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The cost of homogeneity in life cycle pension funds: An explanation to demand's inelasticity of Mexican pension funds with a performance attribution test

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ABSTRACT

In the present paper we study the lack of alpha generation in the main defined contribution pension funds (SIEFORES) in Mexico and we compare the performance of each fund against the one of their life-cycle profile peers (SIEFORE type). As we expected, we found underperformance due to management costs and, more specifically, due to a homogeneous performance that we suggest it is induced by the actual investment policy. We also found that the observed betas have values closer to 1, especially in the case of the "all" SIEFORES system benchmark, a result that proves the observed homogeneous performance in all the SIEFORES. With our results we also prove that the return paid by Mexican Public pension funds is due to factors different than portfolio manager skills, supporting the proofs given in the related literature of pension fund demand inelasticity in Mexico, due to a noisy and uninformed pension fund selection.

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1. Introduction

The Mexican pension fund system started formally in 1917 in the Mexican constitution by following the trend of countries such as Germany who wanted to promote social development and stability with social security measures (such as pensions). Since inception, the Mexican pension fund (along with the social protection measures implemented) was conceived as a sort of capitalization ("*pay as you go*") scheme where, according to a 1973 social security law reform, the workers affiliated to the National Mexican of Social Security Institute (or IMSS by its acronym in Spanish[1]) had a defined benefit given by a life-time pension. This pension is equal to the average of the pre-tax income in the last three years previous to retirement. This law and pension benefit applied to all workers in Mexico whose employers affiliated them (by law) to the aforementioned IMSS i.e. it had a practically universal application with the exception of other institutional or private pension fund plans such as the ones given by the army, private companies, universities, Bank of Mexico or union workers in some of Mexico's states. These last cases had their own rules and plans and where considered different to the IMSS pension plan if the Mexican government and the employer wanted to face the liability instead of the IMSS.

As noted, the Mexican pension fund system was a very good one until, in the decades of 1980 and 1990, the Mexican Government had financial pressures from three main sources: first from the age composition among active and retired workers, second the liability of pension payments that increased from a 40% of the minimum wage to 100% in 1995 and a small contribution from the workers of 8.5% compared to the 23.3% needed,[2] third, the suggestions made by the IMF and World Bank in order to have financial aid during the 1994 Mexican financial crisis.

In order to solve this pressure of an actual value of the pension liability of 141.5% of the Mexican GDP at 1994, the Mexican government changed its State pay as you go system into a defined

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[2] For a more detailed review of the causes that lead to pension system reform, please refer to Sales, Solis, and Villagomez (1998).

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Table 1
The investment policy allowed by CONSAR.

Asset type investment levels (min/max)	Type 1 SIEFORE (SB1)	Type 2 SIEFORE (SB2)	Type 3 SIEFORE (SB3)	Type 4 SIEFORE (SB4)
Mexican Government Fixed Income securities	(51%/100%)	(0%/100%)	(0%/100%)	(0%/100%)
Mexican corporate securities	(0%/100%)	(0%/100%)	(0%/100%)	(0%/100%)
Mexican equity market	(0%/5%)	(0%/25%)	(0%/30%)	(0%/40%)
Sovereign and corporate global bonds (including Mexican UMS)	(0%/100%)	(0%/100%)	(0%/100%)	(0%/100%)
Global equity markets	(0%/5%)	(0%/25%)	(0%/30%)	(0%/40%)
Commodities	0%	(0%/5%)	(0%/10%)	(0%/10%)
Foreign securities investment levels	(0%/20%)	(0%/20%)	(0%/20%)	(0%/20%)

Source: CONSAR (2016a, 2016b).

benefit one with personal pension savings accounts and a warranted a pension payment if the worker reach at least 1250 weeks as active worker. With this reform in mind, all the retirement liabilities were reduced dramatically and the personal pension savings accounts are now managed as mutual funds, known as SIEFORES.[3] They are managed by external or third party portfolio managers known as AFORES (the acronym of Administradora de FOndos para el REtiro – pension fund manager). This reform is similar to the one made by the Chilean government in the decade of 1980 and it is intended to create one of the main savings vehicle in Mexico by investing the pension proceedings in fixed income and money market instruments, along with stocks and commodities.

Since 1997, the Mexican pension fund system and its investment policy have been supervised by the regulatory authority: the CONSAR.[4] At the beginning of this reformed pension system, the SIEFORES were allowed to invest only in Mexican Government Fixed Income securities. Since 2005, the system allowed to have two types of SIEFOREs. One for people with an age higher or equal to 56 years that invested in Fixed Income securities and a second one who invested at most the 15% of their portfolio in equities through structured notes. In March 2008 the CONSAR allowed the SIEFORES to work in a "*life cycle*" scheme where 5 type of SIEFOREs were managed with investment policy that allow to invest in Mexican and foreign securities, such as equities, real state investment trusts and commodities. Finally, in 2013 the five types of SIEFOREs were reduced to 4 with the investment policy given in Table 1.

As noted, the investment policy (since the beginning of the reform in 1997) suggested the presence or induction of a sort of "homogeneity" in the performance of the SIEFOREs that could translate into a lack of competitiveness. A first proof of this possibility is found with Guillén (2011) who made a Data Envelopment Analysis (DEA) and two OLS panel data regressions (one with fixed time effects and another one with fixed country effects) in pension funds from Mexico, Argentina, Bolivia, Colombia, Costa Rica, Chile, Peru, El Salvador and Uruguay. His results and conclusions motivate the present paper by the fact that even though the Mexican pension funds have an acceptable relation between their absolute and relative competitiveness, improvements must be made in Mexico and Latin America to enhance it. He observes also, as one of the causes of his findings, that the limited competitiveness gives no performance advantage to big pension funds even if they have a strong influence in the capital market by their size. This last result motivates our interest to check first if there is alpha generation in pension funds and then to check if the market share of the Mexican pension funds (SIEFOREs) is according to their alpha generation i.e. their good performance. Our rationale at the starting point of this paper was: "If we find no alpha generation a pension fund and homogeneity in its performance related to the one observed among competitors, we will find a cause for demand inelasticity as Calderón-Colín, Domínguez, and Schwartz (2009) suggest".

Since the inception of this new pension system in Mexico, several studies have been made in order to test the historical origins of the aforementioned reform and also to tests the improvements that could be made to enhance the economic impact and welfare of pension savers. Among all these that will be mentioned in detail in the literature review section, we want to note the aforementioned one of Calderón-Colín et al. (2009) who found, as previously told, that the pension investment decision (i.e. the SIEFORE selection) is noisy and uninformed, leading to the concept of pension fund demand inelasticity that is the key concept that motivates this paper. With their results and tests, they observe that Mexican pension savers decide to invest in a pension fund (SIEFORE) not because it is among the best performers (in a return or risk-return profile); but by the influence of big marketing efforts or "institutional issues" like the fact that the selected SIEFORE is part of a big financial institution or an insurance company (suggesting "*back to back*" practices).

This last result is the one that inspires the current research along with the one of Guillén (2011). Here we want to check if there are SIEFOREs that outperform the other ones in the market by paying positive and statistically significant alpha against their investment style peers or against all the SIEFOREs (even against SIEFORES of other types managed by the same AFORE) in the market. If this is the case, these SIEFOREs should be the ones with the biggest market share. If we don't find evidence of positive alphas, there would be proofs that the SIEFORES have homogeneous performance and therefore, there are no incentives to change of SIEFORE (i.e. an inelastic demand). Also if we find betas closer to 1 in the factor models that use the all SIEFORE system performance, there will be also proofs of performance homogeneity and a lack of competitive advantage among funds.

Once that we have presented our main research aim and given the previous work that motivates the present one, we structured the paper as follows: in the next section we describe the data selection and processing to test the homogeneity among SIEFORES and we also present our main findings. Finally we continue with our conclusions and our suggestions for further research in the subject.

2. Methodology

2.1. Data processing

In order to test if there is homogeneity in the performance and also a cause of noisy investment decision in the Mexican pension funds, we will use the historical data of the price of the stock of each SIEFORE in each of the four SIEFORE types. By the fact that some of the SIEFOREs have merged with another ones we will use the historical daily price of the SIEFOREs shown in Table 2 from February 24, 2005 to November 30, 2016 in order to avoid survivor bias and time series with heterogeneous length.

[3] The acronym in Spanish of pension savings mutual fund or "Sociedad de Inversión Especializada en FOndos para el REtiro" (SIEFORE).
[4] Acronym of "Comisión Nacional del Sistema del Ahorro para el Retiro" o "National Pension Savings Comossion".

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