.

In addition, one interesting argument was found when surveying decision makers and policy experts in reforming countries: the use of reform as a way of differentiating from a previous government (Chlon-Dominczak and Mora, 2003). It should be mentioned, though, that this was not stated as the major cause for reform. The central place, according to surveyed decision makers and policy experts, belongs to the financial crisis, and that brings us to the realm of economic, especially financial, factors for the pension reform. These factors received as much attention in the literature as the political factors.

\(^3\) The implicit pension debt is defined as the present value of the pension promises that are owed to current pensioners and to workers according to their years of participation in the old system.
Economic Factors

Previously, there has been talk about the initial reform expectations of increased rates of GDP growth due to the incentives given by defined contribution schemes to move from informal to formal sector, but interestingly this argument received no special attention in recent studies. In contrast, capital shortage (understood here as insufficient national savings for the rate of investments needed/wanted by a country, and consequently its strong dependence on foreign capital) as a potential reason for undertaking pension reform received a great deal of attention recently, and, in fact, it has been judged by some as the central or at least one of major reasons for the reform (Madrid, 2002; Madrid, 2003; Simmons and Elkins, 2004).

The size of debt to GDP ratio has been found to have negative correlation with the decision to reform old-age security system (Brooks, 2002; Brooks, 2005). This has been associated with the necessary transitional costs that occur with pension reform, and which pose a much bigger burden and a much greater financial risk for those countries/governments that are already significantly indebted.

Interestingly, although already for some time now there is not much evidence in support of rising savings as a consequence of the introduction of defined contribution pension scheme, it seems that many governments still rely on that as a one of the main reasons to make a reform, at least in Latin America (Mesa-Lago and Muller, 2002; Madrid, 2003).
Demographic Factors

Finally, when it comes to demographic factors, researchers mostly had no interest in them, although aging and deteriorating old-age dependency ratio (ratio of people aged 65 and above to people aged 15-64) have been cited by the pension reform proponents as arguably the most important reasons for undertaking pension reform ever since *Averting the Old Age Crisis* (World Bank, 1994). Occasionally, though, demographic factors like aging are taken into account, and found to be positively correlated with the pension reform decision (Brooks, 2005). Cases where the demographic factors are given the central place in a study, like the one by Galasso and Profeta (2003) who study political consequences of aging, and particularly of an aging electorate, in several leading OECD countries, are rare.

Other Factors

In the end, it should be mentioned that beside the described political, economic and demographic factors, some authors tried to point to several other factors that might have had contributed to the pension reform decision. One such explanatory factor is expectation of (economic) crisis (Weyland, 1998), which gives importance to the psychological factors in explaining pension reform. As expectations have already been incorporated into the economic theory, this factor might be considered complementary to economic factors. Another potentially interesting factor is culture (the degree of cultural
similarity among countries undertaking reform), which was found to be statistically very significant explanatory variable in the Simmons and Elkins (2004) study, and which probably deserves further examination.
Data and Methods

This paper builds on research by James and Brooks (2001) and Brooks (2002). James and Brooks (2001) perform an initial analysis on the relationship between different political and economic factors and the decision to privatize. Contingent upon the decision to privatize, they estimate a second model assessing the degree of privatization. In the second paper, Brooks (2002) introduces several new variables (especially political ones) and examines some potential interactions between several of the variables from the original analysis. This research continues to build on the James and Brooks’ model(s).

Data used in this paper come from various sources. Data on the degree of privatization for the countries that (partially) privatized their pension systems through 2001 come from James and Brooks (2001). Data on pension system reforms initiated after 2001 come from the Social Security Worldwide database. Demographic data are obtained from United Nations’ World Population Prospects database. Economic data, as well as the majority of political data come from the World Bank’s World Development Indicators database. Finally, data on political freedoms are obtained from the Freedom House’s yearly reports Freedom in the World.

Outcome variables

The aim of this paper is to answer two questions:

1. What factors are relevant for the decision to undertake pension system reform?
2. Once reform has been undertaken, what is the relative significance of different factors with respect to the degree of pension system privatization?

Consequently, there are two dependent variables in this paper:

1. Whether a country undertakes pension reform (REFORM), and

2. The extent to which countries privatize their pension systems (PRIVATE)

*Probability of Pension Reform (REFORM)*

This is dichotomous variable, where countries are considered to have adopted a (structural) pension reform if they legislated and/or introduced a privately funded component to their pension systems. This also includes the situation where countries switch from a defined benefit scheme to a so-called notional defined contributions scheme. A notional defined contribution plan is a pension plan in which the worker has an individual account that is credited with his contributions and grows by an interest rate imputed by the government. However, the accumulation is notional rather than actual, since the money paid in by workers is immediately paid out to pensioners rather than being invested. For this analysis a logit model is used.

*Private share (PRIVATE)*

The variable PRIVATE is a continuous variable showing the share of the total expected pension benefit derived from the private pillar. These expected pension benefits are used as a basis for determining the degree of privatization of the pension system. The degree of privatization measure used in this paper was developed by James and Brooks
Pension benefit from the public pillar is determined using the “average wage” worker in each country included in the analysis, as defined by International Labour Organisation (ILO).\textsuperscript{4} Determining the private pillar pension benefit requires making assumptions about the number of years of payroll contributions, the rate of return on invested funds, and the rate of wage growth over working life.\textsuperscript{5} The analysis of the degree of privatization is done by OLS, and includes only those countries that undertook reform.

**Explanatory variables**

The goal of this paper is to make a broad analysis of the factors that have led to pension reform and to different degrees of privatization. Accordingly, instead of focusing on just one or at most two sets of explanatory variables, this paper includes three sets of explanatory variables: economic, political, and demographic. The idea behind this approach is that it will make it possible to capture more completely and accurately the effects of different explanatory variables than it has been the case in previous analyses which included only one or two sets of explanatory factors, usually economic and/or political ones. For all time varying explanatory variable in this paper I use 1990-1995

\textsuperscript{4} Detailed description of “average wage” worker can be found in ILO LABORSTA database, Sources and Methods section.

\textsuperscript{5} The assumptions used in this paper are as follows: 35 years of payroll contributions, 4.5% rate of return on invested funds, and 2% yearly growth in wages. As far as the rate of contributions, it is determined by each country’s legislation, and so it has been used straightforward in determining the share of private sector benefit. For further explanation of the degree of privatization measure look in James and Brooks (2001), pp 4-5.
average. The only exception is variable projected old-age dependency ratio change, which is calculated as a change in the old-age dependency ratio between 1995 and 2015.

**Economic**

*Implicit Pension Debt (IPD)*

Implicit pension debt (IPD) is the present value of pension liabilities owed to workers under the existing (pre-reform) pay-as-you-go pension system. It shows the maturity of the pre-reform pension system as well as what the necessary transitional costs are for a country implementing a structural pension reform. James and Brooks (2001) used both age-based and public pension spending based IPD. This paper uses only public pension spending based IPD, and there are two good reasons for this choice. First and foremost, unlike James and Brooks’ analysis, this paper includes demographic explanatory variables. Therefore, including age-based IPD would likely limit explanatory power of demographic explanatory variables, in particular the old-age dependency ratio. Second, for some countries there are direct estimates of IPD available, as a result of previous studies. For others IPD has been imputed by regressing IPD for the set of known countries on the share of the population over 60, and using the obtained coefficients for the imputation. Public pension spending based IPD yields a significantly better fit for these imputations compared to age-based IPD.

The expectation is that IPD is positively correlated with the probability of undertaking pension reform, as high IPD decreases the long-term sustainability of the
pension system. At the same time, the share of privately funded pensions is expected to be negatively correlated with IPD, as the transitional costs of radical reforms are likely to deter government from undertaking such radical reforms. Therefore, countries with high IPD are expected to be more likely to reform, but this reform is likely to include only moderate level of privatization.

In addition, IPD also serves as a proxy for path dependency, the effects of existing/pre-reform pension systems on the design of new systems. The higher IPD is, the more important are some vested interests like older workers’ interests or social security bureaucracies’ interests, and these groups are more likely to fiercely oppose reforms. This further strengthens the expectation of a negative relationship between IPD and the share of privately funded pensions.

Central Government Debt (CGD)

The level of central government debt is important, as it indicates the level and limits of fiscal effort necessary to finance transitional costs of pension reform. Although this implies a negative relationship that central government debt has with both the probability of pension reform and the share of privately funded benefit, results might not be so unequivocal. Large government debt might make officials more prone to reform in general, and they might also become more amenable to the voices from international financial institutions advocating the benefits of structural pension reform.
This interaction term captures the specificities of different countries’ positions, as the size of fiscal constraint changes with the implicit pension debt (e.g. the cost of pension privatization). Those countries that have both high implicit pension debt, and high central government debt are expected to be more likely to undertake pension reform than if they would have just high IPD or high central government debt. On the other hand, the effects on the degree of privatization are likely to be negative, as these countries are facing strict fiscal limitations and can hardly choose an option involving high transitional costs.

Savings as a % of GDP (SAVINGS)

Since the beginning of pension system reforms around the world, increased savings have been regarded as one of the main benefits of structural pension reforms. Although this is still by many regarded as one of the main reasons for undertaking a pension reform, the assumption in this paper will be that there is no relationship between the two. If findings in relevant literature are to be believed, there would be no surprise if this expectation would be confirmed.

At the same time, the relationship between savings and the degree of privatization is hard to predict. On one hand, countries with low savings might find themselves constrained in their wish to privatize, as they would have to finance transitional costs from new debt. On the other hand, the wish to raise savings in the long run through higher degrees of privatization might prevail, despite higher short-run costs. If these two
forces are of similar magnitude, finding no relationship between savings and the degree of privatization would be the likely outcome.

*Income share of the bottom quintile (LOWQUINTILE)*

Income share of the lowest 20% of people is a variable included in the model in order to capture the effect of (in)equality. It is hypothesized in this paper that in more egalitarian societies the bottom quintile of population will be relatively better off in comparison with other countries, and that should also mean that it will probably be better organized in voicing and defending its interests. If structural reform means that pension benefits will be more tied to an individual’s income, it is to be expected that those having smaller incomes will oppose such reform. Therefore, the expected relation between the share of the income of the bottom quintile and the outcome variables is negative.

**Political**

*External Debt as a % of GDP (EXTERNAL)*

Although it is usual to measure international pressure by the level of loans granted to a country by the World Bank or IMF, the level of external debt might better capture the real exposure of a country to the influence of international financial institutions. This is especially true if one assumes that private creditors are pretty much in line with the proclaimed policy of IMF and the World Bank, which is a reasonable assumption. Also, using a variable that would refer only to the World Bank or IMF loans might give a
distorted picture of their influence, as it would not capture “soft power” (technical assistance, pension reform promotion). The external debt might, at least partially, account for the “soft power”, as beside the World Bank and IMF some private investors might become willing to use “hard power” (by investing more in a country perceived to be reform oriented) due to the influence of “soft power”. Expectation is that the level of external debt is positively correlated with both outcome variables.

*Occupational Pension Scheme (OCCUPATIONAL)*

This is dichotomous variable that takes on value one for those countries with the existing occupational pension schemes\(^6\) prior to reform, and zero for all other countries. There should be a positive relationship between pre-existing occupational pension schemes and the probability of pension reform, as well as the share of pension benefits being private.

*Central East European and Commonwealth of Independent States (CEE/CIS) or Latin American (LATIN) countries*

It is often speculated that countries in the regions where one or several influential countries undertook a pension reform are more likely to follow their example. Therefore, dummies for CEE/CIS and Latin American countries are expected to catch this regional diffusion effect as well as other regional specificities that are not accounted for with other

\(^6\) A pension scheme generated by a company or organization for the benefit of its employees.
variables. The coefficient on the two regional dummies should be positive with respect to the both outcome variables.

Degree of Democracy (FREEDOM)

This is a measure of the degree of (political) freedom in a country that ranges from 1 (free country) to 7 (not free country).\(^7\) The hypothesized relationship between the degree of freedom and the degree of privatizing pension system is negative, as it is expected that more freedom means more opportunity for different groups in society to express their opinions, as well as more access points for these groups which results in higher possibility for them of having a say in the political process. The relationship with the probability of undertaking pension reform is unknown. On one hand, more democratic societies are probably less likely to make a decision to privatize pension system. On the other hand, with more access points, there are more chances that the question of pension reform will be raised in democratic country than in non-democratic one.

\(^7\) This measure has been developed by Freedom House, and it is used in its *Freedom in the World* annual rankings of political rights around the world.
Demographic

*Old-Age Dependency Ratio (OLDAGE)*

The old-age dependency ratio is defined as a ratio of people aged 65 and above to people aged 15-64. Unlike the often used measure of the share of people older than 65 in total population, this ratio accounts for changes both among older people who make up most of the pensioners, as well as among people aged 15-64 who pretty much cover the totality of the labor force. Therefore, this measure should better reflect the pressure with which pay-as-you-go systems are faced with at the moment of measurement than the ratio of people aged 65 and older in total population. It is important to say that only medium variant demographic projections are used in this paper.\(^8\)

It is expected that this variable will be positively related with the decision to undertake a pension reform, while the effect on the level of pension system privatization is more difficult to predict. While it is likely that with the stronger demographic pressure there will be more inclination toward privatizing a bigger part of the pension system, at the same time the bigger the number of the old-age people, the more vocal they are going to be in the political arena. Nevertheless, one might argue that the bigger the number of the old-age people the tendency is likely to be toward smaller degree of privatization as older people are usually more “disciplined” voters, and therefore have disproportionate voting power.

---

\(^8\) The United Nations calculates high, medium, low, and constant fertility variants of population projection. These are four different predictions of the expected future population of any country in the world dependent on the fertility rates.
Projected Old-Age Dependency Ratio Change (PROJECTED)

Whereas the old-age dependency ratio measures current demographic pressures on pension systems, projected old-age dependency ratio gives sense of future demographic challenges. This variable is calculated as a change in the old-age dependency ratio between 1995 and 2015. The choice of the year 1995 is justified by the fact that it is approximately a mid-point in time looking at the dates when different countries implemented a reform. In addition, having exactly the same starting and ending year has the advantage of completely comparable demographic data across countries. The choice of a 20 year period is admittedly arbitrary, but it has been chosen due to the fact that the 20 year period is sufficiently enough in the future for possible changes in the ratio to show up, as demographic changes usually take somewhat more time to take place than economic or political changes.

I argue that governments, in general, have short time horizons. This means that they are not interested in the long-term future, but rather in the near future, namely the next elections. Therefore, projected old-age dependency ratio change is not expected to be correlated with any of the outcome variables. If that proves to be right, it would be in a sense another, though indirect, confirmation of political-economic cycle theory.

Model

There are two models estimated in this paper because I argue that the decision to undertake a pension reform and the degree of privatization in the reformed pension
system are essentially two separate decisions. This implies that the same factors may have different impacts on each of these decisions. The first model is:

$$
REFORM_i = \beta_0 + \beta_1 IPD_i + \beta_2 CGD_i + \beta_3 IPD*CGD_i + \beta_4 SAVINGS_i + \\
\beta_5 LOWQUINTILE_i + \beta_6 EXTERNAL_i + \beta_7 OCCUPATIONAL_i + \beta_8 CEECIS_i + \beta_9 LATIN_i + \\
\beta_{10} FREEDOM_i + \beta_{11} OLDAGE_i + \beta_{12} PROJECTED_i + u_i
$$

In short form:

$$
REFORM_i = \alpha + \beta ECON_i + \gamma POL_i + \delta DEMOG_i + u_i
$$

where $ECON_i$ refers to all economic factors, $POL_i$ to all political factors, and $DEMOG_i$ to all demographic factors.

This model estimates the likelihood of undertaking a pension reform and is estimated using a logit model. The sample used in this analysis includes all countries in the world for which the relevant data could be obtained.

This analysis focuses on pension reform decision made between 1981 and 2005, and the outcome variable is defined as a single decision (ever reformed or never reformed) over that period of time. There are some important shortcomings of this way of defining the outcome variable, most notably the fact that many of the explanatory variables in the model vary over time. Consequently, it is not clear when these explanatory variables should be measured. Generally, for the reforming countries only
the years preceding the reform are of importance for the decision to reform, whereas for non-reforming countries the whole period is of interest. On the other hand, using different time periods for the countries of interest is also suboptimal as there are likely many factors not being controlled for, like economic or political trends in the world, which could bias the estimates. Therefore, solving one problem would likely result in the emergence of another one. Main issue with averaging over a period of time is that reform and non-reform countries may have same average values of certain explanatory variables, but they might have looked quite different at the moment the reform decision was made, and vice versa. Also, averaging over the whole period of time for all countries is impossible, as many of transitional (CEE and CIS) countries did not exist before 1990, and the quality of statistical data reported by undeveloped countries was quite low at the time. Therefore, the pension reform decision should ideally be defined as either reformed or not reformed for every single year in the period of interest until the reform decision has been made. Unfortunately, data limitations necessitate using this “ever/never” approach to defining the outcome variable.

Time varying variables are measured using the 1990-1995 average. This time period has been chosen because, in most cases, it either directly preceded the reform decision or the decision has been made toward the end of examined period (except in few cases of early reformers). Also, using the time period after 1990 has the advantage of taking into account all the political changes that happened in the world, especially the fall of communism and the emergence of newly independent countries. Nevertheless, any averaging over a period of time inevitably results in “throwing out” a good deal of
valuable information, and this analysis is no different in that respect. Simply, the lack of data forces me to make this kind of compromise, but it would be interesting and useful to try to confirm results of this analysis with hazard model analysis sometimes in the future. A hazard or event history model assesses the reform decision in each year until a country decides to reform and allows one to measure the factors influencing the reform decision at the time the decision is being made.

The second model is:

\[ PRIVATE_i = \alpha + \beta ECON_i + \gamma POL_i + \delta DEMOG_i + u_i \]

This model estimates the degree of privatization in reformed pension systems. Ordinary Least Squares (OLS) model is used for this estimation, as the degree of privatization is regarded as continuous variable (in the range of 0% to 100% degree or pension benefit being from private pillar). Also, it is important to notice that none of the countries that undertook pension reform so far had another substantial pension reform afterwards. From the analytic point of view, this makes the analysis much simpler than it would otherwise be. The sample for this analysis includes only those countries that implemented structural pension reform, and therefore it is limited to only 35 countries.

Before estimating the full model, three models are estimated for the decision to undertake a pension reform. The first of these three models estimates the relationship between the decision to reform pension system and economic variables, while the
remaining two models estimate this relationship for political and demographic variables, respectively. Similarly, three models are estimated for the degree of pension system privatization before estimating the full model. All of the estimated models are presented in the following table.

Table 1: Overview of the Estimated Models

<table>
<thead>
<tr>
<th></th>
<th>REFORM</th>
<th>PRIVATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>ECON</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>POL</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>DEMOG</strong></td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Results

Descriptive data in table 1 show the mean, median, standard deviation, and range of the key economic, political, and demographic explanatory variables included in the analysis.

Table 2: Descriptive analysis of the full sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Median</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Pension Debt</td>
<td>0.1500</td>
<td>3.5000</td>
<td>1.0340</td>
<td>0.8300</td>
<td>0.7383</td>
</tr>
<tr>
<td>Central Government Debt*</td>
<td>0.0044</td>
<td>8.6187</td>
<td>0.7744</td>
<td>0.5365</td>
<td>1.1538</td>
</tr>
<tr>
<td>Savings Rate</td>
<td>-0.0900</td>
<td>0.4000</td>
<td>0.1733</td>
<td>0.1900</td>
<td>0.0868</td>
</tr>
<tr>
<td>Lowest Quintile Share of Income</td>
<td>1.9900</td>
<td>10.5800</td>
<td>6.3475</td>
<td>6.4955</td>
<td>2.2441</td>
</tr>
<tr>
<td>External Debt</td>
<td>0</td>
<td>8.6200</td>
<td>0.7609</td>
<td>0.5200</td>
<td>1.1199</td>
</tr>
<tr>
<td>Pre-existing occupational scheme</td>
<td>0</td>
<td>1.0000</td>
<td>0.0737</td>
<td>0</td>
<td>0.2626</td>
</tr>
<tr>
<td>CEE &amp; CIS countries</td>
<td>0</td>
<td>1.0000</td>
<td>0.2421</td>
<td>0</td>
<td>0.4306</td>
</tr>
<tr>
<td>Latin American countries</td>
<td>0</td>
<td>1.0000</td>
<td>0.2211</td>
<td>0</td>
<td>0.4172</td>
</tr>
<tr>
<td>Political Freedom</td>
<td>1.0000</td>
<td>7.0000</td>
<td>3.0863</td>
<td>3.0000</td>
<td>1.9429</td>
</tr>
<tr>
<td>Old-Age Dependency Ratio</td>
<td>4.0000</td>
<td>27.0000</td>
<td>12.8526</td>
<td>10.0000</td>
<td>6.8649</td>
</tr>
<tr>
<td>Projected Change in Old-Age Dependency Ratio</td>
<td>-0.4286</td>
<td>1.6667</td>
<td>0.7461</td>
<td>0.7273</td>
<td>0.4614</td>
</tr>
</tbody>
</table>

Number of observations = 95
*Number of observations = 93 (missing data on FYR Macedonia and Slovak Republic)

On average, countries have implicit pension debt of somewhat more than 100% of GDP, with central government debt and external debt reaching 75-80% of GDP, which is considered relatively high, but still acceptable. The average savings rate is moderate
(around 17% of GDP), the income distribution is relatively unequal with the bottom quintile of population having just slightly over 6% of total income, and only 7.4% of countries have occupational pension schemes. The average old-age dependency ratio of around 13 reflects more favorable age structure compared with the most advanced economies where the old-age dependency ratio is usually twice as high. On the other hand, the average projected change in the old-age dependency ratio of 0.75 means that in just two decades (1995-2015) the old-age dependency ratio will deteriorate by 75% from its 1995 level. What is particularly interesting is the fact that combined CEE, CIS, and Latin American countries account for 46% of the whole sample, and that these countries plus the remaining developed countries account for more than 60% of the sample.\textsuperscript{9} Therefore, it is most likely that the analysis undertaken in this paper better represents the experiences of these countries than of undeveloped and/or developing countries in Africa and significant parts of Asia (including even developed Middle Eastern countries).

The average characteristics of these countries, though, conceal valuable information, so it is important to give due attention to the range of variables. The range of variables like implicit pension debt (from 15% to 350% of GDP), central government debt (4%-86% of GDP), savings rate (-9%-40% of GDP), political freedom (1-7, measured on scale of 1-7 where 1 represents the highest degree of democracy and political freedom), bottom quintile share of income (2%-10.6%), and old-age dependency

\textsuperscript{9} Table 2 does not include data on regional distribution of countries included in the data set except for CEE, CIS, and Latin American countries. However, the data set is available on demand.
ratio (4-27), all point to the fact that the data set includes countries with vastly different economic, political, and demographic profiles.

Table 3: Means of independent variables for reforming and non-reforming countries

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reformers</th>
<th>Non-reformers</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Pension Debt</td>
<td>1.3454***</td>
<td>0.8523**</td>
<td></td>
</tr>
<tr>
<td>Central Government Debt</td>
<td>0.4233***</td>
<td>0.9674</td>
<td></td>
</tr>
<tr>
<td>Savings Rate</td>
<td>0.1960***</td>
<td>0.1600</td>
<td></td>
</tr>
<tr>
<td>Lowest Quintile Share of Income</td>
<td>6.3012</td>
<td>6.3744</td>
<td></td>
</tr>
<tr>
<td>External Debt</td>
<td>0.4020***</td>
<td>0.9703</td>
<td></td>
</tr>
<tr>
<td>Pre-existing occupational scheme</td>
<td>0.1429*</td>
<td>0.0333**</td>
<td></td>
</tr>
<tr>
<td>CEE &amp; CIS countries</td>
<td>0.4571***</td>
<td>0.1167***</td>
<td></td>
</tr>
<tr>
<td>Latin American countries</td>
<td>0.3149*</td>
<td>0.1667</td>
<td></td>
</tr>
<tr>
<td>Political Freedom</td>
<td>2.4149***</td>
<td>3.4783*</td>
<td></td>
</tr>
<tr>
<td>Old-Age Dependency Ratio</td>
<td>15.6571***</td>
<td>11.2167**</td>
<td></td>
</tr>
<tr>
<td>Projected Change in Old-Age Dependency Ratio</td>
<td>0.8863***</td>
<td>0.6643</td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>35</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.10, ** Significant at 0.05, *** Significant at 0.01

a With the exception of central government debt and lowest quintile share of income, means of explanatory variables for non-reformers are significant at 0.20 significance level.

b Number of observations 33 due to missing data on central government debt for FYR Macedonia and Slovakia.

It is interesting to compare means of different independent variables for reforming and non-reforming countries. Marked differences between these two groups of countries are something that is to be expected if, in fact, the variables of interest help to explain why some countries choose to reform their pension systems while others do not. In comparison with non-reforming countries, reforming countries have higher implicit pension debt, which is consistent with initial expectations. Central government debt is, on
average, more than twice as high in non-reforming countries compared to reforming ones. This supports the view that lower fiscal limitations make countries more likely to reform. Also in line with the initial expectations, reforming countries are more likely to be from Latin America, CEE or CIS region. More represented among reforming countries are also those with older population and with populations that are rapidly growing older. Although initially there is no clear expectation about the direction of the relationship between political freedoms and pension reform decisions, the data in table 2 suggest that reforming countries are somewhat more democratic than non-reformers. When it comes to the savings rate and lowest quintile share of income variables, there are no substantially significant differences between the two samples. Finally, external debt share in GDP is much higher among non-reforming countries, and this is quite surprising. Initially, I expected to find reforming countries to have significantly higher external debt share in GDP as I thought that countries would be more exposed to international pressures if they owed significant sums of money to international financial institutions and/or private investors.

Next, I focus on the reforming countries. Table 4 shows countries that undertook significant pension reform since 1981. This also includes 6 countries (Italy, Kyrgyz Republic, Moldova, Panama, Slovenia, and Ukraine) that reformed, but did not privatize their pension systems. It is interesting to notice differences between Latin American countries and CEE/CIS countries both in timing of reform and the degree of pension privatization.
Table 4: Reforming countries

<table>
<thead>
<tr>
<th>Country*</th>
<th>Private share of pension benefit (% of total)</th>
<th>Year of reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>51</td>
<td>1994</td>
</tr>
<tr>
<td>Australia</td>
<td>57</td>
<td>1992</td>
</tr>
<tr>
<td>Bolivia</td>
<td>92</td>
<td>1997</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>14</td>
<td>2000</td>
</tr>
<tr>
<td>Chile</td>
<td>100</td>
<td>1981</td>
</tr>
<tr>
<td>China</td>
<td>60</td>
<td>1997</td>
</tr>
<tr>
<td>Colombia</td>
<td>100</td>
<td>1994</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>49</td>
<td>2001</td>
</tr>
<tr>
<td>Croatia</td>
<td>33</td>
<td>2002</td>
</tr>
<tr>
<td>Denmark</td>
<td>55</td>
<td>1992</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>100</td>
<td>2003</td>
</tr>
<tr>
<td>El Salvador</td>
<td>100</td>
<td>1998</td>
</tr>
<tr>
<td>Estonia</td>
<td>36</td>
<td>2002</td>
</tr>
<tr>
<td>Hungary</td>
<td>39</td>
<td>1997</td>
</tr>
<tr>
<td>Italy</td>
<td>0</td>
<td>1995</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>100</td>
<td>1998</td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td>0</td>
<td>1997</td>
</tr>
<tr>
<td>Latvia</td>
<td>66</td>
<td>1996</td>
</tr>
<tr>
<td>Lithuania</td>
<td>29</td>
<td>2004</td>
</tr>
<tr>
<td>Macedonia, FYR</td>
<td>46</td>
<td>2002</td>
</tr>
<tr>
<td>Mexico</td>
<td>91</td>
<td>1997</td>
</tr>
<tr>
<td>Moldova</td>
<td>0</td>
<td>1998</td>
</tr>
<tr>
<td>Netherlands</td>
<td>50</td>
<td>1993</td>
</tr>
<tr>
<td>Panama</td>
<td>0</td>
<td>2005</td>
</tr>
<tr>
<td>Peru</td>
<td>100</td>
<td>1993</td>
</tr>
<tr>
<td>Poland</td>
<td>47</td>
<td>1999</td>
</tr>
<tr>
<td>Romania</td>
<td>23</td>
<td>2004</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>33</td>
<td>2002</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>67</td>
<td>2005</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0</td>
<td>2000</td>
</tr>
<tr>
<td>Sweden</td>
<td>21</td>
<td>1999</td>
</tr>
<tr>
<td>Switzerland</td>
<td>50</td>
<td>1985</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0</td>
<td>2004</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>49</td>
<td>1988</td>
</tr>
<tr>
<td>Uruguay</td>
<td>40</td>
<td>1996</td>
</tr>
</tbody>
</table>

*Two other countries reformed (Hong Kong, and Serbia), but due to insufficient data they were not included in the study. Also, two countries postponed implementation of the pension reform indefinitely (Czech Republic, and Ecuador).
Now, I turn to the regression analysis. First, I estimate a series of logit models to determine what contribution (if any) different factors make to the decision of undertaking pension reform (see table 5).

<table>
<thead>
<tr>
<th>Economic Factors</th>
<th>Political Factors</th>
<th>Demographic Factors</th>
<th>Full model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Pension Debt 0.1667</td>
<td>-</td>
<td>-</td>
<td>1.4708*</td>
</tr>
<tr>
<td>(0.7777)</td>
<td></td>
<td></td>
<td>(0.8878)</td>
</tr>
<tr>
<td>Central Government Debt -4.0034**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(1.6534)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPD*CGD 1.8507</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(1.1794)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savings Rate 0.6014</td>
<td>-</td>
<td>-</td>
<td>-0.5548</td>
</tr>
<tr>
<td>(3.8488)</td>
<td></td>
<td></td>
<td>(5.9735)</td>
</tr>
<tr>
<td>Lowest Quintile -0.3191**</td>
<td>-</td>
<td>-</td>
<td>-0.4976*</td>
</tr>
<tr>
<td>(0.1373)</td>
<td></td>
<td></td>
<td>(0.2752)</td>
</tr>
<tr>
<td>External Debt -</td>
<td>-1.1387</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0.8910)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational -</td>
<td>2.7814****</td>
<td>-</td>
<td>3.3377****</td>
</tr>
<tr>
<td></td>
<td>(1.0714)</td>
<td></td>
<td>(1.2513)</td>
</tr>
<tr>
<td>CEE &amp; CIS Countries -</td>
<td>3.0898****</td>
<td>-</td>
<td>4.3370****</td>
</tr>
<tr>
<td></td>
<td>(0.8213)</td>
<td></td>
<td>(1.0995)</td>
</tr>
<tr>
<td>Latin American -</td>
<td>2.7250****</td>
<td>-</td>
<td>3.8719**</td>
</tr>
<tr>
<td></td>
<td>(0.7779)</td>
<td></td>
<td>(1.6751)</td>
</tr>
<tr>
<td>Political Freedom -</td>
<td>-0.2928</td>
<td>-</td>
<td>0.2590</td>
</tr>
<tr>
<td></td>
<td>(0.1860)</td>
<td></td>
<td>(0.3090)</td>
</tr>
<tr>
<td>Old-Age -</td>
<td>-</td>
<td>0.1020***</td>
<td>0.1982</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0349)</td>
<td>(0.1241)</td>
</tr>
<tr>
<td>Projected -</td>
<td>-</td>
<td>1.2370**</td>
<td>0.7270</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.5703)</td>
<td>(1.0866)</td>
</tr>
<tr>
<td>Intercept 2.2372*</td>
<td>-0.9994</td>
<td>-2.9041***</td>
<td>-5.8404*</td>
</tr>
<tr>
<td></td>
<td>(1.3426)</td>
<td>(0.9347)</td>
<td>(0.7841)</td>
</tr>
<tr>
<td>LR Chi-Square 25.9163</td>
<td>44.5905</td>
<td>14.6362</td>
<td>54.5783</td>
</tr>
<tr>
<td>Pr &gt; Chi-Square &lt;.0001</td>
<td>&lt;.0001</td>
<td>0.0007</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>% Concordant 78.5</td>
<td>87.6</td>
<td>70.0</td>
<td>90.6</td>
</tr>
<tr>
<td>Mean Dependent Variable 0.3548</td>
<td>0.3648</td>
<td>0.3684</td>
<td>0.3548</td>
</tr>
<tr>
<td>N 93</td>
<td>95</td>
<td>95</td>
<td>93</td>
</tr>
</tbody>
</table>

* 10% significance level, ** 5% significance level, *** 1% significance level
Before estimating the full model, I estimate three models including economic, political, and demographic explanatory variables, respectively. Facing the problem of limited number of observations, it makes sense to estimate separate models. This approach can provide a valuable insight into the character (direction, and to some extent strength) of the relationship between pension reform decisions and the explanatory variables without “eating up” many degrees of freedom. In turn, this results in more precision in estimates. Nevertheless, the emphasis will be given to the full model as estimates made by the separate models inevitably suffer from omitted variable bias. Therefore, the magnitude of different explanatory variables will be commented on in just the full model, whereas results obtained from the separate models will be commented on in terms of statistical significance and the direction of relationship.

In the first of these models, the one including only economic factors, central government debt and the bottom quintile share of income are statistically significant at the 5% level, and have negative signs. For the bottom quintile share of income variable this is consistent with initial expectations. On the other hand, for central government debt variable there has been no clear expectations of the direction of the relationship, but the negative relationship has been predicted by the descriptive tabular analysis. At the same time, implicit pension debt is surprisingly statistically insignificant considering initial expectations, whereas the IPD*CGD interaction is almost statistically significant (with p-value of 0.12), and has the hypothesized positive sign. This suggests that countries with high implicit pension debt and central government debt are under much greater (fiscal) pressure to undertake pension reform than those countries that are not faced with such
financial challenges. Finally, the variable savings is not statistically significant, and it is uncorrelated with the decision to reform the pension system, as initially expected. This reaffirms the findings from the great majority of relevant literature.

In the model with only political factors, external debt share in GDP is not statistically significant. This is different from initial expectations of positive relationship, and it points me to conclude that international pressures are not as strong and relevant as many (would like to) think. The level of political freedoms is positively correlated with the reform decision, although it should be noted that this explanatory variable is only marginally significant (p-value 0.12). Finding negative relationship in this case is not a big surprise as having more access points, which is characteristic of democratic systems, can work both in favor and against undertaking a pension reform. Finally, both pre-existing occupational pension scheme variable as well as regional dummies are highly statistically significant. While strong positive relationship for occupational and regional dummies is expected, its strength is something that goes beyond expectations, especially for regional dummies.

The third model includes only demographic variables, and results are in line with the initial expectations. The old-age dependency ratio is strongly positively related with the pension reform decision, which is to be expected as it shows the responsiveness of governments to current demographic pressures. On the other hand, finding a statistically significant positive relationship for the projected change in old-age dependency ratio is a little bit surprising, as it might suggest that governments’ time horizon is (sufficiently) long. This is in sharp contrast with the expectation of governments (especially in
democracies) having a time horizon that does not go much beyond next elections, an idea that comes from economic-political cycle theory.

The full model specification appears in the last column of table 5. Two variables, central government debt and external debt, have been left out of this specification for two reasons. First, they do not add any explanatory power to the model, and second, they were not judged to be among key explanatory variables in the model. The results of the full model are consistent with the initial expectations, but statistical significance is mostly lower than in separate models, which is very likely the consequence of the expanded number of explanatory variables.

Unlike the model with economic factors alone, implicit pension debt is found statistically significant and positive in this specification. It is likely that including regional and demographic variables has a positive impact in terms of clearing up the noise from the model. Countries around the world greatly differ in terms of economic development, maturity of pension systems, and demographic trends. For example, developed and transitional countries mostly have mature pension systems that cover almost all workers, high old-age dependency ratios, and consequently high implicit pension debt. On the other hand, undeveloped African and Asian countries have mostly introduced pension systems just recently, and these systems have limited coverage. In addition, the old-age dependency ratios are usually very low in these countries. Therefore, it is likely that undeveloped countries have low implicit pension debt. However, determining all the factors that would help explain this change with implicit pension debt requires further study. It is important to note, though, that these findings
correspond to findings by Brooks and James (2001), and Brooks (2002). At the mean value of Reform rise of implicit pension debt of 100 percentage points results in approximately a third higher chances of pension reform, which is somewhat smaller than the effect found by Brooks and James (2001). As in all recent literature, savings rate has been once again confirmed to be insignificant for the decision to undertake pension reform. Therefore, it seems that the Chilean example is more an exception than a rule, and even in Chile it might be that increased savings have been wrongly attributed almost exclusively to the pension reform. The bottom quintile share of income is statistically significant and negatively correlated with pension reform. For each percentage point increase in the share of income of the bottom quintile of population, the chance of undertaking pension reform falls by 11.5 percentage points. This is a relatively sizeable effect, and an important finding as the possibility of this relationship has not been (directly) discussed in the literature so far.

Pre-existing occupational pension schemes as well as regional dummies are both highly statistically significant, and have huge effects on decision to reform. In fact, these explanatory variables drive the whole relationship, and consequently, I have to conclude that path dependency and regional diffusion of reforms are the two reasons most influencing the decision whether to reform pension system. Pre-existing occupational pension scheme increases chances of undertaking pension reform by approximately 77

\[^{10}\text{Computation of the change in probability for logit models is done according to the following formula: } y(1-y)\beta, \text{ where } y \text{ represents mean value of dependent variable (pension reform decision), and } \beta \text{ is the coefficient of the explanatory variable of interest. This method gives slopes (partials) at the exact point, in this case the mean value of dependent variable, whereas calculating partials between two points requires a different formula.}\]
percentage points at the mean value of Reform variable, whereas being CEE/CIS country, or Latin American country increases this chance by 100 percentage points, and 89 percentage points, respectively. This enormous impact has been found in Brooks and James (2001), as well as in Brooks (2002), the two papers that have been the basis for this research, so this reaffirms their findings.

Political freedom is not statistically significant, and this is consistent with initial expectations. Nevertheless, this is to some extent contrary to Brooks’ findings in her 2002 paper, where political freedom is significant in a few specifications, although not even remotely significant in the others. Finally, the old-age dependency ratio is marginally statistically significant (p-value of 0.11), with every percentage point increase in old-age dependency ratio corresponding to a 4.6 percentage point increase in the probability of pension reform. Again, this is relatively large effect if one bears in mind that the difference in old-age dependency ratio between reformers and non-reformers in the sample is approximately 4.5 percentage points, and worldwide it is common to find developed countries having dependency ratios that are 10 to 15 percentage points higher than in undeveloped countries. Finally, as initially expected, the projected change in the old-age dependency ratio is uncorrelated with the pension reform decision. That reaffirms the initial hypothesis that governments do not have long time horizon, and that their actions with respect to demographic reasons to reform pension system are much more reactive (as represented by the old-age dependency ratio) than proactive (represented by the projected change in the old-age dependency ratio).
Table 6: Estimation of the degree of privatization of pension system

<table>
<thead>
<tr>
<th>Economic Factors</th>
<th>Political Factors</th>
<th>Demographic Factors</th>
<th>Full model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit Pension Debt</td>
<td>-0.34978* (0.20471)</td>
<td>-</td>
<td>-0.44482* (0.23537)</td>
</tr>
<tr>
<td>Central Government Debt</td>
<td>-0.67487 (0.45939)</td>
<td>-</td>
<td>-1.45973 (1.13664)</td>
</tr>
<tr>
<td>IPD*CGD</td>
<td>0.39470 (0.31665)</td>
<td>-</td>
<td>0.62625 (0.37988)</td>
</tr>
<tr>
<td>Savings Rate</td>
<td>-1.03454 (0.76017)</td>
<td>-</td>
<td>-1.06277 (0.95980)</td>
</tr>
<tr>
<td>Lowest Quintile</td>
<td>-0.05749* (0.03214)</td>
<td>-</td>
<td>0.03219 (0.05350)</td>
</tr>
<tr>
<td>External Debt</td>
<td>-</td>
<td>-0.13372 (0.18620)</td>
<td>-</td>
</tr>
<tr>
<td>Occupational</td>
<td>-</td>
<td>0.37212* (0.20693)</td>
<td>-</td>
</tr>
<tr>
<td>CEE &amp; CIS Countries</td>
<td>-</td>
<td>0.05859 (0.17376)</td>
<td>-</td>
</tr>
<tr>
<td>Latin American</td>
<td>-</td>
<td>0.49708*** (0.17256)</td>
<td>-</td>
</tr>
<tr>
<td>Political Freedom</td>
<td>-</td>
<td>0.06969** (0.03083)</td>
<td>-</td>
</tr>
<tr>
<td>Old-Age</td>
<td>-</td>
<td>-</td>
<td>-0.02830*** (0.00947)</td>
</tr>
<tr>
<td>Projected</td>
<td>-</td>
<td>-</td>
<td>0.04862 (0.15388)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.54043*** (0.31157)</td>
<td>0.13449 (0.22180)</td>
<td>0.88510*** (0.25467)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.44</td>
<td>0.48</td>
<td>0.31</td>
</tr>
<tr>
<td>N</td>
<td>33</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

* 10% significance level, ** 5% significance level, *** 1% significance level

Table 6 contains four specifications estimating the degree of pension systems’ privatization. These estimates are done using the OLS method on the same set of explanatory variables as in the case of the decision to reform pension system. Nevertheless, one should keep in mind that these are two separate decisions, and that the importance of same explanatory variables is likely to be different for these two outcomes. The way I address the degree of privatization decision is same as in the case of reform
decision, estimating models with economic, political, and demographic variables separately before estimating the full model. In this case estimating separate models is even more important than for reform decision, as the sample is extremely limited, with only 35 countries that undertook pension reform. Therefore, the insight that can be gained from separate estimations might be very valuable despite all the disadvantages that have been mentioned in discussion of pension reform decision separate models. The full model, on the other hand, is likely to be severely affected by the size of the sample, as it is unlikely to find variable(s) with statistical significance in this situation.

In the model with only economic variables, implicit pension debt and bottom quintile share of income are significant at the 10% significance level, and have the expected negative sign. Central government debt with p-value of 0.15 might still be considered marginally significant. Again, the direction of this relationship is negative as initially expected. In this specification, the interaction between the IPD and the CGD variables is not statistically significant. Also, savings are not statistically significant, but that is something that was expected based on the relevant literature looking at relationship between savings and pension reform/degree of privatization.

In the model with only political variables, external debt is statistically insignificant, contrary to my initial expectation of a significant positive relationship. Also, the dummy for CEE and CIS countries is statistically insignificant. This is an interesting though not unexpected finding as these countries are very likely to opt for pension reform, but are showing a great variation in the design of their reforms. The variables pre-existing occupational pension scheme and the Latin American dummy are
significant at 10% and 1% significance level, respectively, and their impact on the degree of privatization is strong and positive. Political freedom is significant at 5% significance level, and it is positively correlated with the degree of privatization. This is in line with the initial assumption that countries with less democratic regime in power will be likely to adopt higher degree of privatization. Nevertheless, the magnitude of this relationship is not especially big compared to other variables of interest.

Finally, in the specification including only demographic variables, the old-age dependency ratio is highly statistically significant and negative, but very small in magnitude. This is something that is in the range of the initial expectations of older population “exercising” their political (voting) strength to limit the degree of privatization of pension systems. In the same time the strength of this negative correlation is being tempered by the need to reform more in societies with higher proportion of elderly. Consequently, the magnitude of the coefficient on the old-age dependency ratio is relatively small. Also, the projected change in old-age dependency ratio is insignificant, and that is expected given hypothesized short time horizon of governments.

Unlike in the full model explaining the decision to undertake pension reform, the full model explaining the degree of privatization includes central government debt and external debt. Although these two variables are again not considered central to the analysis, they did add, both individually and together, explanatory power to the model.

In terms of regression results, implicit pension debt in this specification remains statistically significant, and it has a relatively large magnitude with 100 percentage point increase in implicit pension debt resulting in 44.5 percentage points less privatization.
Central government debt is statistically insignificant, but its interaction with implicit pension debt is marginally significant (p-value 0.11), and positive with a large magnitude. Considering coefficients on IPD and CGD are both negative and large in magnitude (especially for CGD), their interaction tempers that large negative effect. Nevertheless, this is surprising considering my initial expectation that with both high implicit pension debt and central government debt countries will find it harder to opt for a high degree of pension privatization as that would likely result in high transitional costs. As expected, the coefficient on savings rate is not statistically significant, and in this specification, the coefficient on the lowest quintile share of income variable is insignificant as well. External debt and CEE/CIS regional dummy remained statistically insignificant as they were in specification including political factors alone, which just further reaffirms previously observed results. Similarly, the Latin American dummy, pre-existing occupational scheme dummy, and the level of political freedom remained statistically significant (though political freedom with p-value of exactly 0.10), and in cases of the first two explanatory variables, increased in magnitude making them by far the most significant explanatory variables. Interestingly, these two variables together with the remaining regional dummy were the most important explanatory variables in the estimates of the decision to undertake pension reform as well. Finally, both demographic explanatory variables showed no statistical significance, as expected.
Model Limitations

There are several potential problems with the two models estimated in this paper. The first problem is sample size, especially for the second model. Although this is a serious concern, the number of countries that undertook pension reform is limited, and the way to address this problem might be to repeat this analysis again in the future when this number further increases. Currently there are 35 countries that undertook a pension reform, and several more are expected to do it in the next year or two. In addition, many other countries are seriously considering a similar course of action.

The second problem is a measurement error, and there are two major contributing factors to this issue. First, a decision to define pension reform decision as a single event for the whole 1981-2005 period instead of an event for every year during that period until the decision to reform is made. Unfortunately, due to reasons explained before, the decision had to be made to use this suboptimal approach. This analysis requires averaging several variables over a period of time, and thus may lead to a loss of valuable information. Second, there is a lack of direct estimates for the implicit pension debt. While IPD has been imputed for those countries which lack data on it by regressing IPD for the set of known countries on the share of population over 60, this can just partially substitute the direct estimates of IPD. Therefore, the measure of IPD is less precise than it would otherwise be. The issue of measurement error is an important one for this analysis, especially taking into account that the measurement error likely appears both in one of the outcome variables (pension reform decision) and explanatory variables. Generally,
measurement error in outcome variables is less of a problem as it does not bias the coefficients (unless there is a correlation between measurement error and explanatory variables). Nevertheless, the standard errors in the model are larger, and the explanatory power of the model ($R^2$ value) is reduced. On the other hand, the existence of measurement error in explanatory variables is much more serious as it biases the coefficients of the variables measured with error toward zero, and reduces the explanatory power of the model. In addition, it can bias coefficients of other explanatory variables either upward or downward, and may increase or decrease the standard error of the coefficients of explanatory variables.

Finally, omitted variable bias might be present as well. This could particularly be true for the expectations of the magnitude of the pension crisis. It is probable that this omitted variable is positively correlated with the outcome variables, as people are likely to be willing to accept both pension reform and significant privatization of the pension system if they expect that otherwise the system would become unsustainable and cause severe economic problems. Also, these expectations of crisis are expected to be correlated with the explanatory variables like Savings, as they are likely to spur higher savings due to uncertainties about the future of the pension system. Inability to account for the expectations is biasing the estimates upward. Unfortunately, in available data there is neither a measure for this concept, nor any variable that could serve as a good proxy.
Policy Implications

Pension systems around the world are indubitably among the most important social security programs. Mature pension systems generally contribute to increased equality in the distribution of income, particularly in preventing the elderly from falling into abject poverty. Yet with ever increasing average life-expectancy and shrinking fertility rates, the size of the population receiving pension benefits relative to the working-age population is growing significantly. This situation is becoming more and more unsustainable from a fiscal perspective, but equally important, it is increasingly detrimental for the competitiveness of economies with such large and generous social programs. Therefore, a growing number of countries are considering significant pension reforms, and many countries have already undertaken such reforms. Although pension reform is usually unpopular, it seems that the necessity of undertaking it in many cases prevails over the popular sentiment.

The goal of this paper is to determine two things: what are the main reasons contributing to the decision to undertake pension reform, and conditional on that decision, what accounts for the profound differences in the degree of privatization of the pension systems. In order to answer these questions, I examine a sample of countries representative of the whole world, and run a series of models (logit and OLS) including economic, political, and demographic explanatory variables. It is important to say that this analysis builds on the research by Brooks and James (2001), and Brooks (2002). It reassesses their findings, but also expands on their work by including more observations.
of reforming countries due to widespread pension reforms in years since Brooks and James study has been done. In addition, several new hypotheses are tested, and this is an important contribution of this paper.

Although descriptive analysis, and in particular comparisons of the means of explanatory variables for reforming and non-reforming countries, clearly indicates profound (and statistically significant) differences between the two groups of countries, the main focus is on the regression analysis. It shows that two decisive factors for undertaking pension reform are path dependency (represented in the model by pre-existing occupational pension scheme variable) and regional diffusion. Having some kind of experience with a pension scheme different from the traditional pay-as-you-go one makes people more willing to accept major changes to the pension system. This would suggest that those countries that are not in dire fiscal need of immediate reform might introduce some kind of voluntary funded pension scheme as a supplement to the existing system. That way, these countries would allow their citizens to become familiar with and presumably less hostile toward major reform. In terms of regional diffusion, it seems that having successful reform examples in close proximity is by far the best way to promote pension reform. Therefore, the goal of international financial institutions that are strongly advocating pension reform should be to focus on establishing successful examples of such reform in regions where there are still no reformers, rather than promoting it in places like Latin America or Central and Eastern Europe where countries are already likely to reform.
Further factors important for the pension reform decision include implicit pension debt and the bottom quintile share of income. Finding that implicit pension debt has a relatively sizeable positive effect on pension reform decision reaffirms Brooks and James findings, though the magnitude is slightly smaller compared with their results. This is further evidence in support of the claim that the likelihood of pension reform grows with maturity and generosity of the system, which is reflected in implicit pension debt.

Significance of the lowest quintile share of income as an explanatory variable is important as this variable has not been used in previous studies to the best of my knowledge. Finding that the more egalitarian a society is, and consequently the more political power the poorest have, the less likely a country is to adopt a pension reform has important public policy as well as political implications. It points to the fact that poorer people perceive pension reform as a threat to their wellbeing, and in a situation where they can stop it, they are likely to do that. What should this hostility of the poorest toward the pension reform be attributed to is an interesting question. Proponents of the reform are likely to blame insufficient and ineffective promotion of pension reform, especially when it involves full or partial privatization of the system. They claim that pension reform, particularly the three pillar one, would not only preserve, but actually increase the benefits of poorer pensioners who are in most countries still subject to higher poverty rates than general population. On the other hand, opponents of the reform claim that the fears of less well-off do have ground. They point to the volatility of capital markets as opposed to the security of government backed promises of future benefits, and say that the possibility of higher returns does not offset negative effects of increased insecurity,
which is inherent to the new system. For them, privatizing pension system is simply a bad idea. Finally, there is a possibility that less well-off individuals have higher risk aversion. This means that the less an individual has, the less likely is to be willing to “trade” security for higher returns on money appropriated for her or his pension, and vice versa. Logically, this makes sense, as having a lower salary throughout career usually means accumulating less of wealth other than pension system promised benefits (like savings, life insurance, real estate), and consequently having less or usually no bailout options if there is a downturn in the capital markets. Unfortunately, there are still not enough people receiving benefits from the reformed pension system, so policy analysts cannot yet say which of the indicated explanations is valid, and to what extent. Nevertheless, finding that poorer people are reluctant to support pension reform is interesting and thought-provoking, and therefore deserves due attention both in further analysis of pension reform as well as in any policies dealing with this issue.

The relative importance of old-age dependency ratio in explaining why countries opt for pension reform suggests that conventional wisdom of demographic pressure as one of the main reasons for undertaking pension reform is true, but this is valid only to a limited extent. In fact, the old-age dependency ratio is not among the leading factors in making pension reform decision. First, it is just marginally statistically significant, and it has a relatively small magnitude in comparison with other explanatory variables. Second, whereas current demographic pressures might be playing some role in opting for pension reform, anticipated future demographic pressures (as represented by projected change in old-age dependency ratio) does not have any influence on the pension reform decision.
Therefore, demographic pressures play only a small role. As pension reform should primarily be responding to growing demographic problem of aging, this finding could be judged as undesirable from policy perspective. Coupled with significance of some other, in particular political, explanatory variables, this relatively small role of demographic trends suggests strong dominance of politics over policy in decision making process.

In the model explaining the degree of pension system privatization, it is interesting to note the significant differences in comparison with the model explaining pension reform decision. These differences support the claim that those two decisions, though in some respects connected, are essentially separate. The best example is implicit pension debt variable, which has the opposite sign in the two models, although it is statistically significant in both cases. Unlike its facilitating effect on the pension reform decision, implicit pension debt has a strong negative effect on the degree of pension system privatization. This has important policy implications as it suggests that countries with significant fiscal pressure associated with the pension system and pension reform (namely high anticipated transitional costs) are more likely to opt for a moderate pension reform and preservation of a significant pay-as-you-go component in the reformed system. In turn, this means that more significant changes to the existing system are possible in the countries with less developed pension systems. Thus developing countries are much more likely than developed ones to embark on considerable pension reform.

On the other hand, a pre-existing occupational scheme variable remains positive and strong in magnitude. This implies that introducing such a scheme would make people more likely to opt for higher degree of pension system privatization. Similarly, the Latin
American dummy stays statistically significant, positive, and large in magnitude, but unlike the previous model, the CEE and CIS dummy is statistically insignificant. This is a very interesting finding from a policy perspective as it implies that unlike the pension reform decision, the degree of pension privatization is not that strongly regionally dependent. Actually, one group of countries (Latin American ones) decided to copy regional examples not only in undertaking pension reform, but in the design of the reform as well, while in the other group (CEE and CIS countries), there are a variety of approaches to the pension reform with respect to the degree of privatization. It seems that while countries in the latter group are likely to follow their neighbors/regional leaders when it comes to making a decision whether to reform or not, they are likely to opt for a reform model they consider the best given their particular fiscal/economic/political situation. Economic performance of these countries suggests that such custom-designed reforms are superior to the generic ones, and should be encouraged among future reformers.

The variables savings rate and external debt are included in the model explaining the degree of pension privatization. Including them adds to the explanatory power of this model, unlike in the model explaining pension reform decision where they are left out from the final specification. Nonetheless, neither of the two is statistically significant. For the savings rate, this is the expected outcome based on findings in the relevant literature. On the other hand, countries undertaking pension reform often cite the Chilean example and use the goal of raising savings rate as one of the main reasons for pension reform. Obviously, this is a flawed argument for pension reform, but it seems that its political
appeal is such that governments use it even though it has no support in real world data. Insignificance of external debt variable is to some extent surprising, at least as much as one could have expected that international financial organizations and private investors from abroad would exert at least some influence in order to make pension reform happen and/or to shape it according to their needs. The results suggest that international financial pressures are not as important as they are often considered, and if true this is a very positive thing, because it shows that pension reform decision and design are the result of independent decisions by sovereign countries rather than something imposed by international organizations, foreign governments or private investors. Interestingly, and also contrary to the pension reform decision model, political freedom is statistically significant and positive, though small in magnitude. This would suggest that less democratic countries are, they are more likely to undertake significant privatization of their pension systems. Therefore, once a non-democratic government makes the decision to reform, it is likely that the reform will be far-reaching.

Finally, both demographic variables are insignificant showing that the proclaimed importance of demographic trends for pension reform design (as well as decision of undertaking it in the first place) is far from reality. In fact, it seems that governments use demographic trends more as a handy argument in support of the policy action they favor than a real argument. This trend is obviously dangerous, as it might backfire if people start to dismiss demographic trends (aging in particular) as a serious argument for pension reform due to politicians’ overuse of it, even once it becomes really important.
Conclusion

Pension system reform has become one of the most important economic and political issues in recent years. Consequently, this spurred interest of policy analysts who have been trying to evaluate different reform proposals as well as to determine factors contributing to the pension reform. Building on their analysis, and in particular analysis done by Brooks and James (2001), and Brooks (2002) this paper has focused on examining two questions:

1. What factors are relevant for the decision to undertake pension system reform?, and
2. Once reform has been undertaken, what is the relative significance of different factors with respect to the degree of pension system privatization?

In order to answer these questions I examined different economic, political, and demographic factors, and evaluated their contribution to the pension reform decision and the degree of pension privatization. The first question has been addressed with a logit model, while for the second one I deployed an OLS model.

The decision to undertake a pension reform is found to be strongly positively influenced by the existence of (successful) reforming countries in the region (peer influence), and path dependency, as represented by pre-existing occupational pension schemes. Further factors important for the pension reform decision are implicit pension debt, which is positively correlated with that decision, and the lowest quintile share of income, which is negatively correlated with it. The importance of the lowest quintile share of income variable is further emphasized by the fact that this is the first paper using
that concept to examine correlation between the poorest people’s political power and the pension reform decision. On the other hand, the insignificance of the variable savings rate once again reaffirms similar findings of the majority of relevant literature. Finally, this paper has dedicated special attention to demographic factors as explanatory variables for pension reform decision. Finding them relatively irrelevant confirmed initial expectations of the short time horizons governments have, and the fact that governments are likely to give preference to short term rather than long term issues despite relatively higher importance the latter issues might have for a country.

Results for the model explaining the degree of pension system privatization show that path dependency is a very important explanatory factor. The importance of the regional dummies is not unequivocal as in the case of the pension reform decision. Being a Latin American country is strongly positively correlated with the degree of pension privatization, but being CEE or CIS countries is not. It is interesting to note that implicit pension debt is significant and negatively correlated with the degree of pension privatization, which is opposite of its positive correlation with the pension reform decision. Therefore, the higher implicit pension debt is the more likely a country is to undertake pension reform, but the less likely is for this reform to be radical. As expected, the demographic variables and the savings rate are found statistically insignificant.
REFERENCES:


