Fettered Consumers and Sophisticated Firms: Evidence from Mexico's Privatized Social Security Market

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1. Introduction

There is growing empirical evidence that consumers may not choose optimally when faced with difficult or complex choices, particularly those involving risk and uncertainty, imperfect information, or delayed payoffs over long time horizons. In these situations, people may follow the path of least resistance by making decisions based on shortcuts, approximations, or readily available information as a proxy for costly calculations of benefits over the set of possible actions. For example, people may be overly sensitive to default rules (Madrian and Shea 2001; Cronqvist and Thaler 2004; Choi, Laibson and Madrian 2006; Beshears et al. 2008) or use simple heuristics when allocating resources across investments (Benartzi and Thaler 2001; Bernartzi and Thaler 2007). They respond to advertising, brand name, peer opinion and irrelevant information (Duflo and Saez 2003; Cronqvist 2006; Choi, Laibson and Madrian 2007; Mullainathan and Schwartzstein 2008) or focus on easy-to-understand or more salient prices when making decisions even if doing so leads to suboptimal decisions relative to those of a fully-informed and rational decision-maker (Ausubel 1991; Liebman and Zechauser 2004; McFadden 2006; Kling et al. 2008; Chetty, Looney and Kroft 2008; Abaluck and Gruber 2009).

These findings suggest that people may not be sufficiently adept decision-makers to incentivize efficient markets. This calls into question the extent to which increased choice and privatization can lead to increased efficiency in traditionally publically-provided markets like social security, education, and health care, but suggests that government can move markets towards efficient outcomes by designing policy that facilitates informed consumer choice (McFadden 2006;Thaler and Sunstein 2008). Some recent papers have examined whether government-provided simplified information can successfully lower information and decision making costs to help consumers make better decisions. Hastings and Weinstein (2008) find that school-district-provided simplified information on school test scores caused low-income families to choose higher-scoring schools which resulted in increased academic achievement for their children. However, Mastrobuoni (2009) found no impact of government-mandated information on social security retirement rules on retirement behavior in the U.S. There is scarce evidence on the effects of government-mandated information in a market context where sophisticated firms, consumers and regulators interact. Even if government-mandated information influences

consumer behavior for the good, firms may take actions in response that mitigate a policy's overall efficacy at improving market efficiency. Instituting a policy that considers only consumer biases and not firm responses could lead to very different outcomes than originally intended.[1]

This paper brings new evidence on consumer behavior from Mexico's privatized social security system and examines the role information mandates can play in shaping consumer demand and market outcomes in the presence of sophisticated firms. We use detailed individual-level administrative data on contributions, employment and fund manager choice to examine key aspects of investor behavior and market responses to mandated information in one of the largest privatized social security markets in the world. Mexico privatized its social security system in 1997, moving from a pay-as-you-go system to a defined contribution system with individual private accounts. Accounts are managed by for-profit fund managers, but the market is heavily influenced by government requirements on contribution rates, firm entry, investment vehicles and risk, advertising, and to some extent management fees. Investors are required to contribute a fixed amount of salary to the account, but they are allowed to choose between the approved fund managers. Since the system's inception, between 10 and 21 firms have competed for over 25 million customer accounts.

Despite the large number of firms and tight regulations on investment vehicles, high fees have persisted since the inception of the system, with load fees on contributions ranging from 7-26% in addition to fees on assets under management of 0 to 150 basis points.[2] We find that investors provided firms with little incentive to compete by lowering fees. Investors, particularly lower-income investors, were more influenced by peers, brand name, and advertising when deciding when to switch fund managers and which fund manager to go with. We find that salience and switching costs, measured using changes in employment and withdrawal regulations, are the dominant determinants of time of choice even among the highest-income workers.[3] We also find little evidence that workers are forward-looking when choosing fund managers; they fail to take into account changes in the relative costs of different fund managers as their relative wage to balance ratio changes.

[1] For a review of behavioral Industrial Organization, see Ellison (2006).
[2] Covering the years 2004-2007.
[3] There is a large informal labor market in Mexico, and throughout the paper we will refer to "employment" versus "unemployment" in the formal sector. However, people who are "unemployed" in the formal sector may very likely be gainfully employed in the "informal" sector.

One reason consumers could fail to place sufficient weight on management costs is that the relative cost of each fund is difficult to compute or understand. Multiple fees expressed as percentages over different income and wealth measures may cause consumers to take short-cuts in decision making, leading them to focus on peer opinion, advertising, and brand name as a substitute for computing actual costs, or to delay account management decisions indefinitely.[4]

To increase investor attention to fees, the government instituted key information mandate changes halfway through our sample. The new mandate we examine provided consumers with a more prominent single-fee index to use when selecting a fund manager, and we analyze the impact this information change had on investor decisions and firm strategy. We find that increasing the prominence and scale of the fee index had a substantial impact on investor choice; investors became much more sensitive to the fee index when deciding when to manage their accounts and which fund manager to select, with low-income workers having the largest change in behavior. However, because the fee index was not an accurate measure of costs, we show that for many consumers, the increased focus on the fee index caused them to select higher-cost funds.

We also find little evidence that firms took actions to de-bias consumers (Gabaix and Laibson 2006); measures of direct advertising exposure appeared to increase rather than decrease the importance consumers placed on fee index. Furthermore, we show that firms responded to change in single-fee index by re-weighting their fee structures to decrease single-fee index while increasing overall revenues. By shifting revenues from load fees to balance fees, they were able to attract consumers who focused on the lower relative fee index and did not take into account the actual relative expense of the fund. Thus, responses by optimizing firms mitigated the actual competitive benefit of the information mandate.

This paper proceeds in four sections. The next section provides a background on the Mexican Social Security System and on key policy changes during our sample time period. It is followed by a description of our data and an empirical analysis of worker choices, an analysis of firm incentives. It concludes with thoughts on policy changes in the savings and retirement system in Mexico under the current administration that have in part addressed the complexity in fees and directions for ongoing research.

[4] Also, fees were communicated in APR format, which may be difficult for financially illiterate to understand. Hasting s and Tajeda-Ashton (2008) found 70% of survey sample were financially illiterate and became much more sensitive to relative fees in hypothetical choices when presented with fees expressed as pesos cost per year vs. apr.

2. Background on Mexican Social Security System

2.1 Overview

Mexico's privatized social security system has been in effect since July 1, 1997. The objective of the reform was to make the pension system financially viable, reduce the inequality of the previous pay-as-you-go system, and increase the coverage and amount of pensions through the establishment of individual ownership over retirement account contributions. The government approved private fund administrators called Afores (Administradoras de Fondos para el Retiro) to manage the individual accounts and established CONSAR to oversee this new Sistema de Ahorra para el Retiro (SAR). Six-and-half percent of wages are deposited bimonthly into the SAR account, and the worker can withdraw from this account at retirement (age 65 for men and age 60 for women), disability in old age, and for a limited amount of insurance when unemployed.[5] In June 2007, SAR had over 25 million registered accounts, and total funds in the system exceeded 1.14 trillion pesos.

2.2 Afore approval, operation and investment restrictions

During our sample period, September 2004 - December 2006, there were between thirteen and twenty-one Afores in the market, with ten firms present since the inception of the system and three firms entering in the last six months of the sample. CONSAR must approve each Afore's entry into the market. Afores must submit fee schedules for approval and must seek CONSAR's approval for any subsequent fee changes they wish to implement. Table 1 lists the Afores with their entry date as well as a description of the firm. The Afores range from prominent Mexican banks like Banamex to international investment firms like HSBC to department store chains like Coppel (similar to Sears).

Afores had to offer two age-based investment funds, called Siefores (Specialized Investment Groups for Retirement Funds): a "higher-risk" fund for workers 55 and under called

[5] Mandatory contributions to the retirement account come from three places: the worker contributes a mandatory 1.125% of her base salary, the employer contributes an additional 5.15%, and the government contributes 0.225% of the base salary as well as a "social contribution" of 5.5% of the inflation-indexed Mexico City minimum wage (Sinha (2003)). Workers can withdraw unemployment insurance from the account of 1-3 months of salary depending on the amount available in the account and their contribution history. Workers must have 3 years of contributions to the account to qualify for unemployment insurance withdrawals.

Siefore Básica 2 and a "low-risk" fund for workers over 55 called Siefore Básica 1.[6] *Management fees were set at the Afore level, so the same management fee applied to both Siefores within each Afore.* In addition, affiliates could not split their funds between Afores or Siefores and had to keep their funds in only one fund at one fund administrator at a time.[7] The investment possibilities for each Siefore were heavily regulated by CONSAR. Siefore 1 was effectively restricted to investing in Mexican government bonds, and, while Siefore 2 could include investments in equities, equity investments were capped at 15% and the investment vehicles restricted to Principal Protected Notes and Exchange Traded Funds tied to major stock indices. Hence, Siefores were effectively fund managers that could invest in government bonds, high-rated corporate bonds, and broad equity indices.[8] When we test for persistent outperformance using monthly returns, we do not find significant alphas for the Siefores nor do we find a relationship between point estimates for alpha and average fees charged.[9] This is not surprising given the strict investment and risk regulations placed on Siefores.

2.3 Management Fees

Afores were allowed to charge two different types of fees, a load fee and a fee on funds under management, and despite the tight investment regulation Afores charged high and disperse management fees. The load fee was referred to as a "flow fee" because it was quoted as a percent of the worker's salary instead of as a percent of the contribution to the account, and only contributions, *not account transfers*, were subject to the load.[10] However, this convention implied that flow fees were reported in a way that made them seem smaller than they were - *a flow fee of 1% of salary is actually a 15.4% load fee on the contribution of 6.5% of salary (1/6.5 =0.154)*. In June 2006, flow fees ranged from 0.5% - 1.65% (i.e., a 7.7% - 25.4% load). In addition to the flow fee, firms charged balance fees ranging from 0.12% to 1.5%.

[6] In March of 2008, the system moved to a 5-fund age-based system introducing 3 'higher-risk' funds with broader investment possibilities for younger workers.
[7] For these reasons we will focus our analysis on *Afore* choice since Siefore choice is completely determined by age of the worker and has no impact on relative costs.
[8] Hastings and Tejeda-Ashton (2008) provide more detailed information on investment requirements and holdings for the Siefores during this time period.
[9] Specifically we calculated monthly returns for each Siefore, and measured performance relative to a Mexican Stock Market Index and an A rated or higher Mexican corporate bond index.
[10] In other words, there are no monetary costs of transferring an account from one Afore to another.

Importantly, the mixture of fees implied that the optimal firm for a worker could depend on her wage to balance ratio. For example, a woman currently employed in the formal labor force who planned to soon marry and exit the labor force could disregard the flow fee and choose the Afore with the lowest balance fee since she would expect to have zero contribution flow into her pension account while out of the labor force. The same would apply for someone exiting the formal sector to take a job in the informal sector for a sizable period of time. This variation in the optimal fee as a function of formal labor employment will help us test how forward-looking workers are when choosing funds.

In addition, most firms offered a tenure discount off of the flow fee. This was typically a small basis point discount per year with that Afore. This of course introduces a switching cost, and realizing this, CONSAR ruled in January 2005 that all tenure discounts had to be recalculated based on years in the system instead of years with an Afore. Thus a person who had 5 years vested with a particular Afore would now be offered a 5 year discount with any Afore they chose. These sorts of changes in regulations will aid identification of how much attention workers pay to actual costs versus more salient or easy-to-understand Afore characteristics.

2.4 Information on Fund Choices and Fees

Of course, multiple fees, discounts, and changes in discount rules make it more difficult to calculate the personal alternative costs of each Afore. To simplify fee information for affiliates, CONSAR created a composite fee index called the “Equivalent Fee on the Balance." We will refer to this fee as the CEF (CONSAR’s Equivalent Fee). This fee was the total cost for a person with wage W, balance B, and tenure T expressed as a fraction of their balance. Prior to July 2005, CONSAR published this fee over a 25 year period. In addition, the assumed wage was very low given the assumed balance relative to actual affiliate accounts in the system. For these two reasons, the 25 year CEF was close in magnitude to the balance fee for each Afore, and the spread between them was compressed in absolute terms. In July 2005, CONSAR mandated that going forward, the CEF would be computed over a 1 year period instead of over a 25 year period. This tripled the size of the CEF, making it closer in size to a flow fee (as a percent of wage) than the balance fee, and increased the absolute fee difference between different Afores. In addition to changing the CEF from the 25 year to the 1 year calculation, CONSAR also introduced new regulations requiring the prominent display of a comparative CEF table on the

front page of each worker's account statement. They also required that each affiliate sign a form stating that (he or she) saw and understood the 1 year comparative CEF table when submitting an application to switch Afores.

Table 2 shows how changing the assumed time horizon in the CEF calculation changed the relative 'official' fee tables for the Afores. The first column shows the 25 year CEF for each Afore in July 2005 when the calculation change went into effect. The Afores are sorted from lowest to highest 25 year CEF. The second column shows their corresponding 1 year CEF, the fee that replaced the 25 year CEF in July 2005. The third column gives the relative rank of each Afore based on the 1 year CEF. Two things happened with the CEF. First the scale became 2-3 times as large since the 1 year fee is closer in value to the flow fee than to the balance fee for any positive wage and balance calculation. Second, the CEFs became more dispersed and the relative cost of each Afore changed substantially with relatively high-flow-low-balance-fee Afores becoming relatively more expensive.

Intuitively, the 25 year CEF calculation is driven by the balance fee instead of the flow fee because the flow fee is taken once at the time of contribution while the balance fee is charged every year over the 25 year time horizon. The 1 year CEF calculation is driven by the flow fee because the balance fee is only taken for the single year. If the change in the information mandate significantly increased consumer sensitivity to the CEF when selecting fund managers, then Afores may have faced increased competitive pressure to lower the CEF. However, because they could do so by lowering the flow fee but raising the balance fee, they may have found it profitable to lower the CEF while actually increasing costs if consumers increased focus on the CEF caused them to disregard actual costs in their choice of fund manager.

Figures 1 through 3 plot the Afores' CEFs, base flow fees, and balance fees, respectively, from 2004 through 2007. Figure 1 shows the CEF for each Afore, black vertical lines to demark our sample period, and a red-dashed vertical line marks the point when CEF calculations changed in July 2005. Two features stand out. First, there is a large change in CEFs a few months before the information mandate changed. This was caused by changes in the monthly wage assumption. In fact, there are several instances over our sample where CEFs changed solely due to changes in assumed contribution and balance for the hypothetical worker used to calculate the CEF (e.g. there was no real change in fees that caused these changes in CEFs). Secondly, there are large declines in the CEFs in the later portion of our sample. These were

generated by sharp declines in flow fees coupled with increases in balance fees at many Afores. Figures 2 and 3 show these fee changes. Subsequent to the change in information mandate, many Afores substantially dropped their flow fees,by an an average of 25%, but simultaneously increased their balance fees, often by more than 100%. We will use the administrative data to examine both how the information mandate changed consumer behavior and how it influenced subsequent changes in firm fee structure.

3. Data Description

To examine how workers choose Afores, how they responded to the information mandate change, and how firms adapted to the change in the market, we construct a panel data set for investors and firms from the raw administrative data from September 2004 through December of 2006. Pulling data from several sources, we are able to form a detailed picture of employment, contributions and fund administrator choice, prices and advertising in the privatized pension market. First, we use administrative data that records each contribution made into each account on a bimonthly period. These data include each affiliate's wage, the Afore that manages his account, a unique employer id, and the number of days worked during each bimester. We combine this with data on account balances (recorded semi-annually) to construct variables on formal-sector labor-force participation and formal-sector co-worker characteristics on a monthly basis. We combine this with records for each Afore-switching application along with the approval date, account balance and liquidation date. This allows us to construct a complete time series for each worker's Afore at every point in time, regardless of whether or not he is actively contributing to the account through private-sector employment.

Further, we combine this data with various measures of Afore monthly fees, monthly records for the number of sales agents employed by each Afore, and zip code information on both sales agent locations and the residential location of each account holder (in June 2006). We use these data to construct two basic data sets for analysis. The first data set is a monthly data set of employment status and Afore enrollment of affiliates in the system which we use to examine the determinants of when account holders decide to switch Afores. The second data set uses worker characteristics and the characteristics of each Afore the worker could choose between to estimate

the relative importance workers place on factors such as actual costs, CEF, brand name, and peers when selecting an account.[11]

4. Empirical Analysis of Investor Decisions

4.1 Summary Statistics

Table 3 presents summary statistics from a monthly panel of a random 0.5% subsample of affiliates in the system from September 2004 through December 2006. (Please) Note that all financial statistics are reported in Mexican pesos unless otherwise noted; the symbol for a Mexican peso is $, and from 2004-2006 one US dollar was worth between 10.40 and 11.63 Mexican pesos. Approximately 62% of system affiliates are men, reflecting the higher propensity of Mexican men to participate in the formal labor market. The wage distribution is skewed to the right – with an average employed wage of $4,812 pesos that is substantially larger than the median of $2,995 pesos due to very high wage earners in the top 1% of the distribution. The distribution of balances is also skewed right, and, overall, pension account balances are relatively small with a mean of $25,084 and a median of $11,211 (in comparison to US 401(k) accounts, for example).

The second panel in Table 3 provides summary statistics on employment. Out of our sample of workers who have ever worked in the formal sector (and thus generated an Afore account), the formal sector employment rate is only 40% over the 2 year period. This reflects the high degree of mobility between formal and informal employment in Mexico. In fact, only about 20% of workers are 100% employed in the formal sector and slightly more than 25% of account holders had no formal-sector employer during our 36 month period, a relative boom period in the Mexican Economy. During our sample, the median worker had one unique formal sector employer and worked at a firm with 133 employees.

Given the relative mobility between the formal and informal labor markets and the number of substantial fee changes over the time period, we might expect that most workers would have changed their account manager at least once to re-optimize the cost of management given changes in labor status or changes in relative prices. Table 4 presents summary statistics on the tenure and Afore characteristics by employment status for the period prior to the information

[11] The Data Appendix provides a detailed description of the database and variable construction.

mandate change: September 2004 - July 2005. First, despite the high turnover in the formal sector, few affiliates had ever switched Afores before, and the average length of time in the current Afore is close to the average length of time in the system. In addition, if we break workers into three groups, those who are currently employed in the formal sector, those who are currently unemployed, and those who were always unemployed during our panel (the last two are not mutually exclusive), we see that all workers could move to Afores with substantially lower fees as measured by either the flow fee, the balance fee, or the CEF. Moreover, there does not appear to be any difference in potential fee gain across workers who are persistently employed outside of the formal sector and those who are currently contributing to their Afore accounts. This suggests that workers are not forward-looking or do not understand the different types of fees and hence do not reallocate their accounts across fund managers when exiting the formal sector to minimize balance fees. In fact, workers do not appear to be minimizing fees at all, since even the 10^{th} percentile of workers could realize a substantial reduction in the various measures of fees at any point in time by moving to another Afore.

Figure 4 shows market share for each of the Afores, and their relative balance and base flowfee position in June, 2005. Each point represents an Afore, and the size of each point reflects its market share. The market share and name of each Afore appear next to its observation on the graph. Two things are immediately apparent. First, there is no one Afore that dominates the other choices on both the flow and balance fee. Second, Afores that have clearly higher flow and balance fees than others have the largest market shares. Thus, it appears that factors other than prices are the main determinants of Afore choice, suggesting that investor choice may not generate sufficient competitive pressure on fees to result in efficient market outcomes.

Alternatively, investors could be placing a high weight on fees at the time of choosing an Afore but switching to a new Afore very infrequently, causing Afore choice to look unwise when evaluated at any one point in time. Table 5 demonstrates that this is not the case by presenting summary statistics on the relative fees of the chosen Afore for a random 10% sample of affiliates at the time they choose a new Afore. The first panel presents results for decisions made before the information mandate change. The first row shows that, before the information mandate change, the average person was choosing an Afore that ranked slightly higher (more expensive) on the 25 year CEF (25 year amortization), and 50% of movements between Afores were from

Afores with lower CEF's to ones with higher CEF's.[12] In addition, most investors were choosing Afores with slightly lower flow fees (inclusive of discounts) but slightly higher balance fees than those of their current Afore. If they would have chosen the lowest flow fee alternative instead of the Afore they chose, they could have saved on average 0.90 percentage points on their flow fee, which is equivalent to 0.90/6.5=13.8% of their savings and retirement contribution. On average, investors could have saved 33 basis points in balance fees by switching to the lowest balance fee Afore.

Because Afores all charge different mixes of balance and flow fees, an alternative way to measure how important management costs were to investors at the time of selecting a fund manager is to create an expected cost index for each affiliate. One reasonable approach is to assume that observed formal labor force participation over our period is close to expectations going forward until retirement. Then, assuming fees are constant and that all Afores earn the same real rate of return on investments, we can construct an expected total cost measure for each Afore from now (time the choice was made) until retirement age. If we do this and divide the cost by the average daily wage for the worker over our observed sample period, we find that the average worker moved to a higher cost Afore than his current Afore by an average of 19.55 days of current wages, and he could have saved 163.64 days of wages current wages by choosing the lowest cost alternative.

The second panel of Table 5 shows how choice behavior changed in the period after the information mandate change (August 2005-December2006). First, the average choice was much more directed at minimizing the CEF (now with a 1 year amortization): the average chosen Afore was 2.41 ranks lower (less expensive) than the current Afore, compared to 0.90 ranks higher pre-information-mandate change. In addition, the average decline in the flow and balance fees was larger (more negative) than before the information mandate change, indicating that, on average, greater focus on the CEF led investors to choose funds with slightly lower flow fees or balance fees than they otherwise would have chosen. Thus, the information mandate change appears to have significantly shifted the ways in which investors chose Afores.

Despite this change in behavior, the average person still moved into an Afore with slightly higher total expected costs. This is because the relative rank of the CEF is only correlated 0.45

[12] We focus on changes in rank of the CEF since the levels change dramatically with the information mandate. Using rank is one way to facilitate comparison of behavior before and after the information mandate change.

with the relative rank in total costs across the Afore switchers in the post-information-mandate change. To illustrate the relationship between the two CEF measures and actual relative costs at the time of choice, Figure 5 graphs the density of affiliates in our sample falling into each of four categories at the time of selecting a new Afore: moving to a higher cost and higher CEF Afore, a lower cost but higher CEF Afore, a lower cost and lower CEF Afore, and a higher cost but lower CEF Afore. We represent the densities with scaled circles for choices before and after the information mandate change. Pre-reform circles are darker, and it is clear that CEF changes and total cost changes were more highly correlated along the diagonal from quadrant 3 to quadrant 1. So even though workers did not usually choose Afores with lower CEF's, on average, CEF's and expected costs moved in the same direction. Post-reform, the 1 year CEF was less correlated with expected costs, and even though the majority of workers were now switching to Afores with lower CEF's (32.83+34.07 = 67%), almost half of those workers were now moving to Afores with higher expected costs given their own expected contribution and balance profile. Figure 5 suggests that workers focused on the more salient and easy-to-understand 1 year CEF instead of actual costs, potentially using the CEF as a short-cut approximation to costs despite its inaccuracy.

4.2 Analysis of when workers change Afores

Tables 3-5 suggest that investors were choosing Afores for other reasons than relative management cost, but shifted their decision making towards minimizing the CEF after the information mandate change. We can further explore the extent to which easily-available proxies for cost, along with salience and switching costs, influenced account management decisions along two dimensions: when workers chose to change Afores and which Afores they selected at the time of choice. We can examine the role the information mandate change played in shaping demand as an alternative to actual costs or other proxies such as fund popularity among peers, advertising, and brand name. To quantify the role that switching costs, peers, and easily-available fee information required by the government played in management decisions among high- and low- income workers, we use our panel of contributions, employment, and Afore choice to estimate the factors that influence when a person switches accounts. First, we use our panel of contributions and employment changes to estimate peer and employer effects on account management decisions, and we examine the role salience and switching costs play by

estimating the impact that qualifying to withdraw unemployment insurance from the Afore account has on the probability of switching account managers. In particular, we estimate the following discrete-time hazard model of the probability that worker *i* switches to a new Afore in a given month *t*:

$$y_{it} = \beta' X_{it} + \lambda' Z_{it} + \delta' T_{it} + \delta' D_{it} + \varepsilon_{it} \qquad (1)$$

where X_{it}, includes demographic characteristics such as average employed salary, gender and age, employment indicators, and indicators for periods in which a person switches jobs. Covariates, Z_{it}, capture independent variables that vary at the Afore, time, and affiliate level. These include the market share of person *i*'s current Afore at hiscurrent place of employment, measures of the relative expense of management fees for person *i*'s Afore (flow fee, balance fee and CEF), and a measure of person *i*'s county-level exposure to total sales agents. We include dummies for each length of time in each month in the current Afore, T_{it}, and *because our data tell us the date at which the person registered with hiscurrent Afore, we can construct the lentgh of time that each person had been in his Afore at the start of our panel*. All specifications include monthly dummies and Afore fixed effects.

Table 6 presents results from (1) run separately for 5 employed wage categories: by quartile with the last quartile split further into the 75^{th}-90^{th} percentile and the 90^{th} and above to allow for greater differences in behavior in the upper-tail of the income distribution. All regressions include Afore fixed-effects, monthly dummies, and dummies for length of time in current Afore. We report odds ratios with asterisks for significance, but we exclude standard errors from the table to save space. The mean dependent variable, the probability of switching Afores in a given month, and the mean wage in each category are reported in the bottom panel of the table. The mean probability of switching is very low, but increasing in income across the five colums. For the lowest wage category, the probability of switching is 0.002, but it is more than 10 times larger, 0.0215, for the highest decile of the income distribution. Within each wage category, the odds ratio of switching is also increasing with wage, but at a decreasing rate as we move to higher wage categories. In general, age is not a significant determinant of frequency of account management, but the odds ratio of switching is significantly higher for men among higher-income workers.

The second panel of shows how employment status affects the odds of switching Afores. These variables, to some degree, help us measure the relative importance that salience and switching costs may play in the decision to evaluate and switch Afores. The first variable, *Recently Unemployed*, is an indicator if the person is in the first 2 months after exiting the formal sector; the time period in which one could file for unemployment insurance withdrawal from the pension account if qualified. The second variable, *Qualifies for Unemployment Insurance*, indicates if a person could be qualified to withdraw UI from their account that month, needing 3 years of contributions to qualify. The third variable, *Can Withdraw Unemployment Insurance*, is an indicator if a person is exiting the formal sector into a period of unemployment and qualifies for unemployment insurance withdrawals. The fourth variable, *Unemployed*, is an indicator if the worker is currently not contributing in the formal sector and exited the formal sector more than 2 months prior. Looking at these covariates together, we find that salience and switching costs are substantial determinants of account management behavior. The odds of switching Afores drops substantially for all income groups once they are persistently unemployed or employed outside of a firm that offers savings and retirement benefits to workers. They appear to practically forget about their accounts once they enter this state. As they enter a period of unemployment, if they have sufficient contributions to qualify for an unemployment insurance withdrawal from their account, the odds of switching Afores increases dramatically. This could be for two reasons. First, they may realize how much money they have in their account, and the value of that money may have immediate importance for their financial needs (workers can withdraw up to 3 months of salary depending on their current balance). This realization may cause them to re-evaluate which Afore they are with. Secondly, they must file paperwork with their Afore and with the social security administration to withdraw these funds, so the cost of both evaluating the account and switching accounts would be much lower at this point in time.

We can also use changes in employment to examine how the relative popularity of an Afore at the place of work affects when workers decide to switch Afores. For example, if a worker moves to a new job where her current Afore is in the minority, is she more or less likely to switch her Afore? To measure this we construct the share of person *i*'s Afore at the moment they enter the place of work, *Popularity of Initial Afore.* It measures the market share of person *i*'s Afore at *i*'s new place of employment. At the start of each employment spell with a new employer, this is recalculated. For the lowest two income groups, it is a significant determinant

of when workers switch Afores. A higher Popularity of Initial Afore significantly decreases the probability of switching Afores; and an increase of 10% decreases the odds ratio of switching by about 6% to 6.6% percent for the first and second wage categories respectively. There is no significant impact on higher-income workers, suggesting that lower-income workers are more influenced by peers when deciding when and how to manage their accounts. Similarly, we see that increased exposure to the Afore sales force has a significant and positive impact on the probability of switching Afores among lower income workers and no impact in the top quartile of the wage distribution. The mean concentration of Afore sales agents in a municipio is 1.51 (per thousand IMSS affiliates) with a standard deviation of 0.50. Hence, a 1 standard deviation increase in the sales force concentration in a low-income person's Municipio increase her odds ratio of switching by about 6.4%. Here we can compare the effect of word-of-mouth to sales force. A one standard deviation increase in the share of an Afore in the workplace is 0.1 and has around a 6% impact on the odds of a person in the lower income quartile switching; this is very similar in magnitude to the effect of sales force.[13]

All of these factors lead towards a market that is relatively unresponsive to price competition. The fact that salience and switching costs are so important in moving workers to choice is problematic in a market with a large informal labor sector. In addition, strong peer effects and responsiveness to advertising can increase barriers for entry and lead to competition on advertising instead of price. Indeed, relative to personal characteristics, employment characteristics, and advertising exposure, changes in fees appear to have little impact on when people switch Afores. The final panel of Table 5 shows odds ratios for the effect of changes in relative fees on the probability of switching. To capture changes in relative fees, we create the rank for the current Afore according to several different measures of fees each month. The rank

[13] We ran specification checks where we use the control function approach proposed by Rivers and Vuong (1988) to address the potential endogeneity of local sales force concentration with other factors that could impact switching behavior. We found very similar results, and the first stage residuals were not significant.. Our first stage regressesAgente Concentration on municipio-month level factors that arguably shift the cost of hiring Agentes, but not demand or responsiveness of the affiliates to Agentes, conditional observable characteristics. These factors were created from the INEGI 2000 census data and include: the fraction of people and women ages 18-30 who are students (capturing presence of local colleges or degree programs which is a primary group of people targeted by Afores to become Agente Promotores), the fraction of households with television (a substitute for advertising with Agentes), percentage of workers 18+ who are employed by the government (competing demand for labor pool, and government workers have a separate savings and retirement system outside of Afore market), median wage of workers 18 and over, the variance of government employment across localities within a municipio, and the monthly inflation rate and its interaction with local fraction of people and women who are students and the local median wage rate.

increases (decreases) if person *i*'s Afore becomes relatively more (less) expensive due to changes in its own fees or the fees of other Afores. The first is the personal flow fee, including tenure discounts which change exogenously with regulatory changes at the start of 2005 and when each person reaches a new tenure year. The second measure is the balance fee, and the third measure is the CEF. We allow the impact of the CEF to change with the change in the information mandate. For both the balance and flow fees, the impact of a change in rank is very small in magnitude, even if it is significant in some instances. Only the highest income workers appear to react to the flow fee and even they react by a very small amount. For both flow fees and balance fees, popularity of an Afore at the place of work is more likely to induce lower-income workers to switch than changes in a relative fee would. This also appears to be true for the CEF before the information mandate change, but, after the change, the impact of a change in CEF rank is very strong, particularly for low-to-middle income workers. This confirms the summary statistics in Table 5 – workers appeared to pay more attention to the CEF as a proxy for actual management costs after the information mandate change was implemented, and this influenced when they decided to switch Afores. To further understand the mechanism through which the easier-to-evaluate CEF influenced demand post-information-mandate, we next examine how important the CEF became in determining which Afore workers selected.

4.3 Analysis of Afore choice

To do so, we construct the choice set each affiliate faced at the time of choosing a new Afore for a 10% random sample of Afore-switchers during our sample period. We then model workers as choosing an Afore based on projected costs using their average contributions, current balance, age and years to retirement, and the CEF as an easy-to-obtain proxy for management costs. If workers make fully-informed forward-looking decisions, then the CEF shouldn't affect worker's decisions once we control for the projected costs of the different Afore options. Likewise, changing the CEF and increasing its prominence should have no impact on the weight affiliates place on the CEF when choosing Afores. However, affiliates may choose Afores based on a CEF if they value actual management costs, but find them difficult to understand or determine. Implicit in traditional demand estimation is the assumption that decision-makers understand and evaluate the characteristics for each option that are relevant for utility maximization. However, agents who face decision making costs or imperfect information may

appear to undervalue relevant information and overvalue irrelevant characteristics relative to their fully-rational and fully-informed peers (Hastings, Kane and Staiger, 2008; Hastings and Weinstein, 2008). The CEF may be more salient (DellaVigna, 2009) or may act as a short-cut or proxy for costs that is easier to understand and compute (Borghans, Duckworth, Heckman and Weel, 2009). In either case, we may find that the CEF influences Afore choice and that the information mandate change significantly increases the weight workers place on the CEF when selecting an Afore. [14]

Specifically we construct the choice set that each affiliate in our 10% random sample faced at the time of selecting an Afore and estimate a random utility model of the form

$$U_{icjt} = \beta_c X_{icjt} + \varepsilon_{icjt} \qquad (2)$$

where *i* denotes the account holder, *j* denotes the Afore, and *t* denotes the time period and *c* denotes the personal characteristics cell into which person *i* falls. The cells are determined by 240 combinations of employed wage quartiles, age terciles, gender, unemployment status, and geographic region of residence. We estimate the conditional logit separately for each of the demographic cells, effectively allowing the determinants of Afore choice to interact fully with these demographic characteristics. Characteristics of each Afore for each affiliate include the CEF and the projected total cost by retirement along with their linear interactions with average employed wage. Moreover, we allow for full interactions between each cost measure and information regimes (pre- and post-information-mandate change) and advertising exposure so that we can examine how advertising impacted sensitivity to measures of total costs or CEFs before and after the information mandate change. Additional covariates include the popularity of the Afore at the workplace, Afore fixed effects (which control for unobserved brand quality), advertising exposure interacted with the Afore fixed effects, and past returns.

Once we estimate the coefficients for each person *i* in each cell *c*, we can convert the coefficients into interpretable estimates by either translating them into demand elasticities or by

[14] Our demand estimation assume that affiliates choose an Afore to maximize utility as a function of Afore characteristics and personal preferences. This traditional interpretation implicitly assumes full information, and we interpret the utility parameters as importance placed on different characteristics when selecting an Afore instead of strict preferences under the assumption that all affiliates can easily determine the relative costs and benefits of enrolling with each Afore (Borghans, Duckworth, Heckman and Weel (2009), Hastings Kane and Staiger (2009), DellaVigna (2009)). In addition, we 'control' for the potential endogeneity of sales force concentration using Petrin and Train (2008) extension of Rivers and Vuong (1988) control function approach to conditional logit anaylsis.

normalizing them by the weight placed on cost to get a dollar value attached to each characteristic. Table 7 presents regressions describing how estimated demand elasticities with respect to CEF and costs vary with specific covariates of interest. Each observation is a demand elasticity for a person-Afore combination at the time of choice. Each regression includes Afore fixed effects. The mean elasticity with respect to both cost measures is low – well less than unit elastic. However, the average affiliate's demand is much more elastic in the post-information change period with respect to the CEF. At the same time, price sensitivity with respect to the actual management costs became less negative after the information mandate change. Overall, men are much more sensitive to the CEF and less sensitive to actual costs. Higher-income workers are, on average, more price sensitive as measured by either the CEF or costs. Unemployed workers, while much less likely to manage their accounts, are significantly more sensitive to the CEF when switching. However, in part because they should be minimizing balance fees instead of the CEF, they appear to actually prefer funds with higher personal costs. After the information mandate change, the average sensitivity to the CEF dropped by 0.745, confirming that the information mandate change had a substantial impact on demand responsiveness to the CEF. At the same time, sensitivity to cost increased as workers turned their focus to the more salient CEF and away from seeking information on actual costs. Both before and after the information mandate change, exposure to sales agents is associated with increased elasticity with respect to the CEF, indicating that exposure to sales agents pushed people towards lower CEF options. With the new information mandate, exposure to sales agents made workers appear less sensitive to actual costs. We do not find evidence in any cut of the data that sales agents acted to ‘de-bias’ investors, informing them that a lower CEF may actually mean a higher personal cost.

4.4 Afore Response to the Information Mandate

Overall, it appears that the information mandate had a significant impact on demand, providing a more salient and easy-to-access measure of costs that workers could use when selecting an Afore. We do not find evidence that sales agents acted to direct investors towards lower-cost funds in lieu of lower CEF funds. Instead, it appears that sales agents continued to increase demand elasticity with respect to the CEF after the information mandate change. One potential explanation for this is that firms were able to lower their new CEF’s while still

increasing actual revenues from their customers. Figure 5 suggests that this may have been the case since affiliates choosing lower CEF Afores were equally likely to choose one with higher versus lower management costs.

In addition, following the information mandate change, there were substantial (and unprecedented) changes in the flow and balance fees that Afores charged, with Afores lowering their flow fees by on average of 25% and raising their balance fees by over 100% in many cases. We can draw a link between these fee changes, the information mandate change, and the corresponding change in demand by examining approximate first-order conditions for the Afores with respect to their balance and flow fees. Equation 3 gives a static profit function for an Afore in each time period *t* (a year).

$$\Pi_{jt} = R_{jt} + \sum_i r_{ij}\left(X_i, f_j, b_j\right) * q_{ij}\left(Z_{ij}, Z_{i,-j}, cef_j\left(f_j, b_j\right), cef_{-j}\left(f_{-j}, b_{-j}\right); \theta_i\right) \quad (3)$$

Where R_{jt} is the total revenue for Afore *j* in time period *t* from its consumers who do not evaluate their accounts over the course of the year, *i* denotes investors who evaluate their accounts and decide which Afore to choose in each period *t*, and r_{ij} is the revenue to Afore *j* if consumer *i* chooses Afore *j*, and q_{ij} is the probability that consumer *i* chooses Afore *j*. Revenue from consumer *i* is a function of *i's* characteristics, X_i, like their balance and expected contribution rate during time *t* as well as Afore *j*'s flow and balance fees, f_j and b_j respectively. The probability that *i* chooses *j* is a function of the *i*'s characteristics and *j*'s characteristics, Z, as well as the characteristics of the other Afores in the market, *-j*. In addition, the probability that person *i* chooses Afore *j* is a function of flow and balance fees directly through costs in *Z*, but also indirectly through their influence on the CEF. Two things happened when the information mandate change went into effect. First, $dcef_j/df_j$ became much larger and $dcef_j/db_j$ became much smaller due to the fact that the 1 year CEF is mostly determined by the relative flow fee while the 25 year CEF is primarily determined by the balance fee. Second, $dq_{ij}/dcef_j$ became larger and more negative due to the increased investor attention to the CEF when choosing an Afore. Taken togther, these changes may have resulted in pressure to lower the flow fee but may have also allowed firms to raise their balance fees while still lowering their CEF. To explore the extent to which the change in information mandate could have caused the subsequent movement towards lower flow fees and higher balance fees, we calculate the first-order conditions for each Afore on

the eve of the information mandate change using the estimated demand parameters from pre- and post- information-mandate periods. We calculate the first order conditions assuming Afores play a repeated static Nash Bertrand game in prices (setting flow and balance fees) with differentiated products, and take advertising levels, market shares, and brand value as given. We use the characteristics of consumers in the market on the eve of the mandate change, and assume that the fraction of consumers who arrive into the market have the same characteristics and preferences as those who arrived in the market during the year surrounding the CEF change. We then calculate the first-order conditions using the estimated preference parameters from our choice model and the derivative of the CEF with respect to the flow and balance fees for each Afore in each the 25-year and the 1 year CEF regimes to simulate which Afore each individual would choose. When we do this, we find that pre-information-mandate change, Afores for the most part had, if anything, an incentive to raise both flow and balance fees. After the information mandate change, most Afores had negative first-order conditions with respect to the flow fee but positive ones with respect to the balance fee. This would have given them the incentive to decrease flow fees while allowing them to increase balance fees, a move that would not raise regulatory objections because it would still result in a lower CEF.

Table 8 shows a simple table with signs for fee changes post-information-mandate change alongside the sign of our calculated first-order conditions for flow and balance fees pre- and post- the regulatory change. In the pre-period, both columns are positive, indicating that if Afores raised both prices, given demand before the mandate change, they would increase profits. However, since fee schedules need to be approved by CONSAR, and CONSAR would reject any fee changes that raised both fees as well as the CEF, we can interpret this positive first-order condition as measuring the threat of regulation. Basically, at the beginning of the system or upon entry, Afores had to set a fee schedule predicting what demand would look like, and this fee schedule would be, in a sense, a ceiling for them in the future.

The next two columns of Table 8 show the first order conditions right after the information mandate change. The first order conditions for the flow fee became negative but remained positive for the balance fee. Hence, it became optimal for Afores to lower their flow fees and raise their balance fees. Given the new 1 year CEF, this could actually be accomplished while at the same time *lowering* the CEF. Thus, the combinations of flow fee dropping and balance fee raising were approved by CONSAR. Even though the static model of Afore behavior

is most likely not correct given the dynamic nature of peer effects, advertising, and the threat of regulation, the predictions for the direction of fee changes subsequent to the information mandate change are roughly in line with the actions the Afores actually took.

5. Conclusion

There is growing evidence that consumers may not act sufficiently in their own self interests to generate competitive pressure and efficient private markets for goods that involve information costs or complex, forward-looking cost and benefit evaluations. We examine detailed data from Mexico's privatized social security market, and we find that investors place little weight on management fees and that their account management behavior is instead dictated by convenience, switching costs, peer and employer effects, and advertising. This sensitivity to peers, brand name, and advertising is particularly strong among low-income workers.

We also find, however, that information mandates can substantially impact demand, particularly among low-income workers. Using changes in the information requirements that were introduced halfway through our sample, we show that workers gravitate towards easy-to-obtain-and-understand information on management fees at Afores. Thus, information mandates are a successful tool for 'nudging' consumers towards price sensitivity. However, we also show that sophisticated firms adapt to information mandate changes. In the case of Mexico, firms changed fees to mitigate the impact that the mandated information had on profits. Thus, they were able to harness consumer response to the information mandate, even if that implied that consumers were driven towards relatively higher cost alternatives.

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Figure 1a. Afore CEF, June 2004 - June 2007

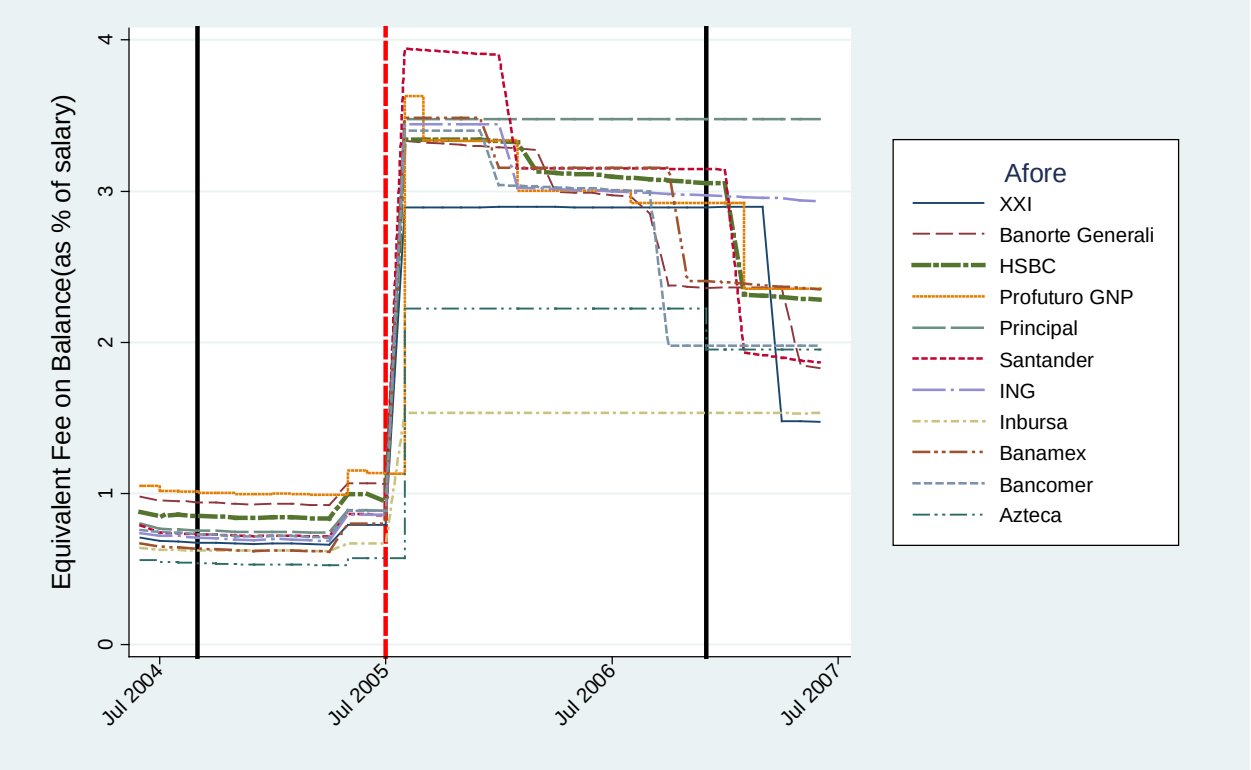


Figure 1b. Afore CEF, June 2004 - June 2007

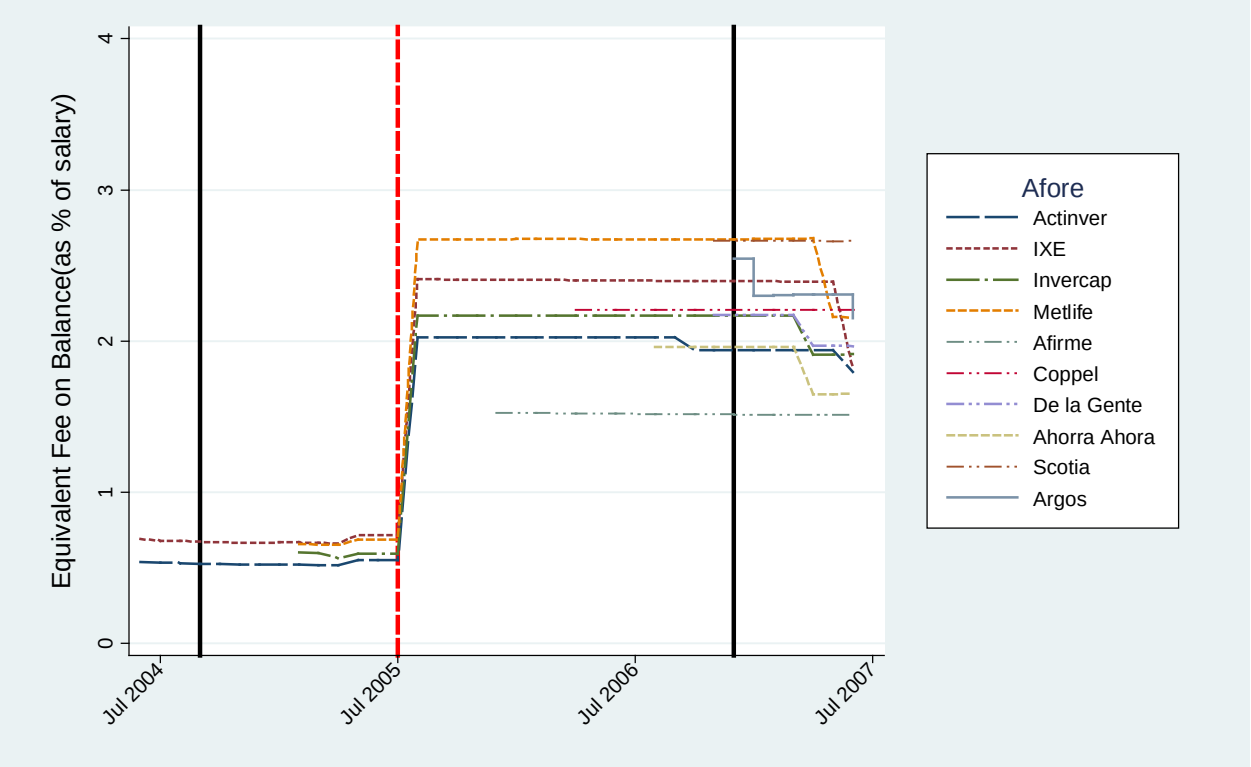
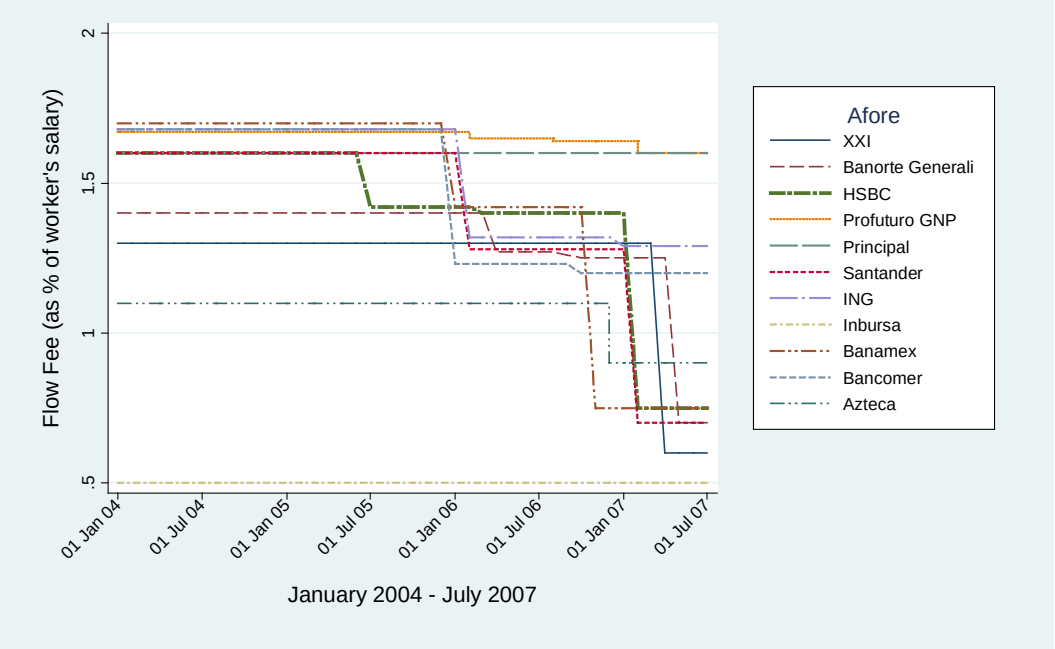


Figure 2: Flow Fee Changes


Flow Fee (as % of worker's salary)
.5
1
1.5
2
01 Jan 04
01 Jul 04
01 Jan 05
01 Jul 05
01 Jan 06
01 Jul 06
01 Jan 07
01 Jul 07
January 2004 - July 2007
Afore
XXI
Banorte Generali
HSBC
Profuturo GNP
Principal
Santander
ING
Inbursa
Banamex
Bancomer
Azteca

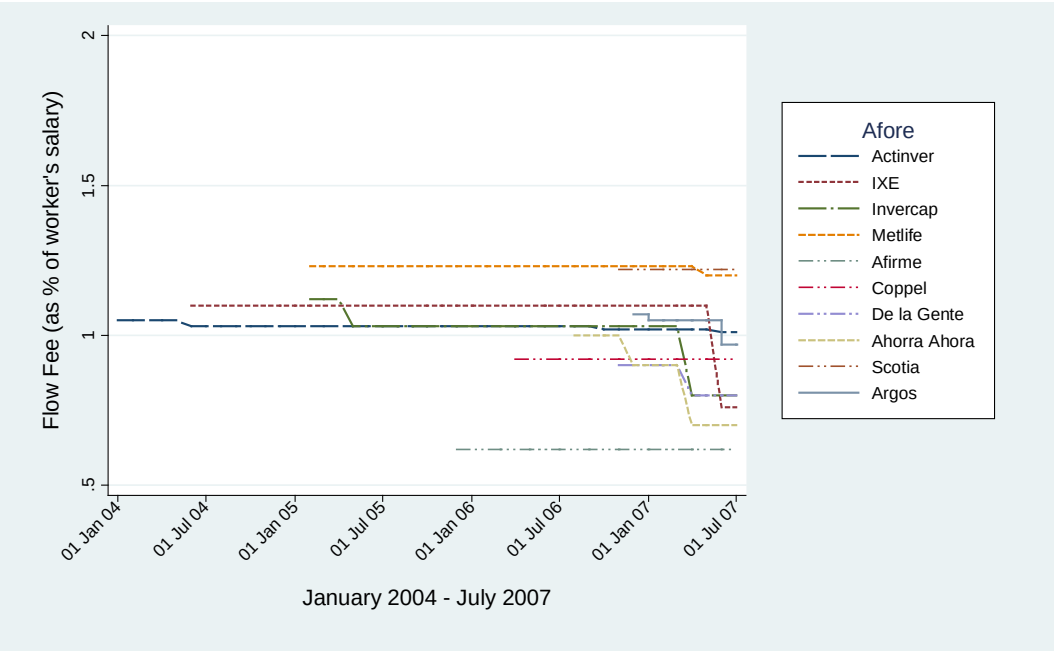
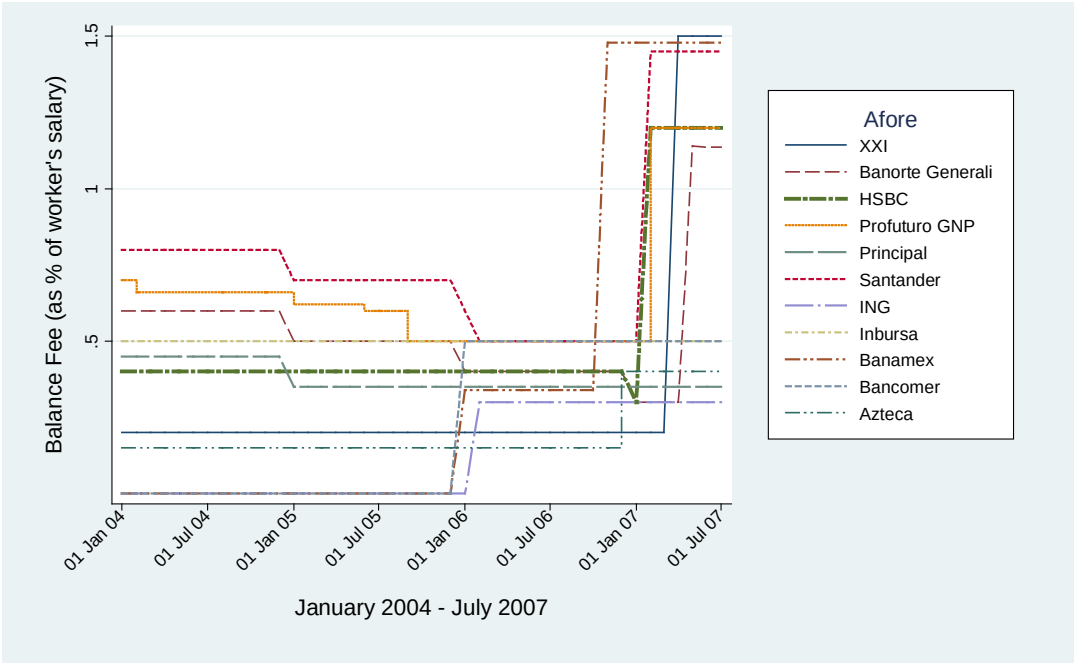

Flow Fee (as % of worker's salary)
.5
1
1.5
2
01 Jan 04
01 Jul 04
01 Jan 05
01 Jul 05
01 Jan 06
01 Jul 06
01 Jan 07
01 Jul 07
January 2004 - July 2007
Afore
Actinver
IXE
Invercap
Metlife
Afirme
Coppel
De la Gente
Ahorra Ahora
Scotia
Argos

Figure 3: Balance Fee Changes



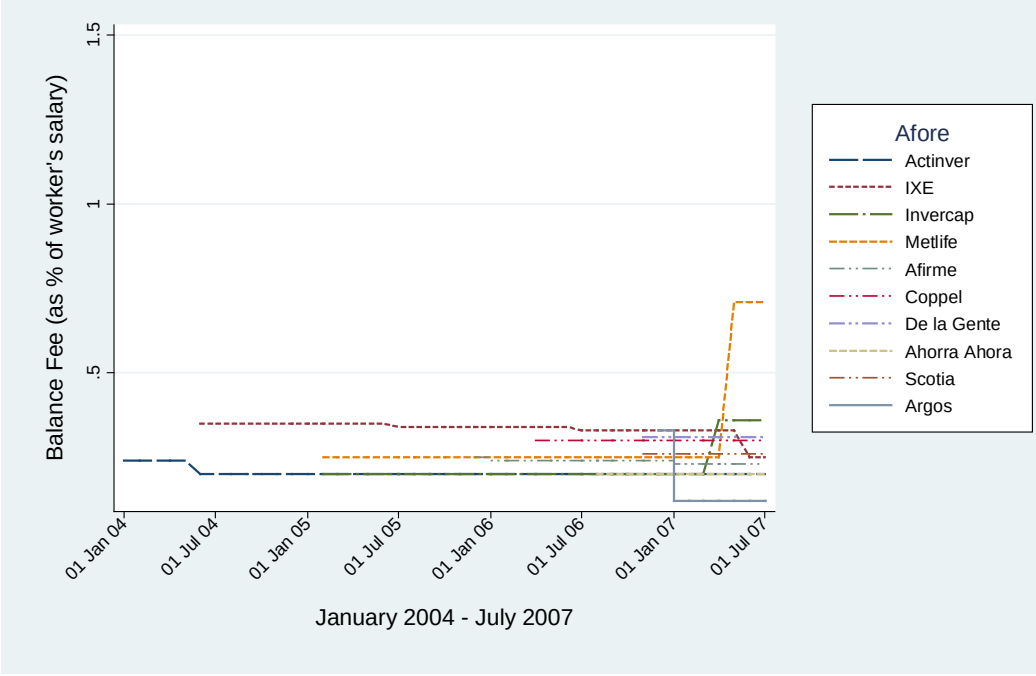


Figure 4. Afore Balance vs. Flow Fee, Weighted by Pesos Market Share

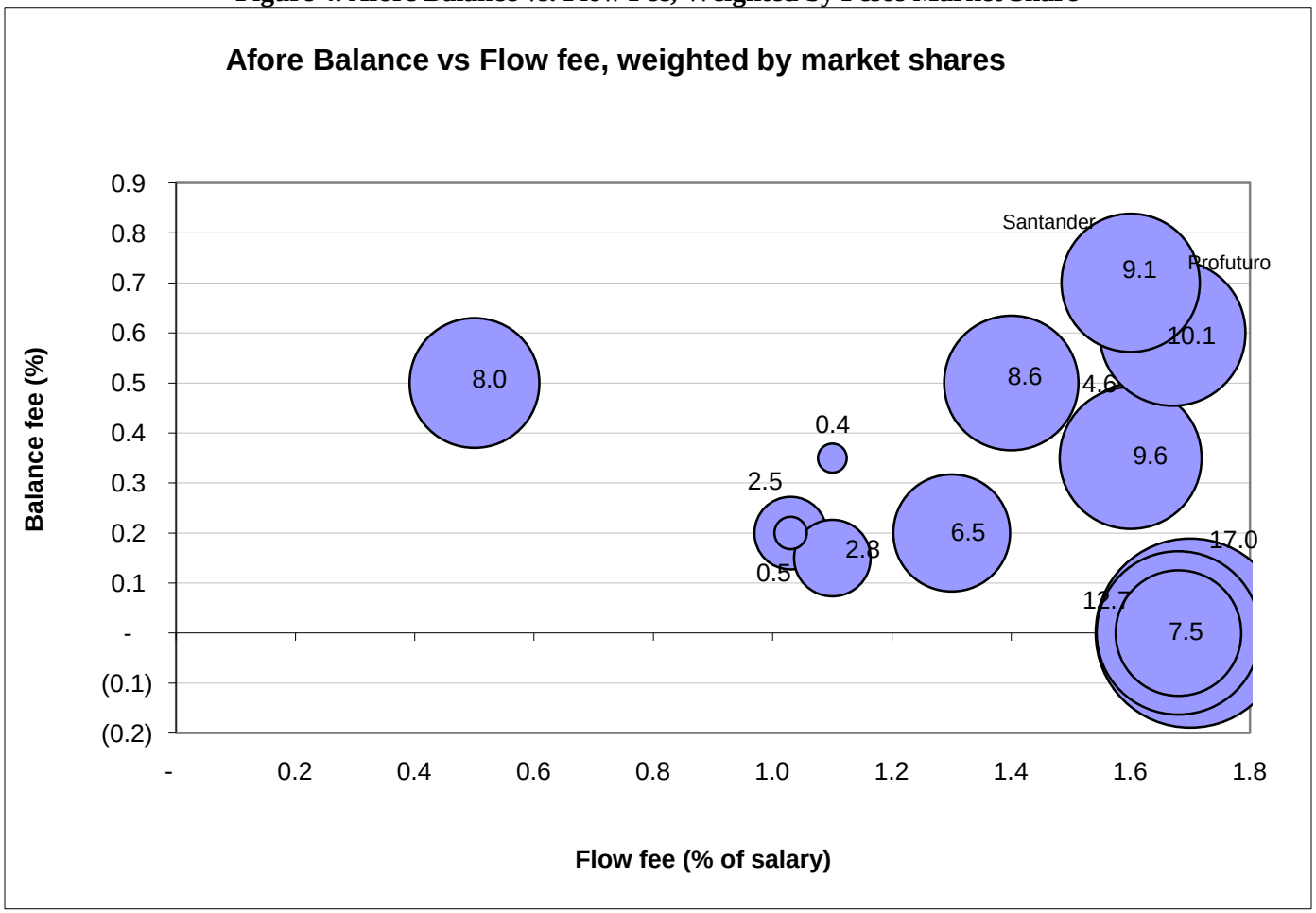


Figure 5. Change in CEF vs. Change in Cost

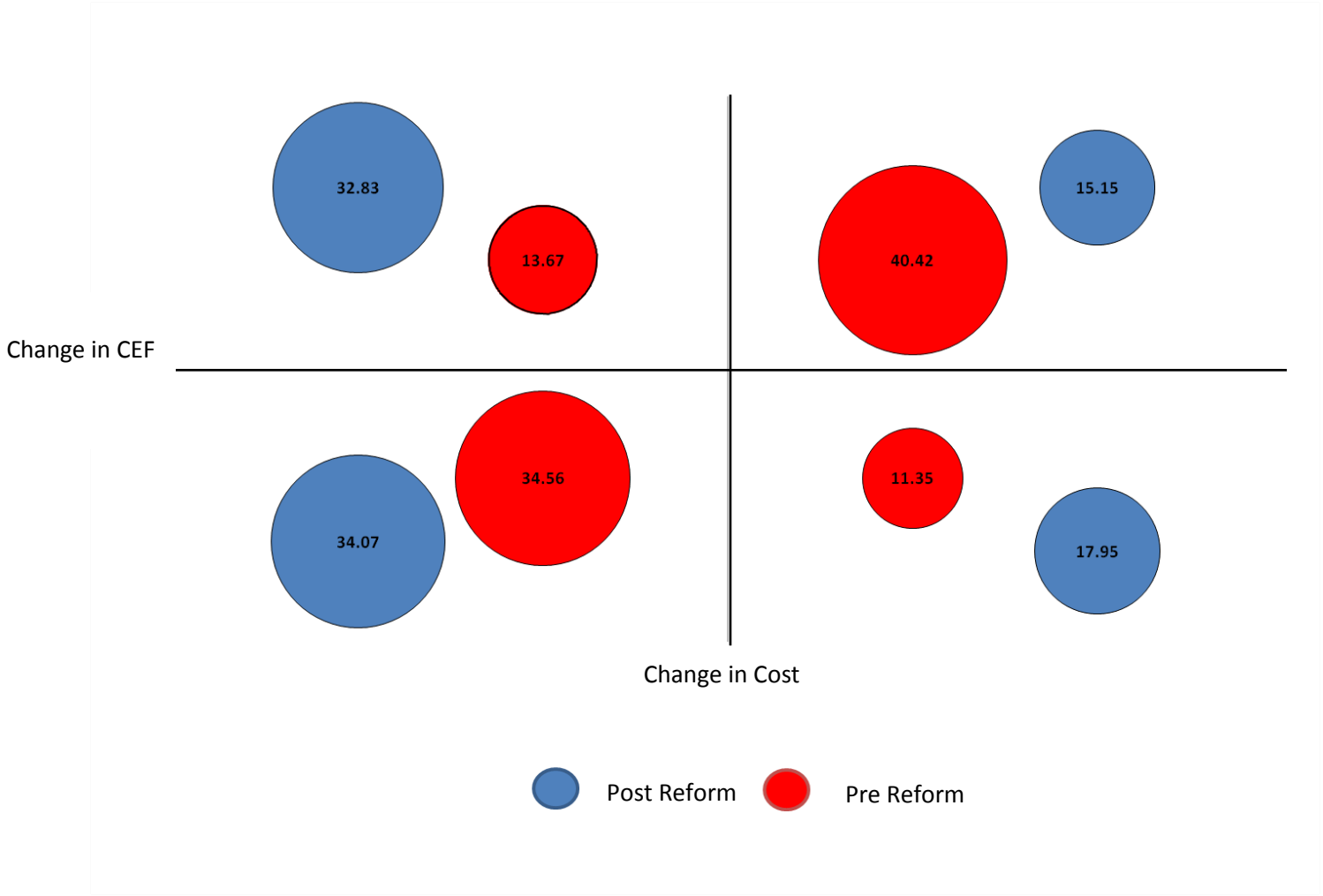


Table 1: Entry Dates and Description for Afores during Sample Period

Afore Name	Entry Date	Firm Description and Brand Perception
Actinver	Apr-03	Mexican financial group
Afirme Bajío	Dec-05	Mexican financial group
Ahorra Ahora	Aug-06	Owned by Mexican financial group Monex
Argos	Dec-06	Mexican insurance company affiliated with international insurance company Aegon
Azteca	Mar-03	Grupo Salinas (owns Elektra retailer for low- to middle-income demographic groups and the TV chain Azteca)
Banamex	Jul-97	Large Mexican bank (since 1884), bought by Citigroup (2001)
Bancomer	Jul-97	Large Mexican bank (since 1932), affiliated to Spanish Bank (in 2000)
Banorte Generali	Jul-97	Northern Mexican bank affiliated with International Insurance Company Generali
Coppel	Apr-06	Mexican leading departmental store for low- to middle-income demographic groups
De la Gente	Nov-06	Joint venture of small savings institutions and government bank (BANSEFI)
HSBC*	Jul-97	International Bank
Inbursa	Jul-97	Banking and financial services group (owned by Carlos Slim)
ING**	Jul-97	International financial group
Invercap	Feb-05	Mexican mutual funds administrator founded in the north of Mexico
IXE	Jun-04	Mexican financial group
Metlife	Feb-05	International insurance company
Principal	Jul-97	International financial group
Profuturo GNP	Jul-97	Mexican mutual funds administrator
Santander	Jul-97	Spanish bank that bought the Mexican Bank Serfin in 2000
Scotia	Nov-06	International banking and financial services company
XXI	Jul-97	Owned by IMSS (former pension system administrator) and Prudential

*HSBC acquired Afore Alianz Dresdner in 2004 which was Afore Bancrecer Dresdner until 2001.**ING acquired Afore Bital in 2001. Bital is a Mexican bank.

Table 2: Equivalent Fee on Balance (CEF): 25 Year vs. 1 Year Calculation for June 2005

Afore	25 Year CEF	1 Year CEF	1 Year CEF Rank
Actinver	0.55%	2.02%	2
Azteca	0.57%	2.22%	4
Invercap	0.60%	2.17%	3
Inbursa	0.67%	1.53%	1
Metlife	0.69%	2.67%	6
IXE	0.72%	2.41%	5
XXI	0.79%	2.89%	7
Banamex	0.80%	3.49%	13
Santander	0.85%	3.95%	15
ING	0.86%	3.44%	11
Bancomer	0.88%	3.40%	10
Principal	0.89%	3.48%	12
HSBC	0.95%	3.34%	8
Banorte Generali	1.07%	3.34%	9
Profuturo	1.13%	3.63%	14

Table 3: Summary Statistics on Affiliates and the Employment (0.5% random sample)

	Mean	10th Pct.	25th Pct.	50th Pct.	75th Pct.	90th Pct.	N
Demographics							
Male	0.62	--	--	--	--	--	98,570
Age (years)	35.07	22.08	25.91	32.43	41.95	52.15	98,570
Monthly Employed Wage (Pesos)	$4,812	$1,428	$1,885	$2,995	$5,128	$9,999	98,570
Account Balance (Pesos)	$25,084	$352	$2,849	$11,211	$29,242	$61,906	98,570
Employment							
Unemployment Rate	0.6	0	0.07	0.82	1	1	98,570
N Employers	0.89	0	0	1	1	2	98,570
N Employees	1,326	5	22	133	671	2,852.00	38,908

Notes: Data taken from administrative data on social security account contributions from September 2004 through December 2006. Age is calculated from the birthdates attached to the account. Average wage is the average wage for the work across all periods they were employed during the sample period in December 2006 pesos. If the worker was unemployed during the entire period, the wage is last recorded wage inflated to December 2006 pesos. Account balance is the balance in each account in June 2006. Fraction of months not formally employed is the percent of months in our sample that the worker does not make a contribution to the social security account. Number of formal employers is a count of the number of unique employer id's that are recorded for each worker during the sample period, and the number of employees at each firm is calculated as the total number of employees for each unique employer id number that have wages and contributions in each period for the entire population of contributions in each month.

Table 4: Summary Statistics on Affiliates and the Employment (0.5% random sample)

	Mean	10th Pct.	25th Pct.	50th Pct.	75th Pct.	90th Pct.	N
Account Management							
Years in Current Afore (June 2005)	6.06	0.91	3.52	7.13	8.83	9.09	98,570
Years of Affiliation (June 2005)	7.25	4.1	5.56	8.29	8.95	9.14	98,570
Average Potential Flow Fee Gain							
Currently Employed	0.89	0.76	0.88	0.92	0.98	1.03	40,374
Currently Unemployed	0.93	0.84	0.91	0.94	0.99	1.03	58,196
Always Unemployed	0.93	0.84	0.91	0.93	0.99	1.03	40,637
Average Potential Balance Fee Gain							
Currently Employed	0.28	0.11	0.15	0.18	0.41	0.49	40,374
Currently Unemployed	0.29	0.14	0.15	0.22	0.46	0.57	58,196
Always Unemployed	0.3	0.14	0.15	0.3	0.49	0.57	40,637
Average Potential CEF Gain							
Currently Employed	1.05	0.8	1.01	1.11	1.19	1.32	40,374
Currently Unemployed	1.14	1.01	1.11	1.13	1.22	1.32	58,196
Always Unemployed	1.14	1.01	1.11	1.13	1.22	1.32	40,637

Notes: Data taken from administrative data on social security account contributions from September 2004 through December 2006. Age is calculated from the birthdates attached to the account. The number of years in the current Afore is calculated for each participant as of June, 2006 based on the date they first registered with their current Afore. The number of years in the system is calculated for each person as of June 2006 and is based on the date they first contributed to the new privatized system. The number of Afores each account holder had since June 2006 is calculated based on a recording of all approved account switches.

Table 5: Summary Statistics on Affiliates and the Employment and Account Management Behavior (10% random sample at time of choice)

	Mean	10th Pct.	25th Pct.	50th Pct.	75th Pct.	90th Pct.	N
Pre Information Mandate Change (Sept 2004 - July 2005)							
Change in Afore Rank (New Afore - Old Afore)	0.09	-7	-4	1	4	7	140,430
Change in Flow Fee (New Afore - Old Afore)	-0.08	-1	-0.2	-0.03	0.11	0.5	140,430
Remaining Flow Fee Gain (Cheapest Afore - New Afore)	-0.9	-1.17	-1.14	-1.05	-0.9	0	140,430
Change in Balance Fee (New Afore - Old Afore)	0.04	-0.5	-0.25	0	0.4	0.5	140,430
Remaining Balance Fee Gain (Cheapest Afore - New Afore)	-0.33	-0.66	-0.5	-0.4	0	0	140,430
Change in Total Cost Measure (New Afore - Old Afore	19.55	-245.85	-77.15	2.12	122.95	300.57	139,967
Remaining Total Cost Measure (Cheapest Afore - New Afore)	-163.64	-441.99	-250.71	-86.3	-2.63	0	139,967
Post Information Mandate Change (Sept 2004 - July 2005)							
Change in Afore Rank (New Afore - Old Afore)	-2.41	-11	-7	-3	2	5	359,171
Change in Flow Fee (New Afore - Old Afore)	-0.16	-0.74	-0.36	-0.09	0.05	0.24	359,171
Remaining Flow Fee Gain (Cheapest Afore - New Afore)	-0.67	-1.07	-0.9	-0.75	-0.47	0	359,171
Change in Balance Fee (New Afore - Old Afore)	0	-0.3	-0.15	0	0.15	0.35	359,171
Remaining Balance Fee Gain (Cheapest Afore - New Afore)	-0.28	-0.5	-0.35	-0.25	-0.15	0	359,171
Change in Total Cost Measure (New Afore - Old Afore	0.99	-146.22	-48.51	-0.79	46.4	149.33	357,551
Remaining Total Cost Measure (Cheapest Afore - New Afore)	-137.49	-329.58	-193.11	-86.38	-24.63	-1.86	357,551

Notes: Calculations taken from a 10% random sample of affiliates who submitted applications to switch Afores during our sample period. For each worker, the complete choice set was constructed.

Table 6: Discrete Time Hazard Model of Switching Afores by Employed Wage Category

	Wage < 25th pctl.	Wage in 25-50th pctl.	Wage in 50-75th pctl.	Wage in 75-90th pctl.	Wage >90th pctl.
Demographics	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
Ave. Employed Wage (thousands pesos)	2.525**	1.157**	1.211**	1.071**	1.001
Male	1.013	0.973	1.056*	1.134**	1.201**
Age	1.020	0.997	0.999	0.995	1.011
Age squared	1.000	1.000	1.000*	1.000	1.000*
Employment Status					
Recently Unemployed	0.418**	0.540**	0.764**	0.739*	0.901
Qualifies for Unemployment Insurance	1.308**	1.253**	1.063	0.901*	1.014
Can Withdraw Unemployment Insurance	1.921**	1.792**	1.862**	3.008**	3.742**
Unemployed	0.137**	0.171**	0.162**	0.131**	0.115**
Entered Formal Sector	0.932	0.974	1.069	1.145	0.924
Switched Employers	0.844	1.121	1.106	1.042	0.787
Peers and Advertising					
Afore Share at Employer	0.310**	0.309**	0.247**	0.262**	0.284**
Popularity of Initial Afore	0.536*	0.506**	0.851	0.893	1.214
Local Sales Force Concentration	1.133**	1.042*	1.042**	0.995	1.006
Measures of Prices					
Personal Flow Fee	1.008	0.961**	0.982**	0.994	1.015*
Balance Fee	1.028**	1.007	1.014**	1.008	1.016**
CEF	0.921**	0.907**	0.951**	0.965**	1.002
CEF* Post Info. Reform	1.239**	1.227**	1.146**	1.080**	1.026**
Mean Wage	1,072	2,405	3,872	6,981	19,278
Dep. Variable Mean:	0.002	0.006	0.0102	0.0165	0.0215
Log Likelihood:	-8,428	-23,120	-36,103	-32,142	-26,128
N Obs.	688,374	688,224	688,311	413,054	275,365

Notes: *significant at 5%; **significant at 1%. Results from a logistic discrete time hazard model. All regressions include Afore fixed effects, monthly fixed effects and dummies for length of time in current Afore at time *t*. Standard errors are clustered at the affiliate level.

Table 7: Estimated Elasticities with respect to Two Fee Measures

	CEF Elasticity	Cost Elasticity
Male	-0.280**	0.019**
	(0.001)	(0.000)
Age	-0.006**	-0.000**
	(0.000)	(0.000)
Monthly Wage (1000 pesos)	-0.049**	-0.008**
	(0.000)	(0.000)
Unemployed	-0.077**	0.026**
	(0.001)	(0.000)
Post-Information Change	-0.745**	0.076**
	(0.001)	(0.000)
Local Sales Force Concentration	-0.135**	-0.023**
	(0.005)	(0.003)
Sales Force* Post-Information Change	0.001	0.012**
	(0.005)	(0.003)
Dependent variable mean	-0.28	0.03
Observations	6,069,222	6,069,221

Notes: * significant at 5%; ** significant at 1%. All regressions include Afore fixed effects.

Table 8: First Order Condition Calculations Pre and Post Information Mandate Change

Afore	Flow Fee Change	Balance Fee Change	Flow Fee FOC Pre-Info Change	Flow Fee FOC Post-Info Change	Balance Fee FOC Pre-Info Change	Balance Fee FOC Post-Info Change
Actinver	-0.02	0	+	+	+	+
Azteca	-0.20	0.25	+	+	+	+
Banamex	-0.95	1.48	+	-	+	+
Bancomer	-0.48	0.5	+	-	+	+
Banorte Generali	-0.70	0.637	+	-	+	+
HSBC	-0.67	0.8	+	-	+	+
Inbursa	0.00	0	+	+	+	+
ING	-0.39	0.3	-	-	-	-
Invercap	-0.23	0.16	+	-	+	+
IXE	-0.34	-0.08	+		+	+
Metlife	-0.03	0.46	+	-	+	+
Principal	0.00	0	+	-	+	-
Profuturo GNP	-0.07	0.6	+	-	+	-
Santander	-0.90	0.75	+	-	+	+
XXI	-0.70	1.3	+	-	+	+