

# Pension Funds and the Impact of Switching Regulation on Long-term Investment

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## Abstract

This paper looks at the impact of members' ability to switch pension fund provider and /or portfolio on the allocation of pension funds to long-term investments. The level of annual turnover in pension fund portfolios was compared with the amount of short-term investments (using government treasury bills and bank deposits as proxy). The investment regulations around switching and other market conduct were then considered. The paper finds that greater movements between pension fund providers and between portfolios is linked to increased holdings of short-term and more liquid assets. Switching appears to be driven by competition, market structure, and investment advice, and, unfortunately, frequently results in poor investment returns for members. The paper makes six recommends

for regulators. First, use administrative controls to prevent fraudulent switching between pension providers. Second, provide clear performance and cost comparisons to inform members' choice of provider/fund and encourage informed decision making, which is beneficial for members and the system. Third, supervise and control advertising and marketing (including reporting of performance periods) carefully, to avoid switches based on misleading advice. Fourth, control financial incentives for sales agents, so that switching advice is given in members' interest and not for commercial gain. Fifth, concentrate issuance in government securities, to create more liquid instruments. And sixth, conduct further research on the concept of a central liquidity pool to manage unexpected outflows.

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## **JEL Code:**

**G110:** Financial Economics / General Financial Markets / Portfolio Choice; Investment Decisions

**G230:** Financial Economics / Financial Institution and Services / Pension Funds; Non-bank Financial Institutions; Financial Instruments; Institutional Investors

**G280:** Financial Economics / Financial Institutions and Services / Government Policy and Regulation

**F380:** International Economics / International Finance / International Financial Policy/ Financial Transactions Tax; Capital Controls

**Keywords:** *Capital Markets, Financial Instruments, Pension Funds, Regulation, Portfolio, Asset Allocation, Capital Gain, Capital Control*

# Pension Funds and the Impact of Switching Regulation on Long-term Investment<sup>1</sup>

## Background

Pension funds are rightly viewed as an important source of long-term capital in many countries. Following the global financial crisis of 2008, the theme of long-term investment and the role of institutional investors as providers of domestic capital for economic development has been high on policy makers' agendas. Pension funds are seen as an important source of long-term, domestic capital as the balance sheets of governments and banks have become increasingly stretched.

Despite generally positive findings linking pension system development and economic growth,<sup>2</sup> there have also been plenty of disappointments. In too many countries, pension fund investments remain highly concentrated in bank deposits and traditional government bonds<sup>3</sup>, contributing little long-term funding for development – as well as delivering disappointing investment returns and therefore pensions. OECD Global Pension Statistics show that around half the assets of pension funds around the world are held in bills and bonds – with the proportion significantly higher in non-OECD countries (at 58.6% of total assets under management (AUM)).<sup>4</sup>

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<sup>1</sup> This paper has been prepared by Alvaro Enrique Pedraza Morales and Fiona Stewart from the World Bank and Olga Fuentes and Pamela Searle from the Superintendencia in Chile.

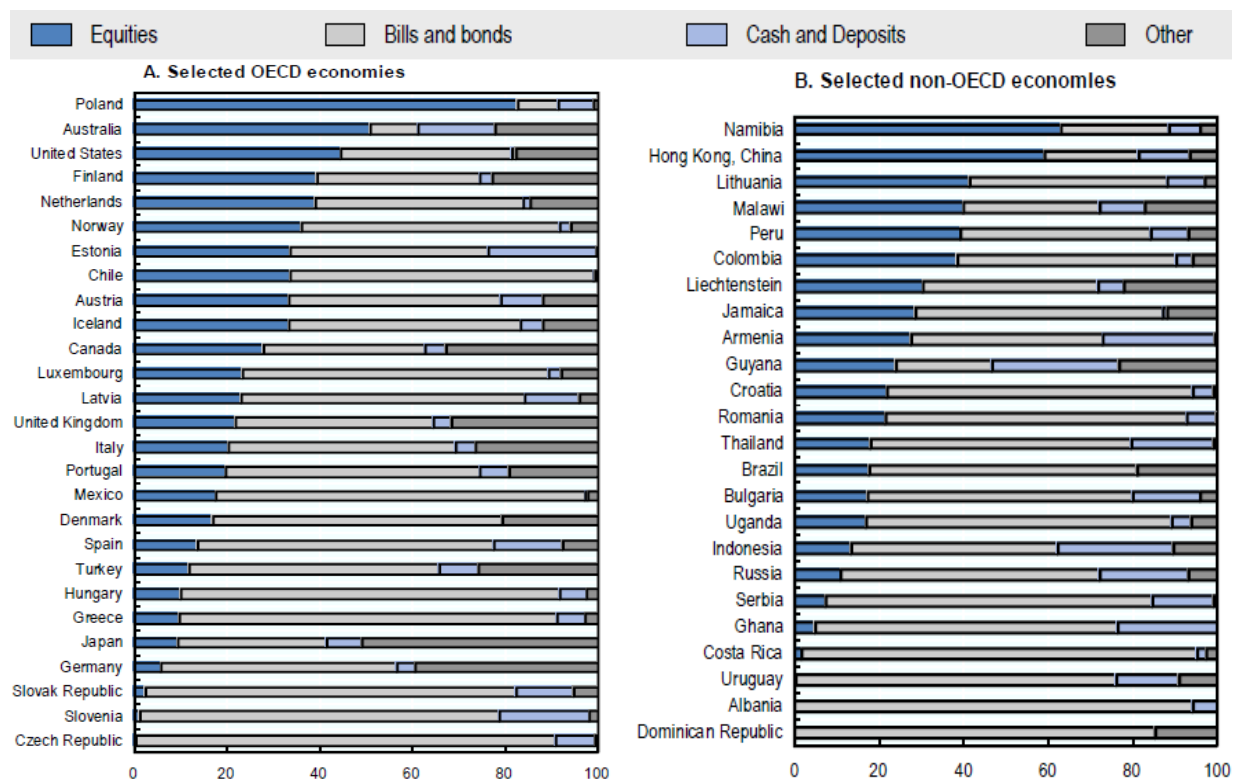
<sup>2</sup> For theoretical and empirical evidence linking pension funds and economic growth see (Stewart, Despalins and Remizova forthcoming).

<sup>3</sup> It should be noted that long-term investment can be also achieved via government instruments if these are of long duration and kept until maturity and/or if they are financing particular goals such as for example infrastructure or green bonds. However, in many countries, pension funds' holdings of government securities are generally of shorter-term duration. It should also be noted that when pension systems are launched in some countries, government bond rates can be high (and remain so for persistent periods). While this is the case, it can make sense for allocations to these assets to remain stable. However, it would be expected that these would decline as macroeconomic conditions and the pension sector develop. While this has been observed in some countries (such as Mexico), others lag in their portfolio diversification trends.

<sup>4</sup> See Pension Funds in Figures, May 2017 + accompanying statistical tables <http://www.oecd.org/daf/fin/private-pensions/pensionmarketsinfocus.htm>. A more in-depth discussion of pension fund portfolio diversification and links to investment performance can also be found in (Stewart, Despalins and Remizova forthcoming '*Pension Funds, Capital Market and the Power of Diversification*').

**Figure 1: Pension Fund Asset Allocation in Selected Asset Classes, (2016 preliminary)**

**% AUM OECD / Selected Non-OECD Countries**



Source: OECD

There are many causes behind the lack of diversification in pension fund investments. These include unsupportive macro conditions (high government bond rates crowding out other investments), a shortage of investment instruments and attractive investment opportunities, poor governance and limited investment knowledge and capacity within the funds.<sup>5</sup>

Regulation can also affect pension funds allocation via restrictive asset class limits and excessive reliance on short-term monitoring of performance. For instance, in defined contribution (DC) pension plans, a disproportionate focus on asset preservation rather than the long-term goal of providing an adequate retirement income can negatively impact portfolio allocation. Investment regulation in some countries may serve to reinforce this focus on the short-term delivery of investment returns rather than the long-

<sup>5</sup> Among numerous other papers, these issues are discussed in Opazo et al (2015), Raddatz et al (2014), and de la Torre et al (2011).

term generation of a pension income through overly restrictive use of asset classes.<sup>6</sup> Over and above straight asset class limitations, it has been argued that distortions are also increased when these are combined with relative performance benchmarks, which encourage herding by fund managers and are usually based on short-term measures.<sup>7</sup>

Other regulatory and agency issues also combine to reinforce the short-term focus of pension fund providers. Pension funds can be prevented from fully diversifying their portfolios into long-term assets by issues such as principle-agent problems, whereby fund managers derive profits from short-term performance rather than from long-term gains (particularly where conservative allocations are rewarded almost the same as risky allocations). In addition, fees are often charged based on short-term performance rather than long-term measures, and accounting and solvency regulations may actually incentivize investment in short-term and liquid assets.

Improving investment regulation can help overcome these hurdles. Using lifecycle funds rather than straight investment limits, removing relative return guarantees, benchmarking outcomes, and measuring performance and fees over a long-term period can have an impact on pension fund portfolio construction, allowing for greater long-term investment.

### Switching and Pension Fund Portfolios

An additional regulatory challenge for DC pension fund managers occurs when individuals have the ability to switch between pension fund managers and/or portfolio. This means that pension fund managers have to manage redemption risks. In the case of pension funds, because saving for retirement is mandatory in many countries, outflows are expected to be very stable, especially those resulting from benefit payouts. However, managers of DC open pension systems, where members are allowed to switch between providers and portfolios—often at will—can be exposed to significant outflows.

Switching can distort pension funds' asset allocation and skew portfolios towards short-term instruments. For example, in order to accommodate unexpected outflows, fund managers might hold more liquid portfolios with a higher proportion of short-term assets.<sup>8</sup> In this case, pension fund managers might be unable to fully take advantage of liquidity and term premiums by forgoing profitable investment opportunities, affecting the value of the funds and future pension outcomes. For example, Muslim and Pasquini (2012), examining the pension system in 27 countries from 1990-2007, find that: *“occupational schemes tend to generate higher returns than do personal pension schemes and closed schemes tend to generate higher returns than do open schemes.”* Furthermore, if domestic pension funds manager indeed

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<sup>6</sup> Again, a fuller discussion of the impact of pension regulation on portfolio construction can be found in (Stewart, Despalains and Remizova forthcoming). Stewart (2014) and Stanko (2015) discuss how regulations could be adapted to incentivize long-term investment horizons by introducing outcome-based benchmarks.

<sup>7</sup> For a discussion of this issue see Randle and Rudolph (2014), and the Viceira and Rudolph presentation *‘The Use of Guarantees on Contributions in Pension Funds’*, World Bank Contractual Savings Conference, January 2012. Acharya and Pedraza (2015) study Colombian pension fund managers in response to changes in the performance benchmark. Further information on herding by Polish pension fund managers can be found in (Stanko 2003) and (Voronkova and Bohl 2005). It has also been argued that the focus on short-term volatility is enhanced by the dislocation between the accumulation and decumulation phase of DC pensions - see (Blake et al 2008).

<sup>8</sup> While this behavior has been widely documented for open-end mutual funds, less is known in the context of DC pension schemes.

skew their portfolios to liquid and other short-term instruments, the full benefits from pension savings on domestic capital market development could be limited.

This paper documents differences in regulation on switching in a number of countries operating DC pension systems. The paper also studies the extent to which switching between pension providers and across different portfolios affect asset allocation. More precisely, the paper analyses whether pension funds' holdings in short-term assets is related to outflows resulting from transfers within and across pension fund providers. Data on pension funds' portfolios were provided by the regulatory authorities in Chile; Colombia; Costa Rica; Estonia; Hong Kong SAR, China; Mexico; Peru; Poland; and Romania.<sup>9</sup>

The remainder of the paper is organized as follows. Section 1 presents the aggregate trends in pension funds' holdings at different maturities. Section 2 documents outflows from benefit payments and switching. Section 3 studies the relation between switching and portfolio allocations. In addition to analyzing the relation between fund transfers and short-term holdings for the group of countries, the section also presents two empirical exercises for Colombia and Chile where recent events in switching provide two quasi-natural experiments to study the causal effects on portfolio strategies and liquidity management. Section 4 concludes and presents several policy recommendations.

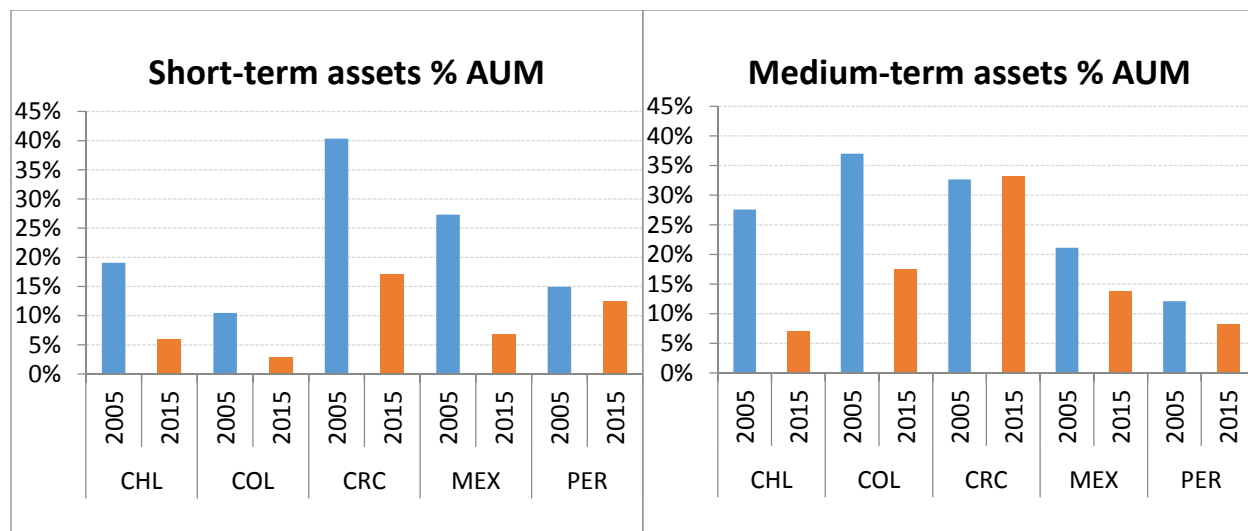
## 1. Holdings of short-term assets

Holdings of short-term and medium-term assets have declined in all Latin American countries over the past decade, with similar trends witnessed in the Central and Eastern Europe region. For the purpose of this paper, short-term assets have been defined as local government treasuries securities < 1-year maturity, local bank term deposits, foreign treasury securities < 1-year maturity and foreign term deposits. Medium term assets are defined as those with between 1-5 years maturity. For example, in Chile, while short-term investments accounted for 19% of AUM in 2005, they were only 6% of the portfolio in 2015. Medium term assets have also declined or at least stabilized during the sample period.

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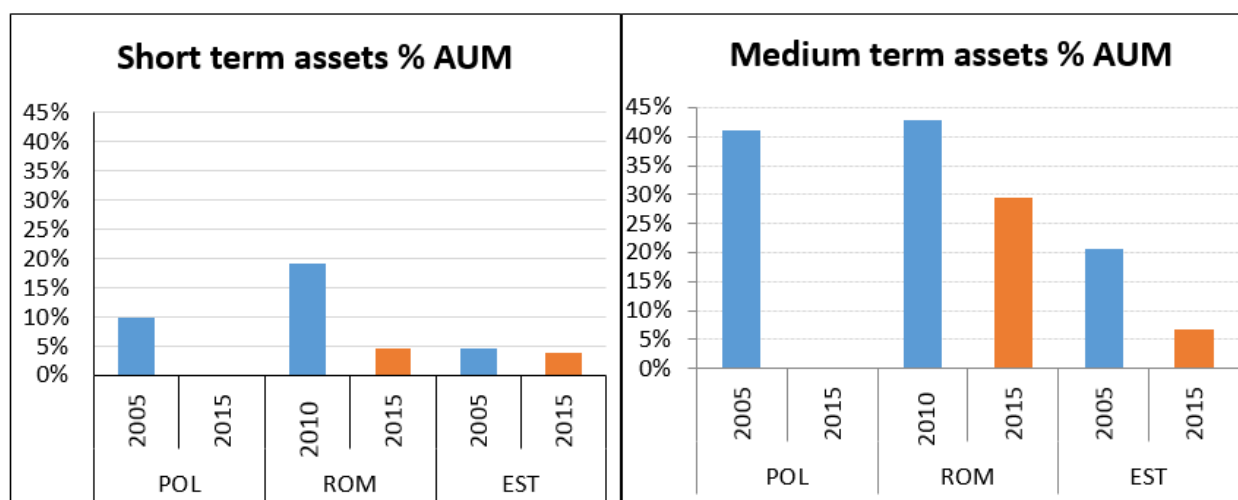
<sup>9</sup> IOPS members from Nigeria and Slovak Republic also kindly provided information for this paper, but as no data were available on switching, it was not possible to include these countries in the paper.

**Figure 2+3: Short-term and Medium-term Assets in LAC Countries**



Source: National pension supervisory authorities

**Figure 4+5: Short-term and Medium-term Assets in EEC Countries**



Note: Romania reported short- and medium-term holdings starting in 2010.

This move towards longer-term assets in the allocation of the pension funds' portfolios have occurred as the systems have become more mature. As assets in the systems grow, and fund managers gain experience, the portfolios of the funds tend to diversify. Chile, the oldest system, has the smallest amount of short- and medium-term asset combined (13% of AUM). Even Romania, with the youngest DC pension system in the sample, has experienced a decline in the share of short-term investments. In Poland, the



abrupt decline in short-term assets is related to structural reforms and new regulation which effectively forced funds to invest into equity securities only.<sup>10</sup>

The one exception to the common decline in short-term assets is Hong Kong SAR, China, where holdings of deposits and cash<sup>11</sup> have remained consistently high at around two-thirds of the Mandatory Provident Fund (MPF) portfolios. This extreme focus on short-term investments is widely believed to result directly from members' choice as opposed to portfolio decisions by managers. For instance, individuals have the right to invest their contributions in any of the constituent funds of a MPF scheme. By design, at least one of these funds has to be a "MPF Conservative Fund", with holdings in short-term bank deposits or other short-term debt securities, and an average investment period that must not exceed 90 days. In addition, some MPF schemes offer other money market funds which invest in short-term instruments such as treasury bills, certificates of deposit, and commercial paper. Overall, the Conservative Fund and money market funds remain popular choices among participants. A new default fund model has been introduced with fee caps.

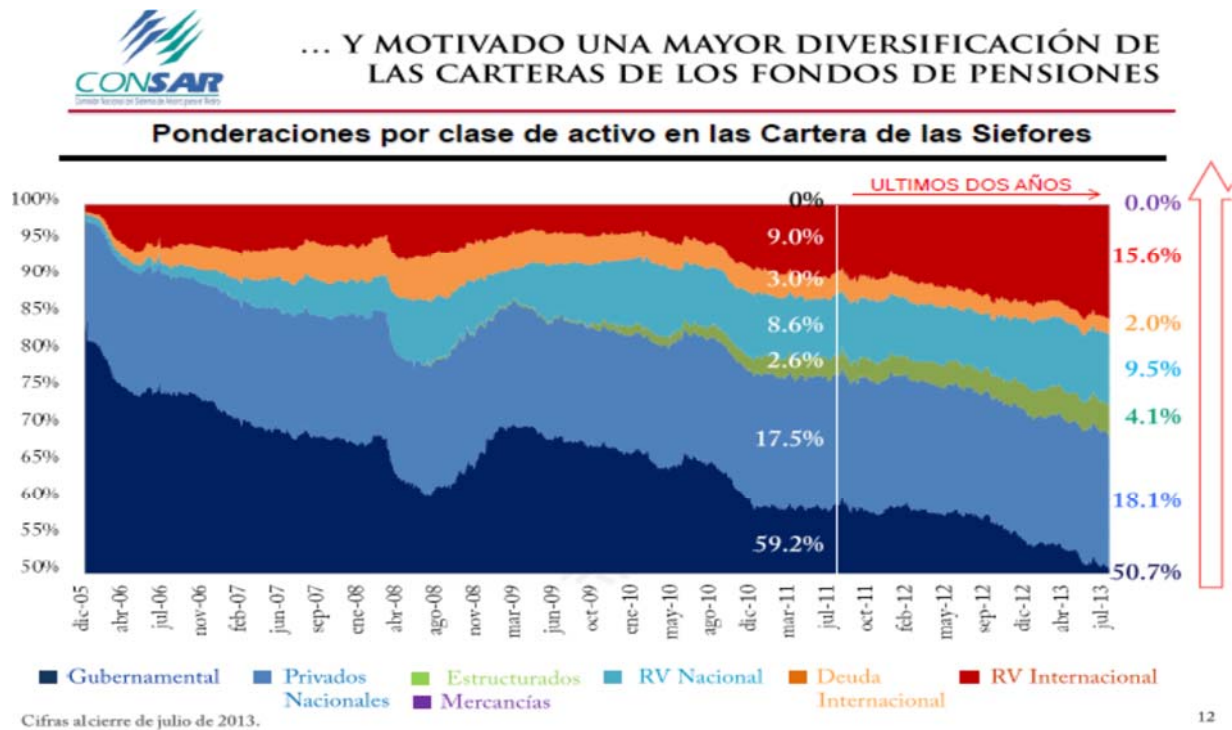
The decline in short- and medium-term assets have been accompanied by gradual changes in portfolio allocation restrictions, i.e. introduction of new asset classes and more flexible investments limits. For example, in recent years, Mexican pension funds have also experience greater diversification. In 2005, equity investments and foreign debt instruments were allowed. Ten years later, 27% of pension fund portfolios were invested in these assets. In addition to international diversification, new regulation allowed pension fund to invest in alternative asset classes. As a result, the total exposure to domestic government securities declined from 80% in 2005 to 51% in 2015. The regulatory authorities in Colombia and Peru have also gradually increased their limits on several asset classes, including those in private equity and other alternative securities.

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<sup>10</sup> Following declines in contributions made to the private pension funds (OFEs) in Poland in 2011, in 2014, the option of choosing whether to transfer any part of the pension contribution to OFE was introduced, with all future contributions accumulated in the public system (ZUS) being made the default option. Further, the 2014 law introduced the 'slider', whereby those members with 10 or fewer years left to maturity would have their second pillar assets incrementally transferred to the first pillar. In 2014, more than half of assets held by OFEs were transferred to ZUS and government bonds were 'renationalized', (shrinking OFE portfolios by around 50%). Pension funds were banned from buying bonds (governmental or private, including those issued by foreign entities), drastically exposing the industry to more equities. The law also lifted the minimum return requirement and overhauled investment regulations (equity limit was raised from a maximum 40% of net assets to a minimum 75% and the maximum foreign investment limit was increased from 5% to 10% in 2014, rising to 30% in 2016). In 2016 it was announced that the government would transfer a quarter of the 140 billion zlotys (\$35.2 billion) of assets held by OFEs, into a single investment vehicle, the demographic reserve fund (FRD) from 2018. This is still to be decided – another proposal is to move everything to the FRD fund. The OFEs will be shut down. The funds will then be invested by a government-appointed manager. Incentives will be provided to opt for long-term investment (with details yet to be finalized).

<sup>11</sup> These are taken as a proxy for short-term assets, since the local authorities did not provide information based on maturities.

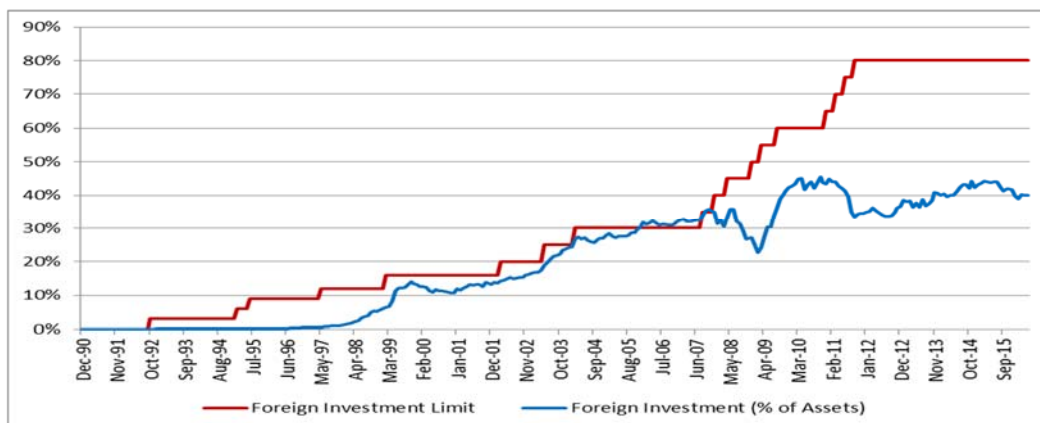
Figure 6: Diversification Pension Funds' Portfolios (2000-2013)



Source: CON SAR

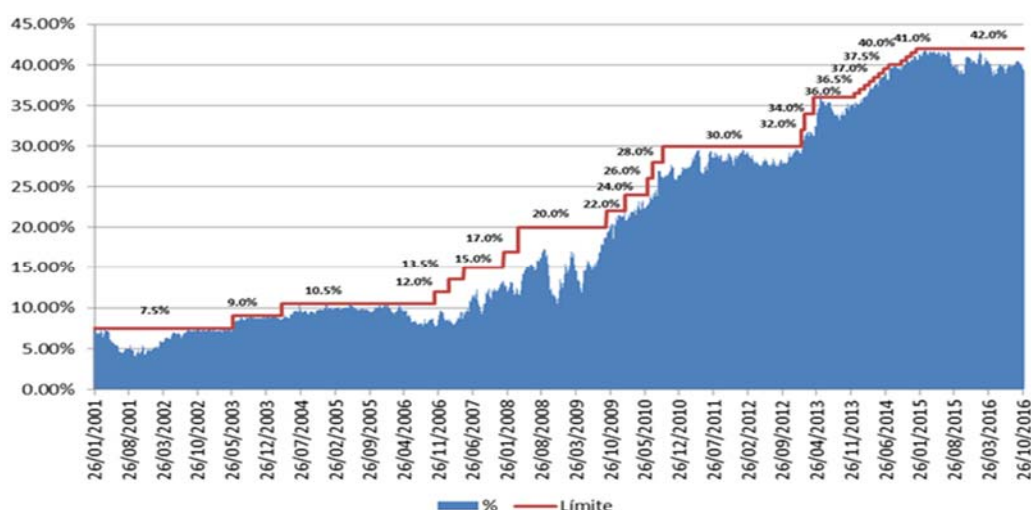
In some cases, the diversification has been achieved via a diversification by moving into overseas investments. For instance, in Chile and Peru, diversification seems to have been away from short-term domestic instruments and into overseas assets as the limits on these investments were increased.

Figure 7: Development of Investment Abroad and Investment Limits Chilean Pension Funds



Source: Superintendencia Chile

**Figure 8: Development of Investment Abroad and Investment Limits Peruvian Pension Funds**



Source: Superintendencia Peru

## 2. Fund Outflows: Benefit Payments and Switching

Pension fund outflows can be classified into (i) benefit payouts resulting from life events and (ii) fund transfers when investors switch between pension fund providers and between portfolios. Benefits payments typically include phased withdrawals after retirement (whether in the form of old-age or from survivor and disability), annuity purchases, and early withdrawals. Switching among providers and between portfolios depends on each country's pension design and the menu of funds available to clients.

### 2.1 Benefit Payouts

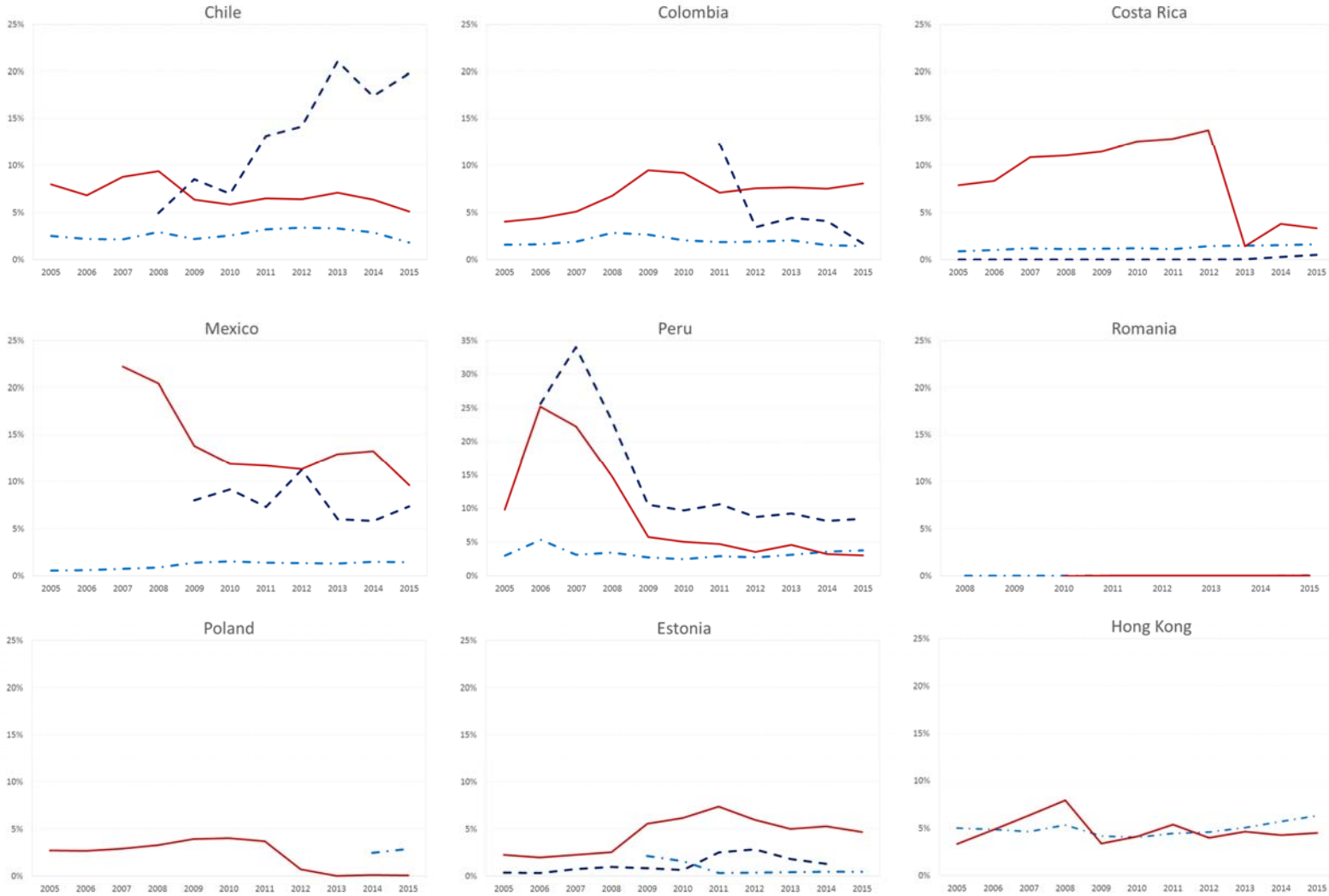
Retirement payouts represent only a small fraction of pension fund outflows. For most countries in the sample, pension funds' outflows are largely driven by transfers across fund providers (solid line) and those between portfolios within the same management company (dash line). Retirement payouts (dash-dotted line), only represent a small fraction of total assets. For example, in Chile, the country with the most mature system in the region, benefit payouts only account for 2.5% of AUM. Estonia and Romania are also still young systems with limited payouts as yet having been required. Poland is the exception due to the systemic changes which allowed members to decide whether they still wanted to allocate new contributions to the funded pillar or whether these will be sent to the unfunded pillar and registered in individual notional accounts (default).

Early withdrawals are not a major driver of outflows. Unlike in some other countries and regions globally (for example in relation to the social security funds in some African countries), early withdrawals do not have a major impact on the pension funds in these countries, as these are tightly controlled (details provided in Annex).

Hong Kong SAR, China has a different pattern, with switching, benefit payouts and withdrawal levels closer than in other countries. Switching represents around 6% of the total portfolio, with benefit payments 4% (the MPF system having been established over 20 years ago) and early withdrawals (allowed 5 years before the retirement age) around 2%.

**Figure 9: Pension funds yearly flows (% of AUM)**

-- Transfers across portfolios    
 -.- Benefits + Payouts    
 — Transfers across providers



## 2.2 *Switching between providers*

The regulations on switching between providers in the different countries varies in the level of restrictiveness. Peru, Costa Rica and Chile new participants who do not choose an AFP are locked into their initial or default provider for a certain period (1 month, 1 year, 2 years respectively) and then allowed to switch at the member's discretion. In Mexico, after trying various iterations, members are now locked into the default fund (based on 5-year net of fee returns) for 1 year, but may switch pension fund managers (AFORE for its Spanish acronym) at higher frequencies if their new AFORE has displayed higher net returns.<sup>12</sup> Switching between providers in Colombia is allowed every 6 months. However, members are also given a regular choice to switch from the privately managed DC system back into the DB public pension system once every 5 years, until 10 years before retirement. In the Central and Eastern European countries, transfers are permitted fairly freely. In Poland, they were previously executed 4 times a year, and in Estonia the transfers take place 3 times a year (details provided in Annex). Switching provider has been allowed at least once a year in Hong Kong SAR, China since 2012.<sup>13</sup>

The most effective regulation to limit switching between providers while maintaining flexibility for individuals appears to be related to administrative checks and marketing rules. For example, in Costa Rica, after November 2012, any member changing provider had to sign a contract with both the new manager (as was previously the case) and the old manager. As a result, from the addition of this seemingly minor administrative burden, switching between providers dropped dramatically from 14% of total AUM in 2012 to less than 2% in 2013 (see Ashcroft, Inglis and Price, 2016).

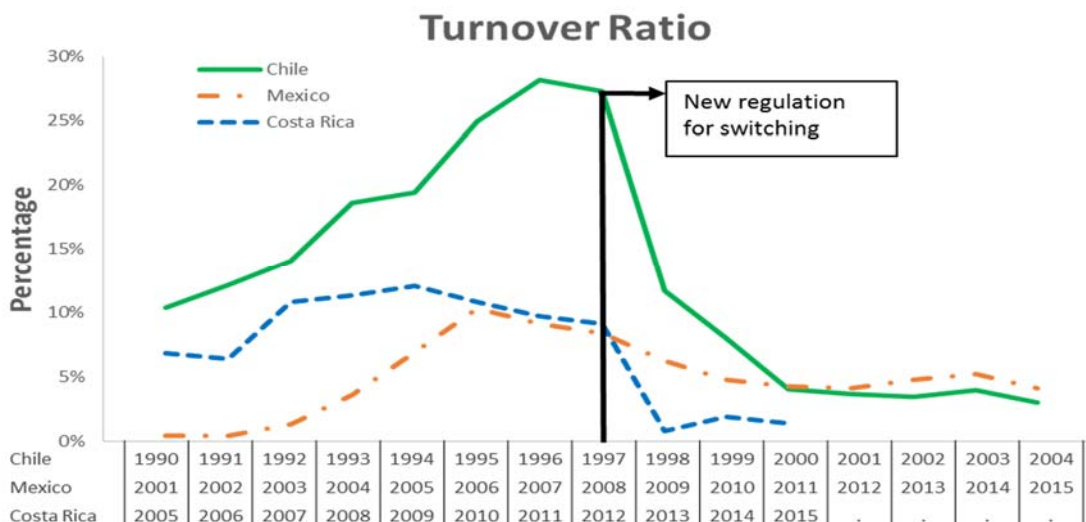
Greater administrative checks were also introduced in Mexico and Chile which helped reduce fraudulent switches. In Chile, after tighter controls requiring clearance from both old and new pension providers were introduced in 1997, switching dramatically declined. In Mexico, the number of switches dropped from 3.8 million members in 2006 to 2.4 million after a similar measure. There, the central administrator (Procesor) also checks with the member's current fund manager that the individual really has requested to transfer (the provider then checks with the individual).

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<sup>12</sup>In the Mexican system, at the point of enrollment, if a member does not choose a provider they get allocated to a provider by CONSAR. Initially this was purely an administrative arrangement to various funds. Then there was a return component but it was initially only 1 year returns – and then over time it become net of fee returns over 5 years). Around 60% of members get allocated in this way so it is a material consideration for pension funds trying to build members.

<sup>13</sup> Switching provider (in the sense of transferring funds) was allowed for MPF members in Hong Kong SAR, China when changing employer, as the MPF provider is chosen by the employer rather than the employee. Since 2012, members were also allowed to switch their contributions to a provider of their own choice once a year. From the launch of the Employee Choice Arrangement in November 2012 to October 2016, there has been 362,000 transfer requests, which accounts for 10% of the average number of employee contribution accounts over the period. Despite greater flexibility, the total amount of transfers between providers has not changed dramatically vs. the years prior to 2012 (figure 9).

Figure 10



Turnover: Number of yearly switches / Total affiliates.

Source: National regulatory authorities

Also in Mexico, the regulator has gone one step further by improving the information available to those members who want to switch. Research found that poor financial literacy leads to confusion over the choice of AFORE, and members are often easy target to manipulation, in many cases resulting in poor individual choices.<sup>14</sup> Marketing controls were consequently introduced. When switching provider, individuals are shown the returns of the old and the new provider. If switching to a fund with lower returns, a prominent (downwards) red line is drawn between providers to make the point – though members are warned that past performance is not necessarily a guide to future returns.

Figure 11: Switching Forms Mexican Pension Fund Administrators

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FIRMA DEL TRABAJADOR

FIRMA DEL AGENTE PROMOTOR

CORP DEL TRABAJADOR

CORP DEL AGENTE PROMOTOR

Source: CON SAR

<sup>14</sup> See (Calderon, Dominguez and Schwartz 2008).

The Eastern Europeans have taken the approach of removing marketing completely from their systems. Switching is allowed between providers, but on the individual members' own decision in Romania, while in Poland advertisement and sales activities by agents was banned from 2012. Marketing has been effectively removed from these systems, which has kept switching between providers to low single digit levels. Other jurisdictions beyond those covered in this paper, have tackled the sales/ switching issue by removing or controlling financial incentives paid to intermediaries.<sup>15 16</sup>

### 2.3 *Switching between portfolios*

In addition to choosing their pension fund provider, pension fund members in many Latin American countries are also offered a choice of investment portfolio. These systems frequently operate on a 'multi-funds' or life cycle model, with a default portfolio which becomes less risky when individuals approach the retirement age. Alternatively, members can opt out from the default option and chose their portfolio or combination of portfolios according to their individual investment strategy.

Pension providers in Europe still generally offer only one investment portfolio (Estonia – and indeed the other Baltic states - being the exception). Aside from the 'multi-funds' restrictions, there are few limitations on switching between portfolios (see details in Annex). Hong Kong SAR, China providers are free to choose whether to offer their members a single or a number of portfolios. It is required by MPF legislation that at least one of the constituent funds of an MPF scheme must be an "MPF Conservative Fund". All MPF schemes, however, offer more than one fund choice to scheme members. As of the end of November 2016, the number of MPF constituent funds offered by the 36 MPF schemes ranged from 3 to 29. Scheme members may choose to invest their contributions in any constituent funds under the MPF scheme in which they participate, and are allowed to change the choice of constituent funds at least once a year. Most schemes allow more frequent switching. The regulatory authority (MPFA) has no information on the fund level switching of scheme members however. Anecdotally, providers say that on the whole switching activity is quite infrequent although there are a small number of members who switch very frequently (weekly in some cases).

Marketing by financial advisors and intermediaries appears to be the main force driving changes in portfolios. For example, in Chile, an online financial advisory became popular among pension fund contributors by providing recommendations of how to time the market by switching between more and less risky portfolios. Daily increases in switching can be seen to coincide with these recommendations.<sup>17</sup> Since 2009, switching between portfolios within the same provider represents the largest flow among pension funds, reaching a stunning 20% of AUM in 2015. Unfortunately, the evidence also shows that 50% of members would have

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<sup>15</sup> The International Organisation of Pension Supervisors has discussed the issues of marketing of DC funds in other jurisdictions (see IOPS 2012). The UK is one example where payment of commissions on products was banned (upfront commissions for long-term products being seen as nearly always giving an incentive for agents to switch and was pervasive in both pension and insurance). Halan and Sane (2016) also discuss the mis-selling scandal in the Indian pension system. There is also an on-going debate in the US around the Fiduciary Rule which touches on these issues. For further discussion on consumer protection issues see (Paklina, forthcoming).

<sup>16</sup> Other pension systems (e.g. Sweden and India) have gone further and operate on a system of 'blind accounts' with one central administrator aggregating fund choices so that asset managers have no incentive to advertise directly to individuals. Such alternative industry structures, while interesting, are beyond the scope of this paper.

<sup>17</sup> See Da et al (2015).



obtained a higher return had they not changed fund and 79% would have been better off if they had remained on the default path.<sup>18</sup>

Similar concerns have been identified in Cost Rica after the recent introduction of multiple portfolios in the system. There is evidence that advertisement tools based on 12 months returns used by pension providers (OPP) have been effective in influencing member investment choices. Consequently, the regulator is reviewing the provisions on annual returns that must be included in statements and on which OPPs can advertise. Instead of 12-month returns, returns over 36, 60 and 120 months will be published.<sup>19</sup>

The same pattern can be found in other countries, with switching following short-term investment performance. For example, Costa Rica, Mexico and Estonia, switching among providers is more common during years of poor performance. In the case of Chile, both type of transfers, across portfolios and across providers, are larger when pension funds display low returns.

**Table 1. Correlation between calendar-year returns and transfers**

	<b>Across Fund Providers</b>	<b>Across Portfolios</b>
LAC		
Chile	-0.46	-0.41
Colombia	0.15	0.04
Costa Rica	-0.23	
Mexico	-0.41	0.71
Peru	0.18	-0.10
EEC		
Estonia	-0.28	-0.14
Romania	-0.03	

Mexico has an interesting approach to performance measurement based upon age. Performance measures are communicated to affiliates in their statement of accounts (every 4 months) and are published on the CONSAR webpage at the end of every month. The net return index (IRN), net of administrative fees charged by the AFORE, of 7 years, 5 years, 3 years and 1 year for basic funds is shown. The IRN is a 6-month moving average of end-to-end net returns (the latter computed over the point in time horizon). Individuals younger than 45 are shown 72 month returns, older participants a shorter duration.

### 3. Fund Outflows and Short-term Assets

For LAC countries and Estonia, short-term investments are positively correlated to transfers across pension fund providers. While the evidence is consistent with fund managers using short-term assets to manage redemption risks, there are at least two potential limitations to this interpretation. First, the share invested in short-term assets varies mechanically in response to differences in returns across asset types. For high-frequency data (e.g. day, week, and month), changes in portfolio weights might be more indicative of differences in asset returns than of managerial strategies. To mitigate this concern, Table 2 reports the

<sup>18</sup> Superintendencia analysis. Calderon, Dominquez and Schwartz (2008) produced similar findings for the Mexico system up to 2008.

<sup>19</sup> In Poland returns up to 40 years can be quoted. Romania is a more standard 2 years.

correlation between yearly flows and the end-of-year share invested in short-term assets. The second limitation to the documented correlation are the potential effects from confounding factors that might simultaneously affect flows and short-term holdings. To deal with this concern, sections 3.1 and 3.2 use a parametric approach to estimate the effect from outflows on portfolio holdings.

**Table 2. Correlation between short-term assets and fund flows (2005-2015)**

	Across Fund Providers	Across Portfolios*	Benefit Payouts
LAC			
Chile	0.53	0.58	0.00
Colombia	0.63	-0.36	-0.25
Costa Rica	0.23		-0.81
Mexico	0.80	0.45	-0.84
Peru	0.05	-0.31	0.14
EEC			
Estonia	0.46	-0.19	0.76
Romania	-0.07		-0.87

Contemporaneous correlations between yearly fund flows and the share invested in short-term assets.

\*Excludes the year of introduction of multi-funds.

The correlation between flows from switching portfolios and short-term assets is mixed among the sample countries. For instance, in Chile, short-term holdings are strongly related to transfers between portfolios. Colombia and Peru on the other hand, display a negative relation between short-term holdings and flows across portfolios. There are several potential explanations for the observed differences across countries. For example, switches between portfolios is indeed most common in Chile. Moreover, flows across portfolios in Chile are also clustered in time (Section 3.2) exerting significant pressure on fund managers to liquidate positions in order to accommodate large transfers in short periods of time (e.g. within days). In such case, managers are more likely to hold cash or cash-like securities to meet redemption needs. Finally, some countries allow managers to transfer securities across portfolios to avoid transaction costs altogether. However, whether managers are able to transfer securities instead of cash depends on the structural differences across portfolios and their individual limits on each asset class.

In summary, the evidence suggests that discouraging excessive switching, whether is between pension providers or between portfolios, should allow fund managers to hold more long-term assets.

### *3.1 Switching between pension systems: The case of Colombia*

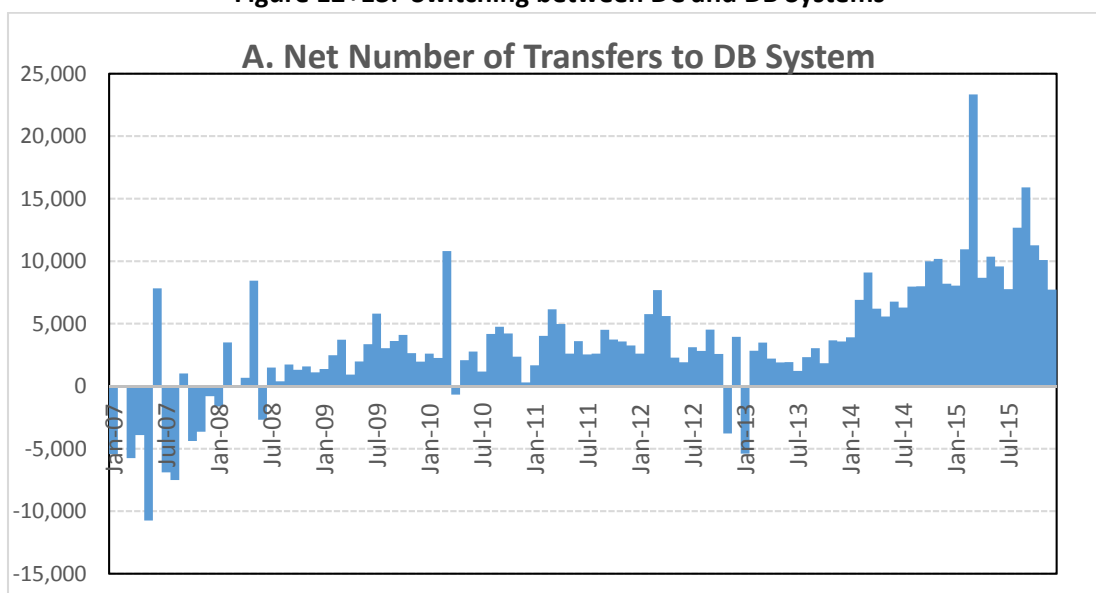
This section studies the effects on the maturity structure of Colombian pension funds in response to outflows from transfers across pension systems. The analysis is based on monthly information of fund flows provided by the Colombian Association of Pension Fund Administrators (Asofondos) and portfolio transaction data from the Securities and Exchange Market during 2006-2015.

Colombian workers can choose between a DC system based on individual accounts, and a DB scheme managed by Colpensiones, a government-owned enterprise. Switching between systems is allowed up to one time every 5 years, except in the last 10 years before the retirement age (57 for women and 62 for men). When a worker switches from the DC to the DB system, the balance of the retirement account is transferred by the pension

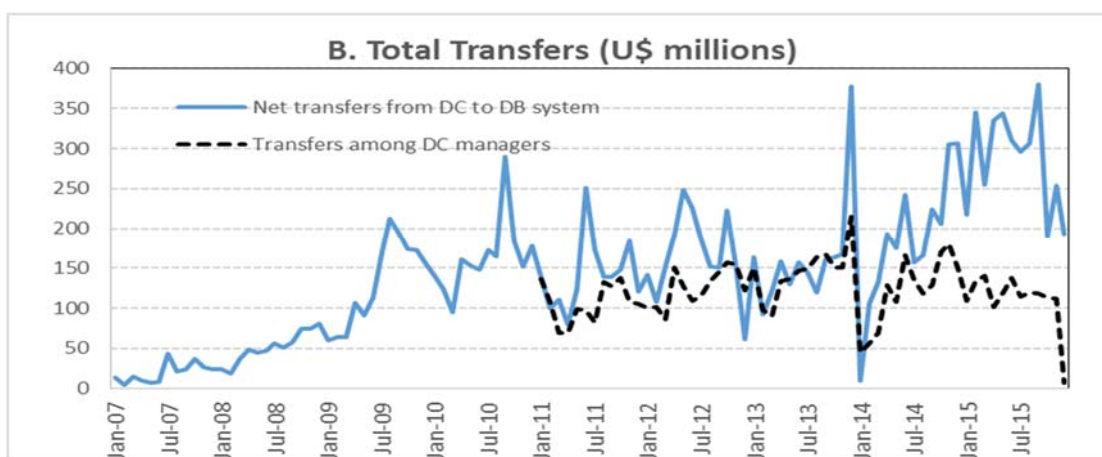
fund provider to Colpensiones. Conversely, when a worker switches from the DB to the DC system, a pension bond redeemable at retirement is issued under the worker's name.<sup>20</sup>

In response to an aggressive marketing campaign by Colpensiones, the number of workers switching to the DB system increased significantly since 2009. As a result, money flows from transfers across systems represent the single largest source of outflows from DC pension funds (Figure 12). In 2015, while 171,526 workers switched from DC to DB systems, only 35,151 moved in the opposite direction. In that year, pension fund managers transferred U\$3.4 billion to Colpensiones, which is 2.6 times the amount of switching among DC pension fund providers, and 3.8 times the total amount of benefit payments during the year. According to estimates by Asofondos and the Minister of Finance, more than 80% of members who switched pension systems would face more unfavorable pension outcomes.

**Figure 12+13: Switching between DC and DB Systems**



<sup>20</sup> In other words, cash only flows from the private to the public system when members switch. While no early withdrawals are allowed in either system, the expected retirement income for a worker might be higher or lower in one system over the other depending on her individual case. For example, it depends among other factors, on the worker's lifetime profile of pension contributions and income range. Given the design and subsidies of each system, a worker might face significantly different pension outcomes depending on her choice.



Note: December 2010 U.S. dollars.

Source: authors' calculation based on data provided by Asofondos.

In response to the surge in transfers among systems, pension fund managers reduced their demand for government bonds with longer maturity and in those that are less liquid. Table 3 presents the estimation of monthly net trading activity by pension funds in domestic government bonds grouped by liquidity and maturity. According to Table 3, transfers among pension systems are negatively correlated with: (i) flows to government bonds in the medium and low liquidity group; and (ii) flows to government bonds with maturity above three years. In other words, after an increase in monthly transfers to the DB system, pension funds managers were less likely to buy bonds with longer maturity and those that are less liquid.

**Table 3: Pension funds excess demand of government bonds by maturity and liquidity.**

Vector autoregressive model (VAR) include controls for country risk perception (10-year Colombian credit default swaps) and stock market volatility. T-statistics in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1 percent, respectively.

Dependent variable: Excess demand = (buys - sells) / (buys + sells)	Liquidity (by turnover)			Maturity (years)		
	High	Medium	Low	< 1	>=1 & < 3	>= 3
Lag of system transfers / total assets <sup>21</sup>	-4.51 [-0.49]	-109.43*** [-4.41]	-64.91*** [-3.03]	-30.48 [-0.95]	26.54 [1.23]	-28.91*** [-4.71]
Lag of asset returns	7.19* [1.77]	0.67 [0.06]	8.427 [0.893]	-15.67 [-1.11]	-22.97** [-2.40]	4.80* [1.78]
Constant	-0.79 [-1.56]	0.62*** [2.62]	-0.09 [-0.82]	0.46*** [2.62]	-0.18 [-1.51]	0.09*** [2.74]
Observations	107	107	107	107	107	107
R-squared	0.07	0.20	0.17	0.12	0.07	0.20

Source: authors' calculation based on data provided by Asofondos and the Securities and Exchange Market data.

<sup>21</sup> We report results with one-month lag of system transfers. This model provided the best fit under three common information criteria: Akaike, Schwarz-Bayes, and Hanna-Quinn.

The negative selling pressure on government bonds is persistent. Model estimates indicate that after a one-time one standard deviation increase in net transfers to the DB system, pension funds reduce their holding of low-liquid and long-term bonds over the next six months, apparently in anticipation of new transfers.

### 3.2 *Switching between portfolios: The case of Chile*

Since 2002, pension fund providers were mandated to offer five types of funds to their members. These funds (A through E) cater to different risk preferences, with fund A having the largest share of equity investment, and fund E composed almost entirely by domestic fixed income securities.<sup>22</sup> Funds B, C, and D are default funds and participants are automatically shifted to less risky funds according to their age. Funds A and E, on the contrary, are not part of the default option, and investors have to explicitly state when and how much of their assets they want to transfer into or out of these funds.

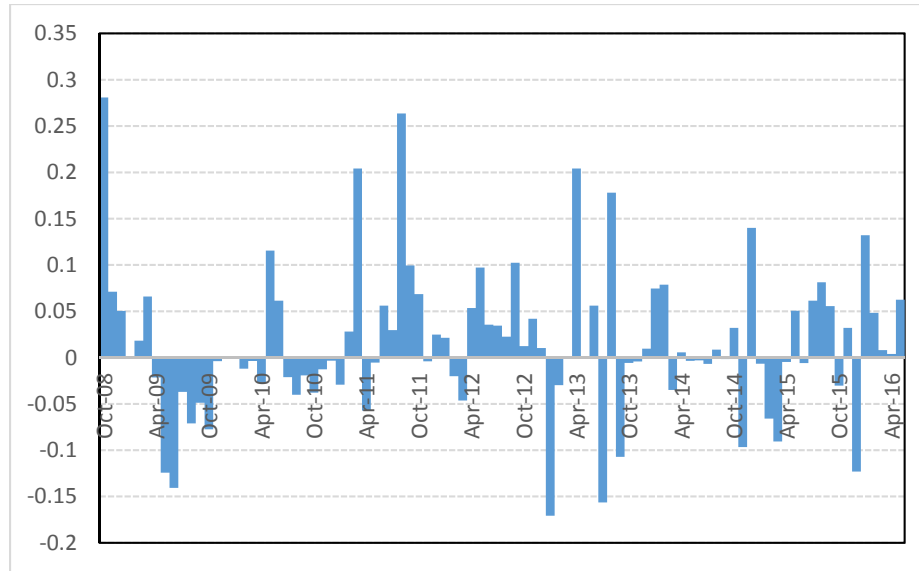
After five years of existence and given its voluntary nature, Fund E remained small, and by December 2007 it represented only 1.4% of Chilean pension assets. During the last decade, however, the fund has displayed significant growth, and it currently accounts for more than 20% of total pension assets. In addition to the recent growing trend, Fund E has also been characterized for its large and volatile flows. According to Figure 14, these flows are clustered in time, often exceeding 15% of the value of the fund in a single month. According to local authorities and scholarly research on the topic, fund members often switch from pension portfolios in an attempt to time the market, typically following the recommendations of popular financial advisory agencies.<sup>23</sup>

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<sup>22</sup> Fund E can have a maximum of 5% of its assets invested in equity instruments.

<sup>23</sup> After 2010 financial advisory agencies started to provide recommendations to individual investors to time the market with their pension funds. These agencies would send investors their switching recommendation by email or by private website login for a per year fee. Through an aggressive marketing campaign on social media, this type of advisor has gained popularity among Chilean pension investors and the spikes in the number of account switches (and transfer value) coincide with the advice provided. That said, there have also been other elements that prompted changes between providers and funds (pension issues having been more in the news and discussed broadly by the general population). See Da et al. (2014) for a comprehensive discussion on how signals and recommendations sent by these types of advisors served as a coordination device among pension savers. Da et al. (2014) analyzed the case of “Felices y Forrados” (FyF, translated as “Happy and Loaded”).

**Figure 14: Evolution of Fund E's Net Amounts Transferred (% of AUM)**



To study whether the stress caused by members switching funds affected investment strategies, this section uses monthly information of flows and portfolio holdings of Fund E provided by the Chilean Pension Supervisory Agency during 2008-2016. More specifically, the following asset classes were analyzed: Indexed Treasury Bonds<sup>24</sup>, Nominal Treasury Bonds, Indexed Central Bank Bonds, Time Deposits, Bank Bonds and Corporate Bonds. Taken as a whole, these investments represent 80% of Fund E's portfolio. To follow the empirical strategy from the previous section, assets were classified according to their duration<sup>25</sup> and liquidity.<sup>26</sup>

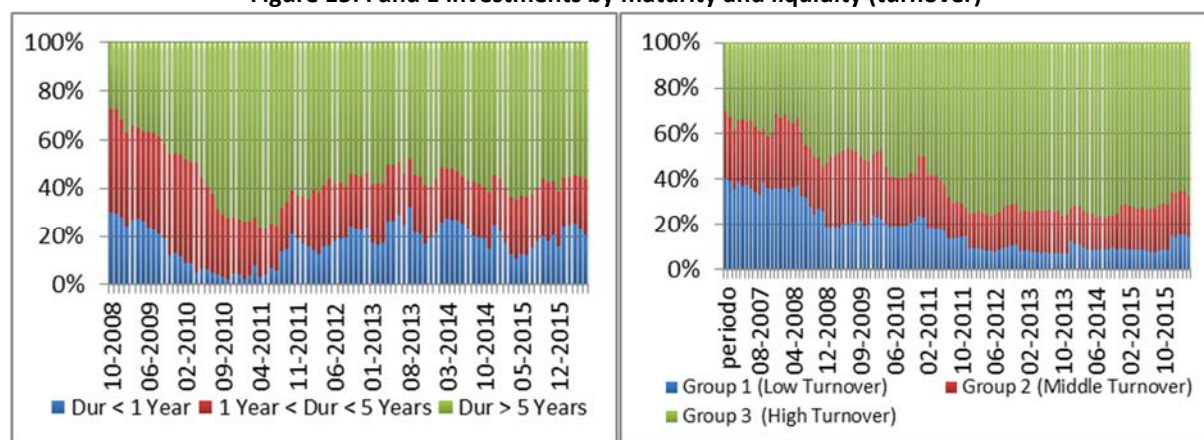
The evidence suggests that larger flows into and out of Fund E are related with more investments in low duration and high liquidity instruments. In particular, after 2011, Fund E investments have become more concentrated in assets with duration below 1 year and in securities with high trading volume. These results, which are consistent with the Colombian evidence, suggest that fund managers increase investments in short term instruments in order to meet liquidity needs.

<sup>24</sup> Indexation to inflation is achieved by using Unidades de Fomento (UF), which is an account unit that is monthly adjusted to reflect changes in the consumer price index. As of December 2016, a UF was roughly equivalent to 40 US dollars.

<sup>25</sup> Less than one year, between 1 and 5 years, and more than five years.

<sup>26</sup> Liquidity is measured by transaction volume of each asset.

**Figure 15: Fund E investments by maturity and liquidity (turnover)**



**Table 4: Fund E investments by maturity and liquidity.**

Vector autoregressive model (VAR) include controls for country risk perception (10-year Chilean credit default swaps) and stock market volatility. T-statistics in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1 percent, respectively.

Dependent variable: Change in Fund E holdings by asset type	Liquidity (by turnover)			Maturity (years)		
	High	Medium	Low	< 1	>=1 & < 5	>= 5
Lag of Fund E transfers / Total Fund E assets	0.090*** [2.776]	-0.009 [-0.394]	-0.057*** [-2.931]	0.377*** [12.932]	-0.108*** [-3.982]	-0.269*** [-8.575]
Lag of market returns	0.090 [0.201]	-0.078 [-0.810]	0.010 [1.072]	-0.082** [-2.085]	0.021 [0.494]	0.080 [1.509]
Constant	0.009 [1.300]	-0.004 [-0.745]	-0.006 [-1.453]	-0.003 [-0.468]	-0.002 [-0.343]	0.005 [0.729]
Observations	88	88	88	88	88	88
R-squared	0.107	0.020	0.117	0.687	0.168	0.496

Source: authors' calculation based on data provided by the Chilean Pension Supervisory Agency.

## 4. Conclusions

The paper documents a significant increase in long-term asset allocation over time, but that this is hampered by pension fund managers having to manage redemption risk. Greater diversification of DC pension funds in the eight LAC and CEE countries can be seen over time – whether into a broader range of domestic assets, or overseas investments. However, the paper shows that excessive switching between fund providers and portfolios can curtail the ability of pension fund to invest long-term. The analysis of the Colombian and Chilean data suggest that funds hold both more liquid and shorter-term assets in order to cope with switching demands – in Chile’s case between private pension providers and for Colombia between the public and private system. Both factors could impede exposure to longer-term, less liquid investments (such as infrastructure related investments) which policy makers are increasingly looking to pension funds to finance – or indeed mean that these investments will have to be structured with these liquidity needs in mind.

Holdings of short-term or liquid assets may be required where switching levels are high, but in other cases could be more ‘precautionary’. In some cases, (e.g. Chile, Mexico), the holding of large amounts of short-term or liquid assets in the portfolios seems necessary due to the sometimes high levels of switching, particularly between funds but also between providers. In other case (e.g. Romania) the large holdings of these types of assets maybe more precautionary as the actual outflows – including those driven by switching – are relatively limited. Whether some form of ‘liquidity reserve’ could be established to prevent such precautionary holdings is an idea which could be discussed, with lessons possibly to be drawn from other financial sectors and products (e.g. repos, UK ‘buy-out’ market).<sup>27</sup>

Sizeable outflows from switching produce several negative outcomes. For individuals changing provider, portfolio, or even pension system, as is the case of Colombia (fortunately uniquely for now), the evidence suggests that most obtain lower returns and reduce their potential retirement income. Beyond the negative effects on their own pension accounts, members who switch often also impose a negative externality to other fund members. Since fund managers have to rebalance their portfolio to accommodate larger outflows by increasing their holdings in short-term assets and in those that are more liquid, pension funds end up with lower than expected returns. Furthermore, given the size of these funds relative to their domestic markets, flow management might lessen the ability of pension funds to provide long-term finance. Whether the benefits of competition, marketing, and lenient switching policies outweigh the costs of a potentially weaker long-term performance is outside the scope of this paper and needs to be investigated further. Alternative industry structures (such as those using blind accounts) again need further consideration.

Changes in switching regulation (making such changes more administratively difficult) and marketing controls and incentives can reduce this type of switching considerably. This in turn allows pension funds to hold a greater percentage of longer-term while at the same time allowing for flexibility on the member’s choice.

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<sup>27</sup>Repos are ‘sale and repurchase agreements’ whereby one party agrees to sell a security at an agreed price to another party at time A and agrees to repurchase the same security also at an already pre-agreed (higher) price at later time B (the difference in the two prices being known as the ‘repo rate’ which can be interpreted as the interest rate over the period). In some pension fund insurance ‘buy-outs,’ the costs are reduced by what are called ‘in-specie’ transfers whereby effectively the pension fund and insurance company swap title for the assets that will remain in force backing the annuity product – so that the only assets actually sold are those that will not feature in the on-going portfolio (see Lane Clark Peacock 2015).



**Based on this research, recommendations for regulators are to:**

1. *Use administrative controls to prevent fraudulent switching between pension providers;*
2. *Provide clear performance / costs comparisons to inform members' choice of provider/ fund and encourage informed decision making, beneficial to members and to the system;*
3. *Supervise and control advertising and marketing (including reporting of performance periods) carefully to avoid switches based on misleading advice;*
4. *Control financial incentives for sales agents so that switching advice is given in members' interest and not for commercial gain;*
5. *Concentrate issuance in government securities to create more liquid instruments;*
6. *Conduct further research on the concept of a central liquidity pool to manage unexpected outflows.*

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## Annex 1: Regulatory Details

	Early withdrawal regulations	Restrictions on Switching between Pension Fund Providers	Portfolio Choice	Switching Restrictions
<b>Chile</b>	Funds from mandatory contributions or agreed deposits cannot be withdrawn before retirement. Voluntary contributions can be withdrawn before retirement but members have to pay additional taxes if they do so.	New members must remain in the default AFP for 2 years – after which they can switch freely. The default AFP is determined by an auction process where the winner is the AFP that charges the lowest management fee. Incentives for cross-selling products banned.	Each AFP must offer four pension funds (known as funds B, C, D and E) and may optionally offer one additional fund (known as fund A). AFPs usually offer all five types of funds. Different investment restrictions apply to each fund and each fund is invested in portfolios with different risk levels. Fund A is the riskiest fund with a maximum of 80% of the fund invested in stocks, and fund E is the safest fund with up to 5% of it invested in stocks.	Members may choose up to two funds to allocate their savings. Members aged 56 (men) or 51 (women) or older are not permitted to choose a type A fund, as with pensioners receiving a programmed withdrawal. The latter are also not permitted to choose a type B fund.  If members do not choose a fund, the AFP must allocate their savings to a default rule, which is defined by: the balance of male and female members up to age 35 must be allocated to a Type B fund, the balance of male members between ages 36 and 55 and female members between ages 36 and 50 must be allocated to a Type C fund and the balance of male members aged 55 or more and female members aged 50 or more must be allocated to a Type D fund.  Currently about 60% of affiliates are at the default investment strategy.
<b>Colombia</b>	Members aged 62 (men) and aged 57 (women) who have contributed for less than 1.150 weeks, and whose individual account balance is not enough to finance a monthly benefit of at least the minimum monthly national salary, are entitled to a refund of their individual account balance	Members can transfer the accumulated capital in their individual accounts to another AFP every six months. Switching back into the public pension system allowed every 5 years, not in the last 10 years before retirement	Each Pension Fund Administrator (AFP) may establish and manage several individual capitalization funds.	
<b>Costa Rica</b>	Withdrawal of funds before retirement is only permitted for those members who do	Any time after 1 year	Pension Operators (OPs) may establish and manage one mandatory pension	

	not obtain a pension from any scheme		fund and several voluntary pension funds.	
<b>Mexico</b>	<p>IMSS affiliates are entitled to make partial withdrawals from the balance in their accounts in two cases: unemployment or marriage. Affiliates who on their first marriage have compiled 150 weeks of contributions are entitled to a partial withdrawal for an amount equivalent to 30 days of current minimum wage in Mexico City. The amount must be subsequently repaid. Unemployed affiliates may partial withdraw funds once every 5 years within limits depending on length of contributions.</p>	<p>Workers can choose any AFORE. Enrolees may switch freely their AFORE once a year, given that they have been members of their current AFORE for at least one year.</p> <p>The worker can change AFORE before one year if: the new AFORE has a higher net return in a given time, plus an additional criteria shown below i. If the current AFORE (i.e., the one that has already the employee's savings) has obtained a consistently good performance, then the worker may not switch to a different AFORE. ii. If the AFORE that the worker may wish to switch has obtained a consistently bad performance, then the worker may not be transferred to AFORE he/she wishes. - the current AFORE changes its investment strategy;- the current AFORE increases its administrative fees;- the current AFORE merges with another AFORE</p> <p>Pension advisors must be registered at CONSAR and pass a technical knowledge</p>	<p>The basic SIEFORES are classified by the following employee's age brackets:</p> <ul style="list-style-type: none"> <li>- SB1: for 60 years-old or older;</li> <li>- SB2: between 46 and 59 years-old;</li> <li>- SB3: between 37 and 45 years-old;</li> <li>- SB4: between 27 and 36 years-old, and</li> <li>- SB5: between 26 and or less years-old.</li> </ul> <p>Each basic SIEFORE has specific investment regime that depends on the age and risk profile of the worker. For instance, the SB5 (young workers) has the most aggressive investment regime and SB1 (workers near to retirement) has the most conservative one. As enrolees are getting older, their pension assets are invested in a more</p>	Any enrolee may opt to invest his/her resources in a more conservative fund than the default option.

		<p>test. AFORES can use any information published on CONSAR website to advertise their fund. If the affiliates wish to move before 1 year, the IRN (net performance) must be shown along with a comparison between the existing and new fund. No tie in sales relating to the financial or commercial group may be provided to the switching affiliate.</p>	<p>conservative investment regime (with lower exposure to equity and a greater proportion of fixed-income instruments) to reduce the volatility of their returns. Thus, a young enrollee will gradually move from Basic Siefore 5 (SB5) to SB4, SB3, SB2 and finally SB1.</p> <p>The investment regime of the basic SIEFORES is characterized by its differentiated quantitative limits (depending on the basic SIEFORE) and qualitative requirements.</p>	
<b>Peru</b>	Not permitted	Any time after 1 month	<p>Each Pension Fund Administrator (AFP) must establish two pension funds (Types 1 and 2) and may optionally establish one additional fund (Type 3) to which mandatory contributions are credited.</p> <p>Type 1 fund (Capital preservation fund): This fund must be established by AFPs to pursue steady growth with low volatility.</p> <p>Type 2 fund (Mixed fund): This fund must be</p>	<p>Type 1 fund: the choice of this fund is mandatory for members aged 60 or more and for those who opted for old-age benefits paid under programmed or temporary withdrawal, unless they opt out of the fund. The decision to opt out must be made in writing and the member must choose between a Type 2 and Type 3 fund.</p> <p>Employees and self-employed persons may opt for any of the funds.</p>

			<p>established by AFPs to pursue moderate growth with medium volatility.</p> <p>Type 3 fund (Growth fund): This fund may be established by AFPs to pursue high growth with high volatility.</p>	
<b>Estonia</b>	Not permitted	<p>Members may change units of mandatory pension funds three times a year and may start to contribute to new pension fund with no time restrictions. The redemption of units in the former pension fund and purchase of units in the new pension fund takes place on 1 January, May, September</p>	<p>PMCs may establish and manage several mandatory pension funds. However, every company must offer at least one conservative fund, the assets of which are only invested in fixed income instruments (bonds and deposits). PMCs usually offer three or four funds that invest 0 per cent (conservative fund), 25 per cent, 50 per cent and up to 75 per cent, respectively, of total assets in equities.</p>	
<b>Poland (pre 2014)</b>	Not permitted	<p>Switching between pension funds is allowed. If the fund member joins another fund, it is obliged to notify the previous fund in written form. Transfer payments between pension funds are executed 4 times a year (on the last working day of February, May, August, and November).</p> <p>Acquisition activity for the pension fund is prohibited.</p>	No portfolio choice	

		<p>Acquisition activity is defined as an activity aimed at inducing a person to join to the open pension fund or remain a member of the fund, particular by offering additional pecuniary benefits to be gained for reasons of membership in the pension fund or by using superiority resulting from employment or another legal relationship.</p> <p>Intermediaries, brokers cannot perform any activities for the acquisition of pension funds.</p>		
<b>Romania</b>	Not permitted	<p>Members can switch the pension fund only on their own initiative (is not allowed for marketing agents to interfere with the process). The marketing activity of pension funds is regulated, the private pension broker may carry out the marketing activity if it meets the requirements and is authorised by the Authority and registered in the Registry. The natural person marketing agents shall carry out the marketing activity of pension fund only for one manager or for one legal person marketing agent, where appropriate. It is</p>	No portfolios choice	



		prohibited that the natural and legal person marketing agents to interfere with the switching process.		
<b>Hong Kong SAR, China</b>	Not allowed (with usual exceptions of early retirement, permanent emigration, small and inactive balances)	Employer chooses the provider in MPF system. On changing jobs, the employee can transfer accrued benefits into a personal account or into the new employer's scheme or retain them in the previous employer's scheme. From 2012 onwards, employees have been able to transfer their own contributions to a scheme of their choice 1x year. Personal accounts can be switching between providers without restriction.	A mandatory provident fund scheme may consist of a single constituent fund, or of two or more constituent funds. Each constituent fund must be approved by the Mandatory Provident Fund Schemes Authority (MPFA). If the scheme comprises two or more constituent funds, each of the funds must have different investment policies among which the members of the scheme may choose to invest their accumulated capital.	The MPFA has issued the Conduct Guidelines to provide guidance in respect of the minimum standards of conduct expected of the registered intermediaries. The MPFA may make disciplinary order against a regulated person (i.e. existing or former registered intermediaries) if the regulated person has failed to comply with a conduct requirement.

## Annex 2: Requested Country Information

Portfolio Information - <b>country representatives please provide</b>											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total AUM (local currency amount)											
Short-term assets <sup>1</sup>											
Medium-term assets (between 2 and 5 years maturity)											
Annual contribution inflow											
Annual returns (local currency amount)											
Annual amount switching between pension fund / portfolio											
Amount of switching between pension fund providers											
Amount of benefit payments <sup>2</sup> (PW old age, survivor and disability)											
Transfers for annuity purchases											
Amount of early withdrawals <sup>3</sup>											
Duration of Pension Funds (in years)											
Please provide amounts in local currency figures											
1 short-term assets = local government treasuries securities <1 year maturity / local bank term deposits/ foreign treasury securities < 1 year maturity/ foreign term deposits											
2 annual benefit payments = transfers to PW/ for annuity purchases/ disability and survivor related payments											
3 early withdrawals= withdrawals before retirement age allowed by regulations by age/ if minimum balance achieved /for housing purchase etc.											