

On the political economy of pension privatization. A cross-country study

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(Preliminary version. Do not quote.)

August 2007

Abstract

Redesigning the division between funded and unfunded pension provision is a core issue on the social policy agenda in affluent democracies. So far, much of the literature has been devoted to assess the pros and cons of pension privatization theoretically or to evaluate determinants of public pension expenditure. In contrast, this study questions: What determines the ability to shift pension provision toward funding? Any attempt to increase private pension provision creates a double payment problem. Current workers are required to continue financing the previous generation's benefits while simultaneously have to save for their own schemes. Quasi-irreversibility, as a mechanism of path dependence, predicts that implicit pension liabilities prevent governments from privatizing old age security. This paper aims to contribute to the literature in three aspects: First, it provides a new measure for cross-sectional comparisons of pension liabilities. Second, the statistical analysis shows that growing implicit pension liabilities slow down pension privatization and thereby confirms the quasi-irreversibility argument. Third, the analysis finds no evidence for patterns of partisan politics or blame avoidance in the process of pension privatization.

Keywords: Pension politics, Pension privatization, Implicit pension liabilities

JEL Classification Numbers: H55, D72

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1 Motivation

Redesigning the division of funded versus unfunded pension provision is a core issue on the social policy agenda in developed welfare states. Politicians and economists alike know, that under current social security rules population aging will put severe pressure on the fiscal sustainability of public pension schemes. So far much of the debate has been devoted to assess the pros and cons of pension privatization from a theoretical perspective (Diamond 1993, Feldstein 1998, Barr 2002). International institutions such as the World Bank (1994) and the European Commission (2003) have provided detailed reform templates with the aim of moving pension provision toward multi-pillar systems, that combine funded and unfunded schemes. Although the World Bank template served as a role model for pension reforms in Latin America and Eastern Europe, the concept had little impact in developed welfare states where comprehensive public pension systems were in place already.

This contribution tries to avoid normative judgments on what might be an optimal policy. Instead it focuses on the political economy of pension privatization. In a democracy any pension reform proposal has to survive the political decision making process. Qualitative research on recent pension reforms shows that these proposals tend to experience major changes during the political processes (Immergut & Anderson 2007). Reform ideas change shape or get dropped completely. There are good reasons to assume that politics is central to pension privatization. Disney (2003) distinguishes two types of pension reform: Parametric versus funding reforms. Parametric reforms change contribution rates and benefits or move unfunded systems toward greater actuarial fairness by strengthening the link between contributions and pension benefits. Funding reforms change the division of private and public responsibility for old age security by increasing funded pension provision.

In recent years pension funds played an increasing role in delivering retirement income security. Pension funds have gained the status of institutional investors. These are

specialized financial institutions that manage savings collectively on the behalf of small investors toward a specific objective with respect to acceptable risk, return maximization, and maturity of claims (Davis & Steil 2001, p.12). Pension funds help individuals to accumulate savings over their working life in order to finance their consumption needs in retirement. They collect, pool, and invest funds contributed by sponsors and beneficiaries to provide future pension entitlements (Davis & Steil 2001, p.15). Pension funds are sponsored by the employer or take the form of personal contracts between individuals and insurance companies. Returns may be purely dependent on the market (defined contribution funds) or may be overlaid by a guaranteed rate of return (defined benefit funds).

This study does not differentiate between the design of funded schemes. The "privateness" or mix of funded vs. unfunded old age security provision is measured as the ratio of pension fund assets per public pension expenditure. Table 1 presents the development of the private public ratio for OECD countries in the last two decades. The figures show considerable variation between countries and in time. Why, for example, is the average private public ratio in Canada 20 times higher than in Germany? And why did it increase in the USA by 77 percent while it decreased in Norway by 19 percent during the same period? This paper seeks to answer these questions with the means of quantitative research. It investigates institutional and political determinants of pension privatization in developed welfare states.

- Table 1 about here -

The paper proceeds as follows: The next section presents two alternative theoretical explanations for pension privatization. The third section re-estimates accrued-to-date pension liabilities based on the methodological framework provided by van den Noord & Herd (1993). Section four presents the operationalization, estimation strategy and the data employed in the regression analysis. The fifth section presents and evaluates the estimation results. The last section concludes.

2 Theory

In order to analyze why some governments choose more private pensions than others, this section outlines two alternative politico-economic explanations (for alternative accounts see James & Brooks (2001) and Brooks (2002)). The first emphasizes the long term costs of unfunded pension schemes while the latter stresses the relevance of domestic political institutions for the process of pension privatization.

2.1 Path dependence

A particular way of understanding pension privatization is through mechanisms of path dependence. Path dependence assumes that options available for policy makers are constrained by the costs of the inherited unfunded scheme. Myles & Pierson (2001, p.306) claim that pension policy is the *locus classicus* for the study of path dependent processes, processes in which early choices constrain reform options in the future. However, there is now doubt that “history matters” for the conduct of any welfare reform. So what is it that makes path dependence an issue for pension privatization?

Path dependence is usually believed to be made up by self-reinforcing mechanism (David 1985, Arthur 1989, Pierson 2000). Contrary to the neo-classical economic theory, which assumes a world of decreasing marginal returns, path dependent processes generate increasing returns which allows for multiple equilibrium. Arrow (2003) takes a different view. He argues that irreversibility of investment, not increasing returns, is at the root of path dependence. Path dependence emphasizes that the long-term historical evolution of an system depends on where it started. “The crucial point is, that the effect of these initial conditions or disturbances is essentially permanent; it does not vanish with time (Arrow 2003, p.23).” All examples that seem to imply that path dependence is a consequence of increasing returns also involve irreversibility of investment, such as the irreversibility of human capital in the QWERTY type writer example. Or as Arrow

(2003, p.28) puts it: “If (...) typists had to relearn their keyboards at short interval, none of the lock-in, path-dependent character of economic history would be present.”

The irreversibility-of-investment argument can be applied to pension reform. Any proposal to shift from unfunded to funded pensions creates a double payment problem. Current workers are required to continue financing the previous generation’s pension benefits while simultaneously they have to start saving for their funded private schemes (Myles & Pierson 2001, p.313). These financial obligations must be taken into account when thinking about moving the private public mix toward funding. Hence, the double payment problem restricts the room for new funded pension instruments in mature systems (Starke 2006, p.110). If the cost of the double payment problem outweighs the potential benefits from shifting toward funding, no reform will take place. Implicit pension liabilities are a useful concept to measure the costs of the double payment problem (Holzmann, Palacios & Zviniene 2001). Increasing funded pension provision makes the implicit liabilities of unfunded scheme explicit.

Brooks (2002, p.509) argues that path dependence predicts the implicit pension liabilities to have a negative impact on the private public ratio of pension provision. Although we might have expected this finding, it does not necessarily prove quasi-irreversibility. Ex-ante, funded and unfunded pensions are alternative financing methods for retirement income provision. The saving technique however is independent from the share of income someone devotes to consumption in retirement. The life cycle theory on saving behavior (Feldstein 1976) predicts a trade-off between funded and unfunded pension saving and therefore comes up with the same conclusion (Davis & Steil 2001). Large implicit pension liabilities indicate a larger share of unfunded pensions. Hence, implicit pension liabilities are expected to have a negative effect on the private public ratio. However, this does not prove the existence of path dependence in pension privatization.

What makes implicit pension liabilities to an argument for quasi-irreversibility is not

its effect on the scope, but on the ability and speed of pension privatization. The essence of the argument is: Assuming the political desire for pension privatization, the costs of replacing the existing unfunded scheme prohibit any reform. Without path dependence we would expect to find a “catch up” effect for countries with a small share of funded pension provision. If there is quasi-irreversibility of investment, the implicit liabilities should have a negative effect on the growth rate of the private public ratio. Instead, Brooks (2002, p.509) hypothesizes that implicit pension liabilities have a positive effect on the likelihood of pension privatization, as large liabilities put pension privatization on the top of the political agenda. If we take the theory of path dependence seriously, this is exactly the opposite of what the quasi-irreversibility argument predicts.

- (H1) Alternative pension saving: Pension liabilities have a negative effect on the private public mix of pension provision.
- (H2) Path dependence: Pension liabilities have a negative effect on the growth rate of the private public mix.

2.2 Pension politics

Public pensions redistribute among and within generations. The private public mix of pension provision might be a result of differences in the distribution of political power among social classes (Galasso 2006, p.41). The power resource theory (Korpi 1983) predicts that trade unions and left wing governments increase public pension expenditure. Pension privatization might clash with political preferences for income redistribution. Comparative research on citizen’s preferences toward income redistribution has shown considerable cross-country variation (Boeri, Börsch-Supan & Tabellini 2001, Alesina & Angeletos 2003, Alesina & Glaeser 2004). Respondents from continental Europe and Scandinavia are more likely to favor governmental responsibility for old age security. This finding is particularly strong with respect to preferences for funded vs. unfunded

pension provision. Since funded pension are less redistributive, the power resource approach predicts that left wing governments are less likely to privatize.

Social and political actors have played an important role for the expansion of the welfare state. By the mid 80's demographic and economic changes have shifted the policy debate toward retrenching the welfare state. Pierson (1994) claims that policies of welfare retrenchment are not just the mirror image of welfare state expansion. During the times of welfare expansion, political parties have been eager to claim electoral credit for new programs and more generous schemes (Myles & Pierson 2001). Welfare retrenchment policies are unpopular because they tend to create losses on relatively large groups (e.g. pensioners) and create only diffuse and uncertain gains (Galasso 2006, p.53). Hence, pension privatization is likely to be a game of blame avoidance. Weaver (1986) hypothesizes that given public resistance to privatization, politicians will attempt to avoid electoral backlashes by making cuts less transparent or to diffuse blame by bringing other key political players on board. A larger number of parties in the government would increase the possibility for blame avoidance through blame sharing. This makes pension privatization more likely. The veto player approach (Tsebelis 1999) predicts the opposite. A larger number of political parties in the government decreases the possibility to achieve substantial reform as executives have to make more compromises on their reform proposals in order to gain legislative support. In short, there is no clear hypothesis on the role of governmental fractionalization for pension privatization.

- (H3) Government ideology: Left wing governments are less likely to increase the private public ratio.
- (H4) Government fractionalization: Higher government fractionalization has a positive/negative effect on the private public ratio.

2.3 Literature Review

Deken & Kittel (2006) point out that the political economy of pension reform can not be studied without taking into account the development of private pensions. Although there is a relatively large literature on the political economy of pension politics, the vast majority of these studies investigate determinates of public pension expenditure (Lindert 1996, Breyer & Craig 1997, Mulligan & Sala-i-Martin 1999, Deken & Kittel 2006, Disney 2007). They all find that pension expenditure per GDP increases with a larger proportion of elderly people in the society, but have little to say about the impact of aging on pension privatization. This paper takes advantage of improved data collection and documentation on institutional investors by the OECD. Davis & Hu (2005) and Bailliu & Reisen (1997), focus on macroeconomic effects of pension privatization. They investigate the link between funded pensions and aggregate saving.

So far there has been very little quantitative research on the political economy of pension privatization. An exception is the work by James & Brooks (2001) and Brooks (2002). James & Brooks (2001) investigate the effect of pension liabilities on the private public mix in pension provision and the likelihood of a structural pension reform. James & Brooks (2001, p.138) hypothesize that a larger implicit pension debt increases the probability or speed of a major reform but decreases the scope of privatization. Their empirical analysis supports the hypothesis. They find that the implicit pension debt has negative effect on the private public mix, while a larger amount of implicit pension debt increases the likelihood of a reform.

Their results can be criticized for conceptual and methodological reasons. First, in order to estimate the likelihood of pension privatization James & Brooks (2001) use a dummy-coded dependent variable. They consider countries to have adopted a funding reform if the government has established a funded pillar. The coding of such a dummy leaves a lot of room for subjective evaluations of pension reforms. Chile is the most prominent example for a large scale funded pension system. Hence, in their cross-

sectional dataset the reform dummy takes the value one for Chile. Britain is coded one as well. However, it seems to be difficult to find any similarities in the economic or political circumstances under which these reforms took place. Moreover, in pension politics it can take years or even decades before the consequences of a reform fully materialize. Hinrichs & Kangas (2003) show how a series of small, not-system-shifting reforms can alter basic characteristics of the old-age security systems. Therefore, it is not advisable to rely on a dummy variable that measures structural pension reform.

Second, James & Brooks (2001) sample consists of up to 64 countries, including developing and developed countries. 19 of those countries are regarded as having undergone a funding reform. However, more than half of those reform countries are developing countries. Conclusions drawn from this sample might have limited explanatory power for the political economy of pension privatization in mature Western welfare states. Since path dependence explicitly addresses reform ability in mature welfare states, developing countries should be excluded from the dataset.

Third, James & Brooks (2001) rely on two sources of data for implicit pension debt measures: van den Noord & Herd (1994) and Kane & Palacios (1996). The consistency of these measures is questionable since both authors use a different methods for estimating implicit pension liabilities. Moreover, the figures for pension liabilities and funding reform relate to different points in time. Estimates for implicit pension liabilities in the United Kingdom are based on the year 1990 while the pension reform has taken place in 1985. For countries with no figures on implicit pension liabilities, James & Brooks (2001, p.140) employ linear imputation methods. The article by Brooks (2002) uses the same dataset and comes up with the same conclusion.

This contribution seeks to compensate for these shortcomings by using a cross-sectional time-series approach including up to 21 OECD countries. The next section sets out a simple methodical framework to measure the development of implicit pension liabilities.

3 Measuring pension liabilities

In unfunded systems each generation pays pensions to previous generations and later receives pensions from younger generations. Unfunded pensions inevitably involve an implicit type of government debt that is introduced when the system is phased in (Werding 2005). During this period, pension benefits are given to individuals of retirement age who have not - or at least not over their entire life span - contributed to financing the scheme. Moving toward funding makes the implicit debt of unfunded schemes explicit. Testing (H1) and (H2) requires knowledge about the costs of switching toward funded pension.

Different definitions, assumptions, and methodologies confuse the measurement of pension liabilities. The two main concepts are accrued-to-date liabilities and open-system-liabilities. Accrued-to-date liabilities present the accrued rights that current workers have in the unfunded system at the present time. Hence, it measures outstanding benefit entitlements as if the system were closed for new accruals starting the next year. Open-system-liabilities present the value of the future cash flows deficit, taking into account all benefits and contributions of current and future affiliates (James & Brooks 2001, p.139). This study re-estimates accrued-to-date pension liabilities.

Accrued-to-date pension liabilities present the sum of pension entitlements under the assumptions that the pay-as-you-go system stops immediately (Franco, Rosaria & Zotteri 2004). This measure is most suitable to capture the costs of switching toward funded pensions. It is important to bear in mind that accrued-to-date liabilities do not provide any information whether the pay-as-you-go system is unbalanced or will be unbalanced in the future. Judgments about the sustainability of a pension system requires estimates about the resources available to pay for the accrued pensions (Franco et al. 2004). Accrued-to-date pension liabilities do not include such information. However, the larger the ratio of pensions liabilities to GDP, the higher is the share of future resources committed to pensions. And the higher the share of future resources commit-

ted to pensions, the higher is the risk of a pension crisis if GDP growth is not adequate. In contrast to conventional debt measures, pension liabilities are relatively sensitive to changes in the assumptions. The stylized system approach presented in the next section makes strong assumptions about the design of public pension schemes. At the same time this will help to keep assumption at a minimum.

3.1 Stylized system approach

The methodological framework to estimate accrued-to-date pension liabilities is taken from van den Noord & Herd (1993) and Franco et al. (2004). Van den Noord & Herd (1993) simulate pension liabilities for a single year - 1990. This section modifies their approach in order to generate cross-sectional time-series data on pension liabilities in OECD countries from 1980 to 2003. The approach does not take into account possible new obligations or future income from contributions or interest, it does not account for disability and survivor pensions and it does not differentiate for females and males. Although this is a very rough measure, which does not help to make any country-specific reform recommendations, it should provide reliable data for the purpose of a cross-country studies.

The population of a country is broken down into five-year age cohorts ($j=20-24, 25-29, \dots, 94-99, 100+$). The pension liabilities of any age group are defined by the size of the age group and the average pension benefit to which persons in this age group are entitled given their number of contribution years. By assumption, individuals enter the labor force at the age of twenty, the standard retirement age is 60, and the number of years of contribution required for a full pension is forty. Accrued-to-date liabilities (L) present the present value of pensions to be paid on the basis of accrued rights if the system were closed. Accrued-to-date liabilities consist of two components; present pensioners liabilities (LP) and present worker liabilities (LW). The value of present

pensioners liabilities is the following (Franco et al. 2004):

$$LP(t) = \sum_{J=\underline{J}}^{\infty} N_j^P B^P \sum_{i=t}^{\infty} S_{i,j}^P \quad (1)$$

where \underline{j} is the minimum pension age, N_j^P is the number of pensioners of age cohort j in year t , B^P is the average pension paid to pensioners in year t and $S_{i,j}^P$ is the rest live expectancy of age cohort j at year t . The average pension benefit is defined as total cash public pension expenditure divided by the number of people aged 65 and older. The rest life expectancy is computed by subtracting the average cohort age from the average life expectancy. Cohorts older than the average life expectancy are assumed to live for one more period. The value of present workers liabilities (LW) is computed by:

$$LW(t) = \sum_{J=\underline{J}}^{\infty} N_j^W Q_j^W \sum_{i=t}^{\infty} S_{i,j}^W \quad (2)$$

N_j^W is the number of workers of age cohort j in year t , Q_j^W is the pension paid at retirement age to workers of age cohort j on the basis of their number of contribution years. It is supposed the individuals enter the work force at the age of 20 years. $S_{i,j}^W$ is the expected number of year receiving pension benefits based on the life expectancy and the minimum pension age. The pension entitlements accrue at a constant rate of $\frac{1}{9}$ every five years. Moreover, there is no minimum contribution period required for eligibility. Therefore Q_j^W is computed by multiplying the average pension benefit with the factor for average cohort contribution years. The total accrued-to-date pension liabilities are:

$$LT(t) = LP(t) + LW(t) \quad (3)$$

In order to get a standardized measure for pension liabilities, $LT(t)$ is divided by GDP. The data on pension expenditure is taken from the OECD Social Expenditure Database (2007). Demographic data comes from the United Nations Population

Prospect (2007).

3.2 Re-estimation results

Prior cross-country figures for pension liabilities have been estimated by Hagemann & Nicoletti (1989), van den Noord & Herd (1993), Kuné, Petit & Pinxt (1993), Chand & Jaeger (1996) and Roseveare, Leibfritz, Fore & Wurzel (1996). Columns 1 to 4 in Table 2 present their results with respect to the base year 1990. Comparing their figures shows large differences in the absolute size of pension liabilities; e.g. for France Chand & Jaeger (1996) estimate 265 percent of GDP while Kuné et al. (1993) estimate pension liabilities to be 69 percent of GDP. These differences in levels are mainly due to different assumptions about accruing pension entitlement, how to discount future benefits and if an open system or closed system approach has been used. However, although the differences in level are large, the relative rank of countries remains almost unchanged. Column 5 in Table 2 presents the re-estimation results based on the modified van den Noord & Herd (1993) stylized system approach. Comparing the re-estimated accrued-to-date pension liabilities in 1990 with prior estimates shows three things: First, differences in levels result from the fact that I do not discount for future benefits. Prior studies assumed that only people at retirement age are entitled to receive pension benefits. Therefore they had to make assumptions about the development of benefit generosity and the inflation rate. In order to keep assumptions to a minimum it is assumed that each worker and pensioner receives his total amount of entitlements paid out on the day the system closes. Second, and more important, the relative ranking of countries confirms prior findings. Third, differences in the absolute size of pension liabilities between countries are less strong.

- Table 2 about here -

Following prior studies I use a very simplified methodology in which the result turns out to be a multiple of current pension expenditure per GDP. Frederiksen (2001) shows

that the relative position of countries remains the same ranked on the basis of pension expenditure per GDP or on the basis of pension liabilities per GDP. In general, countries with higher levels of pension expenditure are those with higher levels of accrued-to-date pension liabilities. Figure 1 shows the relationship between pension liabilities and public pension expenditure. Differences between pension liabilities and pension expenditure per GDP reflect the maturity of the schemes and structural issues. Pension liabilities tend to be larger in countries with mature systems, an older population and more generous pension benefits. Pension expenditure per GDP provides a better indication about the permanent costs of public pensions, while accrued-to-data liabilities measure the costs of closing down a pay-as-you-go scheme. Therefore, this is the adequate variable to evaluate the costs of pension privatization.

- Figure 1 about here -

Figure 2 shows the development of pension liabilities for the seven major OECD economies between 1980 and 2000. The graphs show that pension liabilities cluster into two groups; continental European countries with large public insurance systems and Anglo-American countries with minimum public pension schemes. However, the impact of population aging is almost identical in all countries, only in Canada the increase of pension liabilities is less steep. Figure 3 shows the simulation of pension liabilities in the next twenty years. The simulation is based on the population projection by the United Nations Population Prospect (2007). It assumes that pension expenditure and GDP grow constantly at 2 percent across countries. The graphs indicate that all countries will face a substantial increase in accrued-to-date pension liabilities in the next decade. Table 3 in the appendix summarizes the development of accrued-to-data liabilities within the last 20 years.

- Figure 2 and 3 about here -

4 Regression analysis

This section investigates the effects of pension liabilities and partisan politics on the private public mix of pension provision employing cross-sectional time-series regression.

4.1 Dependent variable

The “privateness” of old age security provision is captured by a variable measuring the ratio of pension fund assets per public pension expenditure. This measure serves as a proxy for the division between funded and unfunded pension provision. A higher private public ratio indicates a move toward pension privatization. Employing the private public ratio as a measure for pension privatization has various advantages. Prior research relied on cross-sectional data and ad-hoc measures provided by international organizations such as the World Bank. In testing hypothesis derived from path dependence a cross sectional approach might be of little use. The private public ratio provides cross-sectional and time-series information on the development of private pensions. Moreover, it is a continuous variable so that the analysis does not have to rely on a categorical measure for privatization, which tend to involve subjective judgments on the design of old age security systems.

4.2 Independent variables

Accrued-to-date pension liabilities are used to test (H1) and (H2), which predict that larger pension liabilities have a negative effect on the private public mix and a negative effect on the growth rate of the private public mix. Accrued-to-date liabilities proxy the obligations of the old pension system that remain and must somehow be financed when a country makes a transition from unfunded pay-as-you-go system to a new system with a funded private scheme (James & Brooks 2001). Governments that decide to reform their pension systems could finance the double payment problem by raising the

tax rate or making public debt. However, from a politico-economic perspective both options have some undesirable consequences. Raising taxes is in general unpopular and might boost the black market economy. For Western European countries the Maastricht criteria limits the ability to increase public debt. Moreover, integrated financial markets penalize unsound fiscal policy (Holzmann et al. 2001). In order to control for this reform strategy the analysis employs a measure for public debt, which is expected to have a positive effect on the private public ratio. The data on central government debt per GDP is taken from the World Development Indicators Database and the OECD Statistics on National Accounts.

Other variables employed in the statistical models are taken from the literature on politico-economic pension models, which assume that individuals vote for the pension system that promises them the largest lifetime utility. Browning (1975) shows that in a democracy electoral outcome can yield inefficiently high levels of public pension expenditure. The opposite might apply to the level of private pension expenditure. A society adopts a pay-as-you-go system if its real rate of return exceeds the interest rate. Therefore it is assumed that the inflation rate has a negative effect on the private public ratio, while the interest rate should have the opposite effect. A high interest rate indicates larger returns on private pension saving. In order to control for the macroeconomic development the statistical model includes GDP growth rate. Data for the inflation rate and GDP growth is taken from the World Development Indicators Database. Data for the interest rate is taken from the World Development Indicators Database and OECD National Accounts.

Rodrik (1998) argues that government spending plays a risk-reducing role in economies exposed to international market competition. He finds a positive correlation between trade openness and welfare spending. Trade openness is measured as exports plus imports divided by GDP. With respect to pension privatization Rodrik's (1998) approach predicts that trade openness has a negative effect on the private-public

ratio. The Data is taken from the Penn World Tables. The effect of partisan politics is captured by two dummy variables indicating a left wing or right wing government. A measure for government fractionalization should help to evaluate the potential for blame avoidance in pension privatization. The political variables are taken from the World Bank Database of Political Institutions (2005).

4.3 Estimation strategy

Many decisions in pension politics have little immediate effect but cumulate over time. The development of pension liabilities in mature welfare states is an example for such a process. Investigating the effect of pension liabilities on the private public mix of pension provision requires a statistical model that focuses on long term effects. In order to test (H1) and (H2) variants of the following regression equation are estimated:

$$y_{i,t} = \beta_0 + \beta_1(ADL_{i,t}) + \beta_2(x_{i,t}) + \epsilon_{i,t} \quad (4)$$

where $y_{i,t}$ denotes for private-public ratio or the growth rate of the private-public ratio in country i at time t . ADL measures accrued-to-date pension liabilities per GDP and variables included in x account for the macroeconomic and political controls. $\epsilon_{i,t}$ is a two way error component accounting for country fixed effects and the time trend. Coefficients are estimated by OLS and heteroscedasticity robust standard errors. All variables included in the regression equation are averaged over a 5-year period.

Kittel & Obinger (2003) argue that an estimation strategy that focuses on long-term effects is less suitable for exploring the effect of political variables on welfare expenditure. Once social programs are in place policy makers can only make marginal changes to them at best. A new government is more likely to change the growth rate rather than the level of the private public ratio. Following Kittel & Obinger (2003) and Allan & Scruggs (2004) I estimate a pooled dynamic model of first difference changes in the dependent variable. First differencing is also necessary because preliminary tests

show problems with stationarity. In order to test (H3) and (H4) variants of the following regression equation are estimated:

$$\Delta y_{i,t} = \beta_0 + \beta_1(\Delta y_{i,t-1}) + \beta_2(y_{i,t-1}) + \beta_3(POL_{i,t}) + \beta_4(x_{i,t}) + \epsilon_t \quad (5)$$

This second model employs annual data, where *POL* measures government ideology or government fractionalization. Variables included in *x* account for the macroeconomic and political controls. Table 4 in the appendix presents the definition and source of the variables employed in the regression analysis.

5 Empirical results

This section presents the results of the regression analysis. However, one should note that the dataset suffers from an unbalanced panel structure. Nevertheless, the estimation coefficients can give interesting insights to the political economy of pension privatization.

5.1 Long-term effects

To start with, figure 4 shows a strong negative relationship between implicit pension liabilities and the private public mix of pension provision. James & Brooks (2001, p.150) find the same negative relationship within their dataset, although they were using different measures for pension liabilities and the private public mix.

- Figure 4 about here -

Estimation results for testing (H1) are presented in Table 7. It shows that the implicit pension debt has a strong and statistically significant negative effect on the share of funded pensions. The time trend and GDP growth have a positive effect on the development of the private public mix. This result confirms the estimation results

presented by James & Brooks (2001, p.149) and Brooks (2002, p.511). It reflects conventional economic wisdom, that societies face a trade off in deciding how much of their resources for old age security should be devoted to funded or unfunded pension schemes. The inflation rate and the interest rate have no statistically significant impact. Trade openness has a negative effect on the private public mix. This finding supports Rodrik (1998), who argues that more open economies have larger public spending. With respect to pension we see that more open economies have less private pension expenditure. The central government debt has a negative and statistically non-significant effect on the private public ratio. Hence, even after controlling for government debt and trade openness pension liabilities have a negative effect on the private public ratio.

- Table 7 and 8 about here -

Estimation results for testing (H2) are presented in Table 8. The coefficient for implicit pension debt is negative and statistically significant. This result indicates that larger implicit pension liabilities hinder countries to catch up with the development of pension privatization in other countries. The long term development of pension liabilities presents a case of quasi-irreversibility of investment. Only GDP growth has a statistically significant and positive effect on the growth rate of the private public ratio. The interest rate has a slightly non-significant positive effect on the private public ratio. This finding is in line with the efficiency considerations in pension economics.

5.2 Short term-effects

Table 9 presents estimation results for political determinates on the private public ratio. First, the results indicate a strong autocorrelation in the development of the private public ratio. The coefficients for the elderly ratio is statistically significant and negative. A negative coefficient for the elderly ratio indicates that societies with a larger share of elderly are less likely to privatize pension. This findings might have

severe consequences for the pensions reform debate, as a reform is getting less likely with demographic change. The interest rate has a positive but statistically non-significant effect on the private public ratio. Estimation coefficients for the inflation rate are statistically significant and negative. Both findings are in line with the hypothesis that high inflation makes private saving less attractive while high interest rates facilitate private pension saving.

- Table 9 about here -

The political variables do not contribute in explaining the variance in the private public ratio, although the prefix indicates a partisan politics effect the estimation coefficients are not statistically significant. The estimation coefficient for government fractionalization is negative but not statistically significant. These findings indicate, that the role of domestic political actors in pension privatization can not be sufficiently explained by patterns of partisan politics nor blame avoidance.

6 Concluding Remarks

This paper seeks to provide empirical insights to the political economy of pension privatization. Based on a modification of van den Noord & Herd (1993) stylized system approach, it presents new cross-sectional time-series data on accrued-to-date pension liabilities. The empirical analysis reveals that implicit pension liabilities have a negative effect on the share of funded pension (H1) and on the growth rate of the private public ratio (H2). This finding stands in sharp contrast to James & Brooks (2001) and Brooks (2002). It indicates that the costs of moving toward funded pensions hinder pension privatization in mature welfare states. With respect to political actors the analysis provides no evidence for a substantial impact of government ideology nor government fractionalization in pension privatization.

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Appendix

Table 1: Private public ratio

| Country | Private public ratio* | | |
|----------------|-----------------------|-------|-------|
| | 1990 | 2000 | Delta |
| Australia | 7.64 | 9.44 | 1.80 |
| Austria | 0.09 | 0.38 | 0.28 |
| Belgium | 0.58 | 0.93 | 0.35 |
| Canada | 6.99 | 8.51 | 1.52 |
| Denmark | 3.05 | 4.08 | 1.03 |
| Finland | m | 1.23 | m |
| France | m | 0.63 | m |
| Germany | 0.42 | 0.35 | -0.07 |
| Greece | m | 0.00 | m |
| Iceland | 14.35 | 24.83 | 10.48 |
| Ireland | m | 19.59 | m |
| Italy | 0.40 | 0.20 | -0.20 |
| Japan | 4.55 | 2.55 | -2.00 |
| Korea | 2.88 | 1.02 | -1.85 |
| Mexico | m | 3.87 | m |
| Netherlands | 14.14 | 16.97 | 2.83 |
| New Zealand | m | 2.05 | m |
| Norway | 0.97 | 0.79 | -0.18 |
| Portugal | 0.63 | 1.40 | 0.77 |
| Spain | 0.56 | 0.59 | 0.03 |
| Sweden | 0.24 | 0.70 | 0.46 |
| Switzerland | 10.05 | 11.07 | 1.02 |
| United Kingdom | 7.50 | 8.15 | 0.65 |
| United States | 9.06 | 16.04 | 6.98 |

Note: * Pension fund assets divided by total public pension expenditure; m = missing

Table 2: Prior estimations results for public pension liabilities

| | Noord et al. (1993) | Chand et al. (1996) | Kume et al. (1993) | Roseveare et al. (1996) | ADL (2007) |
|----------------|------------------------|------------------------|-----------------------|----------------------------|---------------|
| Canada | 121 | 94 | n.a. | 204 | 35 |
| France | 216 | 265 | 69 | 318 | 65 |
| Germany | 157 | 221 | 122 | 348 | 62 |
| Italy | 242 | 357 | 107 | 401 | 58 |
| Japan | 162 | 166 | n.a. | 299 | 39 |
| United Kingdom | 156 | 117 | 42 | 142 | 32 |
| United States | 113 | 108 | n.a. | 163 | 36 |

Note: Figures refer to pension liabilities in 1990.

Figure 1: Pension liabilities and pension expenditure (1980-2003)

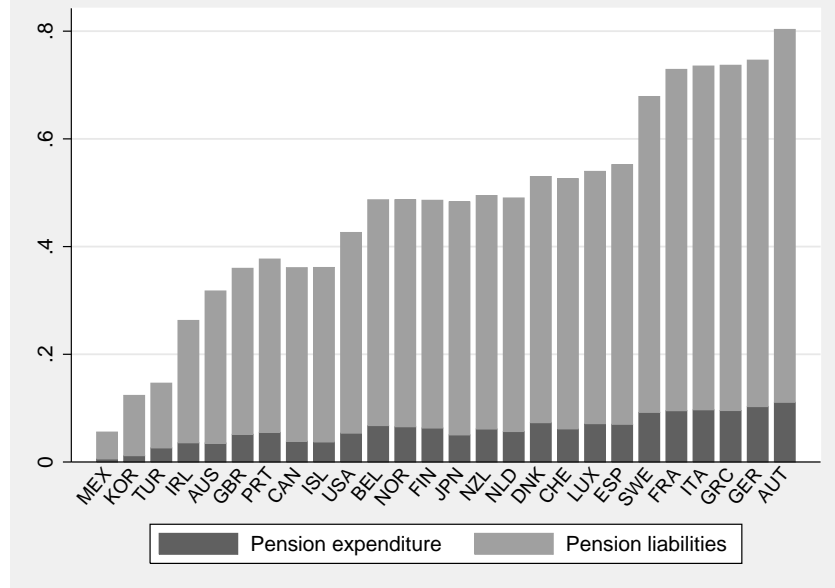


Figure 2: Pension liabilities in seven major OECD countries (1980-2000)

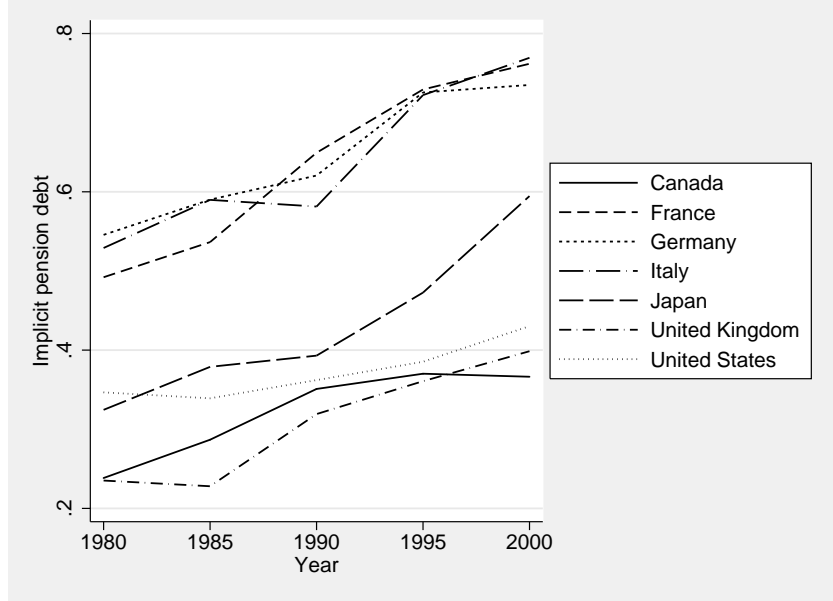


Figure 3: Pension liabilities in seven major OECD countries (2000-2020)

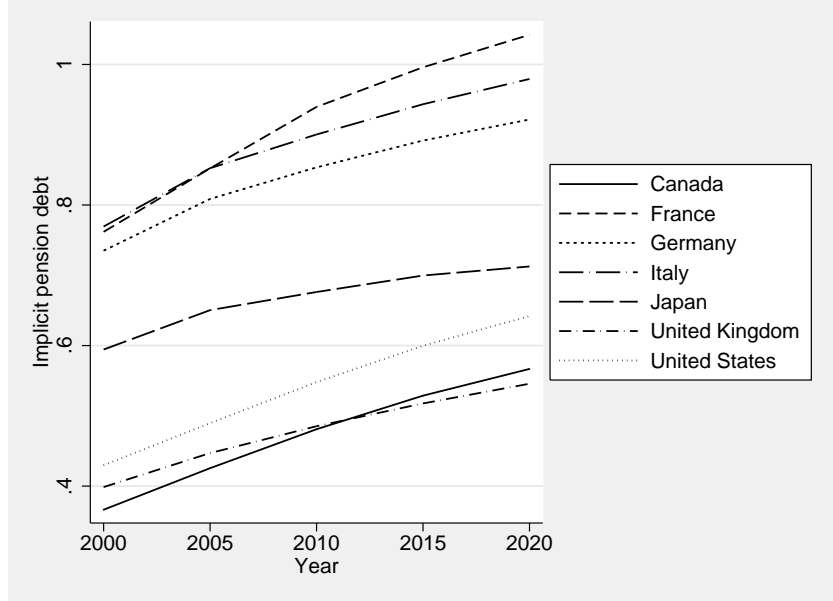


Table 3: Pension liabilities per GDP

| Country | Pension liabilities | | |
|----------------|---------------------|------|-------|
| | 1990 | 2000 | Delta |
| Australia | 0.27 | 0.35 | 0.08 |
| Austria | 0.71 | 0.92 | 0.21 |
| Belgium | 0.44 | 0.48 | 0.04 |
| Canada | 0.35 | 0.37 | 0.02 |
| Denmark | 0.46 | 0.50 | 0.04 |
| Finland | 0.49 | 0.41 | -0.07 |
| France | 0.65 | 0.76 | 0.11 |
| Germany | 0.62 | 0.73 | 0.11 |
| Greece | 0.69 | 0.78 | 0.09 |
| Iceland | 0.30 | 0.35 | 0.05 |
| Ireland | 0.21 | 0.22 | 0.01 |
| Italy | 0.58 | 0.77 | 0.19 |
| Japan | 0.39 | 0.59 | 0.20 |
| Korea | 0.07 | 0.11 | 0.04 |
| Mexico | 0.04 | 0.08 | 0.04 |
| Netherlands | 0.45 | 0.44 | -0.01 |
| New Zealand | 0.47 | 0.40 | -0.07 |
| Norway | 0.44 | 0.52 | 0.08 |
| Portugal | 0.31 | 0.50 | 0.19 |
| Spain | 0.53 | 0.58 | 0.05 |
| Sweden | 0.61 | 0.71 | 0.10 |
| Switzerland | 0.45 | 0.57 | 0.12 |
| United Kingdom | 0.32 | 0.40 | 0.08 |
| United States | 0.36 | 0.43 | 0.07 |

Note: Author's calculations.

Table 4: List of variables, definition and source

| Variable | Definition | Source |
|----------------------|---|---|
| Private public ratio | Pension fund assets divided by total public pension expenditure (Mio \$ US) | OECD Social Expenditure Database, OECD Institutional Investors Database, OECD Global Pension Statistics |
| GDP growth | GDP growth (annual %) | World Development Indicators |
| Inflation rate | Inflation, GDP deflator (annual %) | World Development Indicators |
| Interest rate | Interest rate spread (lending rate minus deposit rate) | World Development Indicators; OECD National Accounts |
| Elderly ratio | Share of the elderly (65+) as a percentage of the total population | OECD Labor Force Statistic |
| Trade openness | Exports plus Imports divided by GDP | Penn World Tables |
| Central gov. debt | Central government debt per GDP | OECD National Accounts |
| Left | 1 if the executive belongs to a party of the left and 0 if right wing or centrist | Database of Political Institutions |
| Right | 1 if the executive belongs to a party of the right and 0 if left wing or centrist | Database of Political Institutions |
| Government frac. | Government fractionalization (the probability that two random draws would produce legislators from different parties) | Database of Political Institutions |

Table 5: Summary statistics (long term)

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------------------------------|-----|------|-----------|-------|-------|
| Private public ratio | 80 | 5.17 | 5.84 | 0.00 | 24.83 |
| Private public ratio growth rate | 56 | 0.26 | 0.53 | -0.54 | 1.75 |
| Pension liabilities | 80 | 0.44 | 0.18 | 0.05 | 0.92 |
| Inflation rate | 78 | 0.04 | 0.03 | -0.01 | 0.25 |
| Interest rate | 80 | 0.05 | 0.02 | 0.00 | 0.12 |
| GDP growth | 80 | 0.03 | 0.01 | 0.00 | 0.08 |
| Trade openness | 80 | 0.67 | 0.32 | 0.18 | 1.72 |
| Central government debt | 77 | 0.00 | 0.00 | 0.00 | 0.01 |
| Time trend | 80 | 3.51 | 1.30 | 1.00 | 5.00 |

Table 6: Summary statistics (short term)

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|------------------------------|-----|------|-----------|-------|-------|
| Private public ratio | 228 | 4.78 | 5.38 | 0.00 | 20.65 |
| GDP growth | 228 | 0.02 | 0.02 | -0.02 | 0.06 |
| Elderly ratio | 228 | 0.15 | 0.02 | 0.11 | 0.19 |
| Inflation rate | 226 | 0.03 | 0.02 | -0.01 | 0.13 |
| Interest rate | 223 | 0.04 | 0.02 | -0.01 | 0.10 |
| Trade openness | 228 | 0.67 | 0.33 | 0.16 | 1.84 |
| Left wing government | 228 | 0.45 | 0.50 | 0.00 | 1.00 |
| Right wing government | 228 | 0.46 | 0.50 | 0.00 | 1.00 |
| Government fractionalization | 228 | 0.29 | 0.28 | 0.00 | 0.83 |

Figure 4: Implicit pension liabilities and private public ratio (2000)

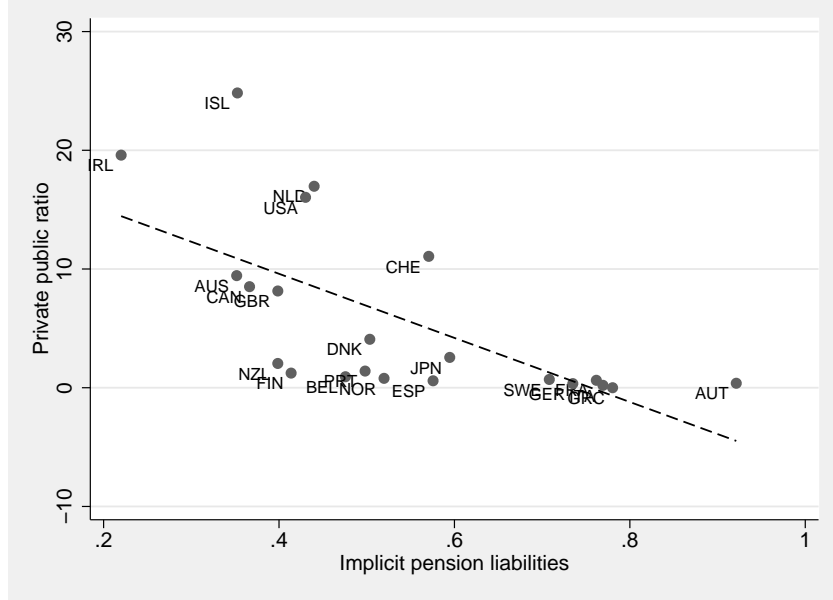


Table 7: Dependent variable: Private public ratio

| | Model 1 | Model 2 | Model 3 | Model 4 |
|-------------------------|----------------------|----------------------|---------------------|---------------------|
| Pension liabilities | -19.88*** (-3.81) | -21.02*** (-3.85) | -18.62** (-3.03) | -19.06** (-3.03) |
| Inflation rate | -6.39 (-0.86) | -1.37 (-0.18) | -4.59 (-0.59) | -0.89 (-0.12) |
| Interest rate | -14.78 (-0.92) | -13.35 (-0.88) | -21.17 (-1.05) | -14.57 (-0.76) |
| GDP growth | 47.06** (2.10) | 54.73** (2.62) | 44.86* (1.74) | 56.46** (2.29) |
| Time trend | 1.60*** (4.43) | 2.07*** (4.75) | 1.52*** (3.80) | 2.05*** (3.90) |
| Trade openness | | -8.38** (-2.47) | | -8.66** (-2.04) |
| Central government debt | | | -159.77 (-0.77) | -244.38 (-1.17) |
| Constant | 7.93*** (4.05) | 11.96*** (4.20) | 8.73*** (3.94) | 12.58*** (4.13) |
| Obs.(ID=21) | 78 | 78 | 75 | 75 |
| R^2 | 0.55 | 0.59 | 0.53 | 0.58 |

Note: All results are from fixed country effects models estimated with OLS; t-statistics in parenthesis; corrected for heteroskedasticity; *** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level; N×T: 21 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States), max. 5 periods (1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2003)

Table 8: Dependent variable: Private public ratio growth rate

| | Model 1 | Model 2 | Model 3 | Model 4 |
|-------------------------|--------------------|--------------------|-------------------|-------------------|
| Pension liabilities | -5.00** (-2.17) | -5.22** (-2.24) | -5.70* (-1.77) | -6.01* (-1.81) |
| Inflation rate | -5.18 (-1.00) | -4.92 (-0.93) | -6.92 (-1.50) | -6.62 (-1.39) |
| Interest rate | 5.13 (0.84) | 5.21 (0.81) | 9.36 (1.65) | 10.07 (1.59) |
| GDP growth | 11.37* (1.94) | 11.70* (1.97) | 7.63 (1.51) | 8.20 (1.65) |
| Time trend | 0.06 (0.65) | 0.10 (0.79) | 0.12 (1.00) | 0.20 (1.30) |
| Trade openness | | -0.55 (-0.44) | | -1.05 (-0.89) |
| Central government debt | | | 45.03 (0.58) | 40.53 (0.52) |
| Constant | 1.91** (2.22) | 2.21** (2.06) | 1.74* (2.01) | 2.27** (2.13) |
| Obs. (ID=19) | 55 | 55 | 53 | 53 |
| R^2 | 0.38 | 0.38 | 0.36 | 0.38 |

Note: All results are from fixed country effects models estimated with OLS; t-statistics in parenthesis; corrected for heteroskedasticity; *** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level; N×T: 19 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States), max. 5 periods (1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2003)

Table 9: Dependent variable: Δ Public private ratio

| | Model 1 | Model 2 | Model 3 | Model 4 |
|--|---------------------|---------------------|---------------------|---------------------|
| Δ Public private ratio $_{t-1}$ | -0.34** (-2.53) | -0.34** (-2.50) | -0.34** (-2.52) | -0.34** (-2.50) |
| Public private ratio $_{t-1}$ | 0.01 (0.28) | 0.01 (0.34) | 0.01 (0.29) | 0.01 (0.27) |
| GDP growth | 0.07 (0.01) | 1.23 (0.21) | 0.17 (0.03) | -0.60 (-0.12) |
| Elderly ratio | -12.11** (-2.47) | -12.34** (-2.50) | -12.11** (-2.46) | -12.04** (-2.44) |
| Inflation rate | -8.12* (-1.74) | -8.41* (-1.79) | -8.15* (-1.73) | -8.78* (-1.76) |
| Interest rate | 4.15 (1.12) | 4.17 (1.11) | 4.17 (1.08) | 4.37 (1.14) |
| Trade openness | 0.20 (0.85) | 0.20 (0.85) | 0.20 (0.84) | 0.28 (1.07) |
| Left | | -0.13 (-0.81) | | |
| Right | | | 0.01 (0.09) | |
| Government fractionalization | | | | -0.15 (-0.50) |
| Constant | 1.71** (2.07) | 1.76** (2.11) | 1.70** (2.07) | 1.71** (2.05) |
| Obs. (ID=21) | 194 | 194 | 194 | 194 |
| R^2 | 0.32 | 0.32 | 0.32 | 0.32 |

Note: All results are from fixed time effects models estimated with OLS; t-statistics in parenthesis; corrected for heteroskedasticity; *** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level; N×T: 21 OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States), max. 13 periods (1990-2002)