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ADMINISTRATIVE COSTS AND THE ORGANISATION OF
INDIVIDUAL ACCOUNT SYSTEMS: A COMPARATIVE
PERSPECTIVE

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Introduction

Prefunding is now seen as a desirable characteristic of old age security systems because it can be used to 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. Many countries now in the process of establishing their IA systems are concerned about these costs and are seeking ways to keep them low.

This paper investigates the cost-effectiveness of two alternative methods for organizing mandatory IA's: 1) investing through the retail market, in which workers choose their own pension fund, entry is open subject to regulations and prices are set by the fund; and 2) investing through the institutional market with entry and price negotiated for a larger group or for the entire covered labor force and worker choice constrained by group choice. In a competitive bidding process, which is a recommended way of determining group choice, primary competition takes place at the point of entry to the market, and a more limited secondary competition for individual workers occurs among the winners of the primary competition. In both the retail and institutional cases government "organizes" the markets, but in the former regulations are used while in the latter competitive bidding or other group mechanisms are used. Also in both cases most countries will end up with a relatively concentrated market due to scale economies, but the paths differ, as well as the equilibrium costs and fees, due to the differing paths. Our question: what is the most cost-effective way to organize a mandatory IA system?

We start with a simple stylized illustration of retail and institutional markets that decomposes total costs into its investment, record-keeping, marketing and start-up components (Part I). To analyze actual costs in the retail market we use data from mandatory schemes in Chile and other Latin American countries (Part II), complemented by mutual fund data from the U.S., an example of a relatively well run voluntary retail financial industry that has much in common with decentralized IA systems (Part III). To analyze costs in the institutional market we use data from large centralized pension funds in the U.S. (Part IV) as well as from mandatory and voluntary IA systems in various countries—Bolivia, Sweden and the Thrift Saving Plan (TSP) in the U.S.—that operate in the institutional market (Part V). They do so by aggregating small contributions into large blocks of money, constraining choice regarding investment portfolios and managers, and negotiating fees on a group or centralized basis. In Bolivia and the TSP entry has been limited and fees set in a competitive bidding process; in Sweden price ceilings attempt to mimic the marginal cost function and the sliding fee scale in the institutional market.

Empirical evidence in this paper and elsewhere find substantial economies of scale and scope in asset management. Both the retail and institutional markets exploit these economies, but in different ways. The retail market pools funds from many individual investors, enabling them to benefit from scale economies, but at the cost of high marketing expenses—about half of total costs—that are needed to attract and aggregate small investments into large pools. In the Chilean AFP and U.S. mutual fund industries, most annual fees range between .8 and 1.5% of assets and marketing is the largest cost component. Slightly larger numbers obtain in retail personal pension plans in the U.K. and master trusts in Australia (Murthi, Orszag and Orszag 1999, Bateman 1999, Bateman and Piggott 1999). A 1% annual fee reduces retirement accumulations by 20% for a lifetime contributor, so administrative costs in the retail market reduce pensions by 15-30%.

The institutional market, which caters to large investors, benefits from scale economies without large marketing costs, hence its total costs are much lower. We investigate whether and how mandatory IA systems that consist of many small investors could be set up to capture these same advantages. We find that use of the institutional market in IA systems in Bolivia, Sweden and the U.S. has reduced fees to less than .6% and in some cases to less than .2% of assets. These lower fees stemming from lower administrative costs in the institutional market reduce pensions only 10% or less, a potential saving of 10-20% relative to the retail market.

Costs must always be weighed against benefits. Potential pitfalls inherent in the institutional approach include the increased probability of corruption, collusion, regulatory capture, decreased performance incentives, rebidding problems and inflexibility in the face of unforeseen contingencies (Parts V and VI). If these problems can be surmounted, the institutional approach is worth serious consideration, especially for countries with small asset bases and at the start-up phase of a new IA system.

I. How Administrative Costs Vary Across Time and Systems and How to Compare Them

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

$TOTADMINCOST_t^i = STARTUPCOST + R\&C + INV + MARKETING$, 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

$R\&C$ = 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 manager, and they depend on profit-maximizing calculations about costs versus returns of incremental marketing activities.

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 main arguments of the fund's production function—the volume of assets and the number of accounts that determine costs. Looking simply at current costs can be misleading as an indicator of efficiency or long run costs, in comparing systems of different sizes or stages of development.

Table 1 illustrates the total administrative cost and its breakdown between $R\&C$ and INV in two 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), in this section, for expositional purposes, we assume that $R\&C$

cost per account and INV cost per unit of assets are constant and start-up costs are incurred in the first three years.

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 does the same but increases the gross annual contribution from \$520 to \$2020. Panel C illustrates the retail approach, with marketing plus investment expenses totaling 1.1% of assets, R&C costs \$30 per account. We see that cost per account and per unit of assets change over time, and in a given year differences appear between these systems, even if they are equally efficient:

1. Start-up costs greatly accentuate total cost in the early years.
2. Cost per account starts relatively low and rises through time as average account size grows, due to increased investment and/or marketing costs.
3. Cost as a % of assets starts high and falls as average account size grows, due to constant R&C costs per account; scale economies in asset management would accentuate this effect.
4. 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.
5. A higher contribution rate leads to a faster build-up of assets, and a lower cost as % of assets, even if two systems are equally efficient (Panel A v. B).
6. An expensive investment and marketing strategy, as in the retail market, increases cost per unit of assets and leads to faster growth in cost per account and per unit of assets, while the institutional approach keeps these costs low, both in the short and long run (Panel B v. C).

If we apply this production function approach across countries, in attempting to evaluate the cost-effectiveness of different systems, additional problems arise because wages, infrastructure and productivity vary widely. If the relevant technologies tend to be capital-intensive, then capital-rich countries with relatively cheap capital will have lower costs per account and asset unit, while the opposite is true if the feasible technology set uses labor intensively, especially unskilled labor. Funds that operate in countries with a facilitating legal and physical infrastructure, such as enforceable contract rights and telephone lines that work, will be able to use their own labor and capital more productively. Regulations that vary across countries also influence the feasible production function. Data gaps do not allow us to control for differences in types and quality of service, which therefore become part of the “random” variation.

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. Thus fees over time might be smoother than costs over time.

We would expect that in the long run competition will eliminate pure profits, so fees will just cover fund costs. 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. New computerized technologies may reduce variable costs in the long run but raise fixed costs in the short run. New financial instruments may increase benefits but also transactions costs as well as cost differentials across managers and funds. And oligopolistic profits may remain if scale economies are large relative to size of market. Moreover, price discrimination, used to recover fixed costs when heterogeneous consumers have different price elasticities, means that cost may have different relationships to price for

different groups of investors. In this paper we presume that in the long run fees will bear a close relationship to real costs, and costs depend on how the system is organized.

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). Proponents of centralized funds point to the cost advantages that stem from lower R&C, investment and marketing expenses. We argue, and provide supporting evidence, 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 aggregates many small accounts into large blocs of money and negotiates investment fees on a group basis, thereby keeping costs and fees low by:

- Cutting STARTUPCOST by avoiding excess capacity
- Minimizing MARKETING cost;
- Constraining worker choice to portfolios and strategies with low INV costs
- Using increased bargaining power to shift costs and reduce oligopoly profits.

R&C expenditures may also be organized to cut costs and facilitate compliance, although we have less evidence on this.

When these strategies are utilized, the cost to workers of an IA system are in the same neighborhood as a centralized system, but with greater competition and choice, which are the key elements of a privately managed funded pillar.

II. How High are Administrative Fees in Latin America and How are They Spent?

In this section we examine costs and fees charged by individual account systems in Chile and other Latin American countries. These fees have been subject to great criticism by opponents of IA systems. AFP fees do not necessarily represent real costs nor do they represent a long term commitment. AFPs in Chile (and other Latin American countries) made losses in the early years of the new system because of large fixed and start-up costs that exceeded their revenues; but the industry has been quite profitable in recent years. We might expect competition to eliminate these profits but price insensitivity among investors may prevent this from happening quickly. Deregulation and increasing 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 managerial wages, marketing costs and fees. 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.

Costs and Fees in Latin America Across Time, Countries and AFP's

Tables 2 and 3 presents information about aggregate fees, costs and their impact on member accounts for AFP systems in a variety of Latin American countries in 1998. Table 4 presents a longer time series for Chile, on which we have data since 1982.

Most Latin American countries have adopted the Chilean 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. In Chile the fee started at over 20% of contributions but has now fallen to an average level of

15.6% (and possibly less for the many workers who are said to get unofficial rebates). Table 2 shows that in other Latin American countries, such as Argentina and Mexico, fees are still 20% of contributions or even higher. In Bolivia, which is experimenting with an institutional approach to administrative costs, they are lower. Table 3 shows that in systems that are still in their early years, these fees do not even cover full cost.

Besides the problems inherent in cost comparisons across countries that were listed in Part I, additional problems appear in Latin America, where the allocation of fees and expenses between administration, insurance and other AFP activities is not always clearcut. In Argentina the division between insurance and administrative costs may be arbitrary, and in Colombia additional revenues are obtained from the management of unemployment insurance and voluntary insurance. Generally only contributors pay fees although non-contributing affiliates also generate costs and the ratio of contributors to affiliates varies across countries. Nevertheless, some effects are striking. While initially the differences among countries may appear to be random, upon closer examination clear patterns emerge.

- New systems are characterized by high start-up costs--until a sharp drop occurs around year four. This helps account for the higher expenses outside of Chile in 1998.
- Thereafter, cost per account climbs gradually due to the increased investment costs associated with larger assets, while cost per unit of assets falls as the constant R&C costs per account are spread over a larger asset base. Figures 1 and 2 demonstrate the negative relationship between cost per unit of assets and average account size implied by these tables--except for Bolivia which has a much lower expense ratio than would be expected. In contrast, Mexico--which is one of the newest systems with the smallest account size--has the highest expense ratio relative to assets in the region. We would expect Mexico's cost per account to rise but its cost per unit of assets to fall as its system matures.

Costs and Fees in Chile

Chile, which has by far the largest account size due to its age and contribution rate, has the smallest expense ratio per unit of assets. In Chile in 1998, using the official exchange rate for conversion, the average account size was \$5000 per affiliate and \$10,000 per contributor, cost per affiliate and contributor were \$59 and \$112, respectively, and fees somewhat higher. (All these numbers are two to three time higher if PPP conversion rates are used). While fees per account have been rising, as a percentage of assets they have fallen sharply--from over 9% in 1982 (much like Mexico today) to 1.36% in 1998 (much like the US mutual fund industry today).

Table 5A presents the results of a simple regression analysis that sums up this relationship between aggregate assets, costs and fees for the Chilean system over time. Start-up costs and assets alone explain 96-98% of the variance in costs and fees across time. Very high correlations among assets, affiliates and contributors together with small sample size preclude the inclusion of more than one variable in this analysis of aggregate costs.

However, when we disaggregate by AFP as well as by year, larger sample size and greater variation is introduced that allows us to decompose total costs and fees into their major determinants—assets and affiliates—and to explore potential scale economies. Table 5B presents the results of a panel data (fixed effects) analysis of Chilean AFP costs, 1982-98, using these independent variables, and showing how the system has evolved through time. We see there that:

1. Start-up fees and, even more, start-up costs in the first three years of operations were high.
2. As the number of affiliates grows, (R&C) costs and fees grow en toto and relative to assets.

3. As assets grow, (investment) costs and fees grow, en toto and per account, but costs and fees as a % of assets, which ultimately determine net return, decrease—due to scale economies.
4. Scale economies are further demonstrated by the fact that affiliates and assets both have a coefficient of less than 1, singly and summed, in the logged regressions on total costs; but the negative term (although insignificant) in the quadratic implies that these scale economies may eventually come to an end. Calculations using these coefficient suggest that this occurs when the AFP has about 3 million affiliates and US\$15 billion—half of the current Chilean market.

Mergers have indeed been occurring. We can expect that Chile, Mexico and other Latin American countries will benefit further from maturation and scale economies in the future, so their future costs will be lower than present costs for that reason.

Implications of Front-Loaded Fees: how to convert them into annualized fees

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. Such a fee basis has a different impact on returns depending 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. For comparability, we have converted the 15.6% front-loaded fee in Chile into an equivalent annual fee based on assets that will yield the same final year accumulation (Table 6). This tells us how much, effectively, gross investment returns are being reduced each year and it enables us to compare it with fees charged by mutual funds and other financial institutions. 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. If a worker contributes only for her first 20 years of employment the equivalent average annual fee for all her contributions is .57%, while if contributions are made only in the last 20 years, the equivalent average annual fee is 1.65% (column 2). For a worker who contributes every year for 40 years, paying a fee on each new contribution, the annual equivalent of all these front-loaded fees is .76% (column 3). 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 expense ratio that is equivalent to the 15.6% fee on contributions would then be .94%, almost 1% of assets per year.

A front loaded fee means that workers with different employment histories will end up paying different annual equivalents as a subtraction from their gross returns, even if they impose the same real cost on the fund. Front-loading of fees may induce evasion among workers in their later years, since they can avoid all investment costs on accumulated assets if they simply stop making new contributions. It may induce AFP's to reject transfers from older workers with larger assets and investment costs. Thus, front loads may not be desirable in the start-up phase of a mandatory system because of their distributional impact and may not be sustainable in the long run if AFPs are permitted to change their fee structure, but they are frequently used, perhaps as a device to help AFP's cover their costs, which are also front-loaded.

Comparison Between Chilean AFP Fees and Mutual Fund Fees

Annualized Chilean fees are similar to fees of mutual funds that operate in the U.S. domestic market (Part III). American mutual funds, because they are voluntary, cater to a higher socio-economic group and provide much greater diversification and service than Chilean AFPs, 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 AFPs are therefore relatively inexpensive if the standard of comparison is fees in other diversified mutual funds that invest individuals' savings. However, they are more expensive than savings accounts in commercial banks, either in Chile or elsewhere (Valdes 1999b).

The breakdown of costs among AFPs 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 countries the number would probably exceed 50% if we included staff salaries involved in marketing. These similarities suggest that a study of US mutual fund data will yield insights into how costs might evolve in IA systems and how these costs might be reduced—e.g. by reducing marketing costs.

Finally, AFP fees are much higher than fees paid by institutional investors and they have a substantial impact on ultimate pension amounts. This leads one to wonder whether it is possible to organize a mandatory system so that it captures the lower costs and higher benefits 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 retail 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). Each mutual fund investor has an individual account, that can be transferred from fund to fund, so this might provide information on how an IA system would operate in a competitive retail market. An earlier paper analyzed the determinants of these fees and the cost structure that underlies them. We used 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), as well as information culled from annual reports, surveys conducted by mutual fund associations, and discussions with fund officials. In this section we summarize these results and consider the policy implications for a reformed social security system that includes individual accounts (For a fuller account and numerous references see James and others 1999).

Costs and Fees in the Mutual Fund Industry

In the US mutual fund industry, the fund pays annual fees to its investment adviser and distributor (which is usually the same group or “sponsor” that set up the fund originally), and much smaller fees to lawyers, auditors, transfer agents and others. The charges are allocated among shareholders proportional to their assets and determine the fund's reported “expense ratio” that it subtracts from its gross return to obtain the net return passed on to shareholders. In addition, for many funds front-loaded and back-loaded commissions are paid directly by individual investors to brokers or other sales agents upon purchase or sale; these entry and exit fees are part of the price to relevant shareholders although not received by the fund. Brokerage fees paid by the fund for securities transactions are also excluded from the expense ratio but are costs to shareholders, netted out of the fund's reported 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 7).¹ In 1997 the total

¹ Average brokerage costs were estimated on the basis of a subset of funds that reported these data for 1997. The unweighted and weighted averages were 26 and 12 basis points, respectively. This measure probably understates full trading costs for two reasons: first, for some assets trading costs are netted out of gross returns rather than being reported separately, and second, the impact of large buy and sell orders upon price are ignored. It should be noted that

investor cost was 1.85% of assets, compared to the reported expense ratio of 1.28%. Weighted by assets, the total and reported numbers fall to 1.43% and .91% (or \$360 and \$228 per account), respectively. Asset-weighted numbers are more relevant for our purposes.²

Most funds are members of a mutual fund complex (e.g. Fidelity and Vanguard). Certain activities, such as advertising, research, 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. Thus, the relative fees paid by members of a fund complex do not necessarily reflect the real cost of producing them. For example, small and new funds that are expensive to run may be allocated only a small share of costs to attract new customers, and index funds that are marketed to cost-conscious consumers may similarly be allocated a small share. Business strategy concerning joint cost allocation may be different in a mandatory IA system. These caveats should be kept in mind as we analyze fund costs below.

We conducted a regression analysis designed to explain the “expense ratio”—reported expenses (excluding trading 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 many funds in the data set). We sought to determine the extent to which cost variation is random or systematic, to identify the factors that determined the systematic variation, and to assess the implications for IA systems. We ran the OLS regressions separately for each year, 1992-97 and also conducted a frontier (envelope) analysis for 1992-97. Tables 8 reports results from the OLS regression for 1997 and Table 9 reports the frontier analysis for 1992-97. The regressions in Table 8 explain 64% of the variance when all the above variables are included. 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. Our major empirical findings and their implications for IA systems:

Considerable evidence of economies of scale and scope

Expense ratios fall when total assets in fund, assets in the entire fund complex, and assets per shareholder increase. A simple cross-tabulation shows that funds with assets of less than \$10 million have an average expense ratio of 1.6%, while for those with assets of \$1 to 10 billion it is .96% and for more than \$20 billion it is .6%. While all funds need industry analysts, portfolio managers, computers and access to electronic trading facilities, large funds can be managed with a relatively small increase in total resources. But these economies from asset aggregation do not continue indefinitely. The positive sign on the coefficient of Asset^2 in the regressions eventually halts the fall in expense ratio. Thus, aggregation brings economies that lead to industry concentration, but the limit to these economies nevertheless leaves space

brokerage costs reported here refer to the cost of trading securities and do not include brokers' commissions for selling fund shares, commonly known as front and back loads, which we annualize and treat as marketing costs.

Annualized front-loaded sales commissions were estimated as .2 times the front-loaded commission on new sales. An annualization factor of .2 was used to convert a one-time fee into its annual present-value equivalent, assuming that the average investment is kept in the fund for 7 years and the discount rate is 10%, corresponding to the high rate of return over this period. The annualized fee is not very sensitive to the discount rate. Earlier data indicated that a 7-year average holding period is reasonable (Wyatt Company 1990).

² The total investor expense ratio calculated here is very similar to the total shareholder cost ratio calculated by Rea and Reid 1998, although they use slightly different datasets and definitions. The most important differences are that they deal only with equity funds (which are more expensive than bond funds) and they do not include brokerage (trading) fees in their measure of investor costs. Their simple average cost ratio is 1.99% and their asset-weighted average is 1.44%, which is very similar to our numbers of 1.85% and 1.43%, respectively. According to their calculations, marketing fees are 40% of total costs.

for multiple mutual funds (and pension funds), the exact number depending on the total market size of each country.

Significant fixed costs per account

Holding aggregate assets constant, the expense ratio increases with number of shareholders and decreases as average account size rises. The basic reason, as discussed in Part I, is that funds incur a fixed cost per account for record-keeping and shareholder communication (R&C), and the larger each account the smaller this cost will be, as a percentage of assets. According to these regressions and corroborating evidence from periodic surveys of transfer agents (the organizations which provide these services for mutual funds), average R&C costs per account are \$20-25. Fixed costs of R&C pose a potential problem for IA systems if the accounts are small. These fixed costs help explain the high expense ratios of new AFPs in developing countries. This raises the question of whether an investment option with lower R&C costs should be used or whether R&C costs should be amortized over a long time period, to avoid imposing a heavy burden on early cohorts, when new IA systems are started.

High marketing costs

Using brokers, other sales persons and mass advertising methods, the industry has successfully called to the attention of potential shareholders the advantages of equity investing, using mutual funds as the vehicle. The major marketing expense to shareholders consists of sales commissions. Two thirds of all funds are sold through third parties (brokers, insurance agents, financial planners) who receive some kind of commission (through front or deferred loads or annual 12b1 fees). And most of these sales commissions are passed on to consumers. If we define the "total annual marketing cost" paid by the shareholder as the 12b1 fee + annualized front load, it is .61%--around 43% of all fund expenses (Table 10). This is very similar to the marketing proportions in Chile's AFP system. 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. But most methods to keep IA costs low involve a reduction in marketing expenses, under the assumption that much of it is zero-sum and not the most efficient way to provide useful information to new investors.

Lower expense ratios for institutional funds

A small number of mutual funds are limited to institutional investors (i.e. bank trust departments, corporations, small foundations). These funds have a significantly lower expense ratio as compared with funds for individual investors. The same assets can be amassed with much lower distribution, communication and record-keeping expenses from one large institution than from numerous small individuals. Institutions are much less likely to pay sales commissions 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 regressions and the total investor cost for institutional funds is less than half those of retail funds (Table 11). This led us to investigate the institutional market in greater detail, to determine whether IA's were doomed to have high expense ratios due to their small account size or could benefit from low expenses due to the large aggregate amounts in the mandatory system.

Lower costs of passive management—for some assets

Also important is the large 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. Controlling only for asset allocation, fees of passive funds are less than one-third those of actively managed funds in the retail market (Table 11).

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 from index funds may therefore be overstated by our regression results, although they remain real cost savings to individual investors. If index funds become a larger share of the total market, opportunities for cost-shifting may decline. Finally, the lower costs of index funds are not statistically significant for small cap and emerging market funds. 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, but this may be less true of developing and transitional countries where emerging markets and small cap stocks dominate.

Asset allocation: international funds

Asset allocation has a major impact on costs. Bond funds have lower costs and small cap 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-ask spreads, transactions and custodial costs, currency hedging costs, and the relative paucity of effective cost-saving passive investment opportunities. 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 can economize on costs if they concentrate investments in large liquid domestic instruments; international diversification comes at a cost. In contrast, the higher costs in developing countries could be mitigated by international diversification, including the use of foreign index funds.

Net and gross returns

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 (Elton and others 1993, Malkiel 1995, Malhotra and McLeod 1997). In fact, some of the same factors that increased costs actually reduced returns during this period. Most important, in our sample larger assets increase gross and net returns, but this effect stops after a point. Funds with front loaded sales commissions 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 this effect is absent in small cap, international and emerging market funds (also see Muralidhar and Weary 1998, Shah and Fernandes 1999). Institutional funds have higher net returns. These results from separate equations are consistent with the negative sign on gross and net

returns as control variables in our expense ratio equations. Cost and net returns appear to be negatively correlated. Thus, strategies involving high administrative costs do not seem justified on grounds that they raise returns.

Changes over time: Will price competition reduce investor costs?

The question of whether expenses 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. 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 expenses 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). It appears that in the short run we cannot count on competition to bring price down for many investors. Why is this the case? We hypothesize that competition through marketing rather than through price cuts may be a consequence of high volatility and the resulting high noise-to-signal ratio that makes it difficult for investors to distinguish between random luck versus systematic skill and low costs until many years of observations have elapsed (see James and others 1999). Funds spend on marketing, pointing to their lucky returns, rather than cutting costs and price. This poses a problem for IA systems, as an entire generation of workers may pass through the system before low cost, high performing funds are identified. The difficulty small investors have in processing financial information will 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

Although small institutions invest through special low cost institutional mutual funds, large institutions (e.g. DB plans of major corporations) do not invest through mutual funds that must treat all shareholders equally. They can get better asset management rates elsewhere.

How Much do Institutional Investors Pay for Asset Management?

Table 12 presents illustrative cost data on costs of money management provided by a large manager of institutional funds operating outside the mutual fund framework. It also shows median costs for 167 large and 10 of the largest U.S. pension funds. These rates show clear evidence of scale economies and the cost efficiency of passive management.

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 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. Despite the sliding fee scale, most funds use multiple money managers 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. These numbers from large US pension funds are roughly consistent with numbers from occupational pension plans in the UK, Switzerland and South Africa, and from “industry funds” in Australia, all of which cost between .4 and .6% of assets for large DB and DC plans in which workers have no choice of investment manager.³

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 are more likely to use passive investment strategies. They also have the credible threat of managing their money in-house if they do not get good terms from an external manager. An “all or nothing” bargaining strategy for a large money bloc enables them to capture potential oligopoly profits or a fee that approaches marginal cost if this is less than average because of fixed costs.

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, and often commissioned salespersons are involved. 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. Commissions are rarely paid. 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 marketing and 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. This is much lower than retail costs ranging from .3% to 1.5% for the average passively and actively managed mutual fund, respectively.

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, by operating through the institutional market. 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 for the investment function on a group or centralized basis. Competition takes place in two stages. In the first stage, a competitive bidding process might be used to limit entry to asset managers

³ However, personal pension plans in the UK and master trusts in Australia, where workers have greater choice, have higher costs. See Bateman 1999, Bateman and Piggott 1999, Murthi, Orszag and Orszag 1999, Daykin 1998, Queisser and Vittas 2000, data from Financial Services Board of South Africa.

charging the lowest fees subject to performance specifications. Limited entry avoids high start-up costs in the early years of a new system. Low fees create a disincentive for high marketing expenses. In the second stage workers choose from among funds that won the primary competition. 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. With R&C costs of .1% of assets (as in the average mutual fund in Table 7 and as calculated for an IA system with small contributions in Table 1), and with investment costs as given above for institutions, an “institutional” IA system would cost .14-.75% of assets in the long run (James et al 1999).

Several countries are now experimenting with variants of this approach. The three institutional IA systems described below all operate within this fee range and imply some trade-off of political insulation and individual freedom for the cost reduction. We start with the most constrained system, in Bolivia, that is appropriate for a small developing country, and conclude with the Swedish system, that offers considerable choice among existing funds, mimics the institutional market through a sliding scale of price ceilings, and is more appropriate for countries with advanced financial markets. We describe the cost savings that seem achievable, as well as the pitfalls of these schemes.

Auction Off Entry Rights to a Single Portfolio: Bolivia

In 1997 Bolivia auctioned off the asset management rights in its new defined contribution pillar to two investment companies, in a widely publicized international bidding process. At the start of the new system it was expected to have 300,000 participants, each contributing 10% of wages into their retirement accounts, bringing total annual contributions to \$300 per account or almost \$90 million en toto. Initially almost all of the assets had to be invested in government bonds, to help finance the transition, but over time the funds were expected to diversify.

The bidding process for management rights consisted of two stages that began with notices in the *Wall Street Journal*, *Financial Times* and *Pensions and Investments* and proceeded via extensive internet communications, facilitating international competition. A web site was established to exchange documents such as draft law and regulations, proposed contracts and other data. Initial selection criteria included: experience in asset management (at least 10 years of global asset management, at least \$10 billion in assets under management); experience in pension fund administration and record-keeping (at least 100,000 accounts); and experience in establishing new systems. Reacting to this publicity, 73 asset managers expressed interest, 12 consortia (including 25 separate companies) applied and 9 were selected to bid. At the bidding stage, the managers competed with respect to asset management fee and conditions regarding guarantees and regulations were added. Concerns about possible guarantees that might be required and the government’s insistence that in the early years the AFP’s must invest most incoming revenues in Treasury bonds led only three managers to submit bids at this stage.

The bidding process specified that a uniform fee of .5% of salary (5% of net contributions) would be imposed, and companies bid on the size of their additional asset-based fee. In the end, the lowest bidder offered to charge 22.85 basis points of the first billion dollars under management, 1.4 basis points on the next \$.2 billion, .67 basis points on the next \$.3 billion and no management fee on assets above US\$1.5 billion—strong evidence of the scale economies in asset management noted above. The second bidder quickly adopted this schedule, thereby ending the bidding process. (Another 20 basis points is paid to Citibank, which serves as international custodian for all the funds; in Chile custodial fees are covered by the AFP’s).

Both winners consortia consisted of international consortia that included foreign and domestic partners: Invesco-Argentaria and Banco Bilbao Vizcaya S.A.-Prevision. Their contract runs for 5 years. Initially

workers were assigned to a company and no switching was permitted. Starting in the year 2000, urban workers will be allowed to switch and new workers will be permitted to choose. After the five-year contractual period additional companies will be allowed to enter and the price caps will be lifted. (von Gersdorff 1997 and Guerard and Kelly 1997).

Why were international companies so interested in a small pension fund in a small country? The same companies that run the new defined contribution pillar will also manage the \$1.65 billion proceeds of a privatization program (an amount which is equal to 22% of Bolivia's GNP). Pension reform and state enterprise reform were undertaken simultaneously in Bolivia and management rights to the two sets of assets were auctioned off jointly. In addition to the fees paid by workers, the companies will receive a fee of .2285% of privatization assets, which will roughly double their revenues in the early years. Given that 5% of pension contributions equals \$15 per year, which could barely cover R&C costs, cross-subsidies from the management of privatization assets could well be involved. It is likely that bidders would have been less interested and initial costs paid by workers in the IA system would have been higher without the presence of large privatization assets. But they probably would have been lower if the same scenario were repeated in a country with better financial markets and infrastructure. In other countries, bidders might be attracted because of complementarity with desired insurance and banking markets.

The Bolivian system is designed to keep average costs and fees low in the early years by reducing fixed costs and excess capacity since only two companies are operating; decreasing marketing and record-keeping costs since each company is given an initial monopoly for a group of workers and transfers are not allowed; amortizing infrastructure costs over several years, during which each company has an assured market share; and increasing information and bargaining power since the government bargains on behalf of the entire system when fees are established in the contract. Was this accomplished? Initially fees in Bolivia are only .5% of wages (5% of incoming contributions) plus .23% of assets plus .2% of assets for the custodian. This produces a fee that is less than one-third that in Chile in the first year (3% of assets for Bolivia in 1998 compared with 9.4% in Chile in 1982, see Tables 3 and 4). For workers who will only be in the system for 20 years or less, Bolivia is clearly much cheaper than Chile.

However, the differential is expected to narrow over time as the asset-based component grows. Under the current fee structure, a full-career worker who enters the system today would pay the equivalent of .56% of assets per year over his lifetime, as compared with .76% in Chile. Thus, in the long run, given the present pricing structure, the difference between the two countries is about 20 basis points. (In the absence of cost-saving measures we would have expected Bolivia to be more expensive than Chile due to its smaller size accounts and less developed infrastructure and financial markets, so these numbers understate the true saving).

Restricted entry has other pros and cons besides the impact on costs. One advantage of a bidding process with only two or three winners, especially in small countries, is that for some period it provides a guaranteed market share that may entice international companies with financial expertise to enter the market. The established standards and practices of these firms may, to some extent, substitute for regulatory capacity in countries where this is weak. At the same time, the extreme concentration opens the door to corruption in the award of the initial contracts, collusion between the two firms, and possibly control of the contract monitors by the firms that it is supposed to regulate. The firms may agree to buy government debt at low rates rather than investing more broadly, in return for favorable regulatory treatment. The regulators may have weak power relative to the power of two large investment companies that control the market. The two companies may also constitute a controlling share of the securities market in Bolivia, once this begins to develop and they are permitted to diversify; this is a threat particularly if international investments are not allowed. Thus, this system is not as well insulated from political objectives and monopolistic distortions as a less concentrated system would be.

Another problem stems from the lack of incentives for service and to slow adaptability to unforeseen contingencies, due to the incomplete nature of contracts. While certain service targets were set, the contract cannot specify every element of service that might be desired, and companies are likely to cut back on services that are not specified in order to maximize their profits while living within the contract. The fact that workers cannot switch companies initially removes competitive pressures to perform well for those circumstances and services that are not enumerated. Of course, the possibility of switches after three years, as well as the entry of new firms after 5 years, means that long run contestability may prevent abuses of monopoly power. But it is also possible that political pressures from the first two companies may lead to a continuation of the restrictions on entry and switching. Moreover, competition in Bolivia has been dampened by an unexpected development—the merger of the parent companies of the two winning bidders—which in effect have become one. Thus, the Bolivian approach keeps costs low at start-up, but the impact on costs and performance in the long run is uncertain.

One way to mitigate these problems is to maintain an auction process for the long run, but with rebidding every 3-5 years on the basis of performance as well as fees. However, the incumbent may have a big competitive advantage over potential newcomers, since it already has affiliates and R&C files. To facilitate contestability, it may be desirable to separate the fixed cost component of the operation (such as the R&C database) from the investment function, and to permit investment abroad, which will make the environment more inviting to asset managers from abroad.

With these caveats in mind, the limited entry-by-bidding approach is worth serious consideration, especially as a way to avoid excess capacity at the start-up of new systems and in the longer run for countries that have modest contribution and asset bases.

Competitive Bidding with Portfolio Choice: TSP

In Bolivia the same portfolio (government bonds and bank deposits) is offered by both funds. A less constrained variation on this theme uses a competitive bidding process to select a limited number of varied portfolios, and investment companies offering them, among which workers can choose. This approach is employed by the federal Thrift Saving Plan (TSP), a voluntary plan for civil service workers in the United States. It has been proposed as one possible model that might be followed if the U.S. social security system were reformed to include IA's. In the TSP, contributions by workers are matched by their employer, the federal government, up to a combined limit of 16%. Beginning with barely a million participants and \$3 billion in assets in 1987, the TSP had grown to 2.3 million participants and \$65 billion by 1998, with average annual contributions of \$2600 and average account size of \$27,400 that far exceed the size of other plans analyzed in this paper.

In the TSP model, several benchmarks are selected and the right to run a fund through passive management based on that benchmark is auctioned off periodically in a competitive bidding process. Initially only three portfolios were authorized--a money market fund that holds short term government securities, a fixed income fund that holds medium and long term government and corporate bonds, and a common stock fund indexed to the S&P 500. It is now in the process of adding a small cap fund and an international stock fund (the voluntary market provided these options many years ago). A bidding process is held every 2-4 years, with prospective managers evaluated on the basis of tracking ability, trading costs, fiduciary record and fees. Workers have a choice among these funds and limited switching is permitted. However, the same investment company has been selected to run the stock and bond funds so workers do not have a choice among investment companies. Moreover, the contract holder has not changed over the lifetime of TSP, consistent with the "first mover" advantage mentioned above.

The TSP essentially operates as an institutional investor, passing the savings along to its investors. As a result of its information and bargaining power as well as its use of passive management, investment costs (including trading fees) are only a few basis points. The largest cost component, about \$20 per account, is for R&C, which is carried out by a separate public agency. (An alternative model might auction off the R&C function as well). While R&C costs have been quite constant over time in dollar terms, investment costs have been rising with assets, so total administrative costs are now \$30 per account. As a percentage of assets, administrative costs have fallen from .7% at the start-up of the system to .11% in 1998 (Table 13).

The fee is less than 10% of what workers would pay, on average, if they were given a broad choice of portfolios and chose the same mix as retail mutual fund investors (who pay 1.43% of assets, on average). It is about half of what they would have to pay in the retail industry in the U.S. for similar funds (S&P index mutual funds are available for 21 basis points, including trading costs). This cost is exceptionally low in part because contributions are passed on by a single employer, the government, which also covers some additional communications costs. But the biggest cost saving in TSP (a saving of 1.2% of assets per year compared with the average mutual fund investment) comes from constraining the choice of investment strategy to domestic passive management; countries that did not have such deep financial markets could not achieve such large savings. Small additional savings (of .1% per year) accrue to TSP from using a competitive bidding process to enhance bargaining power, secure better rates and eliminate marketing expenses.

The advantage of such a process: Workers have a clear-cut choice of investment portfolio—but choice is constrained in a way that is designed to keep fees low without sacrificing expected returns. This constraint may be a big advantage in an IA system where many small account holders are unaccustomed to evaluating multiple investment options, and where it is important to avoid a high implicit contingent government liability. The disadvantages: the selection of portfolios is very limited, adaptation to change is slow and there is no competition. Workers who want a risk-return trade-off that is different from that permitted by the system's governing board or those who want active management cannot satisfy their preferences. Investment in enhanced index funds, high-yielding but risky venture capital, private equity and new financial instruments are completely ruled out. Competitive pressures for good performance and innovation are limited once a portfolio is chosen since, for any given portfolio (and even across portfolios), there is no choice of manager. These disadvantages could be mitigated by increasing the number of benchmarks available and selecting two or three companies to run the funds for each benchmark. The larger the asset base, the more feasible this becomes.

In developing countries where the pension system is a major source of long term capital, financial markets are not efficient, and few attractive financial instruments and benchmarks are available, a heavy concentration on passive investment may not be feasible or desirable. Thus, as was the case with the Bolivian model, this approach is promising but must be used with caution.

Open Entry and Price Ceilings: Sweden.

Still greater product variety could be achieved, while retaining low fees, by allowing open entry subject to a price ceiling imposed by a central authority. Sweden recently established an IA system using this type of approach. Five million workers are expected to participate, contributing 2.5% of wages. (This funded system is supplementary to a large unfunded “notional” defined contribution pillar, to which workers contribute 16%). For a full time worker, annual contributions will amount to \$600 per year and about 16 billion kronor or \$2 billion per year are expected to flow into the system. Money began to accumulate in an unallocated pool in 1995, so when allocations to individuals and funds begin in 2000, total assets will be about \$10 billion.

All mutual funds that operate in the voluntary market (several hundred funds) are free to participate providing they agree to the net fee schedule set by the public agency that administers the system (the PPM). Subject to this proviso, workers can select the fund of their choice. After studying the industry's production function to determine the size of fixed and variable costs, the public agency has just promulgated the fee schedule that it plans to impose. It is a complex schedule that attempts to mimic the cost function and the fee schedule that would be charged in the institutional market. It depends on the expense ratio charged by the fund to the general public in the voluntary market (as a proxy for asset class and quality) and the magnitude of contributions that it attracts in the mandatory system (Table 14 and Figure 1). A sliding scale was used so that price would track declining marginal and average costs. It also cushions the risk of participation for funds that are not sure they will attract a large volume of assets, thereby encouraging diversity, while restricting excess profits from those that are more successful (MPIR 1998).

Mutual funds in the voluntary market in Sweden charge varying amounts ranging from .4% to over 2%. As of 1997 the average fee plus trading commissions was 1.5%, as in the U.S. (Dahlquist et al 1999). Funds will charge the same fees in the mandatory system, but are required to pay a rebate to the PPM, which passes it back to workers. The rebate to the PPM is higher for high cost funds and more popular funds. Funds that attract large sums from the mandatory system are left with a net marginal fee of less than 20 basis points and a net average fee of 20-30 basis points. Intensive marketing is likely to be ruled out by these fees since cost would exceed incremental net revenues. These net numbers are roughly similar to fees paid for management of domestic assets by large institutional investors in the U.S.

This method could not be used, however, unless some other arrangements were made to cover R&C costs, for these costs will exceed the permissible fees in the early years of the new system. Many mutual funds would be unwilling to participate if they had to cover R&C expenses out of their allowable fee. The Swedish system avoids this problem by centralizing collections, record-keeping and most communications—charging all workers an additional asset-based fee to cover these costs (thereby cross-subsidizing low earners) and amortizing expenses over a 15-year period (thereby spreading fixed costs over many cohorts). R&C costs are expected to be .3% at the beginning, eventually dropping to .1%. To avoid the cost of setting up a new collection system, contributions are collected by the central tax authorities together with other taxes and eventually passed on to the PPM. The PPM records these contributions, aggregates the contributions of many individuals and moves them in omnibus accounts to the mutual funds chosen by workers. Indeed, the funds will not even know the names of their individual members—a procedure known as “blind allocations.” All fund switches will be processed by the PPM. These features reinforce the bulk buying power of the public agency and further discourage sales commissions.

The rebate collected from the funds is distributed back to the workers, according to a formula set by the PPM. One might expect (and high fee funds preferred) that the rebate would go back to workers in the originating fund, on grounds that net price paid by workers would then equal net fee received by fund, and both would approximate marginal cost. However, the PPM proposed (and low fee funds, that tend to be associated with unions, preferred) to give each worker back the same amount (as a percentage of assets invested) regardless of which fund he or she has chosen. This would drive a wedge between net price paid by workers and received by funds. Workers who chose low fee funds would get back far more than the rebate paid by their fund, while workers in high fee funds would continue to pay high fees that their funds would not keep. If the net fee received by each fund approximates its marginal cost (which is the intent), the net price paid by consumers would differ from marginal cost and, in making their allocation decisions, consumers would not be taking real marginal cost into account (Figure 1).

The PPM proposal, obviously, was opposed by the high fee funds and their potential consumers. The net outcome, therefore, was a political compromise: part of the rebate will be returned on a group basis and part on an individual basis. Thus, the system will redistribute across consumers in ways that are not

obvious or obviously equitable. This controversy about how to distribute the rebate exemplifies the value judgements and/or political pressures to which price control systems are subject, sometimes at the expense of efficiency. It is not clear whether this redistributive fee-cum-rebate schedule will prove to be politically sustainable.

The Swedish system also illustrates some of the pitfalls of a price control system that stem from the difficulty in promulgating an efficient and equitable fee schedule for a differentiated industry. Experience in other industries warns that “incorrect” prices may be set and quality deterioration may occur under price controls. For example, it remains to be seen which funds will be willing to enter the system under these terms. If the price has been set too low, few if any funds would choose to participate. (In Kazakhstan a very low unstable fee ceiling of 1% of contributions + 10% of investment returns has been set and, partly for this reason, participation by private investment companies is limited).⁴ And those that do participate may provide inferior service. While many funds appear to be interested in Sweden, the nature of the participating companies will be skewed by the fee structure. Most likely bond, large cap and index funds investing in Sweden and other industrialized countries will participate, while actively managed small cap and emerging market funds that have more expensive production functions may be reluctant to join. Thus price controls are implicitly pushing the system toward certain assets and toward passive investing, although these were not explicit goals at the outset.

How much is actually saved by this complex system? Under the current formula, the average fee that will be paid by consumers and kept by funds depends on the distribution of assets in the mandatory system, which is not yet known, since the system will start operating in the year 2000. Suppose, hypothetically, that the demand and supply effects described above shape consumer choice so that 75% of all assets accrue to low fee funds while 25% of assets are divided equally among the others. Then, the net average fee paid by consumers (including trading commissions and R&C costs) will be about .8% of assets annually, compared with 1.5% in the voluntary market; total saving = .7% of assets. In the long run, as R&C costs fall, total savings rise to 1% (Table 15).

As in the case of TSP, much of this potential saving is due to incentives that change the mix of funds and shift consumers toward low cost funds. A smaller proportion is due to cost cuts for the given funds, stemming from fee ceilings that discourage marketing expenses. The saving is not nearly as much as the TSP achieves, mainly because the Swedish fees are high enough to accommodate greater choice, including active management. Thus, the Swedish model would be a possibility for other countries that want to provide considerable choice in their IA system, while also achieving modest cost reductions—but the dangers of price ceilings discussed above are also real.

VI. Constrained Choice: Is It a Good Choice?

An over-arching characteristic of these approaches is constrained choice for the worker. The government organizes the market and constrains choice in every mandatory system, albeit with different objectives. In Chile and most other Latin American countries with decentralized schemes, pension funds must abide by detailed regulations controlling their investment portfolios, designed to reduce financial market risk and regulatory difficulty, rather than to minimize costs. As a result, marketing costs are high and returns have

⁴ In Kazakhstan the pension fund is responsible for R&C. It contracts out the asset management function to investment companies which are allowed to charge .15% of contributions + 5% of nominal investment income. The pension fund keeps the remainder. The part of the fee that is based on investment returns will be high in good years and in inflationary periods, but very low in poor, non-inflationary years. So far there are 11 pension funds, some tied to particular employers, plus 1 state pension fund with the majority of affiliates. There are three asset managers, including one multinational that is trying to develop other business in Kazakhstan.

not been maximized, but potential disasters have been averted (Srinivas and Yermo 1999). Moral hazard problems have potentially been reduced, thereby making government guarantees of benefits less costly.

The IA models used in Bolivia, Sweden and the TSP preserve private competitive fund management and worker choice, but choice is constrained with the object of reducing administrative costs and eventually increasing pensions. Preliminary evidence suggests that in the long run they will cut costs to less than .6% and in some cases to less than .2% of assets per year (Table 15). If gross returns are not affected negatively, such fee reductions could raise pensions by 10-20% relative to the retail market.

To evaluate whether these cost and fee reductions are desirable, it is important to analyze where they come from. We have identified three major sources: changes in investment portfolios and strategies, lower costs of managing a given portfolio, and redistributing by cost-shifting and cutting oligopoly profits. The first source has the largest impact on fees, especially in countries with efficient financial markets and passive investment opportunities. The second source, operating mainly by minimizing marketing and start-up expenditures, is available in developing countries as well. Cost-shifting involves distributional trade-offs between long run and short run fees and between fees in the voluntary and mandatory markets. The reduction in profits is probably the least important since, in many countries and in a global financial market, these will be small anyway in the long run. Potential gains may also be achieved by centralizing the R&C function, although this is less clear.

Changes in portfolios

All three cases severely limit the range of portfolios available to workers, ruling out “expensive” portfolios in assets such as small cap stocks and emerging markets and directing workers toward index funds in liquid domestic instruments instead. Innovation and new product development is discouraged or ruled out. TSP does this most strongly and directly; about 90% of its fee saving is attributable to this constraint on asset allocation. Sweden does it indirectly by setting price ceilings that will restrict the supply of “expensive” funds and cross-subsidies that will push demand toward cheaper funds. Developing countries such as Bolivia that lack well-functioning index funds and liquid securities markets have much less access to this source of cost saving. (Of course, they also lack access to a wide set of financial instruments necessary for diversified active investment; their portfolios are constrained mainly by availability). This may, however, become an additional rationale for the development of new instruments, more accurate indexes, disclosure rules that will enhance market efficiency, and international diversification using index funds (Shah and Fernandes 1999).

These constraints on asset classes are predicated on the assumption that the judgement of many workers about the relationship between fund performance and fees is imperfect, and that cost saving, which is certain, should take precedence over workers’ expectations about returns, which are highly uncertain, in a mandatory scheme. The evidence cited above supports the idea that many small investors (and even large investors) are poorly informed. Constraining investment choice at the start of their new systems 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.

But these restrictions decrease the adaptability for individual risk-return preferences to informed workers as well as the fund’s incentive to innovate and are therefore not an unmitigated gain. The agents who set these restrictions may not always act in the workers’ best interests. Additionally, individuals may have a smaller sense of “ownership” and a larger sense of being taxed if their choice of investment strategies 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” a small number of investment portfolios and managers. These

dangers can be alleviated by allowing greater choice, but at a cost in terms of higher price (Sweden versus TSP).

Cost-reductions

All three cases achieve further economies by investing assets through the institutional market to a limited group of companies and centrally negotiating fees for large money blocks. In Bolivia and the TSP a small number of slots for investment companies was set a priori and operating rights auctioned off to the lowest qualified bidder; price was determined through the competitive bidding process. In Sweden a low price structure was pre-set by the public agency and quantity of companies willing to accept these terms remains to be determined, but a small number is expected to dominate the market. The low fees and limited entry dampen marketing costs and excess capacity that might otherwise exist at start-up. 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.⁵ When the fee is decreased, the incentive to spend on marketing will similarly decline and this helps to sustain the low fee.

As discussed earlier, marketing provides both accurate and misleading information to consumers, incentives for good performance and a large element of zero-sum game competition. Reductions in marketing expenditures are efficient if the zero-sum game component is cut while the useful information is not cut. It seems likely that the socially optimal amount of marketing is less in a mandatory IA system than in the voluntary market. Since the total investable amount is predetermined by law; marketing is not needed to induce people to save or to attract these savings to financial markets. 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. This could be a big problem in a new mandatory system with many small inexperienced investors. In such a system it is important to provide other less biased, less expensive sources of information 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 in the mandatory systems may be more problematic in countries with low tax collection capacities and fewer alternative sources of information, particularly those that wish to use marketing as a tool to increase coverage and reduce evasion.

Cost-shifting

The third source of the fee savings is due to cost-shifting and is mainly a short run and distributional effect: maintaining the burden of fixed costs in the voluntary rather than the mandatory systems and shifting part of the initial capital costs in a new system to later cohorts. For example, in Sweden entry is open only to firms that operate in the voluntary market, the fee schedule aims at charging marginal cost and a 15-year amortization period is being used for R&C by the public agency, while a private company would probably expect a positive return in five years. Since the benefits of an IA system accrue disproportionately to younger generations, who have more opportunity to accumulate savings, it seems reasonable that much of

⁵. Corroborating evidence about the cost-savings when marketing is eliminated comes from Australia: the "industry funds" which are nonprofit and have a captive membership stemming from collectively bargained retirement plan, charge fees that are less than 1/3 the level of for-profit "master trusts," that compete in the retail market with heavy sales expenses (.53% of assets for the industry funds versus 1.9% for the master trusts; Bateman 1999, Bateman and Piggott 1999). This fee differential is due in part to marketing expenses in the master trusts but not the industry funds. The low cost occupational plans in the UK, Switzerland and South Africa, referred to earlier, also benefit from low marketing expense in the absence of worker choice.

the fixed costs should be shifted to them as well—but obviously this involves a value judgement. Obtaining lower fees through an “all or nothing” offer for large blocs in oligopolistic markets likewise reduces price in the mandatory system without a corresponding impact on real resource cost—it shifts fixed costs to the voluntary sector or cuts oligopoly profits.

Centralizing collections and R&C: does this help?

The institutional approach is likely to imply centralized collections and record-keeping. Centralized collections enable money to be aggregated and moved in large blocs without the identity of the worker being disclosed and centralized record-keeping allows the investment function to be more contestable in the rebidding process. Both TSP and Sweden separate collection and R&C responsibilities from investment responsibilities and turned the former over to a central agency. In Bolivia, where only two asset managers operate, virtual centralization through private companies has been achieved, but this has not been separated from the investment function. Is this desirable?

Besides its role in making the rebidding process more contestable, centralized record-keeping has other cost implications. It facilitates economies of scale and standardization and avoids the compatibility problems that could arise when a member switches funds and information systems. It enables a basic level of service to be provided, without competitive pressures to upgrade to a more costly level. Workers can more easily have multiple accounts without multiple costly records and with the entire lifetime record in one place upon retirement. Centralization also has a redistributive potential—it permits a cross-subsidy to small accounts of low earners, which may be deemed socially desirable in a mandatory scheme. But the downside is the possibility that the central R&C office may have little incentive for accuracy and efficiency if it has a monopoly.

Centralized collections enable the IA system to piggyback on existing tax collection systems, hence avoid the cost of setting up a new collection system and reduce incremental paperwork costs to employers. But piggybacking involves a large time-cost, hence opportunity cost. An average of 9 months will pass in Sweden each year before the contributions will be attributed to individuals and allocated to funds, during which time participants simply earn the risk-free government rate. If the government rate is 3 percentage points lower than the rate that investors would otherwise have earned, this opportunity cost is equivalent to a charge of 2.25% of contributions or .11% annually of assets. We have not added this amount into our total cost calculations but they should be borne in mind—the advantages are not cost-free.

Centralized collections may also facilitate compliance since a single collection agency has responsibility for tracking contributors and therefore for identifying evaders. Individual pension funds have little incentive to report evaders, since they will simply lose a potential future customer. But the centralized agency may also have little incentive, since it doesn't keep the money. The outcome here obviously depends on governance capacity and social norms and we have little empirical evidence on real world outcomes.

Centralized collections and record-keeping may be handled through a public agency or may be contracted out to a private company or clearinghouse in a competitive bidding process. Croatia is attempting the latter approach. Using a public agency may not be a good option for countries that have weak tax collection mechanisms and distrust of government. For example, this approach probably was not feasible in Chile at the start of its reform. Centralization via a contracting process has the advantage of introducing price and quality competition into the choice. The bidding process could be run by the government, or by an association of pension funds in order to make the winner more accountable to them. Even if centralization is not required from the start, the system is likely to move in that direction if sub-contracting is permitted, due to scale economies. (Such sub-contracts are not permitted in Chile). Most mutual funds in the U.S.

(except the largest fund complexes) turn their R&C functions over to an external “transfer agent” and two transfer agents dominate the entire industry—evidence of natural market adaptation to scale economies. Many Australian funds contract out the account administration function to a few large R&C companies (Bateman 1999). We might expect such procedures to develop in other mandatory pension systems, if they are permitted. The pros and cons of alternative R&C arrangement obviously require further empirical study, as countries experiment with alternative systems.

Other caveats and pitfalls

The institutional approach to IA systems involves other caveats and pitfalls besides those already mentioned. First of all, in a competitive bidding process the “wrong” number of firms may be chosen, resulting in over- or under-concentration relative to the least-cost point. Or in a system of price ceilings the wrong price may be chosen, resulting in under- or over-supply.⁶ Second is the need to build performance incentives into the initial contract. It is likely that whatever performance and service characteristics are not explicitly mentioned will be given scant attention by the winning bidders who want to maximize their profits subject to the contractual constraints. Market competition provides continual implicit incentives for good performance, in ways that matter to consumers. Innovation is encouraged. Competition bidding makes some of the incentives explicit ex ante and disregards the others—the essence of incomplete contracts. The greater the choice for workers and the contestability at the rebidding stage, the smaller is this problem. Also, the less confidence one has in the ability of workers to evaluate fund behavior, the smaller is this problem—and different analysts probably have different priors on this subject. Empirical evidence on the performance of asset managers who are chosen under different procedures might throw some light on this issue.

Further along these lines, a competitive bidding process is inflexible in the face of unforeseen contingencies that have not been spelled out in incomplete contracts. One such unforeseen contingency occurred in Bolivia when the parent companies of the two winning investment managers merged in a global merger process; in effect the two winners became one and the duopoly became, effectively, a monopoly.

Whether a monopoly or duopoly is involved, effective regulation is essential. But one or two large winners in a competitive bidding process may capture the regulators; the “regulated” may be in a stronger bargaining position than the regulators. Corruption in the bidding process and collusion afterwards is a related possibility (Valdes 1999a). A further problem is that a small number of large funds may exert a dominant control over small capital markets, rather than helping to develop these market further. These considerations may lead a country to choose a larger number of winners at the primary bidding stage than would be chosen on the basis of scale economies alone. Further concentration would then be achieved via the market at the secondary stage of competition for workers—but this would increase marketing costs as each “winner” tries to increase its market share.

A final problem occurs at the rebidding stage. Every competitive bidding process must specify a credible rebidding procedure. But the first winners may have a big competitive advantage over potential contestants in such markets. This is particularly the case if they have already invested in fixed costs and can therefore underbid new entrants who would have to cover such costs. A short run bidding competition can therefore become a long run monopoly, with little regulation or contestability. A large part of the fixed costs consists of the data base of affiliates to the system. The rebidding contest can be enhanced by separating the R&C

⁶ If price is set too low, entry may be too limited or service and quality of entrants too constrained. If it is set on the wrong base, as in Kazakhstan, this may restrict entry and create incentives for non-optimal investment behavior. If it does not adequately distinguish among asset classes, “expensive” assets may be excluded from the market; this may have occurred in Sweden.

function from the asset management function, and vesting ownership of the membership database in the system itself, rather than in the firms that carry out the investment or R&C functions.

The greater the choice, the smaller are these dangers but the smaller also is the opportunity for depressing administrative costs. We thus face a trade-off between reducing administrative costs on the one hand versus increasing continuous incentives, adaptability and political insulation on the other hand. It seems plausible that the terms of this trade-off depend on the size of the system and the governance capacities of the country. The larger the contribution base, the greater the choice that can be allowed while still benefiting from low costs. Thus, Sweden is likely to have the same long run costs as Bolivia despite the fact that it offers greater choice, because of its larger average account size. The TSP has lower fees than Sweden, both because it has a larger asset base and because it constrains choice to a much greater extent.

These pitfalls can be minimized by a careful writing of the bidding contract—specifying performance targets and rewards, rebidding procedures and a mechanism for handling exceptional contingencies. The more responsible the governance of the country, the more likely that contracts will be carefully written and enforced and thus the lower the political risks of operating through the institutional market. While competition and choice always have a role to play, countries with well developed financial markets and good governance have a wider range of options, including lower cost options, available to them.

VII. 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 can the cost advantages of the institutional market that are obtained by the large investor be garnered by IA systems that consist of many small accounts? To answer these questions we compared costs in the retail market with those in the institutional market, including several IA experiments that aggregate these small accounts into large money blocs in setting price and market access.

Since these systems are new, the evidence is still fragmentary. But so far it is promising. It appears that substantial cost savings can be realized by investing IA's through the institutional market with constrained choice. This could raise final accumulations and pensions by 10-20%. Typically, these systems aggregate contributions, specify a small number of winning funds among whom workers can choose, and use a competitive bidding process to set fees (although Sweden reverses this process and sets fees, allowing competition to determine quantity).

These fee reductions have been achieved by (1) changing the range of investment strategies faced by workers, (2) cutting costs and (3) shifting costs or shaving profits. The largest fee reductions observed stem from a product mix change: constraining choice to investment portfolios and strategies that are inexpensive to implement, such as passive management (as in TSP). This requires access to well developed financial markets and has an offsetting disadvantage for investors who would have preferred different portfolios. The largest cost reductions for a given portfolio are achieved by a price-setting process that cuts incentives for marketing (as in Bolivia and Sweden) and avoids excess capacity at the start of new systems (as in Bolivia). This is likely to work best if the collection and record-keeping functions are separated from the investment function, which facilitates blind allocations and competition at the rebidding stage. The third effect is distributional: increased bargaining power in an "all or nothing" deal is used to maintain fixed costs in the old voluntary market, to partly transfer them to future cohorts through extended amortization, and to keep oligopoly profits low.

Any system of constrained choice imposes costs in terms of satisfying individual preferences, decreasing market incentives, increasing the risk of political manipulation, corruption, collusion and regulatory capture. Investment contracts are bound to be incomplete with respect to performance incentives and

adaptability to unforeseen contingencies, and rebidding procedures pose a further problem. Trade-offs are therefore involved between administrative costs and other less certain and less tangible costs.

Probably the least-cost alternatives and trade-offs are available for industrialized rather than for developing countries. Industrialized countries have access to existing financial institutions, lower trading costs, passive investment opportunities, and more effective governance. For these reasons, they can save more than 1% per year by constraining choice and operating through the institutional market. In developing and transitional countries, particularly those with small contribution and assets bases, investment costs are likely to be higher and the opportunities for reducing fees lower. In particular, reducing fees through portfolio constraints may not be a realistic option in the short run for countries that have limited access to passive management or to large liquid asset classes. For these countries, the main cost-saving measure may be competitive bidding for a limited number of entry slots, that results in lower costs and fees for a given portfolio. Based on the experience of Bolivia, this offers the possibility of reducing costs substantially, especially at the start-up phase—providing government has the capacity and will to construct and enforce the contract carefully.

A total constraint on choice implied by a single centralized fund has led to poor net outcomes for workers and misallocated capital in many countries (Palacios and Iglesias 1999), while the retail market option has led to substantial administrative costs. The institutional approach is an intermediate option that retains market incentive while offering the opportunity for significant cost saving. Hence, it represents an option that policy-makers should seriously consider when establishing their mandatory IA systems--providing choice is not constrained "too much".

Table 1 **Administrative Costs Over Time as % of Assets and \$'s per Account – Hypothetical System**

Panel A: Low costs, small contribution base

Year	Year-end accumulation of individual (in \$000's) ^a	Average size account in system (in \$000's) ^b	Costs as % of Assets		Costs as \$'s per Account		R&C/Total exp.
			R & C	R&C + Inv	Inv. exp per account	R&C + Inv per account	
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	0.70
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: Low costs, high contribution base

Year	Year-end accumulation of individual (in \$000's) ^a	Average size account in system (in \$000's) ^b	Costs as % of Assets		Costs as \$'s per Account		R&C/Total exp.
			R & C	R&C + Inv	Inv. exp per account	R&C + Inv per account	
1	2.0	2.0	1.00	1.10	2.0	22.0	0.91
2	4.0	4.0	0.50	0.60	4.0	24.0	0.83
3	6.4	6.4	0.31	0.41	6.4	26.4	0.76
4	8.8	8.4	0.24	0.34	8.4	28.4	0.70
5	11.2	10.8	0.19	0.29	10.8	30.8	0.65
10	25.6	22.4	0.09	0.19	22.4	42.4	0.47
15	43.6	35.2	0.06	0.16	35.2	55.2	0.36
20	66.8	48.4	0.04	0.14	48.4	68.4	0.29
25	96.4	61.6	0.03	0.13	61.6	81.6	0.25
30	134.4	74.0	0.03	0.13	74.0	94.0	0.21
35	182.4	83.2	0.02	0.12	83.2	103.2	0.19
40	244.0	88.0	0.02	0.12	88.0	108.0	0.19

Panel C: High costs, high contribution base

Year	Year-end acc. of individual (in \$000's) ^a	Av. size account in system (in \$000's) ^a	Costs as % of Assets			Costs as % of Assets		
			R&C	R&C + Investment	R&C + Investment + Marketing	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

Assumptions:

Panel A: a \$520 is contributed each year, R & C costs = \$20 per account, net contribution (NC) = \$500, gross rate of return = 5.1%, investment costs = 0.1% of assets, net return (NR) = 5.0%.

Panel B: annual contribution = \$2020, R&C costs = \$20 per account, net contribution = \$2,000, gross rate of return = 5.1%, investment costs = 0.1% of assets, net return = 5.0%.

Panel C: annual contribution = \$2020, R&C costs = \$30 per account, net contribution = \$1990, gross rate of return = 5.1%, investment costs = 0.6%, marketing cost = 0.5% of assets, net return = 4%

a Individual's account accumulates at the following rate: $AA_t = AA_{t-1}(1 + NR) + NC$.

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 cause decrease in average account size in system relative to individual's account.

Table 2 Administrative Fees in Latin American IA Systems, 1999

Country ^a	Gross Fee as % of Wages ^b	Net Fee as % of Wages	Net Fee as % of Total Contribution	Net Fee as % of Current Assets, 1998	Net Fee as % of Lifetime Annual Assets ^e	% Reduction in Final Capital and Pension
Argentina ^c (10.0)	3.25	2.30	23.0	7.66	1.13	23.0
Bolivia ^d (10.6)	4.60	0.60	5.5	3.0	.54	11.1
Colombia ^c (11.6)	3.50	1.64	14.1	4.0	0.69	14.1
Chile ^e (11.8)	2.47	1.84	15.6	1.36	0.76	15.6
El Salvador (12.1)	3.18	2.13	17.6	-	0.86	17.6
Peru (12.4)	3.74	2.36	19.0	7.31	0.93	19.0
Mexico ^f (8.7)	4.42	1.92	22.1	9.19	1.08	22.1
Uruguay (14.4)	2.68	2.06	14.3	-	0.70	14.3

Source: Augusto Iglesias, Prim America Consultores

- a. Total contribution rate = contribution to IA System + net fee, as % of wages. This number is given in parentheses after each country. In Argentina, Mexico and Uruguay the fee is taken out of the worker's account, unlike other countries where the fee is added on.
- b. Gross fee includes premium for disability and survivors insurance. Net fee excludes this premium.
- c. Some AFPs in Argentina also charge a fixed fee. The split between administrative fee, insurance and other fees and costs is difficult to disentangle in Argentina and Colombia.
- d. This includes a fee of .5% of wages plus .235 of assets that is charged by the AFP's plus .2% of assets to the custodian. The asset-based part will increase over time as assets grow, so total fee as % of wages and contributions will also grow and will be higher than numbers given in columns 1,2 and 3 in the future. Gross fee includes 2% of wages for disability and survivors benefits.
- e. Most Chilean AFPs also charge a small flat fee per month, increasing the net fee. Anecdotal evidence indicates that part of the fee is rebated when workers switch AFPs, decreasing the net fee.
- f. In Mexico the government contributes 5.5% of the minimum wage, which is estimated to be 2.2% of the average wage, to each account. This is included in the total contribution rate given above. Source for Mexico: CONSAR tabulations, 1997.
- g. This is based on a simulation of a full career worker who works 40 years with an annual wage growth of 2% and an annual interest rate of 5%.

Table 3 **Assets, Accounts and Costs in Latin America, 1998 (in US\$)**

Panel A---- using 1998 exchange rate

Country	# of Contributors (millions)	# of Affiliates (millions)	Exchange Rate	Assets (mill US\$)	Total Assets / Contributors (US\$)	Total Assets / Affiliates (US\$)
MEXICO	11.38	13.83	0.100600	5484.43	482	397
Bolivia		0.46	0.177900	238.39		518
Colombia	1.39	2.91	0.000654	2127.57	1531	731
Peru	0.90	1.98	0.319600	1745.38	1939	882
Argentina	3.46	7.07	1.000200	11528.70	3332	1631
Chile	3.15	5.97	0.002111	31056.17	9859	5202
Country	Fee per Contributor (US\$)	Expenses per Contributor (US\$)	Fee per Affiliate (US\$)	Expenses per Affiliate (US\$)	Fee per Unit of Asset (%)	Expenses per Unit of Assets (%)
Mexico	43	44	35	36	8.82	9.19
Bolivia			16	21	3.00	4.04
Colombia	61	101	29	48	4.00	6.63
Peru	142	158	64	59	7.31	6.74
Argentina	261	200	128	98	7.66	6.80
Chile	134	111	71	59	1.36	1.13

Panel B---- using 1997 PPP

Country	# of Contributors (millions)	# of Affiliates (millions)	Exchange Rate	Assets (mill US\$)	Total Assets / Contributors (US\$)	Total Assets / Affiliates (US\$)
MEXICO	11.38	13.83	0.25	13629.30	1198	986
Bolivia		0.46	0.5263	705.26		1533
Colombia	1.39	2.91	0.0025	8132.92	5851	2795
Peru	0.90	1.98	0.6667	3640.93	4045	1839
Argentina	3.46	7.07	1.1111	12806.98	3701	1811
Chile	3.15	5.97	0.0058	85338.19	27091	14295
Country	Fee per Contributor (US\$)	Expenses per Contributor (US\$)	Fee per Affiliate (US\$)	Expenses per Affiliate (US\$)	Fee per Unit of Asset (%)	Expenses per Unit of Assets (%)
Mexico	106	110	87	91	8.82	9.19
Bolivia			46	62	3.00	4.04
Colombia	234	388	112	185	4.00	6.63
Peru	296	273	134	124	7.31	6.74
Argentina	290	222	142	109	7.66	6.80
Chile	368	307	196	162	1.36	1.13

Source: PrimeAmerica Consultores, taken from reports of Superintendencias.

* Countries are arranged in order of total assets/affiliates at 1998 exchange rate

Note: In Colombia and Argentina AFP's engage in other insurance activities whose fees and costs are difficult to disentangle from pension administration. In Bolivia an additional 0.2% of assets is paid to the custodian.

Table 4 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\$)	Marketing Costs as % of Total Exp.
1982	1.44	0.74	1277.74	1205	887	46
1983	1.62	0.76	2212.50	1799	1366	40
1984	1.93	0.70	2842.46	2090	1473	36
1985	2.28	0.68	2290.61	1470	1003	30
1986	2.59	0.68	3112.55	1779	1201	24
1987	2.89	0.70	3812.46	1884	1319	21
1988	3.18	0.68	4868.26	2246	1529	23
1989	3.47	0.65	5844.70	2577	1684	22
1990	3.74	0.61	8144.61	3558	2178	24
1991	4.11	0.61	11999.98	4825	2920	26
1992	4.43	0.61	14265.43	5292	3217	30
1993	4.71	0.59	17839.38	6389	3788	35
1994	5.01	0.57	24206.33	8406	4827	38
1995	5.32	0.56	27039.54	9129	5082	43
1996	5.57	0.56	28366.44	9088	5091	49
1997	5.78	0.57	31133.98	9445	5386	52
1998	5.97	0.53	31060.16	9861	5206	46

Table 4 **Assets, Fees and Expenditures in Chile Through Time (cont.)**

Year	Fee per Contributor (1998 US\$)	Expenses per Contributor (1998 US\$)	Fee per Affiliate (1998 US\$)	Expenses per Affiliate (1998 US\$)	Fee per Unit of Assets (%)	Expenses per Unit of Assets (%)
1982	113	145	83	106	9.39	12.00
1983	101	102	77	77	5.63	5.65
1984	102	97	72	68	4.90	4.65
1985	52	50	36	34	3.54	3.41
1986	52	46	35	31	2.93	2.57
1987	49	42	34	29	2.60	2.22
1988	58	50	39	34	2.57	2.23
1989	64	51	42	33	2.49	1.97
1990	71	63	43	39	2.00	1.77
1991	81	68	49	41	1.68	1.41
1992	95	74	58	45	1.79	1.39
1993	103	92	61	54	1.61	1.43
1994	123	114	71	65	1.47	1.35
1995	143	124	79	69	1.56	1.35
1996	145	128	81	72	1.59	1.41
1997	148	131	84	75	1.56	1.38
1998	134	112	71	59	1.36	1.13

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

Exchange Rates: 1982—0.017103, 1983—0.013734, 1984—0.011233, 1985—0.005445, 1986—0.004878, 1987—0.004200, 1988—0.004041, 1989—0.003372, 1990—0.002969, 1991—0.002668, 1992—0.002616, 1993—0.002320, 1994—0.002475, 1995—0.002456, 1996—0.002353, 1997—0.002274, 1998—0.002111.

Table 5 A
Regression Analysis: Determinants of Costs and Fees, Chile, 1982-98: Aggregate Analysis

Dependent Variables						
Independent Variables	Total Admin. Cost	Total Cost / Assets	Total Cost / Affiliates	Total Fee Revenues	Total Fees / Assets	Total Fees / Affiliates
Assets	0.012 (24.38)*	-0.00004 (4.14)*	0.001 (12.00)*	0.013 (30.47)*	-0.00005 (5.39)*	0.002 (16.48)*
Dummy, start-up year=82	92.781 (4.74)*	9.581 (20.16)*	77.936 (14.91)*	47.948 (2.54)***	6.629 (16.14)*	50.182 (11.61)*
Dummy, start-up years=83-4	53.611 (3.44)*	2.787 (7.81)*	42.486 (10.83)*	43.532 (3.07)**	2.567 (8.33)*	39.383 (12.14)*
Constant	45.780 (5.18)*	2.476 (12.22)*	26.704 (2.23)***	55.269 (6.87)*	2.826 (16.14)*	31.078 (16.87)*
R ²	0.976	0.974	0.951	0.985	0.967	0.956
N	17	17	17	17	17	17

Note: t-statistics are in parentheses

* Significant at 0.1% level ** Significant at 1% level *** Significant at 5% level

Units of measurement: costs, fees, and assets are 1998 US dollars in millions; # of contributors and affiliates are in millions; cost/assets and fees/assets are in %; cost/affiliates, fees/affiliates and assets/affiliates are in 1998 US dollars.

Table 5B Fixed Effects Regression for Chile: Disaggregated by AFP and Year

Indept. variable	Cost		Cost/Affiliate			Cost/Asset		
	quadratic	Logs	quadratic	Logs	No logs	quadratic	Logs	
Affiliate	3.711 (0.65)	0.350 (5.54)*	-78.510 (-0.79)	-0.650 (-10.31)*	11.712 (0.49)	13.587 (3.71)*	0.350 (5.54)*	
Affiliate square	-2.211 (-0.95)		28.336 (0.70)			-3.651 (-2.47)***		
Asset	0.011 (11.95)*	0.535 (14.53)*	0.046 (2.76)**	0.535 (1.248)		-0.002 (-2.82)**	-0.465 (-12.61)*	
Asset square	-1.5e-07 (-1.01)		-5.5e-06 (-2.10)***			1.3e-07 (1.33)		
Asset/Affiliate					0.009 (4.56)*			
Dummy,start-up year=82	6.692 (5.38)*	1.248 (16.45)*	89.603 (4.14)*	1.248 (16.45)*	96.328 (4.89)*	15.121 (19.06)*	1.248 (16.45)*	
Dummy, start-up year=83,84	3.384 (3.50)*	0.655 (11.53)*	44.172 (2.63)**	0.655 (11.53)*	47.804 (3.15)**	4.316 (7.00)*	0.655 (11.53)*	
Constant	3.556 (3.94)*	-0.339 (-0.98)	84.942 (5.42)*	-0.339 (-0.98)	51.181 (4.57)*	0.695 (1.21)	4.266 (12.33)*	
R-sq	Within	0.923	0.917	0.134	0.703	0.173	0.681	0.868
	Between	0.938	0.931	0.137	0.775	0.036	0.110	0.533
	Overall	0.916	0.935	0.0003	0.817	0.210	0.335	0.753
N	234	232	234	232	234	234	232	

Table 5B Fixed Effects Regression for Chile: Disaggregated by AFP and Year (cont.)

Indept. variable	Fee		Fee/Affiliate			Fee/Asset		
	quadratic	Logs	quadratic	Logs	No logs	quadratic	Logs	
Affiliate	16.266 (2.66)**	0.803 (9.99)*	-146.971 (-2.94)**	-0.197 (-2.45)***	-3.719 (-0.36)	3.865 (2.28)***	0.803 (9.99)*	
Affiliate square	-9.792 (-.97)*		27.307 (1.36)			-1.631 (-2.39)***		
Asset	0.010 (10.27)*	0.389 (8.17)*	0.047 (5.64)*	0.389 (8.17)*		-0.002 (-5.37)*	-0.611 (-12.86)*	
Asset square	5.5e-7 (3.45)*		-3.8e-06 (-.90)**			1.9e-07 (4.36)*		
Asset/Affiliate					0.010 (12.81)*			
Dummy, start-up year=82	4.433 (3.35)*	0.828 (8.41)*	16.121 (1.49)	0.828 (8.41)*	32.772 (3.87)*	5.401 (14.72)*	0.828 (8.41)*	
Dummy, start-up year=83,84	3.992 (3.88)*	0.814 (11.07)*	33.096 (3.94)*	0.814 (11.07)*	44.289 (6.81)*	2.969 (10.41)*	0.814 (11.07)*	
Constant	2.569 (2.68)**	1.439 (3.23)**	85.478 (10.91)*	1.439 (3.23)**	33.238 (6.92)*	2.428 (9.13)*	6.044 (13.56)*	
R-sq	Within	0.946	0.903	0.285	0.552	0.495	0.699	0.715
	Between	0.947	0.946	0.138	0.179	0.882	0.850	0.697
	Overall	0.956	0.915	0.278	0.275	0.832	0.702	0.566
N	234	234	234	234	234	234	234	

Note: t-statistics are in parenthesis.

Significance level: 0.1% *

Significance level: 1% **

Significance level: 5% ***

See Table 5A for units of measurement. Similar results were obtained in a random effects analysis.

Table 6 Annual Asset-based Fee Equivalent to 15.6% Fee on New Contributions in Chile
(as percentage of assets)

Starting Age	Contribution Made For 1 Year Only At Given Age	Contributions Made For 20 Years Only, Starting At Given Age	Contributions Made Every Year Until Age 65, Starting At Given Age
	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 33.37% 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 \$134 today in Chile. The fee would increase 2% per year under these assumptions.

Table 7 **Composition of Mutual Fund Expenses, 1997**
(as % of assets and \$'s per account)

	Simple Asset-Weighted			
	Average	Average	Active	Passive
Expenses Included in Expense Ratio				
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	1.43	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 1. 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.

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

Table 8 **Determinants of Expense Ratios of Mutual Funds in the U.S., 1997**
 (dependent variable is total expenses/total assets, in basis points)¹

	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 ²	-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)*

Table 8 **Determinants of Expense Ratios of Mutual Funds in the U.S., 1997**
 (dependent variable is total expenses/total assets, in basis points)¹ (cont.)

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	3610		3610		3610		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
 1 Basis Point = 0.01%
- 2 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, US, 1992-97**
 (dependent variable is total expenses/total assets, in basis points)¹

	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)*

Table 9 **Determinants of Expense Ratios of Mutual Funds, US, 1992-97**
 (dependent variable is total expenses/total assets, in basis points)¹ (cont.)

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 See notes for Table 8

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 Fload	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 Fload	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
Marketing expenses as % of total expenses	35.00	36.00	45.00	43.00
Expenses as % of assets - Funds with either 12b1 or Fload				
Average 12b1 fee	0.38	0.52	0.36	0.37
Average Fload	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>	46.82	44.55	59.04	56.77
Expenses as % of assets – Funds without 12b1 or Fload**				
Average 12b1 fee	0	0	0	0
Average Fload	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, Fload and Total Expenses, see Table 7 and endnotes

**Table 11 Institutional v. Retail, Passive v. Active Mutual Funds
Average Expense Ratios and Investor Costs as % of Assets, 1997***

A. Expense Ratio – Unweighted	ALL			ACTIVE		PASSIVE	
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL	INSTIT.
Domestic Stock Funds	1.43	1.47	0.91	1.50	0.98	0.71	0.37
Domestic Bond Funds	1.08	1.12	0.62	1.12	0.62	0.65	0.35
International Stock Funds	1.69	1.75	1.09	1.77	1.15	0.95	0.66
Emerging Market Funds	2.12	2.19	1.39	2.21	1.39	0.57	
All Funds in Universe	1.28	1.31	0.79	1.33	0.81	0.72	0.42
B. Expense Ratio - Weighted by Assets	ALL			ACTIVE		PASSIVE	
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL	INSTIT.
Domestic Stock Funds	0.93	0.94	0.51	0.99	0.85	0.31	0.19
Domestic Bond Funds	0.80	0.82	0.53	0.82	0.54	0.25	0.31
International Stock Funds	1.18	1.19	0.96	1.20	0.97	0.42	0.68
Emerging Market Funds	1.75	1.77	1.25	1.81	1.25	0.57	0.00
All Funds in Universe	0.91	0.93	0.56	0.96	0.69	0.31	0.20
C. Total Investor Costs Including Annualized Floads and Brokerage Fees - Weighted by Assets	ALL			ACTIVE		PASSIVE	
	ALL	RETAIL	INSTIT.	RETAIL	INSTIT.	RETAIL	INSTIT.
Domestic Stock Funds	1.44	1.47	0.60	1.55	0.97	0.37	0.21
Domestic Bond Funds	1.30	1.35	0.62	1.36	0.65	0.31	0.33
International Stock Funds	1.83	1.87	1.05	1.89	1.09	0.48	0.70
Emerging Market Funds	2.29	2.33	1.34	2.38	1.37	0.63	
All Funds in Universe	1.44	1.48	0.65	1.52	0.81	0.37	0.22

* For 12b1 fee, Fload and total expenses see Table 7 and endnote 1.

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

Table 12 **Marginal and Average Asset Management Fees for Institutional Investors**
How they Vary with Amount of Investment (in basis points)¹ (cont.)

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

Table 12 **Marginal and Average Asset Management Fees for Institutional Investors**
How they Vary with Amount of Investment (in basis points)¹ (cont.)

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	
<i>Internal administrative costs:</i>	
- 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 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 **Administrative Costs of Thrift Saving Plan 1988-98**

Year	Expense Ratio As % of Assets	Average Size Account (in 000\$'s)	Administrative Cost per Account		Investment Cost per Account (\$'s)	R & C Cost per Account	
			(in \$'s)	(in 1998 \$'s)		(in \$'s)	(in 1998 \$'s)
1988	.70	2.4	16.8	(22.7)	1.0	15.8	(21.4)
1989	.46	3.7	17.1	(22.21)	1.5	15.5	(20.2)
1990	.29	5.1	14.81	(18.00)	2.0	12.8	(15.6)
1991	.26	6.7	17.4	(20.71)	2.7	14.7	(17.6)
1992	.23	8.5	19.6	(22.53)	3.4	16.2	(18.6)
1993	.19	10.7	20.3	(22.81)	4.3	16.1	(18.0)
1994	.16	12.8	20.6	(22.39)	5.1	15.4	(16.7)
1995	.14	16.5	23.1	(24.57)	6.6	16.5	(17.6)
1996	.13	20.1	26.2	(27.01)	8.0	18.1	(18.7)
1997	.12	25.3	30.3	(30.61)	10.1	20.2	(20.4)
1998 (*)	.11	27.4	30.1	(30.10)	11.1	19.2	(19.2)

Source: Thrift Saving Plan publications and authors' calculations.

Expense ratio in column 1 is reported gross expense ratio as reported in TSP publications (before adjustment for forfeitures) plus 3 basis points imputed by authors for brokerage (trading) fees. Columns 5 and 6 are authors' estimates separating R&C from investment expenses. Investment expenses are assumed to be 3 basis points of trading costs plus 1 basis point for asset management, custodian, legal and auditing fees related to investments. R&C costs are the remainder. TSP does not report its brokerage costs or breakdown of other expenses between investment and R&C.

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

Table 14 Fee Ceilings in Swedish IA System (as % of assets)

A. Marginal Fee Kept by Mutual Funds by Tranche of Assets they Attract in IA System*

Million KR	Marginal fees	VOLFEE = 200	VOLFEE = 150	VOLFEE = 40
0 – 70	0.40 + 0.75 (VOLFEE – 0.40)	1.60	1.23	0.40
70 – 300	0.35 + 0.35 (VOLFEE – 0.35)	0.93	0.75	0.37
300 – 500	0.30 + 0.15 (VOLFEE – 0.30)	0.56	0.48	0.32
500 – 3000	0.25 + 0.05 (VOLFEE – 0.25)	0.34	0.31	0.26
3000 – 7000	0.15 + 0.05 (VOLFEE – 0.15)	0.24	0.22	0.16
7000 +	0.12 + 0.04 (VOLFEE – 0.12)	0.20	0.18	0.13

B. Average Fee Kept by Mutual Funds by Total Fund Assets they attract in IA System

Million KR	VOLFEE = 200	VOLFEE = 150	VOLFEE = 40
70	1.60	1.23	0.40
150	1.24	0.97	0.38
500	0.87	0.71	0.35
1000	0.61	0.51	0.30
3000	0.43	0.38	0.27
7000	0.32	0.29	0.21
15000	0.25	0.23	0.17

Source: PPM

This table shows the share of the mutual fund's fee in the voluntary market (VOLFEE) that it is permitted to charge in the mandatory IA System, depending on the assets that it attracts in the IA System. Fees are all expressed as a % of assets. One \$US = 8.2 Kronors. Panel A shows marginal fees, panel B shows average fees. Based on current rates, an additional 0.2% fee is estimated to be charged to cover trading costs (brokers' commissions). This is charged as a deduction from net assets. While this is the current fee, competitive forces may push it lower in the new system.

Table 15 Average Annual Fees as % of Assets for Alternative IA Systems

	Retail	Institutional
Latin America	Chile	Bolivia – Competitive Bidding
Start up	9.39	3.00
Current	1.36	3.00
Lifetime simulation	0.76	0.54
Sweden	Mutual Funds	IA Systems – Price Ceilings
Current	1.50	0.80
Long run	-	0.50
United States	Mutual Funds	Hypothetical IA Systems
Active	1.50	0.64
Passive	0.32	0.16
		TSP (competitive bidding, passive)
		0.11

See text and tables, especially tables 2, 6, 7, 12, 13 for derivation of these numbers.

Lifetime simulations are derived from Tables 2 and 6.

These numbers include imputed brokerage commissions (trading costs) and custodial costs.

Numbers for Sweden are guestimates, based on assumption that average fee kept by participating mutual funds will be .3% of assets in short run, .2% in long run. PPM costs are .3% in short run, .1% in long run, trading and other costs = .2% of assets.

Figure 1 Costs of Chilean AFP System, 1982-1998
Relation Between Fee as % of Assets and Average Account Size

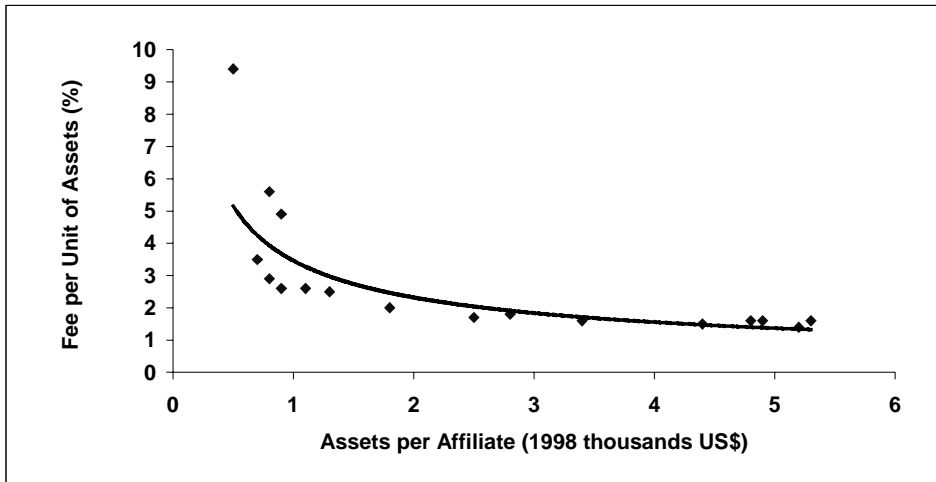


Figure 2: Costs of Latin American AFP Systems, 1998
Relation Between Cost as % of Assets and Average Account Size

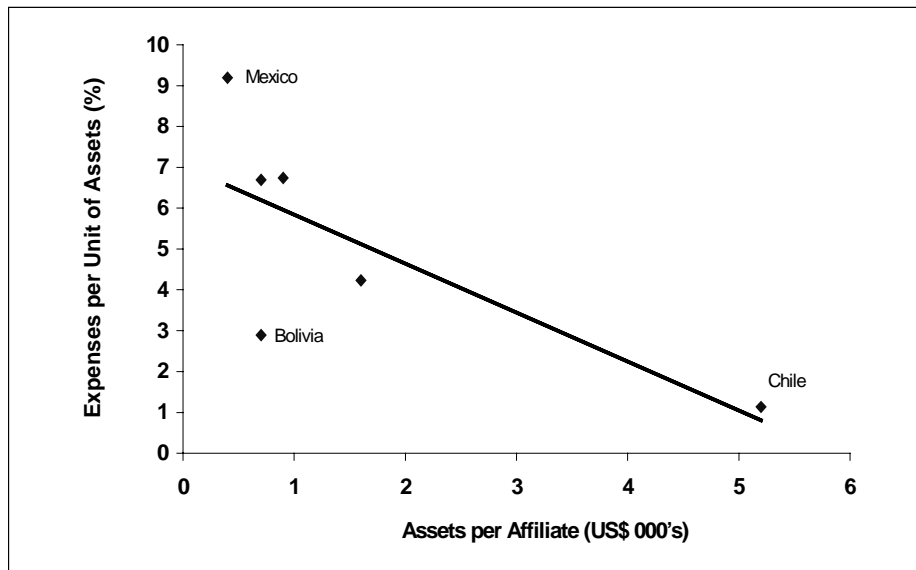
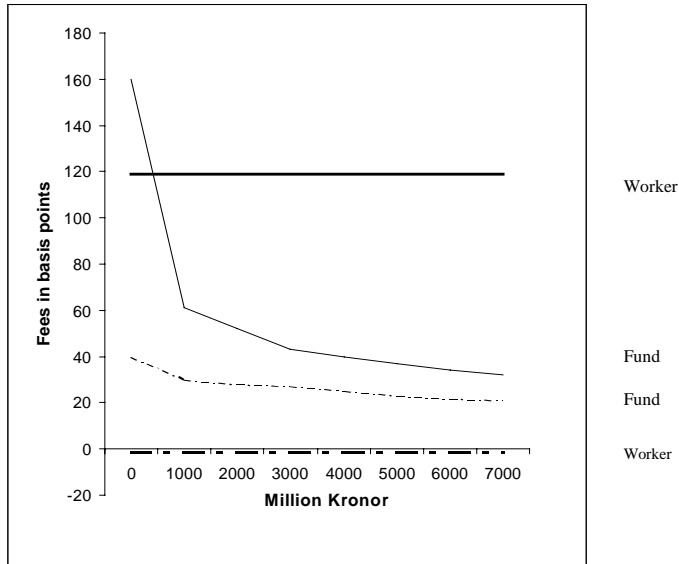


Figure 3 Average Fees Paid by Worker and Kept by Fund in Swedish System



Fee in Voluntary Market 2%
 Net Fee Kept by Fund 0.4%
 Net Fee Paid by Worker

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