Some Overlooked Key Characteristics of Systemic Pension Reform[1]

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Abstract About 40 developing countries have involved in systemic reform that substitutes privately managed funded systems for existing pay-as-you-go public pensions mainly since the mid-1990s. However, about half of them have been either partially or fully terminated. This paper investigates several important characteristics that have been previously largely overlooked. Firstly, the fundamental differences with respect to the dominant approaches of public pension reform between developing and developed countries are described. The major difference has been systemic reform in developing countries vs. parametric reform in developed countries. Secondly, based on the evidence that a substantial proportion of the elderly in developing countries are not protected by any public pension providing what can be considered an adequate minimum standard of living, the inherent key features of systemic reform have turned out to be: triple burden costs during transition period, and the tradeoff of the allocation of government resources between social pensions and mandatory funded pensions. These inherent characteristics have led to the problems of incentive incompatibility, unaffordability of volatilities of capital markets, and low-coverage. We also discuss the difficulties of annuitization in connection with funded defined contribution schemes.

Keywords systemic pension reform, pay-as-you-go, funded pensions, social pensions, annuitization, transition costs

Introduction

About 40 developing countries, living in around half of the world's population, have involved in private funded defined contribution (FDC) systems in their public pension reform mainly since the

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mid-1990s (Table 1 in next section).[2] These privatizations, for the most, have taken the shape of mandatory FDC schemes.[3] These schemes have been adopted to fully or partially replace public pay-as-you-go (PAYG) pensions, called the *systemic reform*, in order to address financial pressures driven by population ageing, and to foster economic growth. However, in recent years, about half of these countries have partially or fully ended their systemic reforms, and many more are facing increasing difficulties in the issues of transition costs, coverage expansion, and low or negative real return.[4]

The goal of this paper is to investigate the overlooked key characteristics of systemic reform which should be the potential forces behind the failures. Firstly, we reveal the facts of fundamental differences of dominant reform approach of public pensions between developing and developed countries. They have been systemic reform in developing countries vs. parametric reform in developed countries. Up to date, it seemed that the discussions of difficulties in systemic reform have mainly been based on developed countries. Therefore, secondly, based on the background of developing countries which is that a substantial proportion of the elderly have not been protected by any public system to ensure a minimum standard of living, we point out that the inherent key features of systemic reform have turned out to be: triple burden costs in transition period, and the tradeoff of government resources' allocation between social pensions and mandatory funded pensions. These inherent characteristics have led to the problems of incentive incompatibility, unaffordability to volatilities of capital markets, and low-coverage. Finally, we analyze the difficulties of annuitization, even in today's developed countries including the United States. Therefore, our analysis concludes that, compared to developed countries, developing countries generally have taken more risky and radical reforms despite more serious difficulties.

Fundamental differences of dominant reform approach across countries

Two reform approaches: Systemic reform vs. parametric reform

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[2] In China, which makes up about 1/5 of the world population, almost every adult gets involved in mandatory or quasi-mandatory FDC pensions now.

[3] Only a few countries have taken the shape of voluntary FDC schemes, and more have allowed certain part of participants to make voluntarily decisions under a mandatory system.

[4] Personal observation of authors in the World Bank's Pension Core Course of 2015.

As the financial pressures of population ageing and system maturation built up on public pensions, and the needs for raising saving rates, calls for reform have gained significant momentum. The answer to these calls has taken the shape of two fundamentally different reform approaches concurrently since the mid-1990s: *systemic* reform and *parametric* reform.

Systemic reform, in which the fundamental structure of pension provisions was altered from PAYG to funded schemes, has been revolutionary. During more than 40 years of transition, transition costs (or double burden costs) occur, as existing pensioners without retirement funds have to be paid for. However, after the transition period, financial gaps driven by population ageing would no longer be an issue, since every individual would be responsible for their own retirement income. For many years and even now, this claim that was based only on financing mechanisms, has been widely accepted by advocators, developing countries' policy-makers, and International Financial Institutions, for example, the World Bank *Averting the Old Age Crisis* (1994).[5] It was till 2013, about 20 years after the World Bank's 1994 report, Holzmann (2013, p.6), the former pension research leader of the World Bank, finally pointed out that "the call for funding was at times motivated by incorrect arguments that funding by itself would be able to address population ageing and the incorrect assumption that the then high funded rates of return would continue in the future", and "it has been accepted that the effects of population ageing on pension systems can only be addressed in three ways: higher contributions, lower benefits, or later retirement; and this applies to both unfunded and funded systems".

On the other hand, many proponents of parametric reform disagreed that FDC systems would provide better solutions than PAYG systems to the public pension reform from the very beginning. There have been heated debates on the strengths and weaknesses of these two reform approaches on both global and domestic stages (Arnold, Graetz and Munnell, 1998; Takayama, 1999 and 2002a; Barr, 2002; Whiteside and Gordon, 2003; Munnell, 2004; etc.). "The centrality of output" indicates that there is no difference between funded and PAYG systems in terms of "the production and consumption of goods and services" (Barr, 2002, p.4). However, funded systems in systemic reform do bring serious consequences which do not exist in PAYG systems: too large transition costs, larger variances of pension benefits, deepening income inequality, etc.

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[5] Also, Prudential Financial, Inc., an American financial services firm, and the Center for Strategic & International Studies suggested to Chinese authorities that mandatory funded systems was the only effective solution (Jackson and Neil, 2004) addressing population ageing.

Therefore, many countries have experimented a series of small changes over time with existing PAYG schemes. The reform packages have included increasing payroll taxes, cutting benefits, postponing normal pensionable age, rewarding late retirement and tightening conditions of early retirement, strengthening the links between benefits and contributions, and implementing "automatic adjustment mechanisms or sustainability factors" (OECD, 2013a, p.9). Thus, parametric reform has been more evolutionary.

As a result, today, PAYG based public pensions take more varieties of its benefit formulas around the world: defined benefits (DB), points and notional defined contribution (NDC) systems. Ten countries converted the traditional DB to NDC; ten countries have adopted points systems.[6] Compared to DB systems, points and NDC systems usually offer stronger links between benefits and contributions, and help to solve the problems of participation incentive and portability of pension entitlements. Furthermore, by strengthening the benefit-contribution links, today's DB systems are highly similar to NDC without a formal switch to NDC systems in many countries (Whitehouse, 2012).

"Add-on" FDC and "replacement" FDC

There exist two kinds of fundamentally different mandatory privately managed FDC schemes around the world, which have not been clearly explained by its advocators. They are "add-on" FDC systems in developed countries and "replacement" FDC schemes in developing countries. Both belong to the second pillar in the World Bank's multi-pillar framework.[7]

Compared to about 40 developing countries, only six developed countries have adopted mandatory privately managed FDC schemes (see Figure 1 and Table 1). Furthermore, these schemes in developed countries are all occupational pensions which are added on the top of existing PAYG schemes (*add-on* FDC). Therefore, they "differ significantly" and "have no equivalent" (Adascalitei and Domonkos, 2015, p.86) with the FDC pensions for the replacement

[6] 10 countries with NDC schemes are: Sweden, Italy, Latvia, Mongolia, Norway, Poland, Azerbaijan, Kyrgyz Rep., Russian Fed., Turkmenistan. 10 countries with Points schemes are: Germany, France, Romania, Slovak Rep., Estonia, Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Senegal.

[7] We are grateful to Edward Whitehouse for helping us clear on the difference of mandatory FDC schemes between add-on FDC and replacement FDC schemes.

of PAYG pensions (*replacement* FDC) in systemic reform. Needless to say, the wide application of voluntary private FDC pensions with much longer history and low coverage in developed countries are even further different from the replacement FDC schemes in developing countries. Therefore, none of the developed countries has adopted systemic reform. Publicly managed (or provident) pensions, set up mainly in low-income countries during the 1950s-70s, are not systemic reform either. Many developing countries have probably not realized these crucial differences clearly, partly due to asymmetric information or knowledge gaps, and partly mistaking, sometimes deliberately, voluntary FDC and mandatory occupational add-on FDC systems in developed countries to be the same as replacement FDC pensions in systemic reform.

(FIGURE 1 ABOUT HERE)

Mandatory or voluntary add-on FDC pensions in developed countries differ significantly from replacement FDC pensions in developing countries in the following aspects. 1) Mandatory or voluntary add-on FDC pensions are usually built up on the top of solid social pensions and/or existing public earning-related pensions. But replacement FDC pensions, in most cases, are based on weak or no social pensions, and accompanying with shrinking of the existing public earning-related pensions. 2) Add-on FDC pensions usually do not incur transition costs problem, but replacement FDC pensions causes at least double burden costs, even more than triple burden costs in many cases (see next section). 3) Annuitizing pension benefits of add-on FDC schemes is not as necessary as that of replacement FDC pensions. 4) The risks from investment failures or capital market' crisis will influence the basic or minimum standard of livings in replacement FDC pensions more directly than those in add-on FDC pensions. 5) The responsibilities of governments on system's securities differ greatly.

Figure 1 shows the different types of FDC pensions and public pension reform approaches in developing and developed countries. There exist four types of FDC pensions in the world, one of which is voluntary, three of which are mandatory. The mandatory systems are: privately managed replacement FDC, add-on FDC, and publicly managed FDC schemes. In general, FDC pensions with low coverage and mandatory PAYG public pensions with high coverage have widely existed in many developed countries. In contrast, FDC pensions with high coverage in many cases, have

been attempted in many developing countries, including 10 countries with publicly managed provident pensions and about 40 countries with privately managed replacement FDC pensions.

Sharp divide of reform approaches between developed and developing countries

It is notable that the reversal or pain infliction due to the introduction of systemic reform has been limited to developing countries. There is a sharp divide between developed and developing countries in their public pension reform approaches, which has not been adequately explained by their reform objectives and enabling conditions.

Table 1 shows a more detailed list of countries with mandatory FDC systems or privatization reforms they engaged in, and the year in which the reform was implemented or legislated. Among developed countries, only six of them appeared in Table 1 with mandatory occupational add-on FDC schemes, all others do not have mandatory FDC pensions. Therefore, parametric reform has been the dominant public pension reform approach of developed countries; in contrast, concurrently, systemic reform was only undertaken by developing countries with the involvement of the international financial institutions. This involvement often took the form of financial and technological support, "and policy advice, for example, in the form of an analytical pension reform paper prepared by the World Bank" (Piggott, 2007, p.5). [9]

(TABLE 1 ABOUT HERE)

On average, many developed countries have been facing higher old-age dependency ratios, which were projected to increase even further, whereas developing countries have significantly lower old-age dependency ratios both now and in the future. Also, many developed countries have suffered from low savings rates which would ideally be buffered by the pension funds through systemic reform, and have been under more immediate fiscal deficit pressures of existing public pensions. Moreover, developed countries have a higher institutional capacity to manage pension funds and more mature capital markets to invest in than developing countries. On the other hand, many developing countries have been facing issues like high income inequality, significantly

[9] Dorfman and Palacios (2013) summarizes all kinds of support including the lending for pensions 2002-2010 from the World Bank.

higher share of low income people, larger informal sectors, weaker or non-existent social pensions, and higher than optimal savings rates, for example China, which should have hampered the adoption of systemic reform.

Theoretically, these factors should have made systemic reform more suitable for developed countries, and to some extent, less desirable for developing countries, especially since they did not address income inequality and may even aggravate it. Therefore, it is hard to make the case that countries simply have picked the reform approach that fit their circumstances best. Asymmetric information or knowledge gaps, and different political structure may have caused many of the developing countries to take up systemic reform.

Many developing countries have not had sufficient information and research on global pension reform. Their access to information has mainly relied on neighboring countries and International Financial Institutions. As mentioned in the above section, they have not realized that systemic reform has been rejected in all developed countries, or have mistaken the add-on or voluntary FDC schemes as the same as replacement FDC pensions in systemic reform.

Part of domestic political elite and pension experts who were supportive of pension privatization could lead to systemic reform in developing countries, for example, Czech Republic and Romania (Adascalitei and Domonkos, 2015), and so on. However, this is politically infeasible for developed countries, for example, even though former president Bush in US and some pension scholars in Japan had planned to privatize their pensions, the proposals weren't adopted. (Munnell, 2004; Takayama, 2002a).

Reversals of systemic reform

Up to 2014, about half of the countries that have been involved in systemic reform have fully or partially reversed. These changes indicate that these reforms failed to survive the transition periods, despite considerable investments to overcome the transition costs and to accumulate pension funds. Table 2 shows the list of countries, along with time of reversals, changes of premiums and duration of the system. There are also many other developing countries which have

not ended their FDC systems even though they have proved unsuccessful for many years.[10] For example, no low-income country has taken legislative steps to downsize or abolish their FDC systems to date. However, as early as in 2005, "most observers would agree that the majority of pure funded defined contribution schemes in poor countries have failed" (Queisser, 2006, p.321).

(TABLE 2 ABOUT HERE)

Compared to the countries with partial reversals, the countries with full reversals are mainly early reformers, most of them started their reforms in the 1990s. It was thirteen years after Chile's systemic reform that the World Bank published its 1994 report. The full reversals also started from thirteen years after each country's reform, except for Czech Republic. The first country was Argentina in 2008, and the latest was China at the end of 2014 announced by the Minister of Finance (Lou, 2014). For some countries, the policy reversal was very rapid, like the Czech Republic, which first legislated systemic reform in 2013 and abandoned it in 2014. Some countries that had legislated reform (such as Nicaragua in 2000 and Ecuador in 2001), ended up never implementing it (Holzmann and Hinz, 2005, p.144).

There are several types of partial reversals: temporary freeze, downsizing the contribution rates, allowing certain workers switch back to PAYG plans. The Central and Eastern Europe countries have mainly downsized or temporarily frozen individual accounts, and Latin America countries, Peru, Colombia and Uruguay have chosen to allow (certain) workers to switch back to PAYG systems (Queisser, 1998; Calvo and Bertranou(s), 2010).

In the face of reversals, the International Financial Institutions' attitude towards systemic reform has shown some changes. Financial support to the two belated reformers: Czech Republic and Romania had been reduced compared to their neighboring countries (Adascalitei and Domonkos, 2015). In the case of China, in 2013, the World Bank staff has made a clear U-turn on their pension design and suggested to change the FDC to NDC models (Dorfman, et al., 2013).[11]

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[10] In the case of publicly managed pensions seen in Asia and Africa, "provident funds have been unable to provide retirement income security in most countries" (Queisser, 2006, p.321).

[11] The World Bank advised China to adopt systemic reform in the early 1990s (Piggott, 2007). In 2007, the assessment showed

The failures of systemic reform have been predicted as "the problem of transition costs will seldom be overcome" by Takayama (2002b, p.13). In reality, unsustainable fiscal burden in a macro-economic level has led to the shrink or abandon in Central and Eastern Europe (Kay, Felix and Sinha, 2014), and the same in China (Lou, 2014).

The transition costs have also been described as double burden costs, which seems to be based on the circumstances of developed countries, where the majority of population are middle class, and solid social pension or assistant systems have been well established long before several decades. However, when considering the different background that a substantial proportion or the majority of the elderly in many developing countries have no access to any public pensions for ensuring a minimum standard of living, transition costs turn out to be triple burden costs (see next section). Considering that it is impossible for developed countries to solve their double burden costs problems (Takayama, 2002b), the failure of systemic reform with triple burden costs in developing countries should be inevitable in theory.

The inherent key features of systemic reform

Up to date, the analysis of the problems of systemic reform has focused on volatility of capital markets, double burden costs, low or negative returns, high administrative costs (Takayama, 2002a; Chlon-Dominczak, Bielawska and Stanko, 2014; Kay, Felix and Sinha, 2014; Zheng, 2011), declined coverage in Latin America (Rofman, Apella and Vezza, 2015), and pension benefit issues as an afterthought (Kay, 2014). Recent years, questions and discussions arise globally once again on whether funded systems make sense in a general perspective of all funded pensions (CEPAR and RIPPA, 2013). However, there are still some other inherent key features remained undiscussed: Triple burden costs, the tradeoff of the allocation of government resources between mandatory FDC and social pensions, and annuity.

Triple burden costs

Double burden costs in transition period turned out to be triple burden costs in developing countries based on their different existing public pension designs, coverage, and situations of income distribution. Moreover, these triple burden costs have been mainly shouldered by mid- and low-

that "on a cost-benefit basis the contribution made by the World Bank on pension reform in China has been extraordinary" (Piggott & Lu 2007, p. v).

earning young people.

When attempts for systemic reform began in 1990s, most developing countries did not have adequate social pensions for large proportions of their populations, based on data from OECD (2005, 2013b), Holzmann (2009), and OECD, IDB and World Bank (2014). They left behind people who were engaged in informal sectors, or lived in rural areas. On the one hand, existing PAYG public pensions in developing countries have often only covered urban formal sectors, a small share of population, and usually with a generous benefits. On the other hand, a majority of the elderly have been left behind with inadequate or no social pension. Therefore, there exist two kinds of young people, a small share of whom has rich parents with generous public pensions, while a large share has poor parents with no adequate public pensions, and private support needed. These large shares of young people are usually middle or low income earners, remaining uncovered by any public pension.

In these situations, even when these large shares of poor young population were covered by the existing urban pure PAYG public pensions, they have already began to suffer from double burden costs. They have had to support two sets of "parents": their own parents privately, and concurrently the existing urban elderly. To make things worse, with the implementation of systemic reform, they have been forced also to pay for their own individual accounts in addition. We dub this phenomenon "triple burden costs". It can most clearly be seen in the case of migrants workers in urban areas, like the 269 million working migrants in China (Ministry of Human Resources and Social Security, 2014), most of whom privately support their parents in rural areas. However, it has been by no means restricted to migrant laborers in urban informal sectors. All the young people, including these who have acquired a job in a formal sector, have suffered from the triple burden costs as long as their parents are not covered by a public pension ensuring a minimum standard of living.

Transition costs could be even more than triple burden when taking into account weak public medical insurance for the large share of the elderly in rural areas. The elderly's medical expenditures in most cases could equal the amount of daily living expenditures.

The tradeoff between systemic reform and social pensions

The framework of multi-pillar pensions only lists different kinds of pillars, But the order of

implementation of each pillar has not been discussed explicitly up to date. In developing countries' practice, 2nd pillars (or systemic reform) were prioritized in virtually. For example, both China and Chile started to care about their weak social pensions in 2008, and had undertaken systemic reforms 11 and 27 years earlier, respectively. Furthermore, enormous general revenues were poured in to fund the transition costs instead of strengthening their weak social pensions.

In China, government subsidies from general revenues for urban individual accounts have been several times higher than total social pensions expenditure before 2010, and more than half of that from 2011 to 2013, whereas social pension benefits have been only about one third of rural minimum living standards for the vast majority of its beneficiaries up to date (Wang, Williamson and Xu, 2015). Using government general revenue to finance transition costs has also been observed in other developing countries. Therefore, in almost all cases, systemic reforms have proven to be a significant drain on public resources, as governments have had to fund the transition costs and invest in developing its financial and regulatory infrastructure.

This has stalled social pension reforms, which require similar resource commitments. This delay has resulted in persistent insecurity for excluded groups. An evident issue is that the particularly vulnerable segments of pension-age population, especially women, and low income workers bear the brunt of this exclusion from public old age security (Rofman and Oliveri, 2012). On the one hand, multi-pillar pensions were intended to protect a small group of people who are in formal sectors, in order to avoid future decline of pension benefits. On the other hand, it has been even more difficult to support a minimum standard of living for a substantial proportion of the elderly who are in informal sectors.

The tradeoff between systemic reform and social pensions has been overlooked together with the triple burden costs problem, because it only occurred in developing countries. In developed countries, the basic principle for contributory pension systems (or insurance pensions) is "self-financing" (Whitehouse, 2014, p.29). Therefore, for dealing with population ageing problem, many developed countries have expanded social pensions by spending more general revenues to prevent old-age poverty, while many developed countries have subsidized insurance pensions.

Incentive incompatibility and low coverage

The adverse tradeoff of government resources allocation between systemic reform and social

pensions has led to the long existence of weak social protection for a substantial proportion of the elderly and triple burden costs for their children. Triple burden costs have left young people with no capacity to pay premiums, because they are also usually middle- or low-earners and have to prioritize the elderly's basic living and medical needs. In these situations, both these young people and their parents can hardly afford the risks of capital markets due to liquidity constraints. Thus, incentive incompatibility has occurred and subsequent low coverage of FDC systems.

Countries have experimented with different ways to incentivize participation, yet subsidies and other methods to win over new contributors have proven ineffective. It is evident that the average pension coverage in Latin America declined from the enactment of the initial reforms in the 1990s to the early 2010s (Rofman, Apella and Vezza, 2015). In fact, contributory pension coverage is highly skewed in favor of high-earners, while discriminating people who are at risk of old age economic insecurity (Rofman, et al., 2015).

One explanation for the declining coverage in Latin America is "high levels of labor informality" (Rofman, et al., 2015, p.17). This indicates that systemic reform has failed to offer more employment in formal sectors. Even though the reform has been expected to foster economic growth by raising saving rates, it seems that their economic growth has not contributed to employment growth in formal sectors. The similar difficulty of expanding coverage has also been observed in China. The negotiations and adjustments on contribution rates and coverage of employees have constantly occurred among laborers, companies and governments.[13] Even though local governments were empowered to seize financial assets from companies to make pension contributions, according to the *Social Insurance Law* enacted in 2010, only about 18% of migrant laborers have been covered by urban pensions by the end of 2013.[14] The difficulty of expanding coverage to more migrants also comes from the conditions of labor market in which many migrants have been unable to receive compensations on time in China.

Difficulties of annuitization

Annuitizing the accumulated pension funds of 2nd pillars in developing countries is inevitably more

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[13] According to authors' fieldworks.

[14] Authors' calculation based on the data of Ministry of Human Resources and Social Security, 2014.

necessary than FDC pensions in occupational pension systems. However, this issue was seldom brought up by proponents of systemic reform.

It has become clear that annuitizing pension funds of individual accounts is by no means an easy task, even for developed countries with much longer histories of private funded pension systems. For example, the 401k system in the US is now facing the problem of unfair annuity prices (Shepard, 2011) and too small an annuity market to handle payouts (Munnell, 2014). Also most of the participants of the Australian mandatory private pension have drawn their benefits at a lump-sum basis. As a result, the benefits from FDC schemes in developed countries have been dominated by lump-sum payouts instead of annuitized lifetime benefits. Lump-sum pension payment, however, poses significant challenges for the beneficiaries in the absence of lifetime benefits. The beneficiaries have to face "the risk of either spending too quickly and outliving their resources or spending too conservatively and depriving themselves of necessities" (Munnell, 2014, p.9).

Therefore, for systemic reform in developing countries, the difficulties of annuitization will be even more serious than occupational funds for developed countries. Even though they are not the most crucial reason behind the reversals in the current stage, it is essential for policy-makers to take them into account.

Conclusion

This paper summarized some overlooked key characteristics of systemic reform, and argues that many countries′ rapid flight from systemic reform in recent years is not simply a coincidence, but a symptom of underlying faults in addition to other problems in the reform paradigm.

Firstly, no developed country has attempted it, even though they were met with more urgent fiscal pressures of their public pensions, and have more capacity to succeed than developing countries. Only six developed countries have mandatory FDC systems which are occupational pensions, have no equivalent with systemic reform. Secondly, for the most, developing countries have suffered from triple burden costs, and the tradeoff of the allocation of government resources between systemic reforms and social pensions. Subsequently, these problems have led to the problems of unaffordability of volatilities of the capital markets, incentive incompatibility, and

low-coverage rate. Finally, there exists the large difficulties of annuitization of occupational pension funds even in developed countries.

Compared to developed countries, public pension systems in developing countries were relatively weaker. However, these public pensions have been further weakened by widely spreading systemic reform since the mid-1990s, and by growing failures of reforms accompanied with tremendous economic dead losses and at least potential social unrest. Our analysis concludes that, in a long run, systemic reform could hardly be a solution for public pension reform, even though in a short run it may look working well in fostering economic growth and development of capital market. Reversals would be inevitable and continue.

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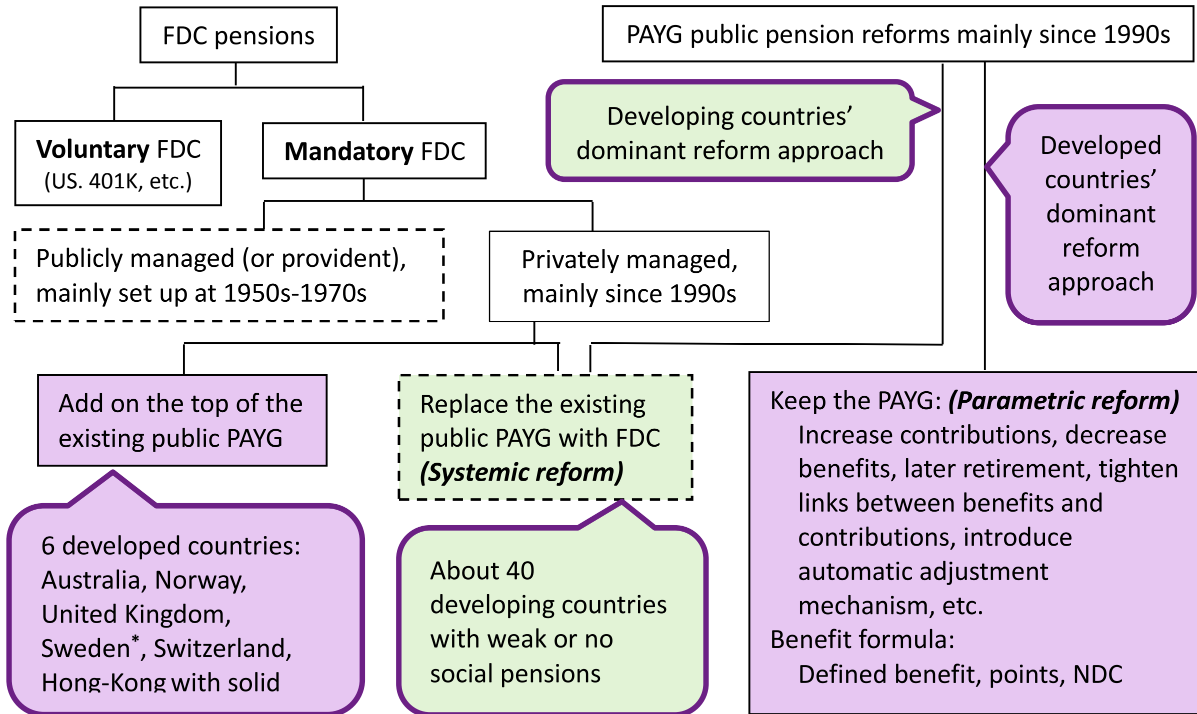
Figure 1. *Different types of FDC pensions and public pension reform approaches*



Notes: (1) FDC and NDC refer to funded defined contribution and notional defined contribution, respectively.

(2) * The Sweden's mandatory FDC scheme is classified as an occupational pension in this paper. Indeed, it was adopted together with the NDC scheme in the public pension reform in Sweden in 1999, however, we conclude that it is much more close to an occupational pension in nature rather than an FDC scheme in systemic reform according to the contents in Palmer (2003).

Source: Authors.

Table 1. *Countries (54) with mandatory FDC pension systems and years of adoption, (Systemic pension reform:38, publicly managed schemes:10, occupational pensions:6)*

Latin America, 15		Europe, 18		Asia and Pacific, 14			Africa, 8		
Management	private		private		private	public		private	public
Developing countries, 48 (systemic reform: 38, pure publicly managed schemes: 10)									
Chile	1981	Hungary	1998	Kazakhstan	1998		Nigeria	2005	1961
Peru	1993	Poland	1999	Brunei	2010		Ghana	2010	1965
Argentina	1994	Latvia	2001	Armenia	2013		Egypt[c]	2013	1955
Colombia	1994	Bulgaria	2002	China[d]	1997		Malawi[b]	2013	
Uruguay	1996	Croatia	2002	India[a]	2004	1952	Tanzania		1964
Bolivia	1997	Estonia	2002	Indonesia		1977	Zambia		1966
Mexico	1997	Kosovo	2002	Malaysia		1951	Uganda		1967
El Salvador	1998	Russian Fed.	2003	Sri Lanka		1958	Swaziland		1974
Costa Rica	2000	Lithuania	2004	Nepal		1962			
Nicaragua[b]	2000	Slovak Rep.	2005	Kiribati		1976			
Ecuador[b]	2001	Macedonia	2006	Singapore[e]		1955			
Panama[a]	2002	Romania	2008						
Dominican Rep.	2003	Ukraine[b]	2013						
Brazil[a]	2013	Czech Rep.[b]	2013						
Curacao[c]	2013								
Developed countries, 6 (private occupational)									
		Switzerland	1982	Australia	1992				
		Sweden	1999	Hong-Kong	2000				
		Norway	2006						
		United Kingdom	2012						

Note: (1) FDC: Funded defined contribution. Private and public refer to privately and publicly managed (or provident) pensions respectively. All the privately managed schemes in developing countries belong to systemic pension reform.

(2) [a] Reform for public employees; [b] Reform approved, but not yet implemented; [c] Reform proposed, but not yet either approved or implemented; [d] China intended to run the funds privately at the beginning, just as a result, the funds are still in governments' hands and the situation is unclear and complex. [e] Singapore is classified into the group of developing countries because it was a developing country at the time its provident fund was introduced, and the nature of its pension systems now is more close to a developing country.

(3) Only Lithuania and Czech Rep. adopt voluntary FDC in their pension privatizations. All the rest countries' FDC schemes are mandatory. It is of note that these voluntary FDC pensions in pension privatization have no equivalent with the voluntary pensions widely existing in developed countries which originally are voluntary pensions.

Source: Authors, based on FIAP, 2014; Kay, Felix and Sinha, 2014; Adascalitei and Domonkos, 2015; *Social Security Programs Throughout the World,* several issues <www.ssa.gov>; and Chinese government's document.

Table 2. *Countries (21) with full or partial reversals of systemic pension reforms*

Countries 12	Partial reversal	Start	Lasting years	Premium	Countries 9	Full reversal	Start	Lasting years	Premium
Estonia	2009	2002	7	6% to temporary freeze	Argentina	2008	1994	14	11%
Lithuania	2009	2004	5	5.5% to 1.5%	Bolivia	2010	1997	13	10%
Slovak Rep.	2012	2005	7	9% to 4%	Hungary	2011	1998	13	6%
Romania	2009	2008	1	Temporary freeze	Poland	2014	1999	15	7.3%
Russia	2012	2003	8	6% to2%	Czech Rep.	2014	2013	1	5%
Macedonia	2008	2006	2	7.42% to 5.25%	Kazakhstan	2014	1998	16	10%
Bulgaria		2002		Ongoing discussion on reversals	China	2014	1997	17	11%
Croatia	2011	2002	9	Old works may fully return to PAYG	Nicaragua		2000	Never implemented	
Latvia	2009	2001	8	8% to 2%, to be raised to 6% planned by 2016	Ecuador		2001	Never implemented	
Peru	2007	1993	14	8%, allow certain workers switch back to PAYG					
Colombia	2007	1994	13	10%, switch back and forth between the public and the private system every three years					
Uruguay	2008	1996	12	15%, allow certain workers switch back to PAYG					

Note: China had started its individual accounts with 11% of premium in 1997, and downsized it to 8%, 5% or 3% gradually since 2001 in either the whole country or part regions.

Source: Authors, based on FIAP, 2014; Rofman, et al., 2015; Kay, Felix and Sinha, 2014; Lou, 2014; Price and Heinz, 2013; and Adascalitei and Domonkos, 2015.