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Pension Fund Capitalism and Financial Crisis

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Founded in 1963 by two prominent Austrians living in exile – the sociologist Paul F. Lazarsfeld and the economist Oskar Morgenstern – with the financial support from the Ford Foundation, the Austrian Federal Ministry of Education, and the City of Vienna, the Institute for Advanced Studies (IHS) is the first institution for postgraduate education and research in economics and the social sciences in Austria. The **Political Science Series** presents research done at the Department of Political Science and aims to share “work in progress” before formal publication. It includes papers by the Department’s teaching and research staff, visiting professors, graduate students, visiting fellows, and invited participants in seminars, workshops, and conferences. As usual, authors bear full responsibility for the content of their contributions.

Das Institut für Höhere Studien (IHS) wurde im Jahr 1963 von zwei prominenten Exilösterreichern – dem Soziologen Paul F. Lazarsfeld und dem Ökonomen Oskar Morgenstern – mit Hilfe der Ford-Stiftung, des Österreichischen Bundesministeriums für Unterricht und der Stadt Wien gegründet und ist somit die erste nachuniversitäre Lehr- und Forschungsstätte für die Sozial- und Wirtschaftswissenschaften in Österreich. Die **Reihe Politikwissenschaft** bietet Einblick in die Forschungsarbeit der Abteilung für Politikwissenschaft und verfolgt das Ziel, abteilungsinterne Diskussionsbeiträge einer breiteren fachinternen Öffentlichkeit zugänglich zu machen. Die inhaltliche Verantwortung für die veröffentlichten Beiträge liegt bei den Autoren und Autorinnen. Gastbeiträge werden als solche gekennzeichnet.

Abstract

Basic public pension schemes and cut backs in earnings-related public pensions led to an increasing role of supplementary pensions such as pension funds for old-age incomes. In addition to demographic changes that challenge public pensions, private pensions face financial market risks. To what extent are the scope of pension fund capitalism and the impact of financial crises on pension funds related to different institutional arrangements? Given that different production regimes reflect different pension systems, we expect systematic diversities with regard to the public-private pension mix and the specific design of supplementary pensions. These varieties should be mirrored in different forms of vulnerability of pension funds to financial market crises. We hypothesize a higher scope of pension fund capitalism and vulnerability to financial market crises in countries with predominant market-based coordination mechanisms and short term strategies on financial markets (i.e. Liberal Market Economies).

Keywords

Pension Funds, Varieties of Capitalism, Financial Crisis, OECD-countries, Political Economy

General note on content

The opinions expressed in this paper are those of the author and not necessarily those of the IHS.

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I. Introduction¹

In the past few decades we have seen a shift from public pension systems toward private pension systems, particularly in the form of funded occupational pensions. In addition to insurance contracts, pension funds are the big winners of this development. This cross-country trend goes hand in hand with country specific peculiarities. The scope and form of pension funds differ in terms of lower and higher importance for the old-age income, contingent upon the level of public pensions (Bismarck versus Beveridge system). In addition, pension funds consider the interests of their beneficiaries in different ways, depending on the governance form (employer's commitment or collective agreement) as well as the organization and participating actors (market, firms, social partners, state). Given that different production regimes reflect different pension systems – in line with the Varieties of Capitalism approach (VoC) – we expect systematic diversities regarding the public-private pension mix and the specific design of supplementary pensions. These varieties should be mirrored in different forms of vulnerability to financial market crises. This article contributes to the scientific evaluation of the current financial crisis and adapts the VoC approach to multipillar-pension systems. In practice, this article aims to show mechanisms and regulations that help to reduce pension funds' vulnerability to financial crises.

Financial markets and state economies worldwide are still facing the heaviest financial crises since the Second World War. Not only states and banks, but almost all investment players, including pension funds, have to deal with stock market turmoil and losses. Although the economic and financial problems in each country are similar, the impact of the turbulences has varied. We have already gained descriptive knowledge about the impact of this development on funded pensions (OECD, 2008a, 2009: 25f; Antolin and Stewart, 2009; Pino and Yermo, 2010), but what is still missing is a theoretical underpinning in the form of analytical explanations. Some authors refer to the form and scope of the overall public-private pension mix and the institutional embeddedness in order to explain the impact of pension fund capitalism on financial markets (Jackson and Vitols, 2001). We are more interested in the reverse effect: the impact of financial markets and their crises on pension funds. Therefore, we question to which degree the scope of pension fund capitalism and the impact of financial crises on pension funds are related to different institutional arrangements. Following the VoC approach, non-market based coordination is inherent to Coordinated Market Economies (CMEs) whereas Liberal Market Economies (LMEs) pursue coordination via market mechanisms. We try to explain the different vulnerabilities of pension fund capitalisms to financial crises by applying the central ideas of the VoC approach.

¹ The author would like to thank the German Research Foundation (DFG) and the Pension Research Network (FNA) for their support. This paper was partly written in summer 2011 during a research stay at the Institute for Advanced Studies (IHS) Vienna. I am grateful for valuable comments received from the anonymous reviewer.

Related to interdependencies between production regimes, social policies and welfare states, the following hypotheses will be tested: countries, in which market-based coordination mechanisms and short term strategies on financial markets are predominant, are more likely to have a higher scope of pension fund capitalism and vulnerability to financial market crises. Since these features characterize liberal market economies, one can assume a higher impact of financial crises on pension funds in such countries.

The next section provides an overview of recent analyses concerning the impact of the financial crisis on social policies. We then introduce the core arguments and hypotheses drawing on the framework of the VoC approach. Afterwards, the scope and coordination mechanisms of pension fund capitalisms will be analyzed separated into the categories of liberal market economies, coordinated market economies, and mixed/Mediterranean market economies. The fourth section takes a closer look at the assets and investments of pension funds in different market economies, including the development during the financial crisis 2007-09. Based on the analysis of various data sets, the results show interdependencies between production regime, pension fund capitalism, and the vulnerability to the financial crisis and with it systematic differences between LMEs and CMEs/MMEs.

II. Financial crisis and social policy

The scientific evaluation and research regarding the recent financial crisis is still in its infancy. The majority of the studies so far have analyzed economic or employment politics and have looked at state intervention (Datz, 2009; Eichhorst et al., 2010; Euzéby, 2010; Chung and Thewissen, 2011; Starke et al., forthcoming), with some observers expecting countries to react to external shocks such as the financial crisis according to specific production regimes (Iversen, 2007). Furthermore, only a handful of analyses have explicitly focused on the impact on pensions; furthermore these studies have mainly been from a descriptive perspective (OECD, 2008a, 2009: 25f; Antolin and Stewart, 2009; Pino and Yermo, 2010). Exceptions are comparative studies about the impact of the financial crisis on pensions in Eastern Europe (Schmähl, 2011). What is missing is a theoretical underpinning. Few authors emphasize the bigger impact of the financial crisis in LMEs when compared with CMEs, with reference to theories concerning comparative capitalism, thereby neglecting the effect on pensions (Nölke, 2009).

Another strand of literature has pointed to the relationship between market economies, welfare states, and social politics while stressing the role of employers and their attitudes toward social benefits for the development of welfare states (Ebbinghaus and Manow, 2001; Estevez-Abe et al., 2001; Mares, 2003; Schröder, 2008). Findings concerning the impact of pension systems and the public-private pension mix on financial markets reveal that the financing of public pensions and the scope and regulation of supplementary pensions together with their institutional embeddedness are responsible for the differences between LMEs and CMEs (Jackson and Vitols, 2001). In contrast, the article in hand focuses on the reverse effect, the impact of financial markets on private pensions. This study brings together two strands of literature in order to fill the research gaps in the theoretical underpinning of the financial crisis and the impact of financial markets on private pensions.

III. Market economy – pension fund capitalism – financial crisis

The Varieties of Capitalism (VoC) approach distinguishes between two main configurations of market economies – LMEs and CMEs – depending on different forms of coordination and cooperation of firms in five sub-spheres (industrial relations, vocational training and education, corporate governance, inter-firm relations, employees-management relations) (Hall and Soskice, 2001). It is assumed that market economies differ systematically from one another. The more these spheres are complementary, the higher comparative advantages are. CMEs, which are based more on non-market mechanisms in order to overcome coordination problems, and LMEs, which rely on market based mechanisms, are the two ideal-types along which other countries can be benchmarked. Mediterranean Market Economies (MMEs) share characteristics from both LMEs and CMEs, with more capacities for non-market coordination but also market mechanisms within industrial relations (Hall and Soskice, 2001: 21). Since the arguments of the VoC approach have been successfully extended to social policy and welfare states (Ebbinghaus and Manow, 2001; Estevez-Abe et al., 2001) and even to aggregate demand management (Soskice, 2007), where CMEs' monetary institutions act more conservative, we expand the VoC-concept to pensions and in particular to pension funds. Following VoC, we use institutional arrangements as an explanation for financial crisis' vulnerability. We assume that systematic interdependencies exist between the form of market economy and the design of pension funds as well as the impact of financial crises. Even though we partly find well established pension fund systems in CMEs, they differ from their liberal counterparts in design and members' involvement. Not only the importance and level of pension fund investments, but also their design and degree of (organized) coordination matter. In CMEs the role of pension fund capitalism is growing, however this is based on demographic changes and increasing public debts, but in line with CMEs' need for coordination. The nature of coordination depends in turn on the institutional environment and its embeddedness. We hypothesize that pension funds are lower regulated in countries with mainly market-based mechanisms of coordination, while investments in shares are higher in countries with financial markets based on short-term strategies. Since this reflects the picture of LMEs, countries are more vulnerable to financial crises (with losses mainly of shares) when they show core features of LMEs. We have formed four working hypotheses based on these conclusions:

- 1) Due to basic public pension schemes with low replacement rates and a higher importance of financial markets for the overall economy, LMEs tend more toward matured pension fund capitalism. In contrast, CMEs show a lower tendency toward pension fund capitalism because of earnings-related public pensions with high replacement rates and lower importance of financial markets for the overall economy.

- 2) The regulation and coordination of pension funds as well as the involvement of their members' interests is lower in LMEs than in CMEs.
- 3) LMEs have a higher percentage of investments in equities, whereas CMEs invest more in bonds and loans.
- 4) LMEs are more vulnerable to financial market crises than CMEs.

Table 1 summarizes the main expectations for LMEs and CMEs according to the VoC approach.

Table 1: Theoretical expectations

	LME	CME
Coordination	market-based	non-market based (organised)
Pension fund capitalism	stronger (matured)	weaker (developing)
Employees'/pensioners' interests	no/weak involvement	(stronger) involvement
Financial market strategies	short-term (equities)	long-term (bonds)
Impact of financial crisis	higher	lower

III.1 Methods and case selection

In order to analyse the interdependencies between market economy, pension fund capitalism, and vulnerability concerning financial market crises, 19 OECD countries have been selected according to data availability (see Table 2). Since data are limited to pension funds, other private pensions such as insurances, book reserves, and PAYGO-systems have not been taken into consideration. We recognise that there might be differences within countries between individual pension funds (which can deviate from the country average); but in order to analyze country and regime specific patterns, the country-level is chosen as the sample-level. By pension funds we mean

“(...) the pool of assets forming an independent legal entity that are bought with the contributions to a pension plan for the exclusive purpose of financing pension plan benefits. The plan/fund members have a legal or beneficial right or some other contractual claim against the assets of the pension fund. Pension funds take the form of either a special purpose entity with legal personality (such as a trust, foundation, or corporate entity) or a legally separated fund without legal personality managed by a dedicated provider (pension fund management company) or other financial institution on behalf of the plan/fund members.” (OECD, 2005: 16).

Since the financial crisis mainly affected financial markets and especially stock markets, the development of the value of shares is used as the main indicator for vulnerability. Unfortunately, no data are available for the development of shares at the macro-level in times of economic prosperity. Therefore we should keep in mind that, in general, shares

show higher rates of return compared to bonds and loans when markets perform well. For these reasons we cannot compare rates of return in times of crisis to the previous period. Thus we operationalize “vulnerability” as the development of shares’ rates of return during the crisis. Even if we can expect higher returns before and after crises, the change of value in the current period of financial turmoil, which seems to be longer than originally expected (2008-present), has a huge impact e.g. for pensioners close to retirement in the absent of life-cycle investments and also for the long-term development as the returns on foregone investments will be missing. Even if pension funds will partly recover soon, the effects of the crisis remain present, undermining the expected long-term growth of, but also the trust in, funded pensions.

Table 2: Case selection

	Countries
Liberal Market Economies	AU, CA, IE, NZ, UK, US
Coordinated Market Economies	AT, BE, CH, DE, DK, FI, NL, NO, SE
Mediterranean Market Economies	FR, IT, PT, ES

Sources: Hall and Soskice (2001: 19-21).

IV. Results

IV.1 Scope of pension fund capitalism

According to our first working hypothesis we expect LMEs to have only basic pension schemes with low replacement rates. This holds true for most of our LMEs since they come with Beveridge or Beveridge-lite public pension systems that offer replacement rates below 60% of individuals' former income. Canada and the US as outliers have integrated earnings-related benefits in their Bismarck-lite public pension systems. Linked to public basic pension systems, occupational pension systems are more important for LMEs, mainly on a voluntary basis. Nevertheless, in Australia superannuation funds have been obligatory since 1992; while employees in the UK can opt-out of the earnings-related part of the public pension scheme in favor of occupational or personal pensions. Similarly, New Zealander employees are entitled to opt-out from the 2007 introduced mandatory KiwiSaver system (occupational pensions).

The picture emerging from the analysis of the CMEs is mixed, not completely in line with our hypothesis. Besides countries with Bismarckian public pensions and voluntary occupational pensions, countries such as Switzerland, Finland and Norway offer only low replacement rates in their public pension schemes together with mandatory occupational pensions. In addition, we find quasi-mandatory occupational pensions based on extended collective agreements in Denmark, the Netherlands and Sweden. The MMEs have very generous public pensions; only in France is an obligatory occupational pension scheme (PAYGO-financed) needed in order to obtain a decent living standard for the elderly.

In general, the need for additional supplementary pensions and pensions funds is higher in LMEs than in CMEs and MMEs. If we look at the scope of pension fund capitalism, measured as investments in percentage of the GDP, the size of pension funds is highest in LMEs, the average being 63% compared to 45.5% for CMEs and only 6.2% for MMEs (see Table 3). However, deviations are very high in the group of CMEs, reflecting the dualised structure of occupational pensions with partly (quasi-)mandatory and partly voluntary occupational pensions. We observe similar patterns if we look at the contributions and benefits of pension funds. If we relate the amount of contributions to pension funds with the benefits they have to pay, the future situation in Great Britain, the United States, Denmark, Finland, and Portugal seems less sustainable as their expenditures outnumber their revenues (not taking into consideration rates of return and reserves). Even if CMEs do not form a homogenous block in terms of high public pensions and voluntary-only forms of occupational pensions in line with our first hypothesis, the participation rules of pension funds are highly regulated – either mandated by the state or erga omnes extension via collective agreements – in contrast to the majority of LMEs.

Table 3: Scope of pension fund capitalism 2010 (% GDP)

	All funds		Pension funds				
	Investments	Investments	2001/10 Δ	Contributions	2001/10 Δ	Benefits	2001/10 Δ
AU (m)	93.8	91.0	21	8.3	14	4.6	4
CA (v)	128.3	64.7	23	2.8	88	2.5	17
IE (v)	44.2 ^a	49.1	12	-	-	-	-
NZ (v)	13.8	13.8	-6	2.3	15	1.3	-39
UK (v)	80.5 ^a	86.6	12	2.7 ^a	66	3.2 ^a	10
US (v)	119.1	72.6	2	3.8 ^b	20	4.3 ^b	4
LME							
mean	80.0	63.0	11	4.0	40	3.2	-1
LME CV	0.55	0.45		0.62		0.42	
AT (v)	5.4	5.3	79	0.4 ^a	-3	0.2 ^a	17
BE (v)	3.8	3.8	-32	0.4	-5	0.2	-43
CH (m)	111.9 ^a	111.9 ^a	9	8.4 ^a	28	5.5 ^a	16
DE (v)	5.2	5.2	51	0.5	411	0.2	42
DK (qm)	177.8	49.7	83	0.6	-48	0.7	23
FI (m)	91.0	82.1	66	9.7	-1	10.4	23
NL (qm)	134.9	134.9	32	4.7	68	4.1	37
NO (m)	7.8	7.8	41	0.4	-12	0.2	0
SE (qm)	56.4 ^a	8.4 ^a	3	-	-	-	-
CME							
mean	66.0	45.5	37	3.1	55	2.7	14
CME CV	1.00	1.14		1.26		1.39	
FR (v)	8.8 ^a	0.8 ^b	-38 ^c	-	-	-	-
IT (v)	5.3	4.6	103	0.6	115	0.2	26
PT (v)	12.3	11.4	0	0.3	-84	0,7	-54
ES (v)	9.3	7.9	37	0.5	-54	0.4	-14
MME							
mean	8.9	6.2	25	0.5	-8	0.4	-14
MME CV	0.32	0.73		0.33		0.58	

Sources: OECD Global Pension Statistics.

Notes: Occupational pensions: v=voluntary, qm=quasi-mandatory, m=mandatory; a=2009, b=2008 c=2003/08. All funds: pension funds, pension insurance contracts, investment companies and bank managed funds, others.

IV.2 Regulation of pension fund capitalism

In order to update the VoC approach for multipillar-pension systems, it is important to look beyond the scope of pension fund capitalism to the degree of regulation and coordination. Who is involved in the regulation and how strict the rules for pension funds are has implications for market economies since different ways to solve coordination problems are possible. The more members and beneficiaries of pension funds participate directly or via trade unions and employers' associations in the regulation and organization of pension funds, the more organized and coordinated pension fund capitalism is. In a similar vein, state regulations might set standards (in contrast to market standards). Thus, we hypothesized in CMEs a higher degree of regulation and coordination of pension funds together with a stronger involvement of members' interests as compared to LMEs. As a first hint in this direction, the former section showed regulated coverage mechanisms in particular for CMEs' (quasi-)mandatory schemes.

In addition to coverage, pension indexation, investment restrictions, and insolvency protection can theoretically be state-mandated. A high degree of regulation means strategically coordinated pension fund capitalism and should result in fewer losses for beneficiaries. Even if mainly state regulated, regulation in general functions as non-market coordination. For the measure of regulation we make use of a very simple index in order to show the differences between LMEs, CMEs, and MMEs. Drawing on OECD reports, we distinguish between pension indexation, investment restrictions and insolvency protection according to whether state regulations exist (score 1) or not (score 0). We have chosen these three indicators because of their comparative availability and because of their important function for the avoidance of decreasing benefits (indexations), negative return rates due to a high exposure to shares (investment restrictions) and losses of benefit claims due to employers'/funds insolvency (insolvency protection). Indexation of pension benefits in the pay-out period is almost not visible in LMEs, apart from Ireland and contracted-out defined benefit schemes in the UK. Contrastingly, two thirds of the CME-countries specify indexation mechanisms and even three out of our four MME-countries do as well (see Table 4). The picture becomes clear if we look at investment restrictions. All LMEs as well as the CMEs Sweden and the Netherlands are following the prudent person principle with only qualitative restrictions, whereas the majority of CMEs and all MMEs quantitatively limit investments in risky assets. Still, we observe more requirements for insolvency protection in LMEs than in CMEs and MMEs, most likely because in LMEs occupational pensions are responsible for a high share of old-age income. In sum, the total average changes the picture again: CMEs and MMEs are higher regulated than LMEs.

Table 4: Index of regulation

	LMEs	CMEs	MMEs
Pension indexation	0.33	0.66	0.75
Investment restrictions	0.00	0.77	1.00
Insolvency protection	0.50	0.44	0.25
Total average	0.28	0.62	0.67

Sources: Own calculation based on OECD (2008b).

Notes: Average; pension indexation: 0=no rules, 1=state rules/discretionary/self regulated; investment restrictions: 0=prudent person rule, 1=quantitative restrictions; insolvency protection: 0=no insolvency protection, 1=insolvency protection.

The higher regulation and non-market based coordination of pension funds in CMEs (and partly in MMEs) is, in addition to state regulations, reflected in a high number of collective agreements in these countries. In order to further develop the VoC approach and its application for multipillar-pension systems, we need to analyze the coordination mechanisms within pension funds, e.g. the inclusion of members' interests via social partners in collective agreements and boards. In general, and related to our second hypothesis, we find more collective forms of pension funds in CMEs and MMEs, where social partners jointly coordinate and administrate occupational pensions via collective agreements and collective pension schemes as well as bipartite governing boards or supervising committees (Ebbinghaus and Wiß, 2011: 367-371). The collective and self-administered quasi-public schemes in France and Finland together with negotiated sector-wide occupational pensions in the Netherlands, Sweden, Denmark, Belgium, and Germany balance interests between sponsors, beneficiaries and investment managers more equally and are an expression of more coordination than the employer led funds (e.g. trusts) in Great Britain, the United States, Ireland, Australia, and New Zealand with limited rights and influence of members' representatives (see also Ebbinghaus and Wiß, 2011: 355-358).

In the Netherlands, social partners jointly negotiate and administer pension funds within a state provided regulatory framework (Anderson, 2011). Administrative boards (parity representation) are e.g. the key actors for decision about indexation, contribution rates, deficits, and surpluses. Swedish occupational pension schemes are based on collective agreements as well, without an involvement of the government in design and implementation (Lindquist and Wadensjö, 2011). Since 2001, occupational pensions based on collective agreements are increasing in Germany, in addition to the traditional employer-provided occupational pensions (Wiß, 2011). In sectors such as the metal, chemical, and construction industry, social partners have founded collective pension schemes with parity representation and administrative or advisory boards, which are e.g. responsible for contracts with financial companies and the overall investment strategy. Even in MMEs with high public pensions, social partners have become more important for occupational pensions, although the development has been triggered by a top-down process. Nevertheless, the social partners are responsible for the Tfr (severance pay) in Italy as a gate to occupational pensions

(Jessoula, 2011). The latter are based on collective agreements in the case of (the dominant) closed pension funds and executive boards with representatives from employers and employees appoint e.g. the fund representative.

In contrast, LMEs follow a shareholder model of corporate governance and company pension funds, leaving a very little impact to unions (Bridgen and Meyer, 2011). Reforms in Britain since 1995 have emphasized more representativeness in trust membership. Similar rules concerning employees' representation apply to Australia and New Zealand, where the appointment of trusts that are responsible for the management, operation, and investment of funds does not require member or employee trustees (OECD, 2008b: 502-511, 486-493).

In addition to the strong role of social partners within the process of implementation of occupational pensions in CMEs, they are also important players within the political process of state regulations due to their expertise in this field and due to the consensual political systems. Contrastingly, social partners and trade unions in particular are less involved in the firm organized occupational pensions in LMEs, where the government is less dependent on them due to their lower expertise. Furthermore, due to the majoritarian political system in LMEs, there is no need to include social partners in the political process (in contrast to the representative political systems in CMEs and MMEs) of state regulation (that are lower anyway).

Experiences from the current financial crisis show that committees and supervisory boards of pension funds with required representation of members' interests, such as parity of trade unions and employers, existent in particular in CMEs and MMEs, performed better and with fewer losses than their liberal counterparts with pension funds often ignoring members' interests (see also Pino and Yermo, 2010: 21f). Within committees and boards, especially investments committees, pension fund members' representatives make investments of pension funds in CMEs more sustainable and prudent in line with the interests of insured persons and pensioners and with a long-term perspective. However, employers and pension fund managers in LMEs formally not bound to interests of pension fund members are more attracted by return rates as high as possible and therefore follow more short-term investment strategies with higher profits but riskier assets which are exposed to turmoil.

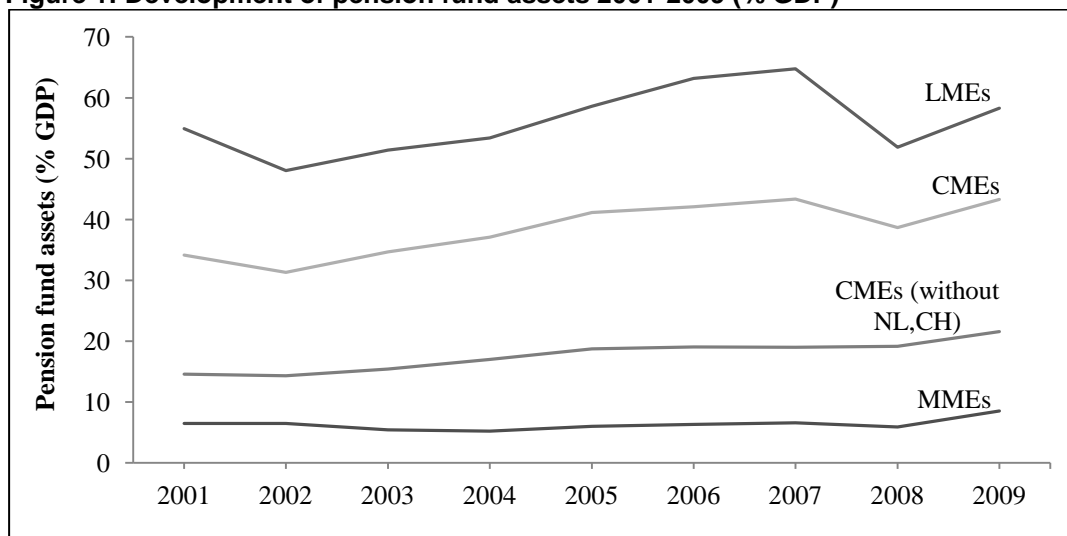
In all countries we find state regulations, but to different extents. According to our index of regulation, they are stronger in MMEs and CMEs than in LMEs. In addition, regulatory space is filled with joint agreements and rules of social partners in CMEs and MMEs, in contrast to LMEs, where trusts and firms have more freedom of choice. Even if state regulation in both CMEs/MMEs and LMEs are existent in order to guarantee certain minimum conditions – in line with path dependencies of public social policy – the VoC approach clearly explains the differences in collective regulations in order to overcome coordination problems.

IV.3 Investments of pension funds

Before analysing the portfolio allocation, we want to show the development of pension fund assets. Since no data are available from the years previous to 2001, we can only interpret the development between 2001 and 2009. According to our third and fourth hypothesis, we expect more vulnerability to turmoil and higher losses for pension funds in LMEs due to a higher percentage of equities in the investment portfolio in line with short-term investments strategies.

On average, investments and assets of pension funds are higher in LMEs than in CMEs and MMEs. Between 2001 and 2009, LMEs' pension fund assets averaged out at 56% compared to 38% for CMEs (18% without Switzerland and the Netherlands) and only 6% for MMEs (see Figure 1). The gap between LMEs and CMEs over time is quite constant, with a slight convergence around 2008, immediately followed again by divergence in 2009. It seems that the steeper growth of pension funds in CMEs widens the gap between the latter and MMEs. What clearly emerges is the massive drop of pension fund assets in LMEs and CMEs in 2002 and 2008 due to financial market crises. The decline of assets in 2008 was highest in LMEs with -19.9% (2002: -12.6%), followed by CMEs with -10.9% (2002: -8.3), and MMEs with -10.6% (2002: 0%).

Figure 1: Development of pension fund assets 2001-2009 (% GDP)



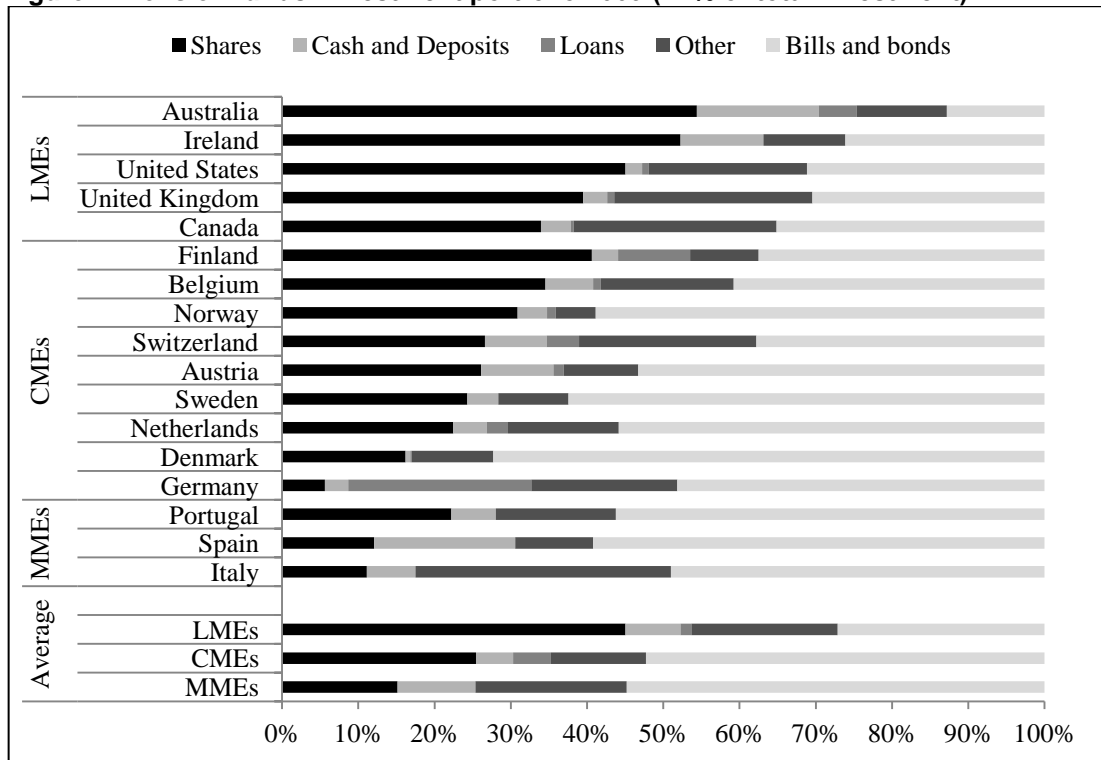
Sources: OECD Global Pension Statistics.

Notes: Averages. MMEs: 2001/02/09: without France.

Where are the losses coming from? The structure of portfolio allocations allows us to draw conclusions about short-term or long-term financial strategies depending on whether equities or bonds and loans are the main financial vehicles. According to the third hypothesis, we assume a higher share of equities for LMEs (short-term strategy) and a higher share of bonds and loans for CMEs (long-term strategy). In general, equities make higher return rates

more likely as well as losses in the event of turmoil, whereas bonds and loans are less risky investments with lower but more stable rates of return. The results of country specific pension funds' investment portfolio, shown in Figure 2, support our expectations. On average, the share of equities in LMEs in their total investment portfolio is 45% in 2009, much higher than in CMEs (25%) and three times more than in MMEs (15%). Even if Finland and Portugal stand out of their groups with a higher share of equities, the coefficient of variation is below 0.5 (LMEs: 0.19, CMEs: 0.4, MMEs: 0.4) and confirms a rather consistent picture. The same holds true for the share of bonds in total investments in 2009. Here, the percentage of bonds in MMEs (55%) and CMEs (52%) is as twice as high as in LMEs (27%), in accordance with the long-term oriented investment strategies in Mediterranean and coordinated market economies and the short-term oriented strategies in liberal market economies. The groups are very homogenous with low deviations between 0.1 and 0.3.

Figure 2: Pension funds' investment portfolio 2009 (in % of total investment)



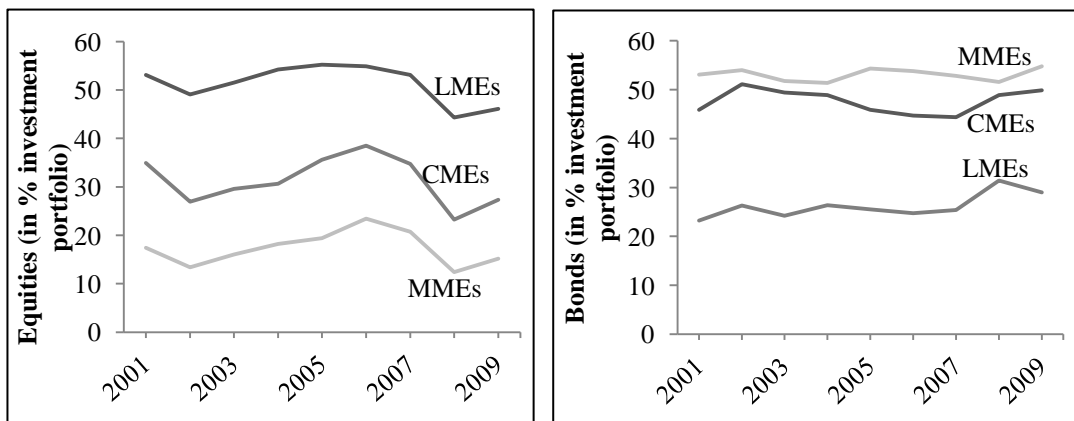
Sources: OECD Global Pension Statistics.

Notes: Ireland and Sweden: 2008. No data for France and New Zealand.

Since the investment portfolio in 2009 might reflect shifting asset allocations due to the financial crisis of 2007/08, we need to look at the long-term development of these two investment categories. Between 2001 and 2009 the gaps between LMEs, CMEs, and MMEs remained quite constant, as did the deviations within these groups (see Figure 3). In 2002 and 2008 we see a decline in equities investments as reaction to financial market crises and a shift of investments to more secure investment vehicles. As a consequence of the financial

crises, assets in bonds are increasing. Between 2002 and 2006, the percentage of equities gains in importance especially in CMEs and MMEs. Although not changing the overall picture, taking into account the long-term investment vehicle loans additionally widens the gap between CMEs and LMEs. In line with our hypotheses, LMEs are following short-term investment strategies over time in contrast to long-term investment strategies in CMEs and MMEs. Due to the higher share of equities in LMEs, we hypothesized higher losses in times of financial crises because of their risky nature.

Figure 3: Development of selected investment categories (in % investment portfolio)

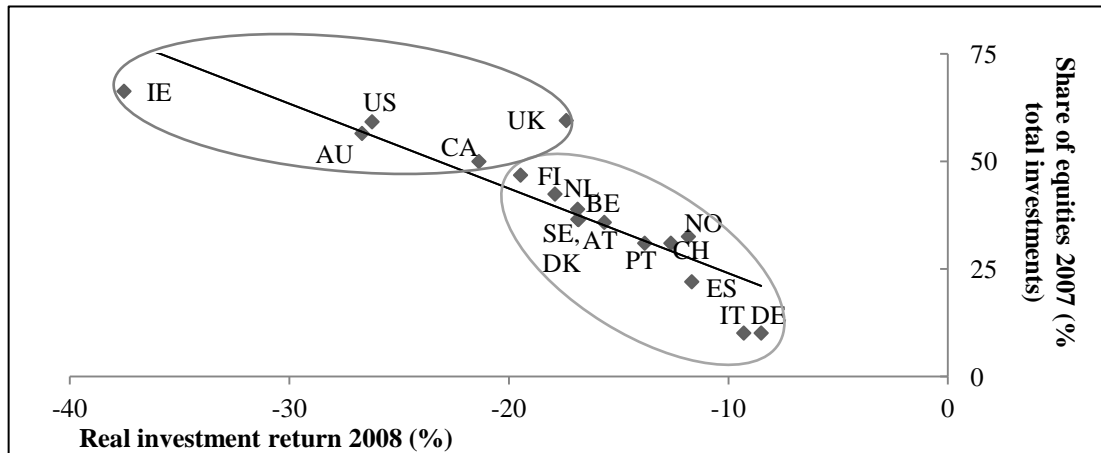


Sources: Own calculations based on OECD

Global Pensions Statistics and Institutional Investors' Assets dataset.

Notes: Without France and New Zealand because of missing data. Since in a few countries the share of mutual funds, for which a breakdown into equities and bonds is not available, is high, we estimated the share of equities and bonds according to the share in all mutual funds at country level (aggregated).

What is the impact of financial crises on equities and pension funds? In order to find an answer, we compare the share of equities of 2007, which was also a crisis year, with the investment returns in 2008 (see Figure 4). In this way, we get a strong correlation of equities' share and investment losses ($r=-0.88$). Pension funds with substantial investments in equities are more likely to have high losses in times of financial turbulences. Besides Great Britain, most of the LMEs had a high share of equities and sustained heavy deficits in 2008, whereas CMEs and MMEs, with lower shares of equities, performed less poorly. Finland and the Netherlands, having more risky investments and higher losses than the average CME, are in between the two groups. Since mainly LMEs have high shares of equities in their pension fund portfolios, pension funds in LMEs are more vulnerable to financial market crises, confirming our third and fourth hypothesis.

Figure 4: Correlation of share of equities and losses in times of crisis

Sources: OECD (2009: 34), OECD Global Pension Statistics.

Notes: No data for France and New Zealand.

IV.4 Market economy – pension fund capitalism – financial crisis

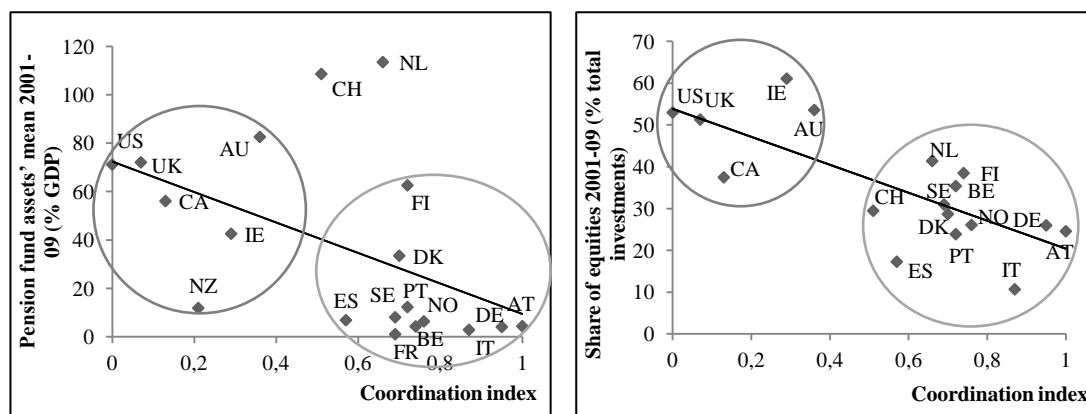
We can conclude from the former sections that LMEs have a higher share of equities in pension funds' portfolio allocation and that LMEs are more vulnerable to financial market crises. But is the type of market economy, the scope of pension fund capitalism, and the market turmoil's sensitivity interrelated and if so, how? To answer these questions, the following part quantitatively examines possible interdependencies. Beyond the more descriptive results, the aim of this section is a theory driven empirical underpinning with "hard facts". We first look systematically and grouped around CMEs/MMEs and LMEs at the correlation between market economy and pension fund capitalism and second at the relation between market economy and financial crisis. For the measurement of the type of market economy, we draw on the coordination index of Hall and Gingerich (2004) since coordination is the core feature that distinguishes a LME from a CME. Variables for the coordination in labor relations (level of wage coordination, degree of wage coordination, and labor turnover) together with variables for coordination in corporate governance (shareholder power, dispersion of control, and size of stock market) in the 1990s build the overall coordination index. Based on a standardized factor analysis from 0 to 1, in countries with higher values strategic coordination is more important than market coordination (Hall and Gingerich, 2004: 10-17). In addition, we use bargaining coverage and the status of works councils as supplementary indicators for strategic coordination.

Market economy and pension fund capitalism

Confirming our theoretical framework, the type of market economy is highly related to the scope and regulation of pension fund capitalism. The higher the coordination in a country, the lower its amount of pension fund assets (see Figure 5). In LMEs with a low degree of strategic coordination private pensions are more important and pension funds assets higher than in CMEs, reflecting lower benefits in their public pension schemes. In contrast, strategic

coordination is more important in countries that belong to the CME/MME-group. High replacement rates in public pension schemes reduce the need for private pensions and with it pension funds assets. If we exclude the two special cases Switzerland and the Netherlands with (quasi-)mandatory occupational pensions, the correlation between coordination and pension fund capitalism is even stronger. The more descriptive results regarding the relation between market economy and share of equities from section IV.3 are also confirmed by Figure 5. Production regimes based on market coordination highly correspond with substantial shares of equities in pension funds' investment portfolios. If we use the average collective bargaining coverage or status and existence of works councils (2001-2009), instead of the coordination index, as indicators for strategic coordination and the involvement of employees' and pensioners' interests, we find similar patterns. As a result, countries which follow strategic coordination mechanisms make fewer investments in equities but rather invest in secure financial vehicles such as bonds and loans. In sum, market coordination (LMEs) goes hand in hand with developed pension fund capitalism, less involvement of pension fund members' interests, short-term financial strategies and a higher share of equities.

Figure 5: Relations between market economy and pension fund capitalism



Sources: Coordination index: Hall and Gingerich (2004); pension fund assets 2001-2009 (average): own calculations based on OECD Global Pension Statistics; share of equities 2001-2009 (average): own calculations based on OECD Global Pension Statistics and Institutional Investors' Assets dataset.

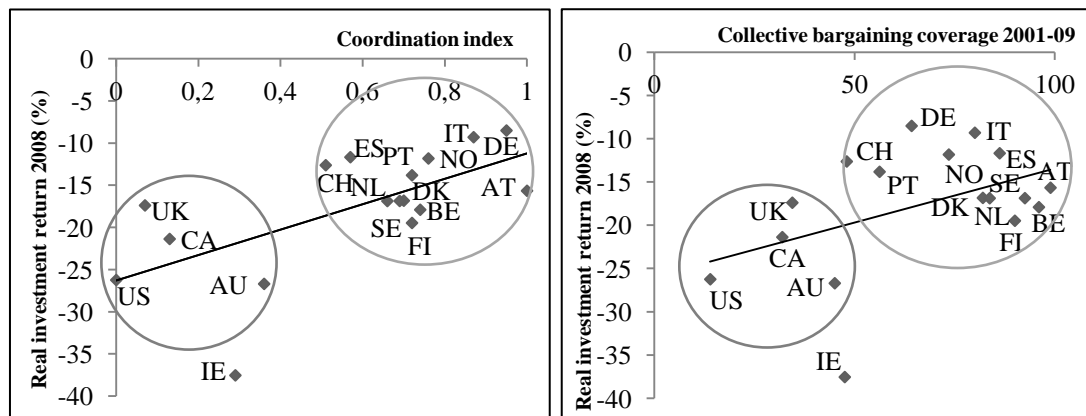
Notes: No data for share of equities for France and New Zealand.

Market economy and financial crisis

In general, short-term market strategies with investments mainly in riskier assets such as equities make higher rates of return more likely. However, these investment categories imply the risk of higher losses in times of financial market turbulences. As we were able to illustrate, LMEs have a higher equity exposure than CMEs. Additionally, Figure 4 points to the fact that pension funds' investment in LMEs suffered more during the financial crisis than in CMEs. If we take the coordination index as an indicator of the degree of strategic coordination in order to separate a LME from a CME, Figure 6 underpins the message.

Pension funds performed better during the financial crisis 2008 in countries that follow mechanisms of strategic coordination, even if their return rates are negative as well. We see a strong positive relationship between the real investment return in 2008 and the degree of strategic coordination. Due to the very high equity exposure, pension funds in Ireland lost most money in 2008. If we use the average collective bargaining coverage between 2001 and 2009, the picture slightly changes but still shows a medium-strong correlation (see Figure 6). Countries with a higher collective bargaining coverage, which is important for occupational pensions and pension funds based on collective agreements, had smaller deficits. Our third indicator, the status of works councils (whether they are existent with rights, voluntary or not existent) shows an even higher positive correlation ($r=0.7$). As a result, short-term market strategies, a high equity exposure and negative investment returns are interrelated. Pension funds in LMEs are faced with a higher vulnerability to financial market crises than CMEs, verifying our fourth hypothesis.

Figure 6: Relations between market economy and investment returns 2008



Sources: Coordination index: Hall and Gingerich (2004); Investment returns: OECD (2009: 34). Collective bargaining coverage 2001-09 (average): ICTWSS dataset.
 Notes: No data for France and New Zealand.

V. Patterns of interdependencies between different spheres

How do pension fund capitalism and its vulnerability to financial market crises fit into the overall institutional framework of market economies? On the one hand, the focus of analysis is on systematic differences between LMEs, CMEs, and MMEs in sub-spheres shown by averages, and on the other hand on the coherence of these groups shown by standard deviations (SD). Table 5 gives an overview of the patterns of market economies in inter-firm relations, industrial relations, pension fund capitalism and financial crises. According to the availability of data, the most recent time periods are listed. Calculations are based on the sum of countries' means. The averages (in bold) as well as the standard deviations are normalized to the range of 0 to 1 in order to make different scales comparable. We prefer normalized standard deviation to coefficient of variations because of the sensitivity of the latter to small changes and numbers close to zero. The lower the scale, the lower is the variation. The aim is not to present another indicator for market economy or coordination but rather to give evidence to similarities and differences across countries and within the country groups.

The data confirm our theoretical expectations and first empirical results. CMEs and MMEs are characterized by strategic inter-firm relations, which go hand in hand with distinct systems of industrial relations, measured by bargaining level and coverage, union density as well as status and rights of works councils. In contrast, firms in LMEs are less interrelated with each other, even if we see a slight increase between the 1980s and 1990s, and continuous and legal relations between social partners are rare. The low scores for standard deviations back the classification of countries in LMEs, CMEs, and MMEs. Organized trade unions entail organized employers' associations and vice versa, resulting in a privileged position of representing members' interests. This automatically gives authority to social partners to build and administer welfare arrangements such as pension funds (in addition to e.g. social insurances). At the same time, financial markets are of varying significance in the overall market economy of LMEs and CMEs/MMEs that are mirrored in the importance of financial markets for old-age security. In LMEs, market-based financial systems have developed with external corporate financing via equities and a high stock market capitalization. However, in CMEs bank-based financial systems have developed with long-term investments and strategic inter-firm relationships with a low stock market capitalization. The results of pension fund capitalism and financial crisis tie in with the results of the other sub-spheres, even if the gap between LMEs and CMEs is smaller. If we take into account the coefficient of variations instead of the standard deviation for private pensions as a percentage of public pensions, we find more variance within the group of CMEs. In this group, especially the Netherlands and Switzerland have substantial expenses for private pensions because of their matured multipillar-pension systems.

Table 5: Patterns of market economies

	LMEs				CMEs				MMEs			
<i>Market Economy and inter-firm relations</i>												
	1990-95		SD		1990-95		SD		1990-95		SD	
Coordination index (1)	0.18		0.1		0.75		0.2		0.71		0.1	
	1985-89	SD	1990-94	SD	1985-89	SD	1990-94	SD	1985-89	SD	1990-94	SD
Firm alliances (2)	0.2	0.3	0.5	0.0	0.6	0.2	0.6	0.2	0.8	0.4	0.8	0.4
Relations purchaser-supplier (3)	0.1	0.1	0.5	0.0	0.4	0.2	0.5	0.0	0.4	0.1	0.8	0.4
Relations firms-investors (4)	0.1	0.2	0.1	0.2	0.9	0.3	0.9	0.3	1.0	0.0	1.0	0.0
Employment security (5)	0.0	0.0	0.1	0.2	0.7	0.3	0.6	0.2	0.3	0.4	0.3	0.4
Average (2)-(5)	0.1	0.1	0.3	0.2	0.7	0.2	0.7	0.2	0.6	0.3	0.7	0.3
<i>Industrial and employee-management relations</i>												
	1990-99	SD	2000-09	SD	1990-99	SD	2000-09	SD	1990-99	SD	2000-09	SD
Bargaining level (6)	1.8	0.3	1.6	0.2	3.2	0.2	2.9	0.1	2.8	0.1	2.7	0.1
Bargaining coverage (7)	43.2	0.2	32.3	0.1	81.3	0.2	81.1	0.2	85.0	0.1	78.5	0.2
Union Density (8)	33.2	0.1	25.2	0.1	52.2	0.2	46.7	0.2	22.1	0.1	19.6	0.1
Works council status (9)	0.2	0.2	0.3	0.3	1.9	0.2	1.9	0.2	1.8	0.3	1.8	0.3
Works council rights (10)	0.0	0.0	0.1	0.1	2.2	0.2	2.2	0.2	1.0	0.3	1.0	0.3
Average (6)-(10)	0.3	0.2	0.2	0.1	0.7	0.2	0.7	0.2	0.6	0.3	0.6	0.3
<i>Pension fund capitalism and financial market crisis</i>												
	1995	SD	2005	SD	1995	SD	2005	SD	1995	SD	2005	SD
Private in % public pensions (11)	59	0.2	64	0.3	21	0.2	28	0.3	1	0.0	2	0.0
	2001-09		SD		2001-09		SD		2001-09		SD	
Pension fund assets (12)	56.1		0.1		38.4		0.0		6.3		0.0	
Share of equities (13)	51.3		0.0		31.3		0.1		17.3		0.0	
Investment return 2008 (14)	-25.8		0.1		-15.2		0.0		-11.6		0.0	
1-Average (11)-(14)	0.5		0.2		0.7		0.1		0.9		0.1	

Sources: (1) Hall and Gingerich (2004).

(2) Huber et al. (2004): Alliances among competing firms for research/development training, standard setting, 0=infrequent use, to 1=extensive use of alliances.

(3) Huber et al. (2004): Long-term relationships between purchaser and supplier firm, 0=infrequent use, to 1=extensive use of partnerships.

(4) Huber et al. (2004): Long-term relationships between firms and their investors, 0=decentralized ownership with high turnovers, to 1=large investors hold significant shares for long periods.

(5) Huber et al. (2004): Long-term employment security guaranteed by firms, 0=uncommon, to 1=common.

(6) Visser (2011): 1=local or company bargaining, to 5=national or central level.

(7) Visser (2011): Employees covered by bargaining agreements in % of all employees.

(8) Visser (2011): Net union membership in % of all employees.

(9) Visser (2011): Status of works councils, 0= no works councils, to 2=existence and rights of works councils.

(10) Visser (2011): Rights of works councils, 0=no rights, bis 3=economic and social rights including co-determination.

(11) OECD SOCX data: Expenditure for private pensions in % of public pensions; without NZ and IT.

(12) OECD Global Pension Statistics: Pension fund assets in % of GDP. MMEs: 2001/02/09: without France.

(13) OECD Global Pension Statistics and Institutional Investors' Assets dataset: share of equities in % of total investments.

(14) OECD (2009: 34): Real investment return of pension funds in 2008. Without New Zealand and France.

Notes: Averages are calculated on standardized values (0-1). SD=standardized standard deviation (0-1)

This is also due to the fact that no data for the nature of pension funds such as the participation of unions and work councils are included. Nevertheless, illustrated earlier, pension fund capitalism in LMEs differs systematically from pension fund capitalism in CMEs and MMEs. Pension fund assets and the share of equities are stable over time, not reflecting the differences within the country-groups (because of the shown deviation over time). As a result, pension fund capitalism and its vulnerability seem to fit into the institutional environment for each country group (LME, CME, and MME), even if differences between countries in the CME group are higher compared to the other sub-spheres.

VI. Conclusions

The main aim of the article was to show that there are differences in pension funds' vulnerabilities to financial market crises, and that these differences are closely related to different market economies. Pension funds in LMEs suffered higher losses during the recent financial crisis than pension funds in CMEs and MMEs because of their market-based and short-term strategies with high shares of equities in the investment portfolio. Beyond these results, we recognize the possibilities of higher rates of returns in LMEs with matured pension fund systems in times of economic prosperity.

In line with the variety in the overall public-private pension mix, the scope of pension fund capitalism is higher in LMEs, but we also find a few matured occupational pension systems in CMEs, especially in the Netherlands and Switzerland. The variance seems to persist over time. Even if in most of the countries belonging to CMEs and MMEs pension funds are growing in importance, they are still far from the grown systems in LMEs. Additionally, we would get similar results if we include pension insurance contracts, which play an important role for occupational pensions in Belgium, Denmark, Norway, and Sweden. Similar to pension funds in CMEs and MMEs, pension insurance contracts feature more long-term investment strategies, usually with (low) guaranteed return rates and more conservative assets. In contrast to the scope, qualitative differences between the country groups are more evident. Since pension funds in CMEs and MMEs are based on long-term relations and strategies, as in other sub-spheres of their market economy, pension funds members are involved into the development and administration of funds via works councils and/or trade unions. Thus a long-term investment strategy with assets mainly in bonds and loans exists, which performed better during the crisis due to their more conservative nature with lower but continuous return rates. The higher vulnerability of liberal pension fund capitalism can be traced back to lower regulation and coordination (less consideration of the interests of pensioners and insured persons) resulting in short-term investment strategies with assets mainly in equities in line with our theoretical expectations deducted from the VoC approach. This does not mean that complementarities that performed poorly during the financial crisis do not provide benefits in other (better) times. Despite deviations also within the country groups, characteristics of pension fund capitalism fit quite well into the overall institutional setting of market economies. The systematic variety across production regimes is supported by the coherence within each group in terms of the sub-spheres inter-firm relations, industrial relations, and pension fund capitalism including financial crisis.

Limitations to this work are due to partly incomplete OECD data that are nevertheless the only information which allow cross-country comparisons of pension fund systems and their performance. In order to further validate the results, country specific case studies could be explored as a next step. This would allow deeper analyses regarding single country regulations and pension funds.

From a theoretical point of view, we presented a finer tuned version of the VoC approach, which allows an application to multipillar-pension systems. So far, this perspective has been almost completely ignored as a result of considering pension fund capitalism automatically equivalent to LMEs. But, as we were able to show, there is a systematic relationship between varieties of market economy and varieties of pension fund capitalism if we highlight coordination as the core feature that distinguishes a LME from a CME. Not only the public-private pension mix and scope of pension fund capitalism alone distinguish a LME from a CME and MME, but also the design of pension funds and supplementary pensions in general. The development and new forms of pension funds, especially in CMEs and MMEs, mirror their specific needs and traditions of coordination. In contrast to their liberal counterparts, pension funds in CMEs are higher regulated and members' interests are more involved. Finally, the findings are also of practical value. The introduction and development of funded supplementary pensions is a consequence of the belief in gain resulting from the higher profits of financial markets compared to lower returns in public pension systems based on tax- or pay-as-you-go-financing. The inherent possible risks of funded pensions such as the massive losses in 2002 and 2008/09 have not been taken into consideration. In addition, following a recovery in 2010, stock markets (and state bonds of countries such as Greece, Ireland, Portugal, Spain, and Italy) are again in trouble in 2011. Since the financial crisis is currently turning into a crisis of the real economy and public budgets, we can possibly expect a higher vulnerability of pension funds in CMEs/MMEs in the event of increasing inflation rates and haircuts due to their high investments in bonds. From a social policy point of view it is important to know how to avoid future risks for pension fund members and sponsors. Based on the experiences of the current financial market crisis, stricter regulations and more inclusive participation of pension fund members could be the proper mechanisms in order to downsize losses during the next financial market crisis.

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