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**How Financial Regulation Can Promote
Herding Among Pension Fund Managers: the
Case of Poland and Chile**

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Abstract

The pension fund regulations in some emerging markets mandate fund managers to earn minimum guaranteed return and also contain restrictions related to stock-profiling. Examining the case of Poland and Chile, the paper finds that such regulations promote imitation in the investment conduct among the fund managers and incentives for them to hold portfolios similar to their peers. Aside from weakening competition among funds, this regulatory regime deprives pensioners the choice of accessing pension funds that meet diverse risk preferences. To address these issues, the study suggests some policy options.

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How Financial Regulation Can Promote Herding Among Pension Fund Managers: The Case of Poland and Chile

I. Introduction

Over the past two decades, the imitating behavior of investors, be they individual or institutional, has grabbed the attention of researchers. This behavior is widely known as *herding* and is capable, if left unattended, of bearing a destabilizing impact over stock prices.

The purpose of this study is to analyze how financial regulation can promote herding among fund managers by examining the behavior of pension fund managers in the context of emerging markets. By the term pension fund we mean any plan /fund for providing retirement income to its participants. Pension funds can be publicly or privately owned; in either case regulatory authorities monitor and assess their performance. The institutional framework in emerging markets typically imposes several restrictions on pension fund managers in terms of how they should allocate their funds and the minimum return they should achieve. The importance of pension funds has dramatically increased over the years as they have emerged as the largest institutional investors globally with the value of their assets reaching USD 16 trillion in 2010². It is the case that the majority of the countries around the world have developed their own pension fund system³. Particularly, there are three main types of pension systems, namely the “Anglo-Saxon”, the “Continental” and the “Latin American”. The first one is more common among the U.S and the U.K, the second one is more common in the developed European economies, whereas the third one is more profound in the emerging markets of Central Europe and Latin America. The Anglo-Saxon one is the more liberal one with no (or few) limitations in their investing policies whereas in the other two there exist certain investment rules

² Source: <http://www.towerswatson.com>

³ Some of the world’s largest pension funds are those of: Japan, Norway, Netherlands, South Korea, California (U.S), Malaysia, Canada, Brazil and Ireland.

imposed by the regulatory authorities. Particularly, in the “Continental” pension system there are some investment norms, regarding the return on the funds’ investments, though these are not considered binding on the pension fund managers there. However, in the third type of pension systems, the Latin American one, these limitations are obligatory and restrict the choice of pension fund managers regarding the allocation of their managed assets.

As Blake *et al.* (2002) state, differences in the investment rules can potentially lead to differences in the investment behavior of pension fund managers. If this is the case, we should expect that the strict regulations regarding the pension funds should have an impact on the investment behavior of their managers. More specifically, what we try to identify in this paper is whether pension fund managers are involved in herd behavior due to the imposed restrictions in the pension system of the emerging markets. The two most typical examples of such pension systems (and the most widely researched ones) are those of Poland and Chile, with the latter being the first country that introduced this kind of pension system.⁴

Our paper is organized as follows: Section II introduces the concept of herd behaviour, presents its key sources and states the research question as to whether financial regulation *per se* can be considered an additional motive underlying the herding tendencies of finance professionals. Section III presents the cases of the Polish and the Chilean pension fund systems and the evidence on the herd behaviour of pension fund managers in each. Section IV discusses the impact of this herding and proposes some measures aiming at mitigating this impact; Section V concludes.

II. Sources of Herding

According to Hwang and Salmon (2004), herding occurs when investors disregard their own beliefs and information and decide to imitate the actions of others in the market. In addition, Bikhchandani and Sharma (2001) divide herding into two categories; *spurious* and *intentional*. In case of spurious herding, investors may act in the same way not

⁴ Poland had introduced a pension fund system similar to Chilean Pension fund system. (Stanko, 2003)

because they imitate each other, but because of a common reaction towards an event or certain news. For example, a decrease in the interest rates may attract more investors to the stock market; this will likely be translated into more people turning to invest in stocks, many of them possibly in the same stocks; yet the roots of this will have little to do with imitation. In case of intentional herding, investors purposely ignore their own beliefs and informational sets and follow the actions of their peers. Research has identified several possible sources of herding, with the most noteworthy being the behavioral, informational and professional/agency sources among others, which are discussed below.

II. 1 Behavioral Sources

The behavioral sources include several biases and heuristics documented in the behavioural finance literature, such as *cognitive dissonance*, *conformity*, *rumor-heuristic* and *limited attention*, among others. *Cognitive dissonance*, which was introduced by Festinger (1957), suggests that when investors hold two conflicting beliefs in their minds, the discomfort caused by this conflict drives them to find ways to relieve the conflict. One way of finding relief is to ensure that their actions are in line with most of the other investors in the market, even though these actions may not ultimately lead to the expected outcome. In addition, Hirshleifer (2001) posited that investors are more comfortable when doing what their peers are doing and dubbed this phenomenon “*conformity*”. Further, investors sometimes seem to be heavily influenced by rumors that arrive in the market as *the rumor heuristic* [Buckner (1965)] suggests. Finally, herding behaviour could be explained by the *limited attention* bias [Daniel *et al.* (2002)], which suggests that investors tend to pay more attention to more recent and salient events; for example, investors pay greater attention to the recent suggestions of a reputed analyst than other more important informational signals.

II. 2 Informational Sources

The next possible source of herding is the informational one; information is considered to play a vital role in the formation of investors’ beliefs and consequently the formation of asset prices. Given the fact that accurate information is often difficult and very costly to

obtain, investors may choose to copy the actions of their peers when they feel that the latter are better informed than them. This phenomenon is widely known as *informational cascading*. Since investors disregard their own information and follow the signals from other investors' trades, their own information is not conveyed in the market, hence causing *information blockages* as Hirshleifer and Teoh (2003) suggest.

II.3 Agency (Career / Reputational) Sources

Last but not least, a possible source of herd behavior among investors, especially finance professionals, is related to *career/reputational* reasons. The seminal work by Scharfstein and Stein (1990) outlines that professional investors, such as fund managers, could copy the actions of their peers (other professionals) due to reputational reasons. For example, an inexperienced or “bad” manager is more likely to follow the actions of a more experienced or “better” manager. If the market ventures upwards (the case of a rally) and his trades mimic those of his “good” peers, he also is likely to perform as well as his “good” and will then be perceived as a “good” manager. If the market is facing a slump and he copies the trades of his “good” peers, any (presumably poor) performance he documents will be ascribed to the poor market conditions (as he will then be able to claim that he did no better – or worse – than his “good” peers).

II. 4 Financial regulation: a Source of Herding?

Recent researches have shown that financial regulation could also be a source of herding, particularly among the pension fund managers. The intuition behind this view is that the restrictions imposed by the regulators on the investment decisions of the pension funds—particularly a mandate to achieve a minimum benchmark return--weaken the incentives for pension fund managers to deviate from the benchmark and hence reduce competition among them. The lack of competition among fund managers as well as the limitation of investment options could lead to the convergence of their opinions and the adoption of similar investment strategies. As Bikhchandani et al (1992) showed, the smaller the number of options available to investors, the more likely it is that investors will converge in their actions. It is this explanation that we will investigate in relation to the Chilean and Polish markets.

III. The Cases of Poland and Chile

To illustrate how financial regulation is capable of encouraging pension fund managers to mimic each other, we shall now present the cases of the Polish and the Chilean pension fund systems. The choice of these two systems is based on the wide attention they have attracted from the academic community. Emphasis will be placed on the structure of these systems, the provisions underlying them, the empirical evidence on pension fund managers herding in these jurisdictions and how this herding can be explained through the institutional framework of these pension fund systems.

III. 1 Poland

III.1.1 The Polish Pension Fund System

The Polish pension fund system was transformed from a simple pay-as-you-go system⁵ to a three-pillar system (Stanko, 2003). The first pillar was a new pay-as-you-go system that remained state owned and the other two pillars were under the control of private companies and they were basically defined contribution systems; out of the three pillars, only the first two (the pay-as-you-go system and one of the private ones) were compulsory, whereas the third one was optional. Even though the second and third pillars are under private management, it is only the third pillar (the optional one) that has to adhere to a very strict regulatory framework. More specifically, there are limitations on the allocation of the available assets to each financial instrument; pension funds, for example, should allocate their available funds for investment into shares to an extent of not exceeding 40% and an additional 20% in shares through mutual funds. Furthermore, the pension funds are obliged by law to achieve a minimum rate of return on their invested funds. The minimum return mandated is the lower of the two values: fifty percent lower than the weighted average industry rate of return or a 4 percent lower

⁵ A pay-as-you-go system is a pension system where the employees pay contributions from their salary for a pre-defined benefit plan.

return than the previous mentioned average⁶. If the pension funds fail to achieve the prerequisite level of return, they have to cover the difference between the required return and the achieved return through their own funds.

III.1.2 Evidence of Herding Behavior

A research paper that sheds light upon the herd behavior of Polish pension fund managers is that of Voronkova and Bohl (2005). In particular, the authors examined whether the reform of the Polish pension system in 1999 led pension fund managers to engage in herd behavior. The sample consisted of semiannual data for 17 pension funds from 1999 till 2002. Their results indicated the presence of significant herding, particularly in respect of stocks of small size. The authors suggest that the reasons for this phenomenon could be twofold. First, relatively less public information about stocks of small companies compared to large companies prompt fund managers to "...pay relatively greater attention to the action of other players in making their own investment decisions regarding small stocks" (this is information-driven herding, entailing intent; see Bikhchandani and Sharma, 2001). Second, herding in stocks of small size also occurs unintentionally. For example, if some fund managers have some investments in small stocks which are performing poorly, then they may seek to dispose of those stocks due to evaluation concerns; this leads to "window-dressing" as highlighted by Lakonishok et. al (1992)⁷. Furthermore, their results indicated higher levels of herding in certain industries such as banking, metal production and computer services--industries that are more likely to

⁶ It is important to note here the tacit encouragement of these regulations towards herding: the benchmark in both cases is the industrial average, i.e. the performance average of all pension funds, thus leading fund managers to view their performance assessment on a relative basis versus that of their peers'.

⁷ Liquidity risk can further boost window-dressing as a driver of herding in small cap stocks. If a small stock performs poorly, selling it is not as easy a task as would have been with a larger stock due to the differences in their trading volumes. Small stocks tend to be characterized by less trading activity, thus implying that the execution of any order on them is more likely to face delays. As a result, fund managers would be more likely to trade on underperforming small cap stocks together with their peers as this would help ensure an increase in the turnover of these stocks and the timely execution of their trades. Conversely, the inability to dispose of a losing small cap stock on time can lead to adverse effects over the performance of a manager's portfolio – and his performance assessment relative to his peers.

represent the benchmark. In addition, it was the case that smaller pension funds were following the trades of the larger ones.

As the authors suggest, several implications can be derived from the regulatory framework of the Polish pension fund system which is characterized by high market concentration and strict performance requirements and penalties. Firstly, the high concentration of the Polish pension fund market is responsible for the high degree of similarity in the composition of the various pension funds' portfolios; this leads to a more or less similar performance among pension funds reducing the competition among them. What is more, since the required performance that the mutual funds must achieve is published quarterly, this might lead fund managers to avoid long term investments and focus on short term targets in order to avoid missing the required benchmark return, hence incurring greater opportunity costs.

Another research paper on the Polish pension fund market—by Kominek (2006)—reaches similar conclusions. In particular, the author by using monthly data this time for 17 pension funds and for a time period of three years, 2002-2005, found that indeed pension fund managers in Poland engaged in herd behavior due to the imposed restrictions from the regulatory authorities. The author underlined the intention of the Polish government to provide security to its pension system's participants (the pensioners); nevertheless the framework with its imposed penalties in case of underperformance has had a significant unintended impact on the behavior of the fund managers and how their investment decisions are made. More specifically, the fund managers appear to follow similar investing strategies, and thereby limiting the options of the individuals to choose their pension scheme according to their risk preferences. Finally, the author suggested that perhaps a limitation on the number of funds or a review of the performance benchmark system could reduce the similarity among the portfolios of pension funds, which are mostly dominated by government bonds.

III.2 Chile

III.2.1 The Chilean Pension Fund Market

The Chilean pension system was reformed in 1981 and was the model that later applied to the majority of Latin American countries and some other countries as well, such as Poland which was discussed previously. Some of the Latin American countries that adopted the Chilean pension system were Peru (1992), Argentina (1993), Colombia (1993), Uruguay (1995), Mexico (1996), Bolivia (1996), El Salvador (1996), Nicaragua (2001) and the Dominican Republic (2001). The new system created was based on obligatory savings accounts run by the Pension Fund Administrators (PFAs), which are private fund management companies, and are supervised by the government. The latter had imposed several restrictions both on the allocation, according to the type of securities, and the performance of the invested funds. The latter is defined as the minimum guaranteed return and should be no lower than either: 1) the annualized average return across pension funds minus two percent over the past 36 months or 2) the annualized average return across pension funds minus 50 percent of the absolute value of this average return over the past 36 months. It may be seen that this is very similar to the one in Poland. With Chile being the first country to impose such kind of a pension system, there were several studies about its system and what impact this had upon pension fund managers' behavior.

III.2.2 Evidence of Herding Behavior

Olivares and Sepulveda (2007) examined the behavior of the Chilean pension fund managers during the period 1997-2005 using the Sias (2004) approach; the latter allows for the decomposition of the inter-temporal dependence of institutional demand for securities into two coefficients, one showing funds following their own strategies and another showing funds following each other, which is the measure of actual herding. So, the authors, by using monthly portfolio holdings, examined whether the introduction of more funds by the PFAs had any impact upon the behavior of pension fund managers. Till 2002, each PFA could manage up to two funds; however from 2002 onwards this number increased to five funds. This legislative change took place in order to provide

investors with more options to choose from depending on their risk preferences and also to promote competition. By breaking their sample into two sub-periods, namely 1997-2001 and 2002-2005, the authors found that the percentage of asset allocation that corresponded to herding increased from 80 percent to 86 percent after the introduction of the new funds. The authors conclude that it is the minimum guaranteed return which drives fund managers to herd towards each other and attempts to provide wider choices to investors does not help in this regard.

Another important paper regarding Chilean pension funds' herding is that of Olivares (2008). The study examines the Chilean pension fund industry from 1997 till 2001 by using monthly portfolio holdings. The number of pension funds which was 13 in 1997 fell to 7 by 2001 because of mergers and cancellations of licenses. Their findings reveal a strong tendency for fund managers to imitate each other. The findings reveal that the benchmark (minimum return to the clients) significantly explains funds' performance. Pension funds tend to replicate their asset allocations to exhibit similarities in returns. They conclude that the obligation on fund managers to attain a minimum guaranteed return, based on relative performance evaluation, encourages them not to deviate from the industry's performance; indeed, the benchmark explains most of the group performance. The paper's analysis indicates that, more or less, funds hold identical portfolios. Moreover, the fact that 70% of the industry's assets are held by the three largest pension funds implies that the minimum required rate of return, which is weighted by the asset values, is determined to a great extent by the largest pension funds. The authors conclude that the imposed restrictions cause weakening of competition among the funds since their investment strategy is limited to replicate the benchmark performance.

Summarizing the evidence from the two countries discussed above, one can see that in both cases there is significant levels of herding among pension fund managers. The researchers in both cases attribute this phenomenon to the imposed restrictions from the regulatory authorities, and particularly to the minimum required return that fund managers should achieve.

IV. Pension Funds' Herding: Impact and Policy Implications

IV. 1 Impact of Pension Funds' Herding

The evidence discussed in the previous sections, indicates that the herding behavior of pension fund managers in the Chilean and Polish markets can be attributed to the regulatory framework prevailing in those countries. Such behavior can have destabilizing effect in capital markets given the funds' leverage in market volume and also can potentially lead to undesirable outcomes in price formation.

Since pension fund managers try to replicate the benchmark performance, the latter being greatly represented by the large cap stocks, it is natural to expect that these stocks will attract the interest of the pension fund managers. This fact is supported by the evidence provided by Olivares (2008) who found that 99% of the pension funds' performance in Chile is explained by the benchmark. This clearly shows that pension fund managers invest across a limited span of stocks representing the benchmark. Since the profiling in terms of risk-return features imposed by the relevant regulatory provisions leads only the largest stocks to fall within the feasibility investment set of pension funds, it is anticipated that pension funds in Chile and Poland will weigh their portfolios heavily towards their markets' "blue chips". In the case of Chile, this would translate in overinvestment of domestic pension funds in many stocks of the country's top capitalization index IPSA; similarly, in the case of Poland, pension funds exhibit particular preference towards the WIG20 index-constituents. This leads to obvious under-diversification in terms of equity investments and could well be termed as potentially detrimental for pension fund participants who may have different risk preferences. If all pension funds offer roughly the same risk-return potential, the decision over which one to invest into can prove more difficult.

There is also problem from the fund managers' side. The regulation of the pension fund system, as it prevails in Poland and Chile, could amplify the career/reputational risks of fund managers. First of all, if they do not achieve the required rate of return they would have to cover the shortfall of their actual performance from the benchmark performance out of their own funds. This is a large financial risk for fund managers. If this risk

materializes, it would hurt the career prospects of the fund managers. Further, failure to achieve the targets set and underperformance vis-à-vis the benchmark can possibly lead to negative assessment of the fund managers by their clients, which could have an adverse impact on their future clientele. However, it is exactly at this point that a paradox arises. No matter how much a pension fund manager wishes to safeguard his or her reputation, it is practically impossible for all managers to meet the benchmark performance and hence, protect their reputation. If all managers are subject to a framework specifying the minimum return they should achieve and also, the assets desirable to invest into, they are unlikely to deviate much from each other in their investment behavior.

IV.2 Policy Implications

We have already seen that the restrictions of the regulatory framework governing pension funds in these two markets promotes imitation in the investment conduct of pension fund managers; this leads to under-diversification of pension funds' investments, which in turn deprives the pensioners from having the choice of pension funds that meet their risk preferences. In this section we explore how this issue can be tackled through specific policymaking measures.

a) **Industry concentration:** If the institutional design (e.g. through minimum performance requirements or restrictions on investment patterns) of the pension funds' industry fosters imitation, one way to deal with its adverse effects is to create incentives for consolidation of funds. There is little point, for example, in having 17 pension funds (the case of Poland) with the investment choices of each being almost a mirror image of the other 16. A reduction in their numbers, possibly through mergers, would allow the merged funds to reap the economies of scale, possibly leading to a decline in the fees levied upon their investors.

b) **Investment flexibility:** The rationale for the strict rules imposed on pension funds' investments is to protect the interests of the pensioners' community; that is to ensure that their savings are not eroded due to excessive risk-taking by the fund managers. However, since pensioners may well bear different risk-preferences, it would only make sense for

pension funds to cater to their diverse risk appetite. One option here is for the regulators to allow pension funds to offer an option to their more risk-loving clients, where a percentage of a fund's equity investment limit would be at the discretion of the manager who would decide which securities to allocate the funds. An example would probably best illustrate this point. According to the changes introduced in 1999 on pension funds' investment limits in Chile, 30-40% of a pension fund's assets could be invested in domestically listed stocks. Assume now that pension fund invests 40% of its assets in equity. What our proposal essentially suggests is that this 40% can be broken up and part of it⁸ be invested in stocks not necessarily falling under the equity screening guidelines of the regulatory authorities.

These two suggested measures could help curb to some extent the desire of pension fund managers to mimic each other as a result of the regulatory environment and at the same time help the pensioners realize some additional benefits.

V. Conclusion

In Poland and Chile, the pension fund managers are required to deliver minimum guaranteed return to their respective clients. In the event of their failure to do so, they are expected to make up the shortfall through their own funds or face liquidation. This framework, while allowing fund managers to maximize returns, aims at protecting the pensioners' interest by inducing the managers to monitor their performance relative to the industry average. There has been significant empirical evidence of some unintended consequences of these regulations in both the countries. Pension fund managers in these countries have been found to exhibit significant levels of herd behavior, mainly resulting from the restrictions of the regulatory frameworks, particularly the requirement for a minimum return. It, in practice, reduces incentives for fund managers to deviate from the benchmark and achieve a higher return than industry average; as a result, the available

⁸ For example, a fund manager could invest 35% of his assets in domestic stocks falling under the list prescribed by the regulators and invest the rest 5% into stocks not belonging to that list. Presumably the latter stocks will be riskier (at least, as compared to the regulatory authorities' prescribed risk profile); therefore, investing 5% of the total fund's portfolio in them would meet the requirements of investors with more risk-loving appetite.

pension products do not match the risk preferences of many pensioners. There are policy options that the regulatory authorities can explore to minimize the negative consequences of the restrictions on fund managers.

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