

How Do Fund Managers Invest: Self Strategy or Herding in Private Pension Funds?

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Abstract

We use Sias (2004) approach to decompose the correlation among investment strategies followed by pension funds administrators in the Chilean private pension fund system during the periods 1997-2001 and 2002-2005, and find that most of this correlation is explained by herding behavior. That is, fund managers mimicking the investment strategy of other funds.

We argue that the obligated minimum guaranteed return that pension funds institutions must fulfill, created the incentive for fund managers to herd.

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I.- Introduction

Private Pension Funds are the largest institutional investor in the Chilean capital market. While pension funds, currently, manage assets for US\$75 billion, Mutual Funds and Life Insurance Companies handle the equivalent of only 13 percent and 10 percent of those assets respectively. These funds were created in 1981 when Chile replaced its pay-as-you-go system for a system of individual capitalization accounts where each worker contributes 12.3 percent of their gross wage. Pension Funds Administrators (PFA) manage and administer these worker's accounts. Later on, several Latin American countries like Argentina, Peru and Mexico, reformed their pension systems following the Chilean example.

An interesting feature of the Chilean pension fund system is that PFAs are obligated to realize a minimum guaranteed return (MGR) on the managed funds. This return is defined as the lower between the weighted average return across funds on the last 36-months performance minus 2% or the absolute value of weighted average return minus 50%. If any fund's performance lies below the MGR, the PFA must supplement the difference between the current return and the MGR. If a PFA does not meet this requirement, the government may liquidate it and transfer its funds to another PFA. Olivares (2007a) using the Lakonishok, Shleifer and Vishny (1992) herding measure, finds that pension fund managers tend to mimic their investment style. He argues that the MGR feature is the responsible for the herding behavior of the PFAs. Furthermore, Olivares (2007b) finds that Mexican private pension funds administrators (Siefors), which are not constrained by a MGR, do not exhibit similarity in performance or herding behavior in asset allocation.

During the first phase of the Chilean system, PFAs were authorized to handle 2 funds and after an amendment in August 2002, each PFA was allowed to manage 5 funds, which differ among them by investment limits. The objective of this change was twofold. First to provide clients the option to choose any fund based on their risk preferences. For instance, while Fund A has an

investment limit of 60 percent on stocks, Fund E can only invest in fixed income securities. Second, to increase the level of competition among PFAs.

In this paper, we investigate whether the creation of new funds in 2002 made it more difficult for managers to mimic their behavior, and in that sense whether the change resulted in PFAs showing different performances and asset allocations. We postulate that because the MGR was kept in place, PFAs should continue showing herding behavior.

Unlike Olivares (2007b), we follow the approach of Sias (2004), which disaggregate herding by showing that one part of the herding measure actually represents the manager following his own strategy, while the other part shows whether the manager follows his competition investment policy, and thus it represents a pure herding measure.

We study the PFAs investment strategies prior and after the 2002 amendment. In particular, we analyze asset allocation during both periods, and find herding behavior before and after the change. Furthermore, herding increases in the second period. While before the change, 80 percent of asset allocation corresponded to herding among PFAs, after the change it increased to 86 percent. Thus, the creation of more funds did not decrease herding but the contrary. We argue that this is the result of the MGR still in place in the Chilean system.

Our results should contribute to increase the discussion on the effect of restraining fund managers behavior by any financial punishment and the possible impact of the current organization of private pension fund markets.

The paper is structured as follows: section 2 refers to the evolution of Chilean pension funds; section 3 explains the methodology and findings, and section 4 concludes.

II.- Chilean Pension Funds

The Pension Funds Act replaced the Pay-as-you-go system in May of 1981. The fundamental tenet of this reform lies in the creation of mandatory individual savings accounts

administered exclusively by private fund managing companies called Administradoras de Fondos de Pensiones or Pension Fund Administrators (PFAs). The Superintendence of Pension Fund Administrators (SPFA) strictly regulates PFAs' investments carried out on behalf of Pension Funds.¹ In addition, by regulation, the government is responsible to guarantee a minimum cash flow stream to pensioners and a minimum guaranteed return (MGR) on funds managed by PFAs. The accountability for achieving this MGR is delegated to PFAs. Regarding compulsory savings, dependent workers must contribute 10 percent of their taxable salary to their individual saving accounts monthly. A supplementary percentage (around 3 percent) is charged to finance management fees and disability–life insurance. Savings accounts cannot be used as collateral by workers to warrant any financial transaction. The employers are the responsible agents to deposit these monthly contributions directly to each PFA. Each worker has the freedom to choose any PFA; however, she cannot divide her individual savings among different pension funds. The law prohibits PFAs from charging any fees on cumulated funds in the savings accounts (asset value) but exclusively on monthly taxable salaries. Even though PFAs are allowed to charge fees on transfer of the client's funds, no institution does.

Every month, workers must pay both variable and fixed fees for PFA services. The variable fee is a percentage of a worker's taxable income. This percentage ranges from 2.3 to 2.8 percent of a worker's income. The variable fee for managing the funds accounts for 85 percent of PFAs' total revenue (the other 15 percent is capital gains from investing in the market). The worker's taxable income is defined as the monthly salary before withheld taxes and health care deductions.

Regarding the number of funds under management, each PFA was initially allowed to manage just one fund. Legislative changes in 2000 gave PFAs the authority to administer two funds (Type I and II). The main differences between them are their investment limit and the type of client they serve. For instance, for government bonds, the maximum limit of investment for the funds Type I and II is

¹ The Pension Fund is the sum of individual saving accounts. A PFA is a privately-owned or publicly-owned entity with a board and shareholders. Both institutions possess independent financial statements and portfolio holdings.

80 percent and 50 percent, respectively. Fund Type I is designed to draw clients who are near their retirement date; however, a contributor cannot divide his PFA-managed savings between both types of funds. In August 2002, lawmakers authorized the running of five funds as a way to spread out the investment alternatives for clients (Funds A, B, C, D, and E). For instance, Fund A is a long-term investment plan that invests in securities with a greater weight in local stocks (variable income security). In contrast, Fund E is highly concentrated in fixed income securities, similar to fund Type I, and designed for those who are near their retirement date. Currently, each worker may select to split his savings between two funds but in only one institution.

In the sample period 1997:06–2001:12, the number of PFAs went from thirteen (in 1997) to seven (in 2001) as a result of a series of mergers. Mergers have been the most effective mechanism used by funds to increase market share. The absorbed institutions were not capable of achieving the break-even point in the number of clients. (TABLE1) illustrates the evolution of the funds through time. By 2001, the largest fund (PFA Provida) has 40 percent of all clients and 31 percent of assets. The three largest PFAs condense almost 60 per cent of total assets under management. During the period 2002:12 – 2005:12, the number of PFAs fell from seven to five and the market share of the largest three PFAs increased to 70 per cent.

3.- Methodology and Findings

3.1.- Data

We use monthly information on portfolio holdings and returns which comes directly from the Chilean Superintendence of PFAs. This data includes all funds that currently exist and those that disappeared. All information is processed in Chilean pesos as fund quota values, stock prices and asset allocations. During the period 1997:06 – 2001:12 only two type of funds existed. The study for this period includes only the Fund Type I which incorporates fixed and variable income securities. Fund Type II is mainly built for people who are close to retirement date and hence the fund exclusively fixed income assets. For the period 2002:09 – 2005:12, we analyze the existing 5 family funds that currently belong to each PFAs and the portfolio holdings classified into 7 assets.

3.2.- Methodology

Several papers have studies whether institutional investors tend to replicate or herd when investing in different financial assets. Scharfstein and Stein (1990) develop a theoretical model to explain why managers may herd. Lakonishok, J., A. Shleifer, and R. Vishny (LSV) (1992), Grinblatt, Titman, and Wermers. (1995), Devenon and Welch (1996) Wermers (1999) and Sias (2004) study in detail the herding in different financial institutions. In the case of Chilean pension funds, Olivares (2007a) applies LSV approach to explain the manager behaviors when defining the asset allocation and asset selection and finds that there exists a great similarity in returns among funds and high correlation in the changes in asset allocation across PFAs.² To analyze much deeper if managers tend to herd when deciding how to select assets, we use Sias's (2004) herding measure. Sias (2004) examines institutional trading activity by analyzing cross-sectional correlation between demand for a security (k) last quarter and demand for the security (k) this quarter. Unlike Lakonishok, Shleifer and Vishny (1992) approach, Sias (2004) method captures the effect that traders may follow their own pattern or other's over adjacent periods. He determines institution's position of each security (k) as a fraction of the security's share outstanding per quarter. Investors are classified as buyers (sellers) if their ownership in stock increases (decreases) and defines:

$$(1) \text{Raw}\Delta_{k,t} = \frac{\text{Buyers}_{k,t}}{\text{Buyers}_{k,t} + \text{Sellers}_{k,t}} \quad k = \text{stock}$$

The standardized fraction of institutions buying security (k) in quarter (t) is:

$$(2) \Delta_{k,t} = \frac{\text{Raw}\Delta_{k,t} - \overline{\text{Raw}\Delta}_t}{\sigma(\text{Raw}\Delta_{k,t})} = \frac{P_{i,t} - \overline{P}_t}{\sigma(P_{i,t})}$$

Sias (2004) runs a cross-sectional regression of the standardized fraction of institutions buying security k:

$$(3) \Delta_{k,t} = \beta_t \Delta_{k,t-1} + \varepsilon_{k,t}$$

² Leading papers in asset allocation and selection are Brinson, Hood and Beebower (1986), Hensel, Ezra and Ilkiw (1991), Brinson, Singer, and Beebower (1991), Ibbotson and Kaplan. 2000,

He argues that this correlation has two components: (i) correlation may arise from individual investors following themselves and (ii) correlation may result from investors following each other (herding) over adjacent quarters. However, he proves (in his appendix) that the correlation between current quarter investors buying and lag quarter's investors computed from N investors across K securities can be decomposed into:

$$(4) \beta_t = \rho(\Delta_{k,t}, \Delta_{k,t-1}) =$$

$$(4a) \left[\frac{1}{(K-1)\sigma(Raw\Delta_{k,t})\sigma(Raw\Delta_{k,t-1})} \right] * \sum_{k=1}^K \left[\sum_{n=1}^{N_{k,t}} \frac{(D_{n,k,t} - \overline{Raw\Delta_t})(D_{n,k,t-1} - \overline{Raw\Delta_{t-1}})}{N_{k,t}N_{k,t-1}} \right] +$$

$$(4b) \left[\frac{1}{(K-1)\sigma(Raw\Delta_{k,t})\sigma(Raw\Delta_{k,t-1})} \right] * \sum_{k=1}^K \left[\sum_{n=1}^{N_{k,t}} \sum_{m=1, m \neq n}^{N_{k,t-1}} \frac{(D_{n,k,t} - \overline{Raw\Delta_t})(D_{m,k,t-1} - \overline{Raw\Delta_{t-1}})}{N_{k,t}N_{k,t-1}} \right]$$

We run the models (3) and (4) to determine the beta coefficient and its decomposition. The summation of beta coefficients (4a) and (4b) provides the total value of beta coefficient belonging to equation (4). However, to apply these models, it is necessary that PFA (i) have traded the same stock in at least two consecutive periods. Initially, we start analyzing through these models the asset allocation to continue later with the asset selection, especially the stock trading.

3.3.- Results

Sias (2004) analyzing different financial institutions average correlation coefficients of 0.11 which is decomposed into 0.06 (t = 12.67) corresponding to institutions following their own trades and 0.05 that represents institutions following others' trades. When the number of institutions that are trading in the market increases, the correlation coefficients raise to 0.16 (t = 29.86). Our findings tend to show that total value of the correlation for the period 1997:06 – 2001:12 is 0.15 (t = 3.07) with p-value of 0.003. When is analyzed what part of the equation (4) explains results, we find that the beta coefficient corresponding to own trades (4a) has a coefficient value of 0.0294 (t = 3.62) and p-value of 0.001 and the beta coefficient of others' trades (4b) with value of 0.1257 (t =

2.74) and p-value of 0.008. These results evidence that great proportion, 81 per cent, of the total correlation comes from fund managers following each other over adjacent periods. In other words, the changes in asset allocation realized by managers show that funds seem to mimic investment strategy pursued by other funds. We check these results by dividing the periods. In the period 1997:06 – 1998:06 and during the Asian financial crisis, the average correlation value is 0.44 ($t=4.61$), which is explicated by funds following their own trades with beta of 0.04 ($t=4.18$) and by funds following others' trades with beta value of 0.39 ($t=4.59$). During the period 1997:06 – 1999:07, the average coefficients is 0.25 ($t=3.72$) and the values of equations (4a) and (4b) are 0.02 ($t=3.23$) and 0.23 ($t=3.63$), respectively.

For the period 2002:10- 2005:12 the average correlation is 0.23 ($t=3.61$), which is explicated by funds following their own trades with beta 0.03 ($t=3.58$), and by funds following others' trades with a beta of 0.19 ($t=3.66$). That is, of the total correlation, 86 percent is explained by the mimicking behavior, while in the period 1997-2001 this represented 80 percent of the correlation.

4.- Conclusion

We observe herding behavior in the Chilean private pension funds system. The inclusion of new funds in 2002 did not change this behavior, but the opposite. Indeed while before the change 80 percent of the correlation among the asset allocation of fund managers was attributed to herding, it increased to 85 percent after the 2002 change.

We argue the minimum return that PFAs must fulfill forces them to mimic their behavior. This mimicking behavior is robust when we divide the sample in several sub-periods.

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Table 3 – Correlation Values – Period 1997:12 – 2001:12

Beta Coefficients	Values	St. Error	p-value
Total	0.1569	0.0511	0.00
Own Trades	0.0294	0.0081	0.00
Other's Trades	0.1257	0.0465	0.00

Table 4 – Correlation Values – Period 2002:10 – 2005:12

Beta Coefficients	Values	St. Error	p-value
Total	0.2312	0.0640	0.00
Own Trades	0.0333	0.0093	0.00
Other's Trades	0.1979	0.0541	0.00