

Mutual Funds and Institutional Investments
What is the Most Efficient Way to Set Up Individual Accounts in A Social Security System?

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Abstract: Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in A Social Security System?

One of the biggest criticisms leveled at defined contribution individual account (IA) components of social security systems is that they are too expensive. This paper investigates the cost-effectiveness of three options for constructing funded social security pillars: 1) IA's invested in the retail market with relatively open choice, 2) a centralized fund without individual accounts or differentiated investments across individuals; and 3) IA's invested in the institutional market with constrained choice among investment companies. Our questions: What is the most cost-effective way to organize a mandatory IA system, how does the cost of an efficient IA system compare with that of a single centralized fund, and are the cost differentials large enough to outweigh the other important considerations?

Our answers, based on empirical evidence about mutual and institutional funds in the U.S. and the IA system in Chile: The retail market allows individual investors to benefit from scale economies in asset management, but at the cost of high marketing expenses that are needed to attract and aggregate small sums of money into large pools. Administrative costs range from .32-1.5% of assets annually, depending on investment strategy. In contrast, a well run centralized fund can be much cheaper (.04-.65%) because it achieves scale economies without high marketing costs—but it gives workers no choice and is subject to political manipulation and misallocated capital.

Mandatory IA systems can be structured to get the best of both worlds: to obtain scale economies without incurring high marketing costs or sacrificing worker choice. This is accomplished by aggregating small compulsory contributions into a large pool which is then allocated across a limited number of funds according to worker preferences but with centrally negotiated rates in the institutional market. We estimate that in the long run, for an IA system with small contributions as contemplated in the US, this system of constrained choice will cost .14-.79% of assets (or \$31-132 per account) annually. This is only slightly more expensive than a single centralized fund, half the cost of the retail market and increases total pension accumulations by 4-15%. We believe that using the institutional market with constrained choice is worth serious consideration, especially for countries with a small contribution base, hence modest account size, and at the start-up of a new multi-pillar system.

Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in A Social Security System?

Prefunding is now seen as a desirable characteristic of old age security systems because it helps increase national saving, makes the financial sustainability of the system less sensitive to demographic shocks, and reduces the need to increase taxes as populations age. With prefunding comes the need to determine how the funds will be managed. Those who fear political manipulation of publicly managed funds see defined contribution individual accounts (IA's) as a way to decentralize control and thereby achieve a better allocation of the funds. But IA's have been criticized on other grounds, most important among them being high administrative costs. Costs are especially high relative to assets at the start of a new system, because of start-up expenses and fixed costs associated with each account. To illustrate why administrative costs are important: an annual cost of 1% of assets (slightly more than the up-front fee now charged in Chile) can reduce a worker's retirement benefits by 20%. Moreover, costs are more predictable than returns, and more amenable to policy choice.

This paper investigates the cost-effectiveness of three options for constructing funded social security pillars: 1) IA's invested in the retail market with relatively open choice, 2) a centralized fund invested in the institutional market without individual accounts or differentiated investments across individuals; and 3) IA's invested in the institutional market with constrained choice for workers among investment companies. Our questions: what is the most cost-effective way to organize a mandatory IA system, how does the cost of an efficient IA system compare with that of a single centralized fund, and are the cost differentials great enough to outweigh the other important considerations?

To answer these questions we use data from pension funds in Chile which was the first countries to establish a decentralized IA system and from mutual funds in the U.S. because the best data are available here, the U.S. mutual fund industry is an example of a relatively well run retail financial industry (which deals with numerous small investors); and the U.S. is currently considering how to reform its social security system. Observing that an institutional investment market (which deals with large investors) co-exists with mutual funds in the U.S., and at much lower cost, we also use these data to identify and quantify the sources of economies from operating in the wholesale money market. Costs in both the retail and wholesale markets would be higher in developing countries, but their relative positions should be similar to those described here. (For a discussion of applicability to developing countries, see James et al 1999). We distinguish among asset management, marketing and record-keeping costs, showing how each varies with type and size of system.

Empirical evidence presented in this paper and elsewhere suggests the existence of large economies of scale and scope in asset management. All three options exploit these economies, but

in different ways. The retail market allows individual investors to benefit from scale economies in asset management, but at the cost of high marketing expenses—almost half of total costs—that are needed to attract and aggregate small sums of money into large pools. At the start-up of a new IA system, the fixed cost per account for record-keeping and communications (R&C) is also high, relative to assets. In contrast, a centralized fund can be much cheaper because it achieves scale economies without high marketing or R&C costs, but gives workers no choice and hence is subject to political manipulation and misallocation of capital.

The system of constrained choice described in this paper is much cheaper than the retail market and only slightly more expensive than a single centralized fund. It obtains economies in asset management and record-keeping while keeping marketing costs low and allowing significant worker choice that helps to insulate it from political interference. It accomplishes this by aggregating small compulsory contributions into a large pool which is then allocated across a limited number of funds according to worker choice but with centrally negotiated rates (via competitive bidding with limited entry or open entry with price ceilings) that discourage high marketing expenses. In countries with well developed financial markets passive investment is likely to be emphasized if the object is low cost. If one values the cost saving as greater than the decreased marketing information and constraints on choice, this system will be more efficient than the retail approach, and if one values improved political insulation and adaptability to individual preferences, it is more efficient than the centralized approach.

Part I sets up a hypothetical model that decomposes costs into asset management, R&C and marketing components. Part II provides an international perspective, by examining costs in the mandatory AFP system in Chile, which uses the most common method, the retail market. Part III draws on data from voluntary saving in mutual funds in the U.S. Both in Chile and the U.S., individuals have diversified accounts that they can move from one company to another in a competitive retail investment market. Although the American mutual fund industry is vastly more developed than the Chilean AFP industry, we find strong similarities, in terms of annualized costs as a percentage of assets and the composition of these costs. Average annual administrative costs range between 1% and 1.5% of assets for most investors, and marketing is the largest cost component in both cases. In Chile annual costs are less than 1% for those who start contributing early in their careers. In the U.S. a low-cost niche of less than 1% has developed for passively managed funds indexed to various benchmarks. In both cases costs were higher 15 years ago and have declined slightly as a result of asset growth and competition. These two cases give us insights into how an IA system might develop in the retail market.

Part IV explores costs in the institutional market, drawing on U.S. data once again. Administrative costs for pension funds and other large investors are estimated to be 4-8 basis points (.04-.08% of assets) for passively managed portfolios, and 35-65 basis points (.35-.65% of assets)

for actively managed domestic portfolios—much less than the retail market. These large cost savings are due to economies of scale in the investment function, smaller costs in the marketing functions, the virtual absence of record-keeping costs, and the greater bargaining power of large investors in an industry where average costs greatly exceed marginal cost. These would also be the costs in a well-run centralized funded pillar with no IA's and no choice.

Part V considers whether and how an IA system with constrained choice could be set up to benefit from these same economies. We outline the elements of such a system—which include worker choice among a limited number of money managers chosen through a competitive bidding process (or through fee ceilings that discourage marketing expenditures). We estimate that such a system could operate with approximately the same investment costs as the centralized fund. However, additional R&C costs will necessarily be incurred if workers have individual accounts with differing asset managers. Using data from the transfer agent function of mutual funds and the experience of the federal employees Thrift Saving Plan, we find a relatively fixed R&C dollar cost per account, that falls rapidly as a percentage of assets as average account size grows.

Thus, the steady state cost in a constrained IA system in countries with well developed financial markets is likely to be .14-.18% of assets annually for a passively managed investment strategy (or .49-.79% if active management is chosen), including all money management and record-keeping fees. For the system size that has been under consideration in the U.S. (average annual contributions approximately \$500), this amounts to \$31-39 or \$106-172 per account, respectively. This is only 10 basis points or \$21 per account per year higher than the cost of a centralized scheme. It is much less than the expected return to saving or the cost of voluntary or mandatory individual accounts in retail markets. Constrained choice offers large administrative cost savings combined with political insulation, and is likely to imply a Pareto improvement so long as choice is not constrained “too much.”

I. How Administrative Costs Vary Across Time and Systems

We start by setting forth a small model of the components of administrative costs that can be used to understand changes in costs across time and systems.

$$\text{TOTADMINCOST}_t^i = \text{STARTUPCOST} + \text{FCOST} + \text{R\&C} + \text{INV} + \text{MARKETING}$$

Where:

TOTADMINCOST_t^i = total administrative cost for pension fund or system i in year t

STARTUPCOST = capital costs incurred in the early years of a new system or fund

FCOST = fixed cost needed to operate in year t ;

R\&C = record-keeping and communication costs;

INV = investment cost;

MARKETING = marketing cost.

Each of these cost components is determined quite differently. R&C costs tend to be technologically determined and standardized, depending on quality of service and number of accounts. Passive investment costs are also technologically determined, depending on volume and allocation of assets. Active investment costs are market-determined, stemming from the premium that a manager who is deemed to be superior can command in a market for differentiated investment skills. Marketing expenses usually go together with active management, since they are used to sell the skills of a particular asset management company, and they depend on profit-maximizing calculations about the costs versus net returns of incremental marketing activities. Suppose that, in choosing an investment manager, all consumers have the same fall-back option that is low in cost and returns (say, a savings bank account or money market fund). They will not choose an active manager unless they expect him to yield a higher net return, after subtracting all expenses, including his wages and marketing costs. Then, the manager will be able to charge a larger dollar skill premium and to spend a larger amount on marketing, while still staying above this threshold return, as total assets in the system grow. This scenario would lead active investment and marketing costs to rise with assets, even though this relationship is not technologically determined.

In comparing costs across funds or systems and trying to ascertain how these are likely to change in the future, it is necessary to take into account the total volume of assets and the number of accounts that determine costs. Table 1 illustrates the total administrative cost and its breakdown between R&C and INV in three hypothetical systems, as they evolve through time. Two cost measures are used—dollars per account and basis points per unit of assets (1 basis point = .01%). The first measure is useful because it tells us how much it costs to operate an account for an average worker, while the second measure tells us how much gross returns are being whittled away by administrative costs. While economies of scale are probable (see James and Palacios 1995, Mitchell 1998 and Part III), in this section, for expositional purposes, we assume that R&C cost per account and INV cost per unit of assets are constant. Scale economies would slow down the growth and/or accelerate the decline in all these cost measures. We also abstract from annual fixed costs and high start-up costs at the beginning. While these cost functions are hypothetical at this point, we will see later that they are not implausible.

Panel A illustrates a stylized cost profile for an IA system that uses the institutional approach, with passive investing that costs .1% of assets annually, R&C costs of \$20 per account. Panel B illustrates an institutional approach with active investing—INV cost rises to .6%. Panel C illustrates the retail approach, with marketing plus investment expenses totaling 1.1% of assets, R&C costs \$30 per account. We see in Table 1 that:

1. Average (dollar) cost per account starts relatively low and rises through time as average account size grows, due to increased investment costs.
2. In contrast, average cost as a % of assets starts high and falls as average account size grows, due to constant R&C costs per account.

3. R&C costs dominate at the beginning but their impact on net returns become much smaller in the long run, when investment and marketing costs dominate—particularly if a high contribution rate and expensive investment strategy are chosen (Panels B and C).
4. If an institutional approach with low investment costs are chosen, costs per account remain small and costs as a % of assets become very small in the long run (Panel A).
5. A larger contribution amount leads to a more rapid increase in dollar cost per account and decrease in cost per unit of assets (Panel C).
6. An expensive investment strategy and high marketing expenses increase dollar costs per account by a larger amount as time passes, although the cost per unit of assets and therefore the negative impact on net returns is constant through time (Panel C).

While we have been defining costs to the fund and the system, costs (fees) to consumers may vary from this. In the short run, at the start-up of a new system, funds may run temporary losses, in the expectation that they will increase their market share and recoup their capital expenses later on. In the medium term, they may earn profits, that offset the earlier losses. We would expect that in the long run competition will eliminate pure profits, so fees to investors will just cover costs to the fund. But the existence of marketing competition, as well as potential skill and wage differentials across asset managers, makes it difficult to predict the cost and fee level at which this zero-profit equilibrium will occur. Moreover, price discrimination, used to recover fixed costs when heterogeneous consumers have different price elasticities, means that marginal and average cost may have different relationships to price for different groups of investors. In this paper we focus on fees that are paid by the average investor, we presume that in the long run these fees will bear a close relationship to real costs, and costs depend on how the system is organized.

A well run centralized fund without IA's has the cost advantage of lower R&C expenses since it features only one investment account (although additional records must be kept of the benefit entitlements of each worker) and potential use of bargaining power to secure low investment and marketing costs (as in Panels A and B minus R&C costs). But it has the disadvantage of creating a principal-agent problem and lack of political insulation if it is managed by the government: for these reasons it may not end up minimizing costs or maximizing returns or being run in the workers' best interests. In contrast, the retail market for IA's incurs R&C costs for many small accounts, expensive investment strategies may be chosen, and marketing costs are often high (as in Panel C). We argue that, by operating in the institutional market, an IA system may achieve most of the cost advantages of centralized funds but with greater political insulation and responsiveness to workers' preferences. The institutional approach to IA systems aggregates many small accounts into large blocs of money and negotiates fees on a centralized basis—via a competitive bidding process or open entry with price ceilings. This can keep costs low, as in Panels A and B, by:

Constraining worker choice to low INV cost portfolios and strategies;
Minimizing MARKETING cost by reducing allowable fees;
Organizing R&C expenditures to benefit from scale and quality economies;
Cutting STARTUPCOST and FCOST by avoiding excess capacity.

When these strategies are utilized, the cost of an IA system is only minimally higher than that of a well-run centralized fund without IA's.

II. How High Are Administrative Fees in Chile and How Are They Spent?

In this section we examine the administrative costs and fees of Chilean AFP's, which have been operating since 1981. These fees have been subject to great criticism by opponents of IA systems. In Chile the worker pays a fee to the AFP, which is an administrator that sets up the fund and runs it. Practically all expenses are paid by the AFP, not the worker or the fund directly. So fees do not necessarily represent real costs of operating the fund, especially in the short run, nor do they represent a long term commitment. AFP's made losses in the early years of the new system when they incurred start-up costs that exceeded their revenues, but the industry as a whole is quite profitable and more concentrated at this stage (Table 2). We might expect price competition to eliminate these profits but price insensitivity among investors and entry barriers to new firms may prevent this from happening quickly. Deregulation and oligopoly may alter costs and their relationship to fees in the future, in ways that are difficult to predict. For example, in an industry characterized by differentiated competition, marketing costs play a large role and we don't know whether they will increase or decrease as the industry grows more concentrated. As regulations are liberalized, portfolio diversification increases and managerial skill is deemed increasingly important, this may raise wages for managers who are perceived as more skillful, costs to the AFP's that employ them, expenditures to advertise their superior skills and fees to their members. Despite this uncertainty about the future, the current fee structure poses costs to investors that reduce their net returns, so we take them as given and examine their implications in this section.

Chile adopted an unusual method of charging fees: the fee is imposed when the contribution first enters the system, and no management fees are charged on that contribution thereafter. The fee started at over 20% of contributions but has fallen to an average level of 15.6%. Anecdotal evidence indicates that many workers receive rebates on sales commissions, so for them the effective fee may be only 13% of contributions or less. (In other Latin American countries, such as Argentina and Mexico, where the contribution rate is smaller, fees are still over 20% of contributions, while in Bolivia, which has experimented with a new administrative system, they are lower. See James et al 1999). Charging fees based on new contributions is an extremely front-loaded method as compared with the customary practice in mutual funds of charging an annual fee based on assets, sometimes supplemented with a sales charge on purchases.

This fee structure means that if a worker enters the system for a year but then drops out (e.g. to become self-employed or to withdraw from the labor market) the worker ceases to pay fees while keeping his or her assets in the system. For new systems (e.g. Poland, Uruguay) the number of contributors and affiliates is very close, but for more mature IA systems (e.g. Chile, Singapore) the number of affiliates is roughly double the number of active contributors. (Inactive affiliates require the AFP to incur expenditures for annual statements and asset management, while active contributors incur additional expenses for periodic contributions and fund switches). In 1999 the average fee per contributor was \$174 and per affiliate was \$67, slightly more than total expenses per contributor and affiliate, respectively. In real terms, costs and fees per contributor and affiliate were much lower in the earlier years, when assets were smaller. But as a percentage of assets they have been roughly constant (at 1.2-1.5%) after the first years of high start-up costs passed. We also observe that marketing costs are large (Table 2).

Table 3 presents the results of a simple regression analysis that sums up the relationship between costs, fees, contributors, affiliates and assets for the system as a whole over time. We see there that assets have been the major determinant of total administrative costs and costs per contributor, but costs as a % of assets are invariant to size of system, consistent with the hypothetical retail market depicted in Table 1, Panel C.

A 15.6% fee on contributions reduces the final capital accumulation and pension by 15.6%. Is this fee high or low? To answer this question it is useful to compare it with other institutional arrangements for handling retirement savings, both in Chile and elsewhere. This paper concentrates on comparing it with fees in the retail and institutional market in the U.S. For this purpose, it is useful to convert these front-loaded fees into their annual equivalents (that will yield the same final year accumulation). This tells us how much gross investment returns will be reduced to obtain net returns and enables a direct comparison with mutual funds and large institutional investors in the U.S. and elsewhere. This conversion depends on how long the worker will keep his or her money in the system, which in turn depends on the age and career pattern of the worker.

We have simulated the average annual fee on assets that is equivalent to the front-loaded 15.6% fee on contributions, for workers of different ages at the point when the contribution was made (Table 4). This simulation assumes that the same fee schedule remains in effect over the worker's lifetime, although of course there is no guarantee that this will be the case. For a 25 year old worker (who contributes for one year only but whose money stays in the system for another 40 years), the 15.6% one-time fee is equivalent to .45% of assets annually; for a 45 year old worker it is .91%, and for a worker who contributes monthly in his final year it is 32.4% (column 1). For a worker who contributes every year for 40 years (e.g. age 25-65), paying a fee on each new contribution, the annual equivalent of all these front-loaded fees is .76% (column 3).

Many workers will contribute for 20 years only, because this is the period that makes them

eligible for the minimum pension guarantee. For these workers, the equivalent annual fee depends on whether the contributions were made early or late in their careers, which determines how many years their money will be under management. If a worker contributes only for his first 20 years of employment the equivalent average annual fee for all his contributions is .57%, while if contributions are made only in the last 20 years, the equivalent average annual fee is 1.65% (column 2). (The latter is roughly consistent with the 1.5% of assets that is paid by the average worker today, 18 years after the system got started). Suppose that one half of all workers contribute for 40 years, and one quarter each for their first and last twenty years. The system-wide annual equivalent expense ratio would be .94%, almost 1% of assets per year.

These estimated lifetime fees are similar to but somewhat lower than average mutual fund fees in the U.S. (Part III). American mutual funds, of course, provide much greater diversification and service than Chilean AFP's, which would make their costs higher. But they also benefit from much greater economies of scale and better infrastructure, which would make their costs lower. AFP costs are much lower than costs of U.S. mutual funds that operate in emerging markets. They are much lower than mutual fund fees for voluntary saving in Chile, which, during the early 1990's, averaged around 6% per year for equity funds and 2% for bond funds, plus entrance and exit charges (Maturana and Walker 1999). AFP fees are also lower than those of mutual funds in most other countries, where the combination of front loads and annual fees exceeds levels in the U.S. Chilean AFP's are therefore relatively inexpensive if the standard of comparison is fees in other financial institutions that invest individuals' savings in a diversified portfolio. However, they are more expensive than savings accounts in commercial banks, either in Chile or elsewhere (Valdes 1999b).

The breakdown of costs among AFP's shows that over 45% of total expenditures were used for marketing costs, especially sales commissions. This proportion is similar to marketing expenses in the retail financial markets in the U.S. and other countries. In both cases, the number would probably exceed 50% if we included staff salaries involved in marketing. These similarities suggest that a study of U.S. mutual fund data might yield insights into the determinants of costs in individual account systems and how these costs might be reduced.

Finally, AFP fees are much higher than fees paid by institutional investors (Part IV) and they have a substantial impact on ultimate pension amounts. This leads one to wonder whether it is possible to organize a mandatory IA system so that it captures the lower costs of the institutional market, and if so, what are the trade-offs?

III. Costs in the Retail Market of American Mutual Funds

The mutual fund in the U.S. has been a hugely successful financial institution. Assets have grown from less than one billion dollars in 1949 to almost \$140 billion in 1980 to over \$4 trillion by the end of 1997 and now exceed the combined total of savings bank deposits and life insurance assets (Pozen 1998). The variety of fund objectives and ancillary services has also escalated, with equity funds expanding much faster than bond or money market funds over the last 20 years. Savers apparently feel that investing through mutual funds gives them advantages in terms of convenience, liquidity and diversification which justify the fees.

Our object was to analyze the determinants of mutual fund fees and how they are spent, in order to shed light on how costs might evolve or might be shaped in a reformed social security system with individual accounts. We used simple cross-tabulations, regression analysis and frontier analysis based on a large data set of mutual funds (4254 funds in 1997 and 1300-2000 each year for 1992-96) that we obtained from Morningstar. We also culled information from annual reports, fund prospectuses, and financial statements filed by their investment advisers, as well as surveys conducted by the association of mutual funds and discussions with fund officials and their transfer agents.

In the U.S., like Chile, mutual funds are organized by sponsors, but they are not owned by these sponsors. Instead, the assets are owned by the shareholders who invest in them. A board of directors (most of whom are affiliated with the sponsor) chooses the investment adviser who, in almost all cases, is the original sponsor of the fund. Often the same sponsor starts multiple funds in a fund complex such as Fidelity or Vanguard. The adviser makes key strategic decisions, hires analysts and portfolio managers (who handle day-to-day investment activities), advertises the fund, and provides other administrative services. Competition takes the form of investors exiting and entering funds rather than funds choosing and re-evaluating investment advisers (Baumol et al, 1989).

Marketing and service have been major instruments in the competition among funds for investors. In contrast, price competition seems to have played a relatively minor role, especially in the short run. Later, we interpret this as a consequence of product differentiation and a high noise-to-signal ratio in volatile markets, that makes it difficult to distinguish between random good luck that will not repeat versus low costs that will repeat in the future.

Costs in the mutual fund industry. The fund pays annual fees to the investment adviser and much smaller amounts to distributors (12b1 fees), lawyers, auditors, transfer agents and others (Table 5). By regulation, the charges are passed on to shareholders proportional to their assets and determine the fund's reported "expense ratio" that it subtracts from its gross return to obtain the investors' net return. Thus (unlike Chile), shareholder fees paid to the fund equal costs of the fund,

although they may yield large profits to the investment adviser. In addition, for many funds front-loaded and back-loaded commissions are paid directly by individual investors to brokers upon purchase or sale; these entry and exit fees are part of the price to relevant shareholders although not received or paid by the fund and not included in the expense ratio. Brokerage fees paid for securities transactions are also excluded from the expense ratio, although they are indirectly paid by shareholders in the form of reduced gross returns.

We have constructed a “total investor cost ratio” which equals the reported expense ratio plus average brokerage (trading) costs and annualized front loaded sales commissions (Table 5). In 1997 the total investor cost was 1.85% of assets, compared to the reported expense ratio of 1.28%. Weighted by assets, these numbers fall to 1.43% and .91% (or \$360 and \$228 per average account), respectively. Asset-weighted numbers are more relevant for our purposes because they indicate the expense incurred by the average dollar invested. The lower asset-weighted figures are consistent with economies of scale and/or a selection of clients into low cost funds. The variation in costs is also great. For example, the average dollar invested in passively managed funds incurs a cost ratio that is only one-fifth the expense of a dollar invested in actively managed funds.

Table 6 converts these numbers into the cost categories set forth in Part I—R&C costs, investment costs, marketing expenses and fixed costs, both in terms of dollars per account and as a % of assets. Comparing Table 6 with the hypothetical numbers in Table 1, for an average account size of \$25,000, we see that the costs are somewhat larger than but very close in breakdown to Panel C. Investment costs far exceed R&C cost and marketing cost is the largest component for many funds.

More than half of the reported expense ratio is paid to the investment adviser, who then allocates the money among the factors of production. While in our simple breakdown we have allocated this to “investment expenses”, actually some of it is spent on advertising, development of new products and technologies, and other functions. This disaggregation is difficult to obtain since most fund sponsors are private companies which are not required to disclose their records. Other problems related to measuring and understanding mutual fund costs are:

1. Disclosure of brokerage costs (for securities transactions) was not required until 1996 and they are reported for only a subset of our funds for 1996 and 1997.
2. Some brokerage fees cover research or other expenses of the fund or its adviser (i.e. the “soft dollar” issue), thereby reducing the reported cost that goes into the expense ratio and understating real expenditures on these items.
3. Some investment returns are reported net of cost, without data for the cost of producing them.
4. Income from securities lending operations is sometimes used to offset custodial and other expenses, which are therefore underestimated by reported fees.

5. Some funds do not report number of shareholders and the growing use of omnibus accounts that consolidate many shareholders further complicates the use of this explanatory variable.
6. Investment advisers temporarily waive some fees, especially fees of new funds, as a business strategy to attract new customers, but may later reinstate them; these temporary fees may not reflect real costs.
7. The data set includes only funds that were still operating in 1997 and it therefore suffers from survivorship bias. Many expensive or poorly performing older funds have terminated, which may lead to an understatement of costs or an overstatement of expected returns.
8. Many shareholders pay a front loaded one-time sales charges directly to brokers or other sales agents. These charges are not reported as fund expenses. To include them we had to annualize them based on estimated holding periods on which we lack good data, so caution is needed to interpret these estimates of marketing expenses.
9. The invisible diseconomy of scale—the impact of a fund’s buying and selling activities on security price—is not measured here. This may lead to an overstatement of scale economies, especially in small cap and thin markets where the fund owns a large part of total capitalization.
10. Most funds are members of a mutual fund complex (e.g. Fidelity and Vanguard). Certain activities, such as advertising, research and new product development, are jointly supplied to all members of the complex by the common investment adviser. The allocation of these expenses among the funds may be influenced by estimates of where the expenses can be absorbed with least loss of clients (see point #6 above). Thus, the relative fees paid by members of a fund complex do not necessarily reflect the real cost of producing them. Perhaps most important for our purposes, business strategy concerning joint cost allocation may be different in a mandatory system given its different clientele.

However, except for the last point, we do not believe that these problems bias our major results.

Specification of regressions. The main dependent variable in our regressions is the “expense ratio”—reported expenses (excluding brokerage fees and loads) as a percentage of assets. We did not use the “total investor cost ratio” as our dependent variable because reliable data were not available for holding periods by fund or on brokerage costs for most funds in the data set. Front-loaded sales commissions, a large portion of total marketing expenses, are not part of the expense ratio but they are treated as an independent variable that may influence the expense ratio and are discussed as a marketing cost.

We sought to determine the extent to which cost variation is random or systematic, to identify the factors that lie behind the systematic variation and to assess the implications for IA systems.

Our independent variables fall into three main groups—a core group capturing economies of scale and scope for the key outputs (investment of assets and R&C services per account) as well as the possible relationship between costs, returns and risk; an asset allocation group acknowledging that different real costs are implied by different portfolios; and a business and marketing strategy group reflecting decisions made by the fund’s adviser, such as whether the fund should be actively or passively managed, whether it should seek large (institutional) investors, etc. (Table 7).

Core group:

Assets (in billion dollars)

Asset²

Assets in entire fund complex

Number of accounts (in thousands) or, alternatively, average assets per account

3-year gross return or, alternatively, 3-year load-adjusted net return

3-year standard deviation of returns

Asset allocation group

Dummy variables for funds that specialize in bonds, small cap stocks, special sector stocks, international (industrialized country) funds, emerging market funds, with large cap stock funds as the omitted category.

Business and marketing strategy group

Minimum investment required

Stock turnover rate

Fund age

Dummy variables for funds that sell only to institutional (very large) clients, index funds, bank-advised funds, funds with high (=1) or low (greater than 0 but less than 1) 12b1 fees, funds with front loads and deferred loads.

We ran the OLS regressions separately for each year, 1992-97. We also conducted a frontier (envelope) analysis for 1992-97, which included a time trend as an additional variable. Tables 8 and 9 report results from the OLS regression for 1997 and the frontier analysis for 1992-97, which yield a consistent picture of the determinants of mutual fund costs. The OLS regressions explain 64% of the variance when all the above variables are included, with the “business and marketing strategy” group accounting for more than half of the predictive power. Most of the variance in costs is therefore systematic rather than random. Costs faced by investors vary in large part because of business choices made by fund managers and these same costs could be substantially influenced by policy choices in a mandatory IA system.

Economies of scale and scope. Expense ratios fall when total assets in fund, assets in the entire fund complex and assets per shareholder increase. For funds with assets of less than \$10 million the simple average expense ratio is 1.54%, while for funds with assets of more than \$1

billion it is .96%. All funds need industry analysts, portfolio managers, computers and access to electronic trading facilities. Large funds, however, can be managed with virtually the same staff and trading access as smaller funds. The scale economies come from marketing costs as well as investment management: large funds spread their advertising expenses (and less importantly, their legal, accounting and audit expenses) over a larger asset base. Partly for these reasons, the largest and fastest growing mutual funds also experienced the greatest drop in operating expenses over the last 20 years (Rea and Reid 1998; for more on sources of scale economies see Baumol et al 1990, Sirri and Tufano 1993).

On the one hand, scale economies may be somewhat underestimated in these regressions because fund complexes may subsidize their new smaller funds, charging them less than full costs while they are “infants”, and earning a higher profit margin on their large well established funds where clients may be less responsive to small differences in fees. On the other hand, scale economies may be overstated for certain types of assets such as small cap and emerging market stocks. Reverse causation may also be at work: low-cost funds may have attracted large amounts of assets rather than vice versa. We were not able to distinguish between these two effects in this paper.

Perhaps most important, these economies from asset aggregation do not continue indefinitely. The positive sign on the coefficient of Asset^2 in the regressions brings to a halt the fall in expense ratio when fund size reaches the \$20-\$40 billion range. Other studies have found that scale economies stemming from the size of entire fund complex may stop at \$20-40 billion in the U.S. and at 2.9 billion francs, a much lower level, in France (Collins and Mack 1997; Dermine and Roller 1992). Price impact, not measured here, also places brakes on scale economies, especially in illiquid markets. The fact that many small funds co-exist with larger ones is further evidence of the limits to scale economies and also of the gradualness of the market process in adjusting to these economies. *Thus, aggregation brings economies that lead to industry concentration, but the limit to these economies nevertheless leaves space for multiple mutual funds (and pension funds), the exact number depending on the total market size of each country. A mandatory IA system in the U.S. would generate over \$60 billion of new contributions annually, even with a small contribution rate of 2%. Such flows are large enough to offer options among many fund managers at a cost-effective scale.*

Fixed R&C costs per account. Holding aggregate assets constant, the expense ratio increases with number of shareholders, but this effect disappears once strategy variables such as minimum investment are controlled. The expense ratio decreases as average account size rises. The basic reason, as seen above, is that funds incur a cost per account for record-keeping and shareholder communication (R&C); the larger each account the smaller this cost will be, as a percentage of assets.

R&C costs are \$20-25 for an average-sized account, according to these regressions. According to corroborating evidence from periodic surveys of transfer agents (the organizations which provide

these services for mutual funds), average R&C costs per account have been quite constant in this range during the 1990's. In 1995 the average cost was \$21 and 80% of all funds reported R&C costs between \$10 and \$32 (see Part V).

Fixed costs per account associated with R&C pose a potential problem for IA systems if the accounts are small; \$20 is 4% of a \$500 account but less than .1% of a \$25,000 account, approximately the current level for mutual funds. *These fixed costs help explain the high expense ratios of new AFPs and mutual funds in developing countries. This raises the question of whether an investment option with lower R&C costs (basic service, limited transferability) should be used initially, or whether these fixed costs should be amortized over a long time period, to avoid imposing a heavy burden on early cohorts, in new IA systems.*

High Marketing costs. Aggressive marketing strategies have been developed by mutual funds to maximize the assets under their management. Using brokers, other sales persons and mass advertising methods (media ads, direct mailings), the industry has successfully called to the attention of potential shareholders the advantages of equity investing, using mutual funds as the vehicle. This probably accounts for a large part of the industry's dramatic growth in assets and its access to scale economies. At the same time, marketing itself adds substantially to costs.

The major marketing expense to shareholders consists of sales commissions. Over two thirds of all funds are sold through third parties (brokers, insurance agents, financial planners) who receive some kind of commissions (through front or deferred loads or annual 12b1 fees). However, the proportion of assets managed as no-loads through direct marketing is larger and has been increasing through time. (Table 10).

How much do marketing fees add to total expenses? It is possible that sales commissions may substitute for other costs, such as advertising or communication costs. Our regressions, however, show little trade-off. Most of the 12b1 fee is passed on to consumers as an additional cost. A low 12b1 fee (usually .25%), which is included in the expense ratio, raises the expense ratio by .2%, a high 12b1 fee (usually 1%) raises it by .4% and the latter is usually found together with a deferred load which raises it another .5%, implying that most of the 12b1 fee is an added cost. A front load (a one-time sales fee of 4-5%), that is paid by investors directly to brokers does not reduce the reported expense ratio paid by the fund. (For corroboration of the cost-raising effects of sales loads fees see Ferris and Chance 1987, Trzcinka and Zweig 1990)

If we define the "total annual marketing cost" paid by the shareholder as the 12b1 fee + annualized front load, it is .61% of assets—43% of all fund expenses (Table 10). This is very similar to the marketing proportion of total cost in Chile's AFP system. For funds with front-loads or 12b1 fees, total investor costs are over 1 percentage point higher than for funds that pay no sales commission, and more than half of total investor expenses is attributable to marketing costs. These numbers undoubtedly understate true marketing costs, as they do not include the salaries of staff

who manage the marketing efforts or advertising costs that are paid for out of the adviser's fee. Marketing costs played an even more important role in the early years of the mutual fund industry, before no-loads developed.

Investors have the option, of course, to purchase no-loads. This implies that, rightly or wrongly, they believe they receive value from the third party intermediaries with whom they deal. (For corroboration see Kihn 1996, Capon et al 1996). From a social point of view, marketing probably provides a mixture of useful information, misleading information, an impetus to good performance and zero-sum game raiding. Other studies have shown that the funds which have gained the most are those that combine vigorous marketing with good performance (Sirri and Tufano 1997). The possibility of spreading favorable information by marketing probably acts as a spur to good performance and product innovation. *Most methods to keep IA costs low involve a reduction in marketing expenses, under the assumption that it is zero- or negative-sum and not the most efficient way to provide useful information to new investors.*

Lower expenses for institutional funds. A small number of mutual funds or special classes within a large mutual fund are limited to institutional investors (i.e. bank trust departments, corporations, small pension funds, etc.). Usually the minimum investment for these funds is \$100,000 or higher. These funds have a significantly lower expense ratio as compared with funds for individual investors. The same assets can be amassed with much lower marketing and R&C costs from one large institution than from numerous small individuals. Institutions are much less likely to pay 12b1 (or front loaded fees) to brokers because they have more efficient ways of gathering information. On the rare occasions when they pay these fees, they obtain lower rates. As a result, the expense ratio of institutional funds is .6% lower than that of other funds in the regression specifications where sales commissions are not controlled, and the total investor cost (as a percentage of assets) for the average institutional fund is less than half that for retail funds (Table 11).

Some funds have an initial investment requirement that is high (over \$10,000), albeit not as high as for institutions. These funds also have a significantly lower expense ratio (-.4%) than funds that cater to smaller investors, albeit not quite as low as institutional funds. *These observations led us to investigate the institutional market in greater detail, to determine whether IA's could also benefit from low expense ratios due to the large aggregate amounts in the mandatory system.*

Lower costs of passive management—for some assets. Also important is the significant negative sign on passively managed funds, known as index funds, which do not have to pay the high fees that popular active managers command. Passively managed funds mimic or replicate a stated benchmark, such as the S&P 500 or the Russell 2000. The manager does not engage in discretionary stock selection or market timing and therefore cannot claim a fee for superior information or judgement. Index funds generally benefit from low turnover, which reduces the expense ratio as well as brokerage fees. Their high correlation with the market (low nonsystematic

risk) means that they are less likely to engage in heavy marketing, more likely to rely on price (cost) competition (see below). In the regressions, expense ratios of index funds are .5% less than those of other funds. On average, their fees are less than one-third those of actively managed funds in the retail market (Table 11). Better informed institutional managers realize this and hold a disproportionate share of index funds.

The low cost of index funds should be interpreted with some caution, however. It could mean that fund complexes view these funds as the products that are designed to capture price-sensitive consumers, and for this reason they may allocate much of their joint expenses (advertising, new product development) to the other members of their complex. R&C charges also tend to be less for passively than for actively managed funds; this may be a business strategy decision rather than a reflection of real cost differentials. The real cost savings to the economy and the potential savings in a mandatory IA system from index funds may therefore be overstated by our regression results. If index funds become a larger share of the total market, opportunities for cost-saving and cost-shifting may decline. Finally, the lower costs of index funds were not statistically significant for small cap and emerging market funds, in separate regressions by asset class. *This suggests that IA systems in large cap stock and bond markets in industrialized countries can keep their costs down and increase their net returns by using index funds, although this effect may be smaller than indicated by these regressions and less true of developing and transitional countries where emerging markets and small cap stocks dominate. Passive investment strategies would have the additional advantage in a mandatory system of reducing the variance in returns among participants.*

Asset allocation: international funds. Asset allocation has a major impact on costs. The dummy variables for asset classes have large significant effects—although the total R^2 does not change much in comparison with the core group. Bond funds have lower costs and small cap or specialty funds have higher costs. Expenses are highest in international funds, especially emerging market funds—as a result of their smaller size, the greater difficulty in obtaining information in these countries, their high bid-asked spreads, transactions and custodial costs, currency hedging costs and the relative paucity of effective cost-saving passive investment opportunities. If brokerage fees and price impact were taken into account, this would increase their expenses still further. These factors would also apply to local funds operating in emerging markets, although institutions based in a country needn't hedge against currency risk and may have an informational advantage over those that are based in a foreign country. It follows that IA systems in industrialized countries such as the U.S. can economize on costs if they concentrate investments in large liquid domestic instruments, and international diversification comes at the expense of higher costs. In contrast, developing countries are likely to have higher costs for domestic investments—although this effect could be mitigated for them by international diversification.

Brokerage fees. Brokerage fees paid for securities transactions average .26% of assets for

the subset of funds in our sample that included these data. Weighted by assets, average annual brokerage fees fall to .12%. Recall that these fees are not included in the reported expense ratio but they are deducted from gross returns and are therefore part of total investor cost. Separate regressions on this subset show that brokerage fees, like other expenses, exhibit economies of scale with respect to assets, as large fund families use internal trading and spread the fixed costs of electronic trading over a larger base. Brokerage costs are higher for international funds, especially in emerging markets, and they are, of course, strongly dependent on securities turnover rates.

Net returns, gross returns and risk. Of course, the investor ultimately cares about net returns, not the expense incurred in earning them. If higher costs led to higher returns, they would be worth incurring. However, a large literature indicates that this is not the case (see Cahart 1997, Elton et al 1993, Malkiel 1995, Malhotra and McLeod 1997, Washington Post, Sept. 13, 1998, B1). While this paper focuses on costs, we also carried out regressions on net and gross returns for 1992-97. These indicate that some of the same factors that increase costs actually reduced returns during this period (James et al 1998).

Most important, larger assets under management increase both gross and net returns, although this effect stops after a point. Funds with front loaded fees don't earn higher gross returns, so their load-adjusted net returns are lower than for no-loads. Index funds earn significantly more than actively managed funds, over-all, particularly in the large cap stock and bond markets, but specifications that were disaggregated by asset class indicate that this effect is absent in the small cap, international and emerging market funds (also see Muralidhar and Weary 1998, Shah and Fernandes 1999). Institutional funds have higher gross and net returns.

These results from separate equations and previous literature are consistent with the negative sign on gross and net returns as a control variable in our expense ratio equations. Cost and returns, especially net returns, appear to be negatively correlated. *Thus, strategies involving high administrative costs do not seem to be justified on grounds that they raise returns.*

Changes over time: will price competition reduce investor costs? The question of whether expense ratios have been going up or down over time has been hotly debated (see Lipper 1994). This is an important question because it tells us whether policy makers can rely on market forces to reduce costs. In our regression analysis for 1992-97, time has a small significant positive effect on the reported expense ratio (1-2 basis points per year), after controlling for all our other variables.

These estimates do not take into account changes in sales commissions that are included in the total investor cost ratio but not in the reported fund expense ratio. Between 1992 and 1997 a shift of investors toward no-loads and a decrease in the size of front loads led to a small fall in the total investor cost ratio, despite the rise in the reported expense ratio (Table 10). Over a longer time period (1980-97), the average investor cost ratio has fallen more substantially (by about one-third), for the same reasons (Rea and Reid 1998). But the picture remains mixed because total dollar cost

per account (expense ratio times average assets per account) have gone up dramatically over the same period, primarily as a result of asset growth and secondarily as a result of the rise in non-marketing expenses. More recently, investors have been shifting into cheaper passively managed funds, but in 1997 these still held only 6% of all assets.

The movement to lower cost and higher performing funds generally occurs through the flow of new money to the funds rather than the reallocation of old money. The process, therefore, has been very gradual and some poorly informed investors have not participated in it (Ippolito 1992, Patel, Zeckhauser and Hendricks 1994, Sirri and Tufano 1997, Gruber 1996). The slowness may be due, in part, to the generally robust stock market since 1980. Costs have been small relative to returns and the vast majority of investors in diversified mutual funds have fared well, even those in high cost funds. Costs may become more important as a determinant of net returns and peoples' investment decisions, when gross returns decline. Nevertheless, it appears that in the short run we cannot count on competition to bring price down for the individual investor.

Why is this the case? We hypothesize that competition through marketing rather than through price cuts may be a consequence of volatility combined with the non-separability between cost and benefit in equity markets (where the "benefit" is the net return and the "cost" is one of the ingredients of net return). High volatility creates a high noise-to-signal ratio that makes it difficult for investors to distinguish between random luck versus skill and low costs that are likely to repeat, in predicting net returns, and leads funds to spend on marketing rather than to cut price. A small example will illustrate this point.

Suppose a fund manager has a low expense ratio that, *ceteris paribus*, leads to an alpha (i.e. a net return above the fair return given the risk involved) that is .1 % per month or 1.2% per year. This increment to net return will ultimately increase accumulations of lifetime investors by 24% but, given the volatility of the portfolio, it is realized with a monthly standard deviation (of the nonsystematic risk) of 1%. In any given month or year, some other managers will outperform this manager, although over time he will outperform the market. How do investors distinguish the true ability of this manager to yield excess returns over the long run due to his lower costs, versus the random short run gains that accrue to other managers? If we take each month as an independent observation, regress this fund's return on the market return and are fortunate enough to secure the true alpha as the estimated alpha, 384 observations or almost 20 years are needed to convince investors that this alpha is significantly higher than 0, at the 5% significance level.

In the intervening years, other funds will be advertising their performance, choosing some convenient time period when they experienced above-average returns, and arguing that these superior returns more than justify their higher fees. Given the wide divergence between price and marginal cost in the industry and the fertile possibilities for shaping information in a favorable way, each fund has an incentive to spend substantially on marketing to increase its assets under management.

The proliferation of new funds that are kept alive if they randomly experience high returns at their beginning exacerbates the difficulty in and long time periods needed to separate noise from signal. In view of these calculations, it is not surprising that it has taken no-loads 20 years to gain barely half the market and low-cost index funds are still only a tiny fraction.

The more volatile are the fund-specific returns and the greater the product (portfolio) differentiation, the more difficult it is to isolate true cost savings from random luck; we would expect marketing expenses to play a larger role relative to price competition in these circumstances. Bank deposits and money market funds, therefore, would be expected to depend less on marketing and more on price competition, and the same is true of bond and equity index funds. The movement toward low cost funds might accelerate with a mandatory IA system that includes many low income investors who are interested in low cost. But more basically, when returns are volatile, true cost-saving that yields higher long run returns cannot be distinguished from short run random luck until many years of observations have elapsed. *This poses a problem for IA systems, as an entire generation of workers may pass through the system before low cost, high performing funds have been identified. The difficulty small investors have in processing financial information will only exacerbate this situation. An IA system that constrains investment options to funds with low nonsystematic risk will encourage price competition relative to marketing competition, because such funds will be able to demonstrate their cost-based superiority more quickly than funds with greater fund-specific volatility.*

IV Costs in the Institutional Market

Mutual funds are limited in their ability to charge lower fees for large investors. Regulations require funds to charge all investors the same expense ratio, unless they create separate classes of shares that incur different expenses. Thus, institutional investor classes are usually not charged for shareholder services or distribution, because it can be demonstrated that they do not incur these costs, but they are charged for a pro rata share of the investment adviser and other fees. This treatment makes it possible for mutual funds to compete for small institutional accounts (e.g. of \$1-20 million, owned by bank trust departments or corporations). However, it puts them at a disadvantage when competing for larger accounts. Larger institutions (e.g. DB plans of major corporations and public employers) can get better rates elsewhere.

How much do institutional investors pay for asset management? Table 12 presents illustrative sliding scale data on costs of money management provided by a large manager of assets for institutions. It also shows median costs for 167 large and 10 of the largest U.S. pension funds (median large fund = \$1.5 billion, median assets per money manager = \$113 million; median largest fund = \$42 billion, median assets per money manager = \$543 million). These rates shows clear evidence of scale economies, the cost efficiency of passive management, and the impact of asset

allocation.

Fees as a percentage of assets decline over large ranges with volume of assets managed. Marginal fees are as low as 1 basis point for passive management of large cap stocks and 2.5 basis points for small and mid-caps, once assets in an account reach \$200 million. Fees for active management are higher, but still far less than mutual fund rates. For large cap domestic equity exceeding \$25 million, investors must pay 35-50 basis points. Not surprisingly, fees for emerging market investments are much higher than for domestic investments, but advantages to large institutional investors remain. For active management they pay a marginal fee of .8% and for index funds only .4%. The largest pension funds pay still less. But even these funds use multiple money managers (an average of 34), and allocate less than a billion dollars on average to each active manager, evidence that diversification benefits eventually outweigh scale economies. There appears to be no strong cost reason for aggregating assets per manager beyond a billion dollars.

If we add to these asset management costs another 3-10 basis points for brokerage fees and internal administrative costs that are incurred by large institutions, this brings the total cost to .04-.65%, depending on investment strategy. This may be compared with retail costs ranging from .3% to 1.5% for the average passively and actively managed mutual fund, respectively.

Why do institutions get better rates? In an imperfectly competitive market, large investors have greater reasons and resources to seek out asset managers who will provide good performance at low cost. They are better able to separate noise from signal, to evaluate whether a particular fee is warranted by the expected returns, and therefore to respond sensibly to price differentials. They also have the credible threat of managing their money in-house if they do not get good terms from an external manager. Thus, if marginal costs are less than average because of fixed costs, to attract an institutional investor the asset manager is likely to charge only a small fee above marginal cost per unit invested; this adds up to a large contribution toward total fixed costs where large sums are involved.

Besides the greater information and bargaining power of institutional investors, they also require lower R&C and marketing costs by the asset manager. It is easier and less labor-consuming for the asset manager to deal with the financial staff at a few large institutions than with numerous small uninformed households. To reach the individual retail investor, advertising expenses must be incurred, numerous brochures and statements sent to households, followed up with personal communications to convince them to invest and to choose a particular fund. Often, commissions are paid to motivate sales agents to spend the time and effort needed to carry out this task. In contrast, marketing in the institutional market-place is likely to consume less resources because of the concentration of investors, their greater financial expertise and price sensitivity; sales commissions are rare. And, once the contract is secured only one investor need be served in the institutional market. Even if the billion dollar investor gets better service than the thousand dollar investor (as

is likely the case), total R&C demands relative to assets are much smaller for one institution than for a million small investors.

These factors lead to costs for institutional investors as low as .04-.65% of assets, depending on asset category and investment strategy chosen. These would be the costs in a centrally managed social security fund—if it is well-run.

V. Capturing Institutional Rates for a Mandatory IA System: Constrained Choice

Mandatory IA systems can also be structured to obtain scale economies in asset management without high marketing costs. In other words, they can offer workers an opportunity to invest at much lower cost than would be possible on a voluntary basis. To accomplish this requires aggregating numerous small accounts of a mandatory system into large blocks of money and negotiating fees on a centralized basis, through a competitive bidding process with limited entry or open entry with price ceilings. Limited entry avoids high start-up costs in the early years of a new system. Low fees create a disincentive for high marketing expenses. The lowest fees are obtained when worker choice is constrained to low cost investment portfolios and strategies, such as passive investment. Still, enough choice could be retained to satisfy individual preferences and avoid political control. We call this a system of “constrained choice.” (For a description of constrained choice systems in Bolivia and Sweden see James et al 1999).

How would it work? The exact number of asset managers in a constrained choice system would depend on the volume of contributions as well as the desired amount of choice per worker. Initially the number might range from 2-3 in countries with a small contribution base to 5-10 in larger countries. This number would gradually increase with the growth of assets in the system. If a competitive bidding process is used, as in Bolivia, issues related to the auction process include: selection criteria, term of contract, frequency of re-bidding, and fee structure (performance-based, asset-based, or otherwise). For countries with weak financial markets, an auction would provide an incentive—a guaranteed or quasi-guaranteed market share—for international companies with financial expertise to enter the industry. To produce this outcome, these countries would need to avoid the temptation for corruption and political manipulation of the bidding process.

Initially the options might be restricted to a variety of passive investment choices indexed to different diversified benchmarks. Again, this may not be feasible or desirable in developing countries where such benchmarks do not exist, the rapid entry of new firms make it difficult to build a stable benchmark, and inefficient markets give an edge to active managers who can obtain private information. But where feasible, the bidding process and passive investment strategies would help avoid high start-costs and large expense deductions from small accounts.

Later, as aggregate assets increase, entry could be opened up to a larger number of asset

managers, including active managers who agree to operate below a specified price ceiling. The ceiling would be set high enough to cover marginal cost plus part of fixed costs but low enough to discourage marketing expenses—not an easy target to achieve. It might vary according to benchmark chosen: higher for small caps and emerging market portfolios than for domestic large caps. (If only one price ceiling is set this is tantamount to restricting the available portfolios and strategies to those that are profitable at low cost.) For example, the ceiling might be set at the mean or median money management cost, by asset class, of the largest pension funds in the country. R&C services would be provided elsewhere, to keep small accounts attractive to asset managers and to avoid service deterioration under incomplete contracts. The Swedish system of fee ceilings moves directly to this second stage: it involves numerous mutual funds and centralized R&C. This scheme is also consistent with the two-tiered plan for the U.S. outlined in Goldberg and Graetz 1998. Their plan would initially give workers a choice among six index funds (SPIFs), but would allow workers to opt out into a broader set of qualified options (QPFs) once their accounts reached a specified size.

Marketing expenses. One intended consequence of this method, that accounts for much of the cost saving, is reduced marketing expenditures. Limited entry and low fees reduce the incentive for marketing. Given the large fixed costs and declining average costs in the industry, it will always be tempting for funds to spend more on advertising and sales commissions to increase their market share so long as the attainable fee is higher than marginal cost. When the fee is decreased, the incentive to spend on marketing will similarly decline and this helps to sustain the low fee.

Is this attempt to reduce marketing expenses efficient? This depends on whether the cuts come mainly from the informational content of marketing, or its zero-sum game competitive elements. It seems likely that the socially optimal amount of marketing is less in a mandatory IA system than in the voluntary market. First, since the total investable amount is predetermined by law, marketing is not needed to induce people to save or to invest in financial markets. Second, mandatory centralized collections can aggregate savings into large blocs for efficient investment without marketing expenses. Third, while information is imparted by marketing, investment companies and brokers have a clear incentive to impart misleading information that is in their interest rather than the consumer's interest. For example, broker-salesmen may lead clients to "their" funds rather than to the "best" or "least cost" funds. This could be a big problem in a new mandatory system with many small inexperienced investors. Such a system should include other more cost-effective ways to impart less biased information relevant to investment choices, such as government publications and the popular media. The incentives for good performance and innovation imparted by marketing could continue to be provided in the voluntary market place. Reducing marketing expenses may be less efficient in countries with low tax collection capacities and fewer sources of information, particularly those that wish to use marketing as a tool to increase coverage and reduce evasion. However, for others, the potential savings from cutting marketing costs seems to be about

.4-.5% of assets.

Constrained choice. A second consequence of these economies is constrained choice regarding investment portfolios and strategies. The institutional approach to IA systems limits the range of options available to workers in order to obtain better rates from fund managers. In developed financial markets, this is likely to mean ruling out “expensive portfolios in illiquid assets such as small cap stocks and foreign emerging markets and directing workers toward index funds in liquid domestic instruments instead. The Thrift Saving Plan in the U.S. does this directly. Sweden’s new IA system does it indirectly by setting price ceilings that will restrict the supply of “expensive” funds and cross-subsidies that will push consumers toward cheaper funds. In a separate paper we show that most of the cost-saving achieved by these systems are due to portfolio and strategy changes that they require or induce (James et al 1999).

Constraining investment choice in this manner has certain disadvantages. It increases the probability of corruption or collusion and decreases the adaptability to individual risk-return preferences—although not as much as a single centralized fund. Individuals may have a smaller sense of “ownership” and a larger sense of being taxed if their choice of investment manager is constrained. The risk to the government of being responsible for a bail-out in case of investment failure may be greater when it has “endorsed” or participated in the process of choosing a small number of asset managers. The constraint on choice and these consequent dangers would be particularly great in countries with a small contribution base and a tradition of inefficient government control. Greater choice could be allowed, and hence the trade-off between low cost and low political risk would be less serious, in economies with larger investable resources—from higher contribution rates or wages. As we have seen, a large country such as the U.S. could allow considerable choice and Sweden plans to allow substantial choice.

Constrained choice has an additional value at the start of a new system. It facilitates learning-by-doing, which is probably the most effective form of education, by limiting the mistakes people can make. It makes government guarantees of benefits potentially less costly by diminishing moral hazard problems. Constrained choice can represent an efficiency gain if these advantages, together with the real cost reduction, are valued by participants more than the flexibility they would have had in retail markets. This is most likely to be the case if the constraints on choice are not too great.

We estimate that asset management costs in this system of constrained choice would be similar to those in a single centralized fund—.04-.65% of assets, depending on the range of strategies allowed—with a small addition for advertising costs. R&C costs would, however, be additional in an IA system, since numerous individual accounts, rather than one big pension fund, would have to be tracked. We move on now to discuss how this could be handled in a cost-effective manner.

How to keep R&C costs low. While R&C costs are a small component of total costs in mutual funds, they are likely to be a relatively larger cost component in an IA system that has

successfully cut its marketing and investment expenses. The magnitude of these costs are, to a substantial extent, a policy choice, a function of level and types of services provided, rather than an exogenously given variable. In this section we consider some of the policy choices that can keep R&C costs low.

According to periodic surveys of transfer agents (i.e., the organizations which provide these services for mutual funds), average mutual fund cost per account and per open account have been quite constant at \$21 and \$25 per account, respectively (Table 13). However, they are not uniform across all funds. They tend to be lower for funds that contract out the transfer agent function rather than performing it internally. This may result because pricing in internal arrangements is not an arms-length competitive transaction and because internal control is designed to provide more personalized service, to inculcate loyalty to the fund. Costs per account are 33% higher for money market than for equity funds, because of the greater transaction volume and check-writing facilities offered by the former. They are twice as high for direct market retail funds compared with funds that sell through brokers, who perform some of the customer communications functions that are otherwise provided by the fund (\$33 versus \$17). Transfer agent costs are 20% higher for accounts where dividends are paid monthly rather than annually. Size of account does not appear as a factor influencing costs.

Competition in the U.S. mutual fund industry has resulted in a high and expensive level of R&C service, in part because shareholder service and building shareholder loyalty (a form of marketing) are closely intertwined. Service innovations include the ability to make frequent telephone exchanges, to wire funds, to write checks, and to speak to a representative 12 or even 24 hour per day. Each of these services costs, but their costs are hidden. They are free of charge to the individual user—although, of course, not to users as a group.

Despite these incremental costs for each transaction, the most common method transfer agents use for charging funds is a flat fee per account. Mutual funds, in turn, rarely charge shareholders special fees for checkwriting, exchanges or telephone inquiries (ICI and Coopers and Lybrand 1995 & 1997). This is due in part to the cost of measuring and charging for transactions, and in part to the strong desire of funds to avoid antagonizing high-asset consumers. The net result is a cross-subsidy from non-users to heavy users and the absence of incentives for shareholders to economize on these services. A lower basic service level, with incremental services available at a charge, may be appropriate for a mandatory IA system that has many small investors.

To accomplish this, the R&C function could be separated from the asset management function and centralized—either in a public agency, or a clearing-house run jointly by all participating funds or contracted out to an independent private company. In fact, the mutual fund industry has been moving toward out-sourcing the transfer agent function and concentrating it in two or three large companies. So this would merely accelerate and standardize this process.

Centralization immediately reduces system-wide costs by avoiding the set-up and systems integration problems that occur when a member switches his or her account from one fund complex to another. It allows workers to divide their money among two or more funds without the cost of maintaining duplicate records. It keeps a single record of a worker's lifetime contributions and returns. This is particularly important in a mandatory system where such a record should be readily available, error-free, upon retirement. The separation of R&C from the asset-management function would actually increase the choice of asset managers available to small account holders, since R&C costs, which are relatively expensive for such accounts, would be covered elsewhere. It would facilitate a cross-subsidy to small accounts, which may be socially desirable, without competitive pressures that might oppose this. Moreover, centralization would allow personalized services to be reduced without generating inefficient competitive pressures to upgrade. (But note that government capacity and trust in public agencies are necessary pre-conditions for centralized R&C, and these are lacking in many developing countries).

A second step concerns setting the level of basic service as well as the charges for incremental service in an unbundled system. The basic service level should be low enough to pass a benefit-cost test, given the small average size of the account for the first few years of the new system. It should focus on keeping accurate, timely records and processing transactions efficiently. At the same time, different service levels could be chosen by those willing to pay for more.

For example: Services such as check-writing could be ruled out; dividends and capital gains could be credited annually; fund transfers or other transactions could be restricted or discouraged by a fee that covers the cost. Most important because it is most expensive, personalized services, especially telephone discussions with representatives, could be minimized by encouraging members to use automated phones or the internet instead. A possible strategy here would be to make telephone service available only for limited hours per day and build in probable waiting time to encourage members to switch to automated techniques. Less palatable is the use of toll calls instead of 800 numbers to pass the phone company charges on to consumers, or the use of 900 numbers to impute the representative's time as well. Costs could be cut further by sending statements annually instead of quarterly. The costs and performance of each fund could be reported in a brief 1-2 page summary, rather than the lengthy and detailed prospectus which is required of all mutual funds today. In fact, the short statement may be more educational than the lengthy prospectus which few people read or understand. In-person workshops provided by many 401k plans would be avoided and replaced by brochures introducing investors to concepts such as risk-return trade-offs, diversification and indexing, published for mass distribution. Market competition for high income investors does not allow mutual funds to use these strategies, but centralized record-keeping in a mandatory system does.

Additional economies may, in some case, be achieved by piggybacking on existing tax

collection facilities. Contributions to IA's could be sent in together with other payroll taxes, thereby saving on incremental collection costs. This would also facilitate compliance checks, as a central agency knows whether or not the contribution has arrived, while a decentralized fund may have little reason to report this accurately to the government. However, utilizing existing tax agencies must be approached with caution, as it involves hidden costs such as long delays (as much as nine months), before the worker's contribution is allocated to his account and money manager. If the new contribution loses, say, an incremental 3% rate of return in the interim, this is equivalent to a loss of .15% of assets per year over a workers' lifetime. Moreover, this approach may not be an option for countries that have weak tax collection mechanisms and distrust of public agencies. In these countries workers may be more likely to contribute if they can put the money directly into their own accounts. This was the case, for example, in Chile at the time of its reform; a retail approach was the only feasible approach under those circumstances. Piggybacking, however, can greatly reduce collection costs as well as facilitate compliance and record-keeping in countries that have the capacity.

Table 14 compares the R&C composition of a high cost mutual fund account and a modest-service account proposed for an IA system, that exploits all these cost-saving opportunities. It seems likely that collection and R&C costs will total less than \$20 per account, which is at the low (but not the lowest) end of the mutual fund spectrum.

Comparison with TSP. Our \$20 figure is also consistent with R&C costs of the Federal Thrift Savings Plan (TSP), a retirement savings plan for federal employees in the U.S. The TSP began in the late 1980's. It now has 2.3 million participants, approximately \$65 billion in assets and an average account size of \$27,000 (Table 15). TSP R&C costs have remained fairly stable at \$18-22 per account since 1988, although total administrative costs have increased to \$30 per account as assets have grown. (These numbers are in 1998 \$'s and they cover gross costs, including trading and other investment costs, although these are partially offset on TSP books by account forfeitures).

R&C costs are low in part because much of the communications with participants is done through the federal agencies where members are employed, at an additional (but unknown) cost. In a mandatory IA system information would have to be distributed directly from the funds or public agencies to the individual, at some monetary cost. However, TSP provides certain expensive services that would not be included in a mandatory IA system, such as loans and withdrawals. Moreover, an IA system would benefit from much greater economies of scale. For example, the TSP numbers given above include system-wide fixed administrative costs that would disappear per account in the much larger social security system.

But the biggest cost saving for TSP is due to the constraints it places on portfolio choice and investment strategy: workers must choose among a money market fund, an equity fund indexed to the S&P 500, and an indexed long and medium term bond fund. Moreover, the right to manage

these funds has been auctioned off to only one company, on a monopoly basis. Marketing costs therefore are virtually absent and investment costs are minimal—only 3 basis points including brokerage (trading) fees. Total administrative costs (including R&C) have fallen to only .11% of assets—which tells us the impact on net returns—as average account size has grown. (For a more detailed analysis of TSP see James et al 1999).

Suppose the U.S., in the year 2000, were to institute a similar structure (but preferably with greater choice, corresponding to the greater volume of assets in the system) for a mandatory IA system, with an annual contribution of \$500. If this amount were put in escrow pending tax reconciliation and establishment of the new information system, three-four years of contributions and interest would accumulate before the IA's became operative. By that time, the \$20 R&C cost would be only 1% of assets for the average account. Following Panel A, Table 1, in steady state 40 years later, it would be only 9 basis points.

After adding these 9 basis points to the investment cost derived in Part IV, the total cost for an IA system based on constrained choice is projected to be .14-.18% if passively managed, or .49-.79% if actively managed. In constant dollars, the steady state cost for the average size account would be \$31-172. This cost is much lower than an IA system run through the retail market with unconstrained choice among investment portfolios, resulting in a pension accumulation that is 4-15% larger. It is lower than individual investors have access to for similar portfolios in the voluntary market, primarily due to reduced marketing and secondarily because of bulk buying power and no-frills service. It is slightly more than a single centralized fund would cost, but offers much greater adaptability to individual preferences and insulation from political risk in exchange (Table 16).

VI Conclusion

We started this paper by asking: what is the most efficient way to set up an IA component of a social security system, and how do we compare the cost effectiveness of investing social security funds through 1) the retail market with open entry and choice, 2) a centralized fund without IA's or choice and 3) the institutional market with constrained choice among investment companies?

The evidence in this paper demonstrates that large cost savings can be realized by investing IA's through the institutional market with constrained choice. This would involve moving money in large blocs rather than as small individual investments, while still giving workers considerable choice among asset managers. In the early years of a new system a competitive bidding process could be used in which a limited number of managers are chosen for differentiated portfolios. Subsequently, an open entry process could be used in which companies agree to restrict their fees in exchange for the right to participate. Further economies might be achieved by centralized R&C and collections. The cost savings to participants come partly from reducing marketing expenses,

economizing on R&C costs, and exploiting bargaining power regarding the distribution of the fixed cost burden. Limiting investment strategies to passive management in the early phase would produce the largest cost reduction.

The evidence indicates that many of the same factors that reduce costs will also raise returns. The price paid for constrained choice relative to open choice in the retail market is therefore not lower expected returns, but rather other less quantifiable factors such as greater risk of corruption, collusion and a weaker sense of worker ownership. The importance of these factors will vary among countries and will decrease as the number of asset managers in the system increases. A contribution base that is large enough to allow meaningful choice among multiple asset managers will go far toward diminishing these dangers.

As to the relative cost effectiveness of a constrained IA system versus a centralized fund with no choice, we have seen that the extra costs associated with IA's are negligible, providing a modest level of service is chosen for record-keeping and communicating with participants. At the same time, optional services might be unbundled so that those who use them pay for them.

The most expensive service involves communication and education. It is difficult to expect consumers to make complicated financial choices without information. Our R&C cost estimate included an allocation for preparing and distributing published materials. However, we would argue that, especially for workers who are saving for the first time in their lives, the best education will come from practice—with small amounts. This is another reason for simplifying and limiting choice, especially at the beginning of the new system. By the time accounts have grown and greater choice is permitted, most workers will already have learned, from experience. No doubt the popular press (newspapers, magazines, TV talk shows) would also play a significant role in educating the public, as they surely would face a huge demand once everyone had an IA.

In sum: The structure of an IA system matters. Administrative costs need not make IA's prohibitively expensive. The cost of managing savings in a mandatory IA system can be significantly less than the cost of voluntary saving. An IA system that gives workers choice can be structured to cost only slightly more than a single centrally managed fund with no choice. Decisions about whether to fund and whether to manage the funds publicly or privately should therefore depend on other factors, such as the economic benefits of funding and the risks and returns associated with public and private management of funds.

TABLE 1**Hypothetical Administrative Costs Over Time as % of Assets and \$'s per Account****Panel A: The Institutional Approach with Passive Management ***

Year	Year-end accumulation of individual (in \$000's) ^a				Average size account in system		
	(in \$000's) ^b	R & C as % of assets	R&C + Inv as % of assets	R&C + Inv per account (in \$'s)	R&C/Total exp. per account	Inv. exp per ac-	
1	0.5	0.5	4.00	4.10	0.5	20.5	0.98
2	1.0	1.0	2.20	2.30	1.0	21.0	0.96
3	1.6	1.6	1.28	1.38	1.6	21.6	0.93
4	2.2	2.1	0.95	1.05	2.1	22.1	0.90
5	2.8	2.7	0.76	0.86	2.7	22.7	0.88
10	6.4	5.6	0.36	0.46	5.6	25.6	0.78
15	10.9	8.8	0.23	0.33	8.8	28.8	0.71
20	16.7	12.1	0.17	0.27	12.1	32.1	0.63
25	24.1	15.4	0.13	0.23	15.4	35.4	0.57
30	33.6	18.5	0.11	0.21	18.5	38.5	0.52
35	45.6	20.8	0.10	0.20	20.8	40.8	0.50
40	61.0	22.0	0.09	0.19	22.0	42.0	0.47

Panel B: The Institutional Approach with Active Management*

Year	Year-end accumulation of individual (in \$000's) ^a				Average size account in system		
	(in \$000's) ^b	R & C as % of assets	R&C + Inv as % of assets	R&C + Inv per account (in \$'s)	R&C/Total exp. Per account	Inv. exp per ac-	
1	0.5	0.5	4.00	4.60	3.0	23.0	0.87
2	1.0	1.0	2.03	2.63	5.9	25.9	0.77
3	1.6	1.6	1.28	1.88	9.3	29.3	0.68
4	2.1	2.0	0.99	1.59	12.1	32.1	0.62
5	2.7	2.6	0.78	1.38	15.4	35.4	0.57
10	6.1	5.4	0.37	0.97	32.2	52.2	0.38
15	10.4	8.4	0.24	0.84	50.2	70.2	0.29
20	15.7	11.4	0.18	0.78	68.4	88.4	0.23
25	22.3	14.4	0.14	0.74	86.1	106.1	0.19
30	30.5	17.0	0.12	0.72	102.0	122.0	0.17
35	40.7	19.0	0.11	0.71	114.2	134.2	0.15
40	53.5	20.0	0.10	0.70	119.8	139.8	0.14

TABLE 1 (Cont'd)

Administrative Costs Over Time as % of Assets and \$'s per Account

Panel C: The Retail Approach*

Year	<u>Costs as % of Assets</u>					<u>Costs in \$'s per Account</u>		
	Year-end acc. of individual (in \$000's) ^a			Av. size account in system (in \$000's) ^b		Investment	R&C + Investment	
	R&C	R&C + Investment	R&C + Investment	+ Marketing	R&C/ Total			
1	2.0	2.0	1.50	2.10	2.60	12.0	52.0	0.58
2	4.1	4.1	0.74	1.34	1.84	24.3	74.5	0.40
3	6.2	6.0	0.50	1.10	1.60	36.3	96.5	0.31
4	8.5	8.2	0.37	0.97	1.57	49.0	119.9	0.25
5	10.8	10.2	0.29	0.89	1.39	61.4	142.6	0.21
10	23.9	21.0	0.14	0.74	1.24	126.1	261.2	0.11
15	39.8	32.1	0.09	0.69	1.19	192.7	383.3	0.08
20	59.3	43.3	0.07	0.67	1.17	259.8	506.2	0.06
25	82.9	53.9	0.06	0.66	1.16	323.2	622.5	0.05
30	111.6	63.1	0.05	0.65	1.15	378.8	724.5	0.04
35	146.6	70.1	0.04	0.64	1.14	420.4	800.8	0.04
40	189.1	73.2	0.04	0.64	1.14	439.0	834.9	0.04

a Individual's account accumulates at the following rate: $A_t = A_{t-1}(1+NR) + NCON$ where NR = Net Return and NCON = Net Contribution

b Account size increases at above rate for individuals who stay in system. Withdrawals by high account individuals who retire and their replacement by incoming workers with small new accounts decrease average account size in system. Workers are evenly distributed across 40 age groups. Steady state is reached in year 40.

* Assumptions for panel A:
\$520 is contributed each year. Record keeping and communication (R & C) costs are \$20 per account, so net contribution (NCON) = \$500. Gross rate of return = 5.1% and investment costs are 0.1% of assets, so net return (NR) after subtracting investment costs = 5.0%

Assumptions for panel B:
\$520 is contributed each year. Record keeping and communication (R & C) costs are \$20 per account, so net contribution = \$500. Gross rate of return = 5.1% and investment costs are 0.6% of assets, so net return after subtracting investment costs = 4.5%

Assumptions for panel C:
\$2020 is contributed each year. Record keeping and communication (R & C) costs are \$30 per account, so net contribution = \$1990. Gross rate of return = 5.1%, investment costs are 0.6% of assets and marketing costs are 0.5%, so net return after subtracting investment and marketing costs = 4%.

TABLE 2**Assets, Fees and Expenditures in Chile Through Time**

Year	# of Affiliates (millions)		Contributors/ Affiliates		Assets (1998 US\$ mill.)	
	Total Assets/ Contributors (1998 US\$)		Total Assets/ Affiliates (1998 US\$)	Total Exp.	Marketing Costs as % of	
1982	1.44	.74	1,277.74	723	532	46
1983	1.62	.76	2,212.50	1,115	847	40
1984	1.93	.70	2,842.46	1,338	942	36
1985	2.29	.68	2,290.61	985	672	30
1986	2.59	.68	3,112.55	1,210	817	24
1987	2.89	.70	3,812.46	1,338	936	21
1988	3.18	.68	4,868.26	1,662	1,132	23
1989	3.47	.65	5,844.70	1,985	1,297	22
1990	3.74	.61	8,144.61	2,917	1,786	24
1991	4.11	.61	11,999.98	4,053	2,453	26
1992	4.43	.61	14,265.43	4,604	2,799	30
1993	4.71	.59	17,839.38	5,686	3,372	35
1994	5.01	.57	24,206.33	7,734	4,441	38
1995	5.32	.56	27,039.54	8,581	4,777	43
1996	5.57	.56	28,366.44	8,816	4,939	49
1997	5.78	.57	31,133.97	9,351	5,332	52
1998	5.97	.53	31,060.16	9,861	5,206	46
Year	Fee per Contributor* (1998 US\$)	Expenses per Contributor (1998 US\$)	Expenses per Contributor (1998 US\$)	Fee per Unit of Assets (%)	Fee per Affiliate* (1998 US\$)	
1982	113	145	83	106	9.39	
1983	101	102	77	77	5.63	
1984	102	97	72	68	4.90	
1985	52	50	36	34	3.54	
1986	52	46	35	31	2.93	
1987	49	42	34	29	2.60	
1988	58	50	39	34	2.57	
1989	64	51	42	33	2.49	
1990	71	63	43	39	2.00	
1991	81	68	49	41	1.68	
1992	95	74	58	45	1.79	
1993	103	92	61	54	1.61	
1994	123	114	71	65	1.47	
1995	143	124	79	69	1.56	
1996	145	128	81	72	1.59	
1997	148	131	84	75	1.56	
1998	134	112	71	59	1.36	

Source: PrimeAmerica Consultores based on reports of Superintendencias, and authors' calculations

TABLE 3

Independent Variable	Dependent Variable					
	Total Admin. Cost (\$M)	Admin. Cost/ Assets (%)		Total fees/ Assets (%)	Total	
Admin. Cost/ # Contributors (\$)	Total Fee Revenue (\$M)					
Fees/ # Contributors (\$)						
Total Assets (\$M)	0.02 (6.79)*	0.00 (0.71)	0.01 (2.89)**	0.02 (7.77)*	0.00 (0.85)	0.004
(4.53)*						
# Contributors (M)	35.8 (1.01)	-4.2 (-1.44)	-19.0 (-0.77)	64.1 (2.24)**		
1.59)	1.3 (0.09)					-2.8 (-
Non-Contributing Affiliates (M)	-105.9 (-2.29)**		0.1 (0.03)		-16.4 (-0.51)	-80.3
(-2.16)**	-0.4 (-0.18)	-10.3 (-0.61)				
Dummy, Start-up period (1982-84)	46.2 (1.83)***	2.1 (1)	51.3 (2.93)**		55.7	
(2.73)**	1.8 (1.42)	52.7 (5.75)*				
Constant	59.8 (1.09)	10.1 (2.25)**	83.4 (2.21)**	-1.6 (-0.04)	8.2 (3.06)*	47.7
(2.41)**						
Adjusted R ²	97.8	69.2	86.6	98.9	81.6	96.4
N	17	17	17	17	17	17

* Significant at 0.1% level
 ** Significant at 5% level
 *** Significant at 10% level

TABLE 4

**Annual Asset-based Fee Equivalent to 15.6% Fee on New Contributions
 (as percentage of assets)**

Starting Age	Contributions Made For Contributions Made For 20 Years Every Year		Contributions Made Only, Starting At Given Age
	1 Year Only At Given Age	Until Age 65,	
	1	2	3
25	0.45	0.57	0.76
35	0.60	0.85	1.05
45	0.91	1.65	1.65
55	1.86	-	3.50
64	33.37	-	33.37

Assumptions:

This table shows the annual fee based on assets that will yield the same capital accumulation at age 65 as would a 15.6% front-loaded fee on in-coming contributions. In column 1 a single year of contributions is assumed at the starting age. The annual fee for age 64 is 32.09% because contributions and fees are assumed to be paid monthly, including the last month. In column 2 the worker continues contributing a fixed percentage of wage for 20 years. In column 3 the worker continues investing a fixed percentage of wage from starting age until age 65. A rate of return of 5% is assumed. For columns 2 and 3, annual wage growth of 2% is assumed. Similar results were obtained for 3% rate of return and 1% rate of wage growth. In US \$'s, the average contributor pays \$174 today in Chile. The fee would increase 2% per year under these assumptions.

TABLE 5

Composition of Mutual Fund Expenses, 1997
(as % of assets and \$'s per account)

Expenses Included in Expense Ratio	Simple Average	Asset-Weighted		
		Average	Active	Passive
Investment Advisor	0.56	0.49	0.52	0.08
Distributor for 12b1 fees*	0.35	0.21	0.22	0.02
Transfer Agent (R&C)	0.13	0.12	0.12	0.05
Other (legal, audit, etc.)	0.23	0.09	0.08	0.13
Reported expense ratio	1.27	0.91	0.95	0.28
\$'s per account**	\$320	\$228	\$238	\$70
Other Investor Costs				
Brokerage fees (trading costs)	0.26	0.12	0.12	0.03
Annualized front-loaded sales charge paid by shareholder*	0.31	0.40	0.43	0.01
Total investor costs as % of assets	1.85	1.44	1.50	0.32
\$'s per account**	\$463	\$360	\$375	\$80

* The 12b1 fee is a fee that is paid annually by the fund, primarily for distribution of new shares and related service. It is financed by a charge paid by all shareholders, whether or not they have

purchased their shares through a broker. It is part of the fund's expense ratio and is based on assets. The front-loaded sales charge is paid directly to the distributor by investors who purchase through brokers, as a % of their new investment. It is not included in the fund's expense ratio. The average front-loaded fee is 4.48%. It is charged by about 1/3 of all funds. In this table, this one-time fee has been annualized according to the procedure described in endnote 8. These numbers are averaged over all funds, ignoring the big distinction in costs to shareholders between funds that impose sales charges and those that do not (see Table 10).

** For average account size = \$25,000

TABLE 6

Mutual Fund Expenses by Cost Components, 1997
(as % of assets and \$'s per account)

A. As % of Assets

	Weighted Average	Actively Managed	Passively Managed
Investment	0.61	0.64	0.11
R&C	0.12	0.12	0.05
Marketing	0.61	0.65	0.03
Fixed & Miscellaneous	0.09	0.08	0.13
Total	1.44	1.50	0.32

B. In \$'s per Account

	Weighted Average	Actively Managed	Passively Managed
Investment	153	160	28
R&C	30	30	13
Marketing	153	163	8
Fixed & Miscellaneous	23	20	33
Total	360	375	80

C. % of Total Expenses

	Weighted Average	Actively Managed	Passively Managed
Investment	43	43	34
R&C	8	8	16
Marketing	43	44	9
Fixed & Miscellaneous	6	5	41
Total	100	100	100

Source: Table 5

For conversion into \$'s, average account size = \$25,000

Investment = investment adviser + brokerage fees

R&C = transfer agent

Marketing = 12b1 fees + loads

Fixed & miscellaneous = other

Marketing costs are understated and investment costs overstated because part of investment adviser fee is spent on advertising and organizing sales efforts.

Note: totals differ slightly from some of subcategories due to rounding errors.

TABLE 7

Mean, Median and Standard Deviation of Variables in Sample, 1997

	Asset-Weighted Mean	Simple Mean	Simple Median	SD
Expense ratio (as % of assets)	0.91	1.28	1.17	0.61
Assets in \$billion	9.94	0.59	0.09	2.35
# Shareholders (in thousands)	453.62	23.55	2.19	115.38
Assets in Family Funds (in \$ billions)	151.15	42.06	12.30	86.00
3 Year Net Return (as %)	20.16	14.30	11.44	9.22
3 Year Gross Return (as %)	21.79	16.16	13.45	9.19
3 Year Standard Deviation	11.67	9.85	8.68	6.59
Turnover (as %)	69.40	98.00	65.00	117.00
Fundage	19.90	8.97	5.35	9.58
Percentage of Funds That Are:				
Bond Funds	30	51		
Small cap.	5	6		
Specialty	7	7		
International	10	11		
Emerging Market	1	3		
Institutional	5	7		
Initial investment (10K<\$<100K)	1	1		
Index	6	2		
Low 12b1 fee (0.25% or less)	36	41		
High 12b1 fee (between 0.25% and 1%)	10	21		
Front load	42	35		
Back Load	12	27		
Bank Advised	5	16		

TABLE 8

Determinants of Expense Ratios of Mutual Funds in the U.S., 1997
(dependent variable is total expenses/total assets, in basis points²)

	1	2	3	4	5					
CORE GROUP										
Intercept	113.7	(59.63)*	112.1	(55.35)*	111.0	(22.22)*	83.4	(22.03)*	125.0	(26.09)*
Assets in \$billion	-9.2	(-9.55)*	-7.9	(-10.03)*	-9.1	(-9.61)*	-3.9	(-5.65)*	-5.2	(-5.67)*
Asset ²	0.1	(5.22)*	0.1	(7.20)*	0.1	(5.48)*	0.1	(-6.17)*	0.1	(4.51)*
# Shareholders in 000's	0.1	(3.14)*			0.1	(3.02)*	0.0	(-1.48)	0.0	(0.89)
Assets/Shareholders			-0.4	(-4.9)*						
Assets in Fund Complex	-0.1	(-7.99)*	-0.1	(-7.61)*	-0.1	(-8.66)*	-0.1	(-7.31)*	-0.1	(-10.07)*
3 Year Net Return ³	-1.5	(-13.73)*			-0.9	(-6.26)*	-0.7	(-6.37)*	-0.7	(-4.84)*
# Year Gross Return			-1.1	(-9.73)*						
3 Year Standard Deviation	4.6	(29.56)*	4.4	(27.93)*	3.5	(14.24)*	3.1	(17.94)*	3.3	(14.32)*
ASSET ALLOCATION										
Bond					-1.9	(-0.52)	-9.6	(-3.71)*	-8.0	(-2.35)**
Small Cap					3.2	(0.76)	11.6	(3.98)*	-0.2	(0.05)
Specialty					23.0	(6.01)*	11.7	(4.33)*	16.4	(4.61)*
International					28.9	(7.61)*	24.1	(8.96)*	24.5	(6.89)*
Emerging Market					37.6	(5.25)*	37.5	(7.43)*	39.9	(5.53)*
INVESTMENT AND										
MARKETING STRATEGY										
Institutional							-15.4	(-4.23)*	-52.8	(-11.45)*
Initial Investment							-0.4	(-3.22)*	-0.4	(-1.9)**
Index							-38.5	(-8.72)*	-51.7	(-8.86)*
12b1 fee<1,>0							18.4	(9.73)*		

12b1 fee = 1				43.5	(14.19)*	
Front load				2.7	(-1.43)	
Deferred Load				47.3	(16.86)*	
Turnover				4.3	(8.21)*	6.0 (8.65)*
Bank Advised				-8.1	(-4.44)*	-18.7 (-7.88)*
Fundage				-0.2	(-3.26)*	-1.1 (-12.37)*
Adjusted R2	23.8	22.2	26.9	64.2		38.0
Dep Mean	127.6	127.6	127.6	127.6		127.6
N	3609	3609	3609	3610		3610

- 1 Brokerage fees and front and deferred loads are not included in expense ratios.
For each equation, first column gives coefficient and second column gives t statistics
- 2 1 Basis Point = 0.01%
- 3 3 year net returns are gross returns adjusted for expense ratio and loads
*: significant at 0.2% level
**: significant at 5% level

TABLE 9

**Determinants of Expense Ratios of Mutual Funds in the U.S., 1992-1997
(dependent variable is total expenses/total assets, in basis points²)**

	1		2		3		4	
CORE GROUP								
Intercept	22.6	(12.73)*	23.0	(12.31)*	26.4	(9.17)*	65.0	(31.91)*
Assets in \$billion	-3.5	(-5.97)*	-2.2	(-5.97)*	-2.7	(-7.05)*	-2.3	(4.64)*
Asset ²	0.1	(5.77)*	1.0	(5.33)*	0.1	(6.18)*	0.1	(6.21)*
# Shareholders	0.03	(2.68)**					0.0	(1.3)
Assets/Shareholders			-1.0	(-3.11)*	-0.1	(-3.17)*		
Assets in Funds Complex	-0.1	(-6.27)*	-0.1	(-8.47)*	-0.1	(-8.23)*	-0.1	(-12.94)*

3 Year Net Return ³			-0.6	(-16.25)*	-0.5	(-13.5)*		
# Year Gross Return	-0.4	(-11.31)*					-0.3	(-8.89)*
3 Year Standard Deviation	0.13	(16.79)*	1.5	(19.2)*	1.0	(-11.59)*	1.0	(12.82)*
ASSET ALLOCATION								
Bond					-12.6	(-7.57)*	-23.8	(-19.25)*
Small Cap					14.9	(5.12)*	11.5	(6.25)*
Specialty					15.7	(5.59)*	6.8	(3.96)*
International					18.5	(7.65)*	21.7	(13.72)*
Emerging Market					59.9	(12.92)*	48.2	(15.64)*
INVESTMENT AND MARKETING STRATEGY								
Institutional							-15.4	(-8.09)*
Initial Investment							-0.3	(-2.48)**
Index							-38.6	(-14.18)*
12b1 fee<1,>0							17.7	(13.84)*
12b1 fee = 1							49.9	(23.16)*
Front load							6.2	(4.71)*
Deferred Load							49.7	(25.3)*
Turnover							2.0	(7.46)*
Bank Advised							-2.4	(-1.92)**
Fundage							-0.4	(-8.95)*
Time	2.3	(11.17)*	2.3	(10.66)*	2.3	(10.96)*	1.2	(6.41)*

1 Brokerage fees and loads are not included in expense ratios.
For each equation, first column gives coefficient and second column gives t statistics

2 1 Basis Point = 0.01%

3 3 year net returns are gross returns adjusted for expense ratio and loads.

*: significant at 0.2% level

**: significant at 5% level

TABLE 10**Marketing Expenses in U.S. Mutual Funds***

	UNWEIGHTED		WEIGHTED	
	1992	1997	1992	1997
Prevalence of commissions (% of total funds)				
- funds with 12b1 fees	55.00	61.00	49.00	46.00
- funds with Flood	50.00	35.00	52.00	42.00
- funds with Dload	9.00	27.00	9.00	12.00
- funds with no load or 12b1 fee	34.00	32.00	36.00	44.00
Expenses as % of assets – all funds				
Average 12b1 fee	0.21	0.35	0.18	0.21
Average annualized Flood	0.46	0.31	0.50	0.40
Reported expense ratio	1.16	1.28	0.87	0.91
Brokerage fees (trading costs)	0.27	0.26	0.15	0.12
Total expenses	1.89	1.85	1.52	1.43
<i>Marketing expenses as % of total expenses</i>	<i>35.00</i>	<i>36.00</i>	<i>45.00</i>	<i>43.00</i>
Expenses as % of assets - Funds with either 12b1 or Flood				
Average 12b1 fee	0.38	0.52	0.36	0.37
Average Flood	0.65	0.46	0.75	0.72
Reported expense ratio	1.27	1.46	0.98	1.09
Brokerage fees	0.28	0.28	0.15	0.11
Total investor cost ratio	2.20	2.20	1.88	1.92
<i>Marketing expenses as % of total expenses</i>	<i>46.82</i>	<i>44.55</i>	<i>59.04</i>	<i>56.77</i>
Expenses as % of assets – Funds without 12b1 or Flood**				
Average 12b1 fee	0	0	0	0
Average Flood	0	0	0	0
Reported expense ratio	0.94	0.89	0.68	0.68
Brokerage fees	0.29	0.23	0.17	0.12
Total investor cost ratio	1.23	1.12	0.85	0.80

* For 12b1 fee, Flood and total expenses see Table 5 and endnote 8. Dload is a back-loaded sales charge that is paid to the distributor by investors. Usually the Dload falls as a function of time the shares are held; therefore the average Dload paid by investors ends up being small (but we do not have precise data). Neither Flood nor Dload are included in the fund's expense ratio, since they are paid by the shareholder not the fund.

Annual marketing expenses are defined here as 12b1 fee + .2Flood
.2 is annualized Flood for reasons given in endnote 8.

This table overstates marketing expenses if investors hold their front-loaded shares longer than assumed or if the discount rate is lower than assumed. On the other hand, given that Dload is excluded (on grounds that most people hold their investments long enough to avoid

most of the Dload) and advertising costs are excluded (because they are not reported), this table probably understates marketing expenses.

Average brokerage fees are taken from a subset of funds for which they were available.

** These funds have no explicit marketing expenses in the form of sales commissions. Advertising costs are present but not reported.

TABLE 11

**Institutional v. Retail Mutual Funds
Average Expense Ratios and Total Investor Cost as % of Assets, 1997***

A. Expense Ratio – Unweighted SIVE	ALL		ACTIVE		PAS-	
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL
INSTIT.						
Domestic Stock Funds 0.37	1.43	1.47	0.91	1.50	0.98	0.71
Domestic Bond Funds 0.35	1.08	1.12	0.62	1.12	0.62	0.65
International Stock Funds 0.66	1.69	1.75	1.09	1.77	1.15	0.95
Emerging Market Funds	2.12	2.19	1.39	2.21	1.39	0.57
All Funds in Universe 0.42	1.28	1.31	0.79	1.33	0.81	0.72

B. Expense Ratio - Weighted by Assets SIVE	ALL		ACTIVE		PAS-	
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL
INSTIT.						
Domestic Stock Funds 0.19	0.93	0.94	0.51	0.99	0.85	0.31
Domestic Bond Funds 0.31	0.80	0.82	0.53	0.82	0.54	0.25
International Stock Funds 0.68	1.18	1.19	0.96	1.20	0.97	0.42
Emerging Market Funds 0.00	1.75	1.77	1.25	1.81	1.25	0.57
All Funds in Universe 0.20	0.91	0.93	0.56	0.96	0.69	0.31

C. Total Investor Cost Including Assets SIVE	Annualized Floads and Brokerage ALL			Fees - Weighted by ACTIVE			PAS-
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL	
INSTIT.							
Domestic Stock Funds 0.22	1.44	1.47	0.63	1.55	0.97	0.35	
Domestic Bond Funds 0.34	1.30	1.35	0.65	1.36	0.65	0.29	
International Stock Funds 0.71	1.83	1.87	1.08	1.89	1.09	0.45	
Emerging Market Funds	2.29	2.33	1.37	2.38	1.37	0.60	
All Funds in Universe 0.23	1.44	1.48	0.68	1.52	0.71	0.35	

* International Stock Funds include Emerging Market Funds in this table.

TABLE 12

**Marginal and Average Asset Management Fees for Institutional Investors
How they Vary with Amount of Investment (in basis points)¹**

Passive Domestic Equity	Large cap.	Small & Mid cap.
<\$5 million	20.0	25.0
5-10 million	10.0	15.0
10-25 million	8.0	10.0
25-100 million	6.0	7.5

100-200 million	3.0	5.0
Balance	1.0	2.5
Average fee for \$100 million	7.2	9.1
Average fee for \$500 million	2.6	4.3
Median cost-large US pens. Funds ²	4.0	7.0
Median cost-largest US pens. Funds ³	1.0	6.0

Active Domestic Equity	Value	Growth	Small Cap.
<\$5 million	65.0	80.0	100.0
5-25 million	35.0	80.0	100.0
Balance	35.0	50.0	100.0
Average fee for \$100 million	36.5	57.5	100.0
Average fee for \$500 million	35.3	51.5	100.0
Median cost-large pension funds		37.0	69.0
Median cost-largest pension funds		25.0	55.0

International Equity	Index	Active
<\$10 million	25.00	90.0
10-25 million	25.00	70.0
25-40 million	20.00	70.0
40-50 million	20.00	60.0
50-100 million	15.00	60.0
Balance	10.00	60.0
Average fee for \$100 million	18.75	66.0
Average fee for \$500 million	11.75	61.2
Median cost-large pension funds	12.00	54.0
Median cost-largest pension funds	8.00	34.0

Emerging Market	Index	Active
<\$50 million	40	100
Balance	40	80
Average fee for \$100 million	40	90
Average fee for \$500 million	40	82
Median cost-large pension funds	23	77
Median cost-largest pension funds	12	70

Fixed income	Index	Active
<\$25 million	12.0	30
25-50 million	8.0	24
50-100 million	5.0	17
Balance	3.0	12
Average fee for \$100 million	7.5	22
Average fee for \$500 million	3.9	14
Median cost-large pension funds	6.0	24
Median cost-largest pension funds	5.0	25

Other asset management costs for institutional investors⁴

Internal administrative costs:

- median cost-large pension funds	6
- median cost-largest pension funds	2
<i>Brokerage costs (trading costs):</i>	
- median cost-large pension funds	10
- median cost-largest pension funds	7

- 1 Sliding scale fees for institutional commingled funds, the BT Pyramid funds, were graciously supplied by Bankers Trust, a large money manager of indexed and actively managed institutional funds. Data on large US pension funds is from: "Cost Effectiveness Pension Fund Report", prepared by CEM, 1997 for CALPERS
- 2 These are median costs of external money management for given type of assets, reported by 167 large US pension funds ranging in size from less than \$100 million to over \$100 billion. Median fund = \$1.5 billion. Average of 14 external money managers per fund, managing \$194 million each, median amount managed per manager = \$113 million
- 3 These are median costs for 10 largest US pension funds, excluding Calpers, ranging in size from \$29-65 billion. Average of 34 external money managers per fund managing \$646 million each (\$543 million median)
- 4 This includes brokerage (trading costs) plus internal administrative costs of money management, such as executive pay, consultants, performance measurement, custodial arrangements, trustees and audits. The breakdown by passive and active is not available, but brokerage costs are estimated to be much lower for passive.

TABLE 13

Transfer Agent (R & C) Costs in \$'s per Account

	1991	1993	1995
Cost per account	21.55	22.77	20.93
- 80% range	\$8-\$38	\$10-\$36	\$10-\$32
Cost per open account	24.76	25.92	25.09
- if external	23.08	24.56	23.42
- if internal	25.34	26.39	25.64
- if equity	20.31	22.52	21.89
- if money market	31.27	30.28	28.83
- if sales through affiliated broker	13.63	15.07	16.57
- if direct market-retail	29.31	34.01	32.61
Cost per account (all)			
- if dividends paid annually	17.12	20.77	19.30
- if dividends paid monthly	23.94	24.94	22.29

Source: Investment Company Institute and Coopers Lybrand. Mutual Fund Transfer Agents. 1995 & 1997

TABLE 14

Hypothetical Annual R & C Cost per Account – Breakdown of Services (\$'s)

	Central	Typical Direct Market Mutual Fund (in \$)	IA System with Records (in \$)
Account set up (annualized)¹		2.00	0.10
Annual record keeping and up-date		1.00	1.00
Personal phone calls²		7.00	2.00
2 automated phone calls per account		2.00	2.00
4 quarterly statements		6.00	-
1 annual statement or tax statement		1.50	1.50
2 transactions with written confirmation		5.00	5.00 ³
1 dividend + capital gains distribution with statement		2.50	1.00 ⁴
Distribution of prospectus, semi-annual and annual reports			3.00 1.00 ⁵
Queries and mailing about other funds in complex		2.50	-
General educational material		-	2.50
Total		32.50	16.60

Source: State Street Bank, mutual fund representatives and authors' own calculations.

- 1 We assume that the investor switches to a new mutual fund every 7 years but would stay in the centralized records of an IA system for 40 years.
- 2 We assume 1 phone call per year per account in mutual fund, 1/3 per account in IA system.
- 3 Possible fee for additional transactions.
- 4 Dividends and capital gains are credited to account in IA system and are included in annual statement.
- 5 2 page statement substitutes for prospectus.

TABLE 15

Administrative Costs of Thrift Saving Plan 1988-98

Year	Expense Ratio As % of Assets				Average Size Account (in 000\$'s)		
	Administrative	Cost per Account (in \$'s)	(in 1998 \$'s)	R & C Cost per Account (in \$'s)	Investment	Cost per Account (\$'s)	(in 1998 \$'s)
1988	.70	2.4	16.8	(22.7)	0.7	16.0	(21.6)
1989	.46	3.7	17.1	(22.21)	1.1	15.9	(20.6)
1990	.29	5.1	14.81	(18.00)	1.5	13.3	(16.2)
1991	.26	6.7	17.4	(20.71)	2.0	15.4	(18.3)
1992	.23	8.5	19.6	(22.53)	2.6	17.1	(19.7)
1993	.19	10.7	20.3	(22.81)	3.2	17.1	(19.2)
1994	.16	12.8	20.6	(22.39)	3.9	16.7	(18.2)
1995	.14	16.5	23.1	(24.57)	4.9	18.1	(19.2)
1996	.13	20.1	26.2	(27.01)	6.0	20.1	(20.7)
1997	.12	25.3	30.3	(30.61)	7.6	22.7	(22.9)
1998 (*)	.11	27.4	30.1	(30.10)	8.2	21.9	(21.9)

Source: Thrift Saving Plan publications and personal communications

Expense ratio in column 1 is reported gross expense ratio as reported in TSP publications (before adjustment for forfeitures) plus 3 basis points imputed for investment-related expenses, including brokerage (trading) fees. Columns 4 and 5 separate out these two sources of expenses.

(*) Based on Jan.-Aug., annualized

TABLE 16

**Costs of Retail, Institutional and Constrained Choice Compared
(in basis points per unit of assets and \$'s per account)**

	Retail	Centralized Choice Institutional		Constrained	
	Passive	Active	Passive	Active	Pas-
	sive		Active		
Asset management		8	52	1 - 5	25 - 55
1 - 5			25 - 55		
Marketing	3	65	-	-	1
			5		
R & C	5	12	-	-	9
			9		
Brokerage fee and other			16	20	3
10	3			10	
Total cost	32	150	4 - 8	35 - 65	14 - 18
			49 - 79		
\$ cost per average account of \$22,000 in steady state (see Table 1 Panel A)	70	329	9 - 18	77 - 142	31 -
			106 - 172		

Retail costs are taken from Table 5 and 6.

Institutional costs are from Table 12.

Constrained choice costs are from Table 5, 12-15.

Marketing costs under constrained choice are based on assumption that fee ceilings or competitive bidding process will keep them low.

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