

Reconsidering Benefits of Individual Account Reforms – Australian Evidence in International Perspective

Nikola Altiparmakov, PhD
Board Member
Fiscal Council
Republic of Serbia
Nikola.Altiparmakov@fiskalnisavet.rs

Abstract:

The performance of individual retirement accounts failed to meet (ambitious) reform expectations in many countries. Commentators in the literature often point to unsupportive preconditions in developing countries to explain the disappointing performance and reform reversals in some countries. We show that the same drawbacks encountered in Latin America and Eastern Europe are also present in Australia where very few, if any, unsupportive preconditions can be identified. Over the 1997-2017 period Australian not-for-profit occupational funds posted impressive 4.7% real rate of return compared to only 2.3% returns of for-profit commercial retail funds. Australian retail funds also fared poorly against modern publicly-managed funds, such as those in New Zealand or Canada. Despite their distinctively inferior performance and evidence of suppressing contributors' interests, retail funds seem to rely on market failures to maintain their dominant market share virtually intact over the years. Contributors to retail funds will be receiving more than 40% lower pensions compared to workers saving in the not-for-profit occupational funds, giving rise to pronounced old-age inequality. Australian evidence further undermines the prevalent pension reform agenda from the nineties – that individual accounts are a panacea that should be preferred to alternative funding arrangements.

Keywords: Pension funding, individual accounts, Pay-As-You-Go

JEL: G11, G38, J32, H55

1. Introduction

Introduction of mandatory fully-funded individual accounts managed by private for-profit pension companies dominated pension reform agendas in the last decade of the twentieth century. Inspired by the seemingly impressive rates of return achieved in Chile and propagated by the influential World Bank (1994) study, these reforms were expected to provide more efficient retirement financing compared not only to existing Pay-As-You-Go systems but also compared to occupational and publicly-managed funded arrangements. This radical approach was mostly dismissed in developed countries in Western Europe and North America, but the idea was appealing to developing nations in Latin America and Eastern Europe. In 1992, Australia became one of a rare developed economies to entrust the national earnings-related pension component to mandatory private individual accounts.

Although individual accounts performance did not live up to ambitious reform expectations in many countries, commentators in the literature often do not challenge this approach per se but blame the reform reversals on unsupportive preconditions such as undeveloped capital markets in developing countries, lack of financial literacy, inadequate supervisory capacities or short-sighted political decisions (Gill et al, 2005; Impavido and Rocha, 2006; Drahokoupil and Domonkos, 2012; Price and Rudolph, 2013; Schwarz and Arias, 2014; Casey, 2014). In order to try to isolate inherent individual accounts weaknesses from unsupportive reform preconditions, this article looks at the individual accounts performance in Australia - a developed country where very few, if any, limiting preconditions could be identified.

Empirical evidence shows that Australian not-for-profit, former occupational pension funds realized an impressive net rate of return (before taxes) of 4.7% in real terms over the 1997-2017 period. The performance of commercial for-profit retail funds, mostly organized by financial corporations, was distinctly lower and stood at 2.3% over the same period. Not-for-profit funds have not only been charging significantly lower fees, but were also more successful at capturing economies of scale and investing in higher yielding asset classes. Even after several rounds of reforms aimed at increasing transparency and competition, and despite their persistent underperformance, retail funds are managing to maintain their market share virtually intact. This suggests the presence of market failures and inefficient allocation of retirement savings with workers saving in retail funds receiving 40% lower pensions compared to not-for-profit occupational funds.

Over the same 1997-2017 period, competitive for-profit individual accounts in Chile also realized net returns of over 4% in real terms, which is respectable performance in international comparisons. However, virtually the same level of benefits could have been provided by a balanced public PAYG system, thus undermining the economic rationale for private individual accounts. Regarding other reformed systems in Latin America and Eastern Europe, many of them predominantly invested in domestic government bonds issued to finance pension privatization in the first place, thus reducing the reforms to a very expensive form of PAYG financing in disguise. Eastern European countries that managed to diversify investment portfolios away from domestic government bonds have been realizing disappointingly low returns, around 1% or even negative in real terms.

On the other hand, the performance of modern public pension reserve funds in Canada, Norway and New Zealand has been vastly superior to Australian retail funds, thus

contradicting Iglesias and Palacios (2000) premise of a negative premium associated with publicly-managed funded systems. Overall, the empirical evidence from the last couple of decades firmly refutes the dominant reform premise from the nineties - that individual accounts are a panacea and should be preferred to alternative funding arrangements. This evidence should be taken into account when designing future pension reforms in both developed and developing countries.

This paper is organized as follows: Section 2 describes the disappointing individual accounts performance in Eastern Europe and Latin America. Section 3 discusses the historical development of old-age security in Australia, while Section 4 describes Australian experiences with individual accounts over the last two decades. Section 5 contrasts the Australian performance with that of modern public pension reserve funds. Section 6 summarizes the ex-post revealed weaknesses of individual account reforms with implications for policy making being discussed in Section 7. Section 8 concludes.

2. International experiences with Individual Account reforms

The influential World Bank (1994) *Averting the Old-Age Crisis - Policies to protect the old and promote growth* study has propagated pension funding as a crucial remedy, not to say panacea, to averting the negative effects of demographic aging on retirement incomes in the 21st century. Although World Bank (1994) recommendations could be interpreted in a broader sense to refer to various forms of funding, in practice the focus was on a specific funding arrangement – private for-profit competitive defined-contribution pension funds managing workers’ retirement savings in individual accounts on legally mandatory basis. This reform approach proved to be quite controversial and was criticized by leading economists (Orszag and Stiglitz, 2001; Barr, 2000) as well as actuaries and social policy experts (Beattie and McGillivray, 1995; Brown, 2014).

Introducing mandatory individual accounts is relatively straightforward in Beveridge countries where only modest tax-financed ~~flat-rate~~ public benefits exist at the national level. In this case, individual accounts can be introduced in an ‘add-on’ manner by prescribing new contributions for individual accounts on top of existing taxes on wages. However, in Bismarckian countries where contributions on wages had been imposed decades ago to finance public earnings-related schemes, the public schemes need to be partially or completely closed-down and existing PAYG contributions diverted to private individual accounts. This ‘carve-out’ approach creates a huge fiscal burden due to unwinding of the public system and transition costs for financing accrued liabilities typically last for four to five decades.

Due to significant transition costs and the lack of professional consensus on the pension privatization feasibility, this reform approach was readily dismissed in advanced Bismarckian countries in Western Europe and North America. Furthermore, many countries with Beveridge tradition, including Sweden (1959), Finland (1961), Canada (1965) and Norway (1966), have effectively transformed into Bismarckian tradition after the Second World War due to the addition of contributory earnings-related public pension

pillar (Hinrichs, 2000).¹ This left Australia and Denmark as notable exceptions among developed countries that ended up relying on mandatory defined-contribution individual accounts in the nineties, after several attempts at introducing public earnings-related systems failed in both countries throughout the 20th century.

The most interesting, and radical, pension reforms in the nineties were implemented in Bismarckian countries in Latin America and Eastern Europe which, despite significant multi-decade transition costs, opted for carve-out privatization. This divergent trend in developed and developing Bismarckian countries was facilitated by the technical and financial assistance from the World Bank and the premise that reforms would not only enable higher pensions to future retirees but would also accelerate economic growth and expand contributor coverage (World Bank, 1994). However, the premise of macroeconomic improvements has been on shaky theoretical grounds from the start (Orszag and Stiglitz, 2001; Barr, 2000) and ex-post experiences from both Latin America and Eastern Europe suggest that they ‘have remained largely unmet’ (World Bank, 2006: xvi; Altiparmakov and Nedeljkovic, 2018; Arenas de Mesa and Mesa-Lago, 2006).

The potentially more efficient financing mechanism and higher pensions of future retirees is thus the crucial remaining economic rationale for individual account reforms. It has long been established that in a balanced PAYG system contributors implicitly earn the rate of return equal to GDP growth (Aaron, 1966; Altiparmakov, 2015). Thus, at the outset of reforms, individual accounts were expected to provide (net) rates of return tangibly higher than GDP growth.

This paper measures pension fund performance by analyzing the realized net rates of return in real terms, i.e. gross rates excluding operating expenses and inflation (but inclusive of any taxes paid in order to facilitate comparisons across different tax jurisdictions). Strictly speaking, comparing returns of alternative investments should control for the underlying risk. However, since the objective of all retirement saving products is to maximize long-term performance over a typical 40-year working career, we can assume that alternative pension funds undertake, or should undertake, comparable risks when optimizing their investment portfolio. In fact, we can see that return volatilities measured by the standard deviation in Tables 1, 2, 3 and 5 are mostly in the 8% to 10% range. This is in contrast with GDP growth volatility which is significantly lower, usually in the 2% to 4% range, which confirms that risk adjustment should not be ignored when comparing returns to capital with less risky PAYG financing (Geanakoplos et al, 1998).

Estimating net rates of return is relatively straightforward in Eastern European countries which predominantly charge asset-based fees which can be directly subtracted from realized gross returns to obtain net rates of return in Table 1.²

¹ Sweden is actually a prominent exception in Western Europe that did introduce a very small private individual accounts component equal to 2.5% of wages in the course of reaching a political compromise on a broad pension reform package in the nineties (Hagen, 2013).

² Rates of return presented in Table 1 can be more accurately described as semi-net returns since they exclude asset-based fees but do not exclude contribution-based fees. Although contribution fees are not charged in Latvia and Estonia, data from 2014-2015 period shows they can go up to 2.5% of contributions in Romania, 3.5% in Poland, 3% in FYR Macedonia and 5% in Bulgaria.

Table 1 – Individual accounts performance until 2016 in Eastern Europe, in %

Country	Inception	Individual Accounts		GDP		Prevalence of disguised-PAYG	Reform reversal
		Real returns	Standard deviation	Growth	Standard deviation		
Hungary	Jan 1998	1.6	9.3	2.4	3.1	Yes	Dismantling, 2010
Poland	Jan 1999	4.8	8.3	3.6	1.7	Yes	Dismantling, 2013
Latvia	July 2001	-0.6	7.7	3.5	6.7	No	Scaledown, 2009
Bulgaria	Apr 2002	1.6	8.3	3.5	3.2	No	Scaledown, 2011
Croatia	May 2002	3.8	6.7	1.4	3.7	Yes	None
Estonia	July 2002	0.5	10.0	3.0	6.4	No	None
Lithuania	June 2004	1.4	10.2	3.0	6.1	No	Scaledown, 2010
Slovakia	Apr 2005	-0.1	3.5	3.8	4.1	No	Scaledown, 2009
Macedonia	Feb 2006	3.6	7.1	3.1	2.2	Yes	None
Romania	May 2008	6.1	3.6	1.6	4.3	Yes	Scaledown, 2018
AVERAGE		2.3	7.5	2.9	4.1		

Source: Altiparmakov (2018) and national supervisory authorities.

The groundbreaking carve-out privatization in Chile was accompanied by strict and long-lasting austerity measures that produced a surplus of 8.5 percent of GDP in the non-pension part of the public sector over the 1981–2004 period (Arenas de Mesa and Mesa-Lago, 2006). Other reforming countries were mostly unsuccessful in implementing appropriate austerity measures to support the pension privatization ‘resulting to a large extent in a debt-financed transition and relatively large issues of Government bonds, which ended up in the portfolios of pension funds (Impavido and Rocha, 2006).

In particular, pension funds in Argentina, Bolivia, Costa Rica, El Salvador, Mexico, Uruguay, Kazakhstan, Hungary, Poland, Croatia, FYR Macedonia and Romania have been predominantly investing in domestic government bonds that were issued in the first place to finance the carve-out privatization. These circular transactions do not represent genuine retirement funding but basically a disguised-PAYG mechanism that reduces welfare compared to traditional PAYG financing due to hefty fees charged by private management companies (Altiparmakov, 2015).

Bolivia (2010) and Kazakhstan (2013) thus decided to nationalize private funds and switch to public administration of individual retirement accounts in order to save on marketing and sales costs. Argentina (2008), Hungary (2010) and Poland (2013) went a step further and completely dismantled private individual accounts and reverted back to sole PAYG financing of the national earnings-related system.

Table 1 shows that the performance in Eastern European countries that managed to diversify investment portfolios away from domestic government bonds – also did not live up to reform expectations. Individual accounts net returns were negative in real terms in Latvia and Slovakia and about a meagre 1% in Bulgaria, Lithuania and Estonia. This disappointing performance contributed to the decision in all these countries, except Estonia, to permanently downsize private individual accounts and to rely more on public PAYG financing.

Due to the dominance of front-loaded contribution fees, private pension funds in Latin America mostly publish gross returns data which cannot be easily or unambiguously translated into net returns suitable for international comparisons. The 1981 Chilean pension privatization caught international attention and stimulated reform discussions in other

countries due to realized gross returns over 10% in real terms during the first decade of operation. Gill et al (2005) note that the historical performance of Chilean pension funds has been largely driven by high bond returns as interest rates fell in the early 1980s. However, these exceptional returns were to a considerable extent driven by the specific environment under the Pinochet dictatorship when cumulative gross returns surpassed 45% in the first two years of operation, despite Chilean GDP declining by more than 8% over the same period (Table 2). These extraordinary returns were not sustainable as Chilean pension portfolios diversified and gross returns leveled-down in the nineties.

Table 2 – Gross real returns in Chile, 1981-2017

Year	Gross Returns	GDP growth	Year	Gross Returns	GDP growth
2017			1996	3.3%	6.8%
2016	1.9%	1.6%	1995	-2.5%	8.8%
2015	2.3%	2.3%	1994	19.5%	5.1%
2014	8.4%	1.9%	1993	14.3%	6.7%
2013	5.2%	4.0%	1992	2.9%	11.1%
2012	4.6%	5.3%	1991	26.6%	7.7%
2011	-3.8%	6.1%	1990	13.6%	3.7%
2010	9.3%	5.8%	1989	5.6%	10.6%
2009	27.7%	-1.6%	1988	6.2%	7.3%
2008	-22.0%	3.5%	1987	4.5%	6.6%
2007	6.5%	4.9%	1986	10.9%	5.6%
2006	17.0%	6.3%	1985	9.1%	2.0%
2005	5.7%	5.7%	1984	2.1%	5.9%
2004	9.1%	7.2%	1983	8.9%	-2.8%
2003	11.9%	4.1%	1982	28.5%	-13.6%
2002	2.7%	3.1%	1981	12.9%	6.2%
2001	5.7%	3.3%			
2000	4.0%	5.3%			
1999	14.5%	-0.5%			
1998	-1.1%	4.5%			
1997	4.5%	7.4%			
	1997-2016			1981-2016	
GeomAvg	5.3%	4.0%	GeomAvg	7.4%	4.3%
StdDev	9.5%	2.4%	StdDev	9.3%	4.3%

Source: www.fiap.cl, accessed 13.01.2018, IMF WEO database for GDP growth.

During the second decade of operation, the Chilean pension fund market became highly concentrated and the number of pension funds was reduced from twenty in the early nineties to only six remaining in operation in 2004, with the two largest funds controlling close to 73% of assets in 2006. Impavido (2008) notes that high market concentration is typical for mandatory individual accounts industries, with the largest two funds controlling 62% of Bulgarian assets, and the largest three funds controlling 64% of assets in Poland

and 76% in Slovakia. In order to reduce costs, the 2008 reforms introduced a biannual bidding process that assigns new members exclusively to the pension fund charging lowest (direct) fees. The Chilean expert commission proposed further measures to improve performance in 2015, including the establishment of a public not-for-profit fund manager to compete with private for-profit entities (Barr and Diamond, 2016).

Looking at the identical timeframe with Australia in Section 4 below, Chilean gross real returns averaged 5.3% over the 1997-2016 period. Determining the net rate of return can be technically ambiguous, since one has to decide on the appropriate approach to amortizing the incurred contribution fees. If we look at a representative worker earning the national average wage, his internal rate of return equals 3.3% over the 1997-2016 period. This is the lower bound on possible net return estimates. On the other hand, it can be argued that front-loaded contribution fees need to be amortized over longer periods that cover a 40-year working career. Taking this perspective, contribution fees which averaged about 15% over the 1997-2016 period imply a reduction in yield of about 0.7% during a typical 40-year career (Whitehouse, 2001). This gives a 4.6% net rate of return, which is a higher bound on possible estimates.³

Since the Chilean system has been operating for close to four decades, it is fair to say that the relevant net rate of return is likely closer to the higher bound, most likely around 4.5%. Performance of over 4% in real terms is quite respectable in international comparisons, especially compared to Eastern European countries that diversified away from government bonds. However, it should be noted that Chilean GDP grew by 4% over the 1997-2016 period, which means that virtually the same level of benefits could have hypothetically been achieved in a balanced public PAYG scheme (based on notional defined-contributions for example).⁴ This undermines the economic rationale for implementing the carve-out privatization in the first place. Failure to realize the initially anticipated level of private retirement benefits led to a major re-reform in 2008 which reinforced and strengthened public non-contributory old-age benefits to tackle the emerging elderly poverty (Mesa-Lago and Bertranou, 2015).⁵

Despite the fact that individual accounts performance did not live up to ambitious expectations in most countries, many commentators in the literature do not challenge this approach per se but blame the reform reversals on unsupportive preconditions in developing countries, such as undeveloped local capital markets, lack of financial literacy, incomplete reform plans and short-sighted political decisions (Gill et al, 2005; Rudolph and Rocha, 2009; Price and Rudolph, 2013; Schwarz and Arias, 2014; Casey, 2014). Australia thus provides a unique counterfactual case-study to try to distinguish problems caused by unsupportive preconditions from inherent weaknesses in the design of individual account reforms.

³ Net return estimates for Chile represent author calculations based on annual FIAP data on gross returns and contribution fees over the 1997-2016 period. The data on the amount of annual contribution fees actually charged was not available, but approximations indicate it stood around 0.7-0.8% of assets.

⁴ It should be remembered that the expected rate of return during the payout phase is lower compared to the accumulation period due to more conservative portfolios and annuitization costs. The realized rate of return during the accumulation period in Table 4 should thus be appropriately reduced, likely by 0.5 to 1 percentage points, when comparing the individual accounts performance with that of a hypothetical PAYG system.

⁵ Beattie and McGillivray for example note that Castillo (1993) argued that, despite lower rates of returns in other countries, long-term net rates of return in Chile would be between 5.5% and 6.5% in real terms.

3. Historical development of old-age provision in Australia

Contrasting the development of Bismarckian contributory earnings-related systems in Continental Europe and United States, national retirement systems in UK Commonwealth countries, including Australia, started as non-contributory modest poverty-prevention old-age benefits financed from general taxes, known as the Beveridge systems.

Australia introduced a tax financed means-tested Age Pension assistance for elderly over 65 years in 1908.⁶ Over the 1940's to 1960's period, means testing was made more lenient by increasing income and asset limits and reducing the rate of benefit phase-out, thus expanding the coverage Age Pension assistance. During the 1970's means testing was abolished for persons aged 70 and older, but fiscal restraint during 1980's lead to the reinstatement of means testing and further tightening of the eligibility criteria. Nowadays, the Age pension in Australia is set to guarantee persons aged 65 and older a minimum income equal to 25% of average male earnings and 40% for old-age couples. The eligibility age is legislated to increase to 67 years over the 2017-2023 period.

After the Second World War, the prevailing international paradigm became the development of earnings-related pension components aimed at providing income maintenance of pre-retirement living standard (Hinrichs, 2000). However, attempts at introducing a national contributory earnings-related component in Australia failed on several occasions. In 1928 and 1938, laws stipulating the creation of national contributory earnings-related schemes were drafted and even passed in the Parliament, but the implementation itself was subsequently abandoned. A Pension Reform Committee established by the government in the 1970's argued for the establishment of a national earnings-related contributory scheme, but the proposal was eventually rejected after a change in government (Australian Treasury, 2001). Australia thus remained one of the rare advanced economies which did not introduce an earnings-related pension component at the national level.

It should be noted that voluntary supplementary retirement savings have been tangibly present in various forms in Australia, as is the case in most countries. Although voluntary savings can represent an important addition to retirement living standards, this paper exclusively focuses on the performance of mandatory aspects of retirement savings in Australia and other countries.

3.1. Introduction of mandatory individual accounts

Absence of a public earnings-related scheme meant that Australian workers had to rely on private savings and occupational schemes for consumption smoothing and maintenance of living standard in retirement. Like in other countries, coverage of occupational schemes was mostly limited to (more affluent) workers in the public sector and large companies. Thus, only 32% of wage earners were covered with private occupational pension plans in 1974 (Clare, 2014). Private pension coverage increased significantly in the latter half of 1980's, after collective bargaining negotiations in 1985 prescribed industrial labor agreements to include employers' responsibility to contribute 3% of wages into workers individual retirement accounts. Edey and Simon (1998) note that

⁶ The eligibility age for women was reduced to 60 years in 1910. In 1993 the increase in the eligibility age for woman back to 65 years was legislated, and has become fully effective in 2013.

the timing “was in a sense accidental, reflecting the intricacies of the wage-bargaining process at the time” and objective of increasing national saving which had long been on the policy agenda.⁷

By 1991, five years after the wage bargaining deal was put in place, private pension coverage grew from around 40% to 79% of employees (Clare, 2014). However, nearly one third of private sector workers remained uncovered, while non-compliance and legal obstacles prevented further coverage expansion through industrial agreements. The Australian government thus established the Superannuation Guarantee system in 1992 and legislated mandatory participation in private retirement accounts for all wage and salary earners.⁸ The contribution rate was increased from the initial 3% to 9% by 2002, with further increase to 9.5% over the 2013-2014 period. Future increases are legislated from 9.5% to 12% over the 2021-2025 period.

Liu and Arnold (2010a) explain that the Australian private pension provision has a century-long history and that many private funds originally started as occupational schemes and thus predate the 1992 mandatory Superannuation Guarantee program. Being initially established as occupational funds they have been operating on a not-for-profit basis and charging their members only to cover actual operating expenses. Not-for-profit funds include three types: 1) *public-sector funds* were established to provide pension benefits to certain groups of state and federal government employees, 2) *corporate funds* to the employees of a single company and 3) *industry funds* to unionized workers in a single industry. Membership in these three not-for-profit types of funds was both closed and mutually exclusive, thus the funds properly did not consider themselves to be competitors. *Retail funds* sprang up to cater to individuals not eligible for occupational funds, such as professionals and other self-employed individuals, and to employers not large enough to justify their own dedicated funds. Retail funds operate on a commercial for-profit basis and are mostly organized by financial-services groups, such as banks or insurance holding companies.

After the mandatory Superannuation Guarantee system was introduced, the not-for-profit funds were allowed to become ‘public-offer’ funds and besides safeguarding the interests of their established membership to also offer their membership to the general public, in direct competition with retail funds. Initially, employers and trade unions were deciding in which superannuation funds to deposit contributions on employees’ behalf, but this changed in 2005 when the system was liberalized to allow workers to choose Superannuation funds themselves.

It should be noted that Australian regulations allow for small self-managed funds to be organized for up to four (family) members to self-manage their retirement savings. This option has become very popular among Australians that have accumulated assets equal to 37% of GDP in 2016, which is almost a third of the entire mandatory retirement savings. The analysis of self-managed funds is beyond the scope of this paper due to the lack of relevant performance data but deserves more elaborate future research.

⁷ Interestingly, Denmark, another advanced economy with Beveridge tradition, also ended up introducing individual accounts in a somewhat accidental manner, as a result of wage-bargaining in 1991, after several failed attempts at instituting common national earning-related scheme (Andersen and Larsen, 2002).

⁸ Private pension funds are referred to as “Superannuation” funds in Australia. For parsimony, in this article we mostly refer to them as private pension funds, or individual retirement accounts.

4. Performance of individual accounts in Australia

The performance of public-sector, corporate, industry and retail funds is available from 1997 from the supervisory Australian Prudential Regulatory Agency (APRA) and with net performance of Australian pension funds summarized in Table 3. Since Australian pension fund returns are subject to (concessional) taxation, we also present returns data before taxation, in order to ease international comparisons with Chile and Eastern European countries where mandatory private funds are usually exempt from taxation.

Table 3 – Net real rates of return in Australia, 1997-2017

	After-tax Real Returns				Before Tax		GDP growth
	Corporate	Industry	Public	Retail	Not-for-profit	Retail	
2017	7.1%	8.5%	5.2%	5.7%	7.5%	5.7%	2.2%
2016	1.2%	2.8%	2.4%	0.3%	2.4%	0.0%	2.5%
2015	6.4%	8.1%	8.3%	6.2%	8.4%	6.1%	2.4%
2014	10.0%	10.0%	9.4%	7.8%	10.4%	7.8%	2.8%
2013	9.6%	11.7%	11.5%	10.4%	12.0%	10.4%	2.1%
2012	0.0%	-0.8%	0.0%	-2.2%	-0.6%	-2.4%	3.6%
2011	4.5%	5.5%	5.4%	3.1%	5.6%	3.0%	2.7%
2010	6.4%	5.5%	6.7%	5.7%	6.4%	5.6%	2.3%
2009	-9.8%	-13.2%	-13.8%	-13.0%	-14.4%	-13.4%	1.7%
2008	-13.1%	-9.9%	-9.7%	-13.9%	-11.1%	-14.6%	2.6%
2007	12.6%	13.3%	12.5%	10.8%	13.8%	11.1%	4.5%
2006	10.1%	9.2%	11.0%	8.5%	10.7%	8.7%	2.7%
2005	9.9%	10.3%	11.1%	7.7%	11.1%	7.9%	3.2%
2004	9.6%	10.8%	11.3%	8.3%	11.8%	8.4%	4.1%
2003	-6.0%	-4.4%	-3.5%	-5.1%	-3.5%	-4.4%	3.0%
2002	-6.5%	-7.3%	-8.6%	-7.8%	-7.3%	-7.2%	4.1%
2001	0.0%	-1.1%	-1.1%	-2.1%	0.1%	-1.5%	2.5%
2000	5.8%	5.0%	8.6%	3.4%	8.3%	4.2%	3.2%
1999	6.7%	5.6%	7.9%	3.0%	8.6%	3.7%	4.3%
1998	8.0%	5.9%	6.2%	5.1%	8.1%	6.0%	4.7%
1997	15.8%	12.1%	17.4%	8.1%	18.0%	9.0%	4.3%
GeomAVG	3.9%	3.9%	4.4%	2.1%	4.7%	2.3%	3.1%
StdDev	7.6%	7.6%	8.1%	7.3%	8.4%	7.4%	0.9%

We can notice a stark difference in the performance of different types of Superannuation funds – the not-for-profit funds have been realizing rates of return more than 2 percentage points higher than the retail funds. This translates into more than a 40% lower pension for workers contributing to retail funds during their working careers compared to workers making the same contributions into not-for-profit funds (Whitehouse, 2001).

Australian not-for-profit pension funds have been outperforming GDP growth over the years. This is an important accomplishment since it means that the capitalized system is (on average) providing higher pension benefits to its members than what they could be earning in a public Pay-As-You-Go system. On the other hand, for-profit retail funds are the only type of superannuation funds that failed to outperform GDP growth in Australia. This poor performance resembles Eastern European experiences in Section 2.

The persistent substandard performance of retail funds has drawn a lot of professional attention in Australia over the years. One obvious reason for this underperformance is higher operating fees, with retail funds charging an average fee equal to 1.5% of assets in 2014 compared to 0.87% fee charged by non-for-profit funds (Financial Services Council, 2015).

Higher operating fees charged directly to members can however explain only one part of the retail funds underperformance. Liu and Arnold (2010b) show that retail funds outsource most of their investment activities, often to related entities which have been charging about 2.6 times higher fees (133 bps as opposed to 52 bps) for their services compared to market rates charged to not-for-profit or unrelated retail funds.⁹ This evidence suggests that for-profit funds have been suppressing contributors' interests to that of retail funds' shareholders and management.

Cummings (2012) furthermore finds that not-for-profit funds were much more successful at capturing economies of scale than retail funds, by reducing administrative and investment expenses and also investing in asset classes which provide size-related advantage, such as private equity and real estate. As a result, small not-for-profit funds were outperforming small retail funds by 120 bps on average, while big not-for-profit funds were outperforming their retail counterparts by staggering 300 bps (Vidler, 2011). When analyzing the apparent lack of retail funds' economies of scale, Liu and Arnold (2010b) note that large retail funds often operate as platforms that allow workers to directly control their investments which limits opportunities for portfolio managers to capture economies of scale. Vidler (2011) on the other hand notes that large retail funds could be enjoying economies of scale but not transferring them to workers and instead giving priority to interests of shareholders and internal stakeholders.

We can see in Table 4 that the Australian pension fund market has been going through consolidation and concentration of capital over the years. However, with more than 200 pension funds operating in 2017, oligopoly structures are unlikely to be present to any tangible extent in Australia and the level of capital concentration is much lower than in individual accounts systems in Latin America and Eastern Europe.

In order to improve performance and reduce costs, additional pension reforms were implemented in 2014 which included introduction of a cost-efficient *MySuper* default accounts aimed at close to 80% of employees which were "disengaged" and did not actively choose a retirement saving program. Although some improvement has been made on the cost side, with average annual fees being reduced from 1.3% of assets in 2004 to 1.1% in 2014 (Financial Services Council, 2015), no tangible progress has been made with respect to retail funds' underperformance.

⁹ Liu and Arnold (2012) also find that Australian workers have been purchasing more expensive insurance policies for sickness, disability and premature death in cases where retail funds were bound to offer policies to their members from pre-specified insurance providers.

Table 4 – Structure and trends in the Australian individual accounts industry

	TOTAL		Corporate			Industry			Public Sector			Retail		
	Assets, % of GDP	Accounts, in mil.	# of entities	Asset share	Member share	# of entities	Asset share	Member share	# of entities	Asset share	Member share	# of entities	Asset share	Member share
2017														
2016	86.0%	24.8	30	3.8%	1.4%	41	32.8%	44.8%	38	25.0%	14.2%	127	38.3%	39.6%
2015	84.5%	25.4	34	3.9%	1.4%	42	31.8%	44.5%	38	25.0%	13.9%	133	39.3%	40.3%
2014	76.9%	25.8	42	4.5%	1.6%	43	30.8%	44.1%	38	25.0%	13.9%	137	39.7%	40.4%
2013	69.2%	25.6	50	4.9%	1.6%	46	29.6%	44.2%	40	24.6%	14.0%	150	40.9%	40.2%
2012	61.5%	26.2	64	5.1%	1.7%	51	28.1%	43.8%	40	25.3%	13.8%	163	41.4%	40.7%
2011	63.0%	26.0	71	5.6%	1.8%	53	27.2%	43.3%	41	24.7%	14.0%	174	42.6%	40.9%
2010	61.3%	25.9	85	6.1%	1.9%	58	27.5%	43.9%	41	22.7%	13.1%	187	43.8%	41.1%
2009	55.8%	25.8	106	6.4%	1.9%	59	26.3%	44.0%	42	22.5%	13.0%	211	44.8%	41.1%
2008	65.7%	25.4	143	6.7%	2.0%	62	25.2%	43.8%	42	22.8%	12.8%	223	45.3%	41.4%
2007	74.8%	24.5	214	7.1%	2.1%	66	24.0%	43.1%	42	22.6%	12.9%	232	46.3%	42.0%
2006	65.5%	23.6	295	6.6%	2.0%	68	22.8%	41.7%	44	24.0%	13.2%	235	46.5%	43.1%
2005	58.9%	22.6	695	8.4%	2.6%	75	21.2%	40.9%	50	24.3%	12.7%	243	46.0%	43.8%
2004	51.5%	20.9	1089	8.2%	2.7%	75	20.0%	41.3%	44	25.8%	13.4%	298	46.0%	42.6%
2003	46.9%	21.1	1862	12.4%	3.8%	124	18.6%	39.8%	58	24.1%	11.8%	221	44.9%	44.5%
2002	47.2%	20.2	2484	14.4%	4.5%	134	16.9%	39.6%	76	24.4%	12.4%	244	44.2%	43.6%
2001	49.6%	19.3	3224	17.6%	6.2%	150	15.6%	39.4%	81	26.3%	12.4%	265	40.5%	42.0%
2000	45.7%	18.5	3389	19.2%	6.5%	155	13.9%	37.8%	81	28.9%	13.5%	283	37.9%	42.2%
1999	41.3%	17.4	3585	21.6%	6.9%	157	12.9%	36.2%	82	28.7%	14.9%	297	36.8%	42.0%
1998	37.1%	16.2	3898	24.5%	7.4%	172	12.5%	35.8%	76	28.0%	16.0%	314	35.0%	40.7%
1997	34.3%	15.8	4106	26.2%	8.2%	176	11.7%	35.4%	77	28.3%	16.5%	340	33.8%	39.9%

Vidler (2011) shows that instead of exposing themselves to investment risk, workers saving in retail funds could have earned higher rates of return on risk free assets, such as bank deposits. Furthermore, looking at the performance of 200 largest pension providers holding more than 80% of assets, Vidler (2011) shows that no retail fund ranked in the top half according to net returns performance. Despite their consistent underperformance, retail funds managed to maintain their 40% market share virtually unchanged over the years (Table 4). This kind of seemingly irrational worker behavior indicates presence of market failures and inefficient allocation of retirement savings.

Since best-performing Australian funds are characterized with not-for-profit orientation and have initially been established as non-competitive occupational funds, it is natural to ask whether additional economies of scale could be captured by organizing a not-for-profit non-competitive retirement savings management at the national level? The next Section thus explores the performance of modern public pension investment funds in several developed countries, foremost Canada.

5. Performance of modern public pension investment funds

When discussing individual accounts' weaknesses and alternative reform approaches, Orszag and Stiglitz (2001) point to Canadian efforts at introducing independent and professional management of a public pension investment fund to avoid performance pitfalls steaming from political interference. Being another UK

Commonwealth country, Canada shares institutional similarities with Australia, including the Beveridge pension tradition. National pension systems in both countries started as tax-financed means-tested old-age programs in early 20th century with developments diverging after the Second World War when Canada successfully organized a public earnings-related DB pension tier in 1965. When solvency of the Canada Pension Plan (CPP) became jeopardized in the nineties it was decided to reinforce the existing public DB scheme by modernizing and expanding the public pension investment fund (CPPIB), thus going against the tide and World Bank studies which suggested a positive premium in the case of private retirement savings management (Iglesias and Palacios, 2000).

Two decades later, we can observe in Table 5 that Canadian experiences seem to be successful. CPPIB net real rate of return averaged 5.5% over the 1999-2017 period, which is more than 0.5 pp higher than the performance of Australian not-for-profit funds. The performance difference seems even higher if we compare identical time periods since CPPIB was not established in the financially prosperous 1997-1998 years. A large part of this over performance is due to economies of scale, with CPPIB operating expenses averaging about 15 bps compared to about 90 bps for Australian non-for-profit private pension funds.

Table 5 – Modern pension reserve funds, net real rates of return

	Canada		Norway		New Zealand	
	Returns	GDP growth	Returns	GDP growth	Returns	GDP growth
2017				1.4%	18.1%	3.5%
2016	10.3%	1.5%	5.3%	1.1%	1.2%	3.6%
2015	2.0%	0.9%	1.8%	1.6%	14.3%	3.2%
2014	16.0%	2.6%	6.3%	1.9%	24.3%	2.8%
2013	15.4%	2.5%	14.3%	1.0%	18.0%	2.1%
2012	9.0%	1.7%	11.2%	2.7%	0.1%	2.5%
2011	3.8%	3.1%	-5.3%	1.0%	20.6%	1.9%
2010	9.5%	3.1%	7.6%	0.6%	12.9%	2.0%
2009	14.0%	-3.0%	23.5%	-1.6%	-23.7%	0.4%
2008	-20.1%	1.0%	-24.4%	0.4%	-8.5%	-0.4%
2007	-2.7%	2.1%	1.1%	2.9%	11.9%	4.0%
2006	11.4%	2.6%	5.6%	2.4%	15.3%	2.8%
2005	12.9%	3.2%	8.5%	2.6%	10.8%	2.6%
2004	6.1%	3.1%	6.3%	4.0%	7.9%	4.4%
2003	15.6%	1.8%	10.8%	0.9%	na	-
2002	-5.1%	3.0%	-6.6%	1.4%	na	-
2001	2.9%	1.8%	-3.7%	2.1%	na	-
2000	3.8%	5.2%	0.4%	3.2%	na	-
1999	0.8%	5.2%	10.9%	2.0%	na	-
1998	na	-	8.2%	2.6%	na	-
1997	na	-	7.2%	5.3%	na	-
GeomAvg	5.5%	2.3%	4.0%	1.9%	8.0%	2.5%
StdDev	9.1%	1.8%	9.7%	1.4%	12.8%	1.3%

An independent and professional investment mandate had been introduced for public pension funds in Norway, Ireland and New Zealand about the same time that the CPP was modernized in Canada (Iglesias, 2002; Vittas et al, 2008). The performance of the Norwegian public pension fund was also vastly superior to the Australian retail for-profit funds with net real returns averaging 4% over the 1997-2016 period, while management costs were kept below 10 bps. The pension fund in New Zealand posted stellar performance with net rates of return, before taxation, averaging 8% in real terms from September 2003 to June 2017, with management costs declining from 74 bps in 2008 to 29 bps in 2016.

Ireland could be considered an exception to the impressive public fund performance since most of the assets held in the Irish reserve fund were used to save the failing banking sector in 2009. However, it should be noted that public funds in Ireland were not mismanaged, which was one of the prevailing fears stressed by the World Bank (1994). Instead, Ireland decided to use public funds to tame a national financial crisis in a similar manner to Argentina which nationalized assets in private individual accounts in order to tame its own financial crisis in 2008. From this perspective, it could be said that modern public pension funds fared no better and no worse than private individual accounts facing a major national crisis.

When analyzing alternative funding arrangements, Iglesias and Palacios (2000) note that the returns of publicly-managed funds were “almost always below the growth of income” which contrasts “with privately-managed pension fund returns, which generally exceed income growth”. Twenty years later, empirical evidence points to a completely opposite conclusion – modern publicly-managed funds have been generally outperforming GDP growth rates by a significant margin, while private individual accounts failed in doing so in many reforming countries.

6. Revealed Individual Accounts Weaknesses

Australia presents a unique counterfactual opportunity to explore individual accounts performance in an environment where very few, if any, unsupportive preconditions can be identified. In particular, the add-on pension privatization in Australia enjoyed bipartisan political support and was not accompanied with legacy transition costs, so private pension funds were not incentivized in any way to favor government securities but were free to pursue optimal portfolio diversification, including investments abroad. Being a developed country, Australia was able to organize adequate supervisory capacities and rely on relatively financially literate citizens and highly developed financial markets. Finally, having developed an occupational pension industry decades earlier, Australia provides an ideal opportunity to compare the performance of occupational not-for-profit funds with commercial retail funds.

When comparing the effects of occupational pension legacy in Australia with purely for-profit competitive organization of funds in Chile, World Bank (1994:275) notes that “costs, especially marketing costs, might be lower in the Australian scheme, where employers choose the pension fund on a relatively long-term basis... [Since] workers bear the risk while employers choose the investment manager - the incentives for high returns might be lower in Australia than in Chile.” Australian ex-post evidence supports the well-

established premise that occupational funds have lower costs than for-profit individual accounts (Bateman and Mitchell, 2004). However, the hypothesis of individual accounts higher returns seems to be firmly refuted by the Australian data, both in terms of gross returns and net returns.

When analysing low rates of return in Hungary, Impavido and Rocha (2006) report that Hungarian pension funds organized by financial institutions have been charging significantly higher fees and realizing tangibly lower rates of return compared to pension funds organized by non-financial companies or industries. Besides higher first floor fees, financial companies in charge of Hungarian pension funds also outsourced investment activities to related financial institutions which have been charging second floor fees tangibly above market rates charged to non-related entities. Despite this underperformance, Hungarian workers have not been switching to better performing funds and financial institutions have been dominating the pension market holding more than 80% of assets. Mesa-Lago and Bertranou (2015) similarly note that 80% of workers failed to switch to the fund with tangibly lowest fees after the 2008 reforms in Chile.

Impavido and Rocha (2006) try to explain this irrational worker behavior by inadequate disclosure standards which undermined performance comparisons, weak supervisory enforcement and lack of financial literacy. Yet, the same disappointing outcomes persist in Australia, with retail for-profit funds maintaining their dominant market share virtually intact over the last two decades (Table 2), despite several rounds of reforms aimed at improving competition and protecting consumers. These outcomes contradict the premise that competitive for-profit private pension provision would ensure efficient allocation of retirement savings. To the contrary, these outcomes indicate inherent market failures which seem to be present in both developed and developing countries alike.

Going back to finance and economic basics, one might ask how exactly would a financially literate worker pursue the maximization of his individual account returns in a rational manner? He could base his decision on the past performance of different pension funds, but Gill et al (2005:143) note that “workers do not appear to react to differences in returns” and we know that even a weak form of market efficiency suggests that past performance is not an indication of future returns. On the other hand, strong market efficiency implies that fund managers are not able to outperform the market in the long run and workers should thus choose the fund with the lowest fees. However, we have seen that workers don’t seem to promptly react to differences in the first-floor fees, while pension funds also charge significant second floor fees not directly visible to consumers. It is thus no surprise that workers in both developing and developed countries seem to be most responsive to marketing and sales campaigns, with Mastrángelo (1999) showing that the marketing elasticity of demand in Chile was 18.5 times higher than the price elasticity.

Under these circumstances, it can be argued that even financially literate workers would not be in a position to rationally maximize their retirement returns. Especially if pension funds’ investments exhibit herding effects, as is the case in many reforming countries including Chile where “there is no correlation between the level of commissions and the performance of a pension fund” (Gill et al, 2005:149). Stark differences between returns of not-for-profit and retail funds indicate that herding effect is not prevalent in Australia, and yet, underperforming retail funds have been able to retain their market share throughout the years. And if a developed country with strong supervisory capacities cannot

in practice enforce the fiduciary role of private for-profit managers, what can be expected in developing countries of Eastern Europe or Latin America?

7. Policy lessons

The major policy lesson from more than two decades of diverse international evidence is that countries should avoid carve-out privatization since this approach is highly unlikely to outperform existing PAYG financing. If social preferences call for individualization and restriction of redistribution, this objective can be pursued with notional defined-contribution (Holzmann, 2012) or pension-point (Borsch-Suppan and Wilke, 2006) reforms while maintaining public PAYG financing.

In Chile, the international role model for carve-out privatization, the implementation of necessary austerity measures was facilitated by the presence and commitment of the Pinochet regime. However, securing the sustainability of multi-decade transition cost financing proved challenging in many democracies where reforms were predominantly debt financed and reduced to expensive forms of welfare-reducing PAYG financing in disguise. Eastern European countries that managed to diversify investment portfolios have been posting barely positive or even negative returns in real terms.

The commitment to efficiency-enhancing reforms allowed Chile to continue posting impressive returns, significantly superior to for-profit pension funds in Australia or Eastern Europe. Impressive as they may be, Chilean private individual accounts still failed to outperform benefits that a hypothetical balanced PAYG system would have provided, thus undermining economic rationale for this kind of reform.

Disappointing pension privatization performance can cause social and political unrest and contribute to eventual reform reversals – ranging from nationalization of individual accounts management in Bolivia and Kazakhstan, scaling-down of individual accounts in Slovakia, Latvia, Lithuania, Bulgaria and Romania, to outright dismantling of the entire system in Argentina, Hungary and Poland. To be sure, the disappointing performance was not the only driving force behind these reform reversals, with the global financial crisis and national fiscal crises being the actual triggers in Argentina and Hungary. However, as Fultz (2012) notes, the financial crisis should not be considered the root cause but merely a catalyst that exposed previously unresolved reform weaknesses in Hungary and Poland, as well as Argentina (Arza, 2008).

The add-on introduction of individual accounts, as in Australia, is more politically and fiscally feasible. However, contrary to reform trends in the nineties, this approach should not be considered a panacea or even superior to alternative funding arrangements, especially in developed countries. Individual account systems in different and diverse countries have been plagued with identical drawbacks in practice, such as high operating costs, lack of effective fiduciary behavior of for-profit management companies and suboptimal worker choices. This suggests inherent problems and the presence of market failures in the design of individual account reforms which manifest themselves even in the most supportive environments, such as Australian. Competition among for-profit management companies seems unable to provide superior investment performance, especially after taking into account significant marketing and sales costs this introduces.

The crucial aspect to adequate outcomes seems not competition, but prudent governance, which can be pursued in various manners depending on local preconditions.

Developed countries with successful occupational funds tradition, such as Australia, can strengthen these foundations and expand their coverage, which is the route Switzerland took back in 1992. Countries with good public governance can consider prefunding via professionally independent public investment funds which are best positioned to capture economies of scale, can benefit from a wider range of investment opportunities such as private equity and can provide insurance against investment and longevity risks via intra- and inter-generational risk pooling.

However, one should not make the same mistake twice and overgeneralize the good performance in Canada or New Zealand, as was done with Chilean individual accounts in the nineties. The quality of public governance in Canada, Norway or New Zealand is very, very good, even compared to many developed OECD countries, and especially compared to developing countries where many governance concerns raised by Iglesias and Palacios (2000) remain valid. For example, Yermo (2008) notes that France tried to establish a relatively small public reserve fund in 1999 and to prefund it until 2020. However, the lack of political commitment undermined prefunding efforts and led to earlier withdrawal of assets in 2010.

Individual accounts expose workers to investment risks, thus reducing their welfare compared to systems that provide the same expected level of benefits in a defined-benefit manner, such as Canada. Furthermore, many reforming countries in Latin America and Eastern Europe, and also Australia, are exposing workers to the longevity risk of outliving their savings since annuitization at retirement is not mandated, which Bateman and Piggott (1998) identify as a major policy deficiency.

The most adverse effects of investment and longevity risks can be mitigated by the presence of a public means-tested flat rate benefit. However, means-testing of public benefits creates moral hazard to undertake extremely risky investments and/or to dissipate retirement assets too quickly in order to qualify for public old-age benefits.¹⁰ Introducing mandatory annuitization would reduce the moral hazard, but completely eliminating it would require moving from means-tested to universal old-age benefits, as in New Zealand or Canada for example. However, universal old-age benefits are costly and can prove to be fiscally unaffordable, as was the case in Australia.

Exposure to investment and longevity risks leads to intra- and inter-generational inequality of living standards in retirement. Workers within same generations earning equal salaries will have significantly different pensions depending on their choice of pension fund. These differences will be highly pronounced in Australia, with contributors to for-profit retail funds accumulating more than 40% lower savings compared to not-for-profit occupational funds. Even workers choosing identical pension funds but retiring a few years apart can receive significantly unequal pensions, as Burtless (2009) shows using the data for United States over the 20th century. Gill et al (2005) note that the gap between average accumulated savings between 1980s and 1990s cohorts in Chile will be around 35%.

According to the OECD, the elderly poverty rate in Australia was over 25% in 2014 – the second highest in OECD countries and significantly higher than 9% elderly poverty in Canada, despite the working-age poverty being actually lower in Australia (10.2%) than in

¹⁰ Edey and Simon (1998) note the ‘double dipping’ problem whereby many Australian have been early retiring and spending their private savings quickly in order to qualify for the means-tested Age Pension.

Canada (12.7%).¹¹ To be sure, Australian individual accounts system is still immature and this difference will likely improve as it matures in the next couple of decades. However, even the mature Australian system cannot be expected to come close to the level of equality and low poverty provided by the Canadian partially-funded defined-benefit scheme.

8. Concluding remarks

Australian experiences reinforces the disappointing individual accounts performance in Eastern Europe and Latin America. It suggests inherent weaknesses in the reform design that go beyond specific preconditions in reforming countries. Persistently substandard performance of Australian for-profit retail funds compared to not-for-profit, former occupational, pension funds – indicates the presence of market failures. Retail funds are being able to maintain their market share despite unambiguous evidence of substandard performance and suppression of contributors’ interests to that of retail funds’ shareholders and management.

Empirical evidence from the last couple of decades seems to be refuting the major reform premise from the nineties – that individual account reforms are a panacea and are to be preferred to alternative funding arrangements. Reforming countries, developed and developing alike, should reconsider carve-out privatizations since they seem to be highly unlikely to outperform existing PAYG financing. The add-on approach to individual accounts seems more feasible from the fiscal and political perspectives. However, it should be contrasted with alternative funding arrangements, such as broadening the coverage of occupational funds or modernizing public investment funds, since those alternatives might provide higher rates of return in developed countries with good governance standards.

REFERENCES

- Aaron, H.** 1966. “The social insurance paradox”, *Canadian Journal of Economics and Political Science*, Vol. 32, No. 3
- Altiparmakov, N.** 2015. “A call for more elaborate and transparent pension data to inform policy-making: A critical examination of World Bank data for Eastern Europe”, *International Social Security Review*, Vol. 68, No. 2
- Altiparmakov, N.** 2018. ‘Another Look at Causes and Consequences of Pension Privatization Reform Reversals in Eastern Europe’. *Journal of European Social Policy*, Vol. 28 (in press).
- Altiparmakov, N. and Nedeljkovic, M.** 2018. ‘Does Pension Privatization Increase Economic Growth? Evidence from Latin America and Eastern Europe’, *Journal of Pension Economics and Finance* 17(1): 46-84.

¹¹ Poverty is measured as the share of elderly whose income is lower than 50% of the median income in the entire population. Elderly poverty thus measures income inequality at the lower end of the income distribution. Australian public old-age benefits are slightly below the national poverty line. OECD (2017) notes that Australian old-age poverty data might not be completely comparable to other countries due to prevalence of lump-sum withdrawals of retirement savings.

- Arenas de Mesa, A. and Mesa-Lago, C.** 2006. ‘Structural Pension Reform in Chile: Effects, Comparisons with Other Latin American Reforms and Lessons’, *Oxford Journal of Economic Policy* 22(1): 149–67.
- APRA – Australian Prudential Regulation Authority.** 2007. *Insight*, Issue #2, Celebrating 10 years of Superannuation Data Collection, Sydney, Australia
- Arenas De Mesa, A. and Mesa-Lago, C.** 2006. “The Structural Pension Reform in Chile: Effects, Comparisons with other Latin American Reforms and Lessons”. *Oxford Journal of Economic Policy*
- Andersen, J. G. and Larsen, C. A.** 2002. *Pension politics and policy in Denmark and Sweden: Path Dependencies, Policy Style, and Policy Outcome*, Paper presented at XV World Congress of Sociology, Brisbane, July 7-13th, 2002
- Australian Treasury.** 2001. “Towards higher retirement incomes for Australians: a history of the Australian retirement income system since Federation” in *Economic Roundup – Centenary Edition*, Canberra, Commonwealth of Australia
- Azra, C.** 2008. ‘The Limits of Pension Privatization: Lessons from Argentine Experience’. *World Development*, 36:12:2696–2712
- Barr, N.** 2000. *Reforming Pensions: Myths, Truths and Policy Choices*. IMF Working Paper WP/00/139
- Barr, N. and Diamond, P.** 2016. ‘Reforming pensions in Chile’, *Polityka Społeczna*, No. 1, 2016, pp. 4-9
- Bateman, H. and Mitchel, O. S.** 2004. “New evidence on pension plan design and administrative expenses: the Australian experience”. *Journal of Pension Economics and Finance*, 3(1):63-76
- Bateman, H. and Piggott, J.** 1998. ‘Mandatory Retirement Saving in Australia’. *Annals of Public and Cooperative Economics* 69 (4): 547–569
- Beattie, R. and W. McGillivray.** 1995. “A Risky Strategy: Reflections on the World Bank Report Averting the old age crisis”, *International Social Security Review* Vol.48 #3
- Borsch-Supan, A. H. and Wilke, C. B.** 2006. “The German Public Pension System: How it will Become an NDC System Look-Alike”, in *Pension Reform: Issues and Prospects for NDC Schemes*, Holzmann, R and E. Palmer (eds).
- Brown, R.** 2014. ‘The essence of social security: debunked myths’. *Australian Journal of Actuarial Practice*, Vol. 2:5-12.
- Burtless, G.** 2009. *Lessons of the Financial Crisis for the Design of National Pension Systems*. CesIfo Working Paper No. 2753, July 2009.
- Casey, B.** 2014. “From pension funds to piggy banks: (Perverse) consequences of the Stability and Growth Pact since the crisis”, *International Social Security Review* 67(1): 27–48
- Castillo, R. B.** 1993. “Analysis of a national private pension scheme: The case of Chile – Comments”. *International Labour Review*, Vol. 132, No. 3
- Clare, R.** 2014. ‘Australian Pensions: An Equitable and Sustainable Arrangement in a Post crisis World?’ in *Equitable and Sustainable Pensions – Challenges and Experiences*, Clements, B., Eich, F. and Gupta, S. (eds), International Monetary Fund
- Cummings, J. R.** 2012. *Effect of fund size on the performance of Australian superannuation funds*. Australia Prudential Regulation Agency Working paper, March 2012, Sydney, Australia

- Drahokoupil, J. and S. Domonkos.** 2012. “Averting the funding-gap crisis: East European pension reforms since 2008”, *Global Social Policy* Vol. 12, No. 3
- Drahokoupil, J. and S. Domonkos.** 2014. “Is the Egg Basket Worth Its Price? The Fiscal Implications of Pension Privatization in Eastern Europe” in *Equitable and Sustainable Pensions – Challenges and Experiences*, Clements, B., Eich, F. and Gupta, S. (eds), International Monetary Fund
- Dunsford, G. and D. Wickham.** 2008. *New Ideas for Age Pension Reform*, Discussion Paper presented to the Institute of Actuaries of Australia’s Superannuation Policy Forum, Sydney, Australia, September 25th 2008
- Edey, M. and J. Simon.** 1998. “Australia’s Retirement Income System” in *Privatizing Social Security*, Feldstein, M. (ed), Chicago University Press
- Financial Services Council.** 2015. *Superannuation fees report 2014*. Produced by Rice-Warner Actuaries, Sydney, Australia
- Fultz, E.** 2012. “The retrenchment of second-tier pensions in Hungary and Poland: A precautionary tale”, *International Social Security Review* Vol. 65, No. 3
- Geanakoplos, J., O. S. Mitchell and S. P. Zeldes.** 1998. “Would a Privatized Social Security System Really Pay a Higher Rate of Return?” in *Framing the Social Security Debate: Values, Politics and Economics*, Brookings Institution Press
- Gill, I. S., T. Packard and J. Yermo.** 2005. *Keeping the Promise of Social Security in Latin America*. Stanford University Press; World Bank, Washington, DC
- Hagen, J.** 2013. *A History of the Swedish Pension System*. Uppsala Center for Fiscal Studies Working Paper 2013:7, Uppsala University, Uppsala, Sweden.
- Hemming, R.** 1998. *Should Public Pensions be Funded?* IMF Working Paper WP/98/35
- Hinrichs, K.** 2000. “Elephants on the move. Patterns of public pension reform in OECD Countries”, *European Review* Vol. 8, No. 3
- Iglesias, A. and Palacios, R.** 2002. *Managing Public Pension Reserves Part I: Evidence from the international experience*. World Bank Pension Reform Primer, January 2000, World Bank, Washington, USA
- Impavido, G. and R. Rocha.** 2006. “Competition and Performance in Hungarian Second Pillar”, World Bank Policy Research Working Paper 3876
- Kay, S.** 2014. “Political Risk and Pension Reform in Latin America and Central and Eastern Europe”, ISA/FLACSO meeting, Buenos Aires, July 23-25, 2014
- Liu, K. and Arnold, B.R.** 2010a. *Australian superannuation – the outsourcing landscape*. Australia Prudential Regulation Agency Working paper, July 12th, Sydney, Australia
- Liu, K. and Arnold, B.R.** 2010b. *Australian superannuation outsourcing - fees, related parties and concentrated markets*. Australia Prudential Regulation Agency Working paper, July 12th, Sydney, Australia
- Liu, K. and Arnold, B.R.** 2012. *Superannuation and insurance: Related parties and member cost*. Australia Prudential Regulation Agency Working paper, November 2012, Sydney, Australia
- Mastrángelo, J.** 1999. *Políticas Para la Reducción de Costos en los Sistemas de Pensiones: El Caso de Chile*. Financing Development Series. Santiago, Chile: CEPAL/ECLAC
- Mesa-Lago, C. and Bertranou, F.** 2015. “Pension reforms in Chile and social security principles, 1981–2015”. *International Social Security Review* 69 (1): 25-45.
- OECD – Organization for Economic Cooperation and Development.** 2017. *Pensions at a Glance 2017 -OECD and G20 Indicators*. Paris, France.

- Orszag, P.R. and J.E. Stiglitz.** 2001. “Rethinking Pension Reform: Ten Myths about Social Security Systems” in *New Ideas About Old Age Security: Toward Sustainable Pension Systems in the 21st Century*, World Bank
- Palacios, R.** 2002. *Managing Public Pension Reserves Part II: Lessons from Five Recent OECD Initiatives*. World Bank Social Protection Discussion Paper Series No. 0219, World Bank, Washington, USA
- Price, W. and Rudolph, H.** 2013. *Reversal and Reduction, Resolution and Reform: Lessons from the Financial Crisis in Europe and Central Asia to Improve Outcomes from Mandatory Private Pensions*. Washington, DC: World Bank.
- Rudolph, H. and Rocha, R.** 2009. *Enabling Conditions for Second Pillars of Pension Systems*. World Bank Policy Research Working Paper #4890, April 2009, World Bank
- Vidler, S.** 2011. *Compare the pair – A Comparison of long-term superannuation performance*. September 2011, Industry Super Network, Sydney, Australia
- Vittas, D., Impavido, G. And O'Connor, R.** 2008. *Upgrading the Investment Policy Framework of Public Pension Funds*. World bank Policy Research Working Paper WPS4499, World Bank, Washington
- Whitehouse, E.** 2001. “Administrative charges for funded pensions: Comparison and Assessment of 13 Countries”, *Insurance and Private Pensions Compendium for Emerging Economies – Book 2*, OECD
- Schwartz, A.M. and Arias, O. S.** 2014. *The Inverting Pyramid*. Washington, USA
- World Bank.** 1994. *Averting the Old-Age Crisis: Policies to Protect the Old and Promote Growth*, Oxford University Press
- World Bank.** 2006. *Pension Reform and the Development of Pension Systems: An Evaluation of World Bank Assistance* (World Bank Independent Evaluation Group). Washington, DC: World Bank.
- Yermo, J.** 2008. “Governance and Investment of Public Pension Reserve Funds in Selected OECD Countries”. *OECD Working Papers on Insurance and Private Pensions*, No. 15, OECD Publishing.