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## Mutual Funds and Institutional Investments

### What Is the Most Efficient Way to Set Up Individual Accounts in a Social Security System?

Estelle James, Gary Ferrier, James Smalhout, and Dimitri Vittas

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

This paper investigates the cost effectiveness of three options for constructing funded social security pillars: (1) IAs invested in the retail market with relatively open choice; (2) IAs invested in the institutional market

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with constrained choice for workers among investment companies; and (3) a centralized fund invested in the institutional market without individual accounts or differentiated investments across individuals. Our questions are the following: What is the most cost-effective way to organize a mandatory IA system, how does the cost of an efficient IA system compare with that of a single centralized fund, and are the cost differentials great enough to outweigh the other important considerations?<sup>1</sup>

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

Empirical evidence presented in this paper and elsewhere suggests the existence of large economies of scale and scope in asset management. All three options exploit these economies, but in different ways. The retail market (option 1) allows individual investors to benefit from scale economies in asset management, but at the cost of high marketing expenses (almost half of total costs), which are needed to attract and aggregate small sums of money into large pools. At the start-up of a new IA system, the fixed cost per account for record keeping and communications (R&C) is also high, relative to assets. In contrast, a centralized fund (option 3) can be much cheaper because it achieves scale economies without high marketing or R&C costs but gives workers no choice and hence is subject to political manipulation and misallocation of capital.

The system of constrained choice described in this paper (option 2) is

1. We concentrate on the asset-accumulation phase since annuities pose a host of other issues. We do not include the cost of pay-as-you-go schemes in this analysis since (unlike transfer systems) funded schemes represent either additional saving or diversions from other savings that would have incurred costs. Well-managed funded schemes cost more than well-managed pay-as-you-go schemes because they provide an additional service—the management of savings. Savings provide productive value to the economy that one does not get from pay-as-you-go schemes, and some of this value is passed on to workers in the form of higher retirement benefits than they could get from the same contribution to a pay-as-you-go scheme. This paper is about how to manage those savings, not about whether to save.

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

Section 3.1 sets up a hypothetical model that decomposes costs into asset-management, R&C, and marketing components. Section 3.2 provides an international perspective by examining costs in the mandatory AFP (*administradoras de fondos de pensiones*) system in Chile, which uses the most common method, the retail market. Section 3.3 draws on data from voluntary saving in mutual funds in the United States. Both in Chile and in the United States, individuals have diversified accounts that they can move from one company to another in a competitive retail investment market. Although the American mutual fund industry is vastly more developed than the Chilean AFP industry, we find strong similarities, in terms of annualized costs as a percentage of assets and the composition of these costs. Average annual administrative costs range between 1 and 1.5 percent of assets for most investors, and marketing is the largest cost component in both cases. In Chile, annual costs are less than 1 percent for those who start contributing early in their careers. In the United States, a low-cost niche of less than 1 percent has developed for passively managed funds indexed to various benchmarks. In both cases, costs were higher fifteen years ago and have declined slightly as a result of asset growth and competition. These two cases give us insights into how an IA system might develop in the retail market.

Section 3.4 explores costs in the institutional market, drawing on U.S. data once again. Administrative costs for pension funds and other large investors are estimated to be four to eight basis points (0.04–0.08 percent of assets) for passively managed portfolios and thirty-five to sixty-five basis points (0.35–0.65 percent of assets) for actively managed domestic portfolios—much less than the retail market. These large cost savings are due to economies of scale in the investment function, smaller costs in the marketing function, the virtual absence of record-keeping costs, and the greater bargaining power of large investors in an industry where average

costs greatly exceed marginal cost. These would also be the costs in a well-run centralized funded pillar with no IAs and no choice.

Section 3.5 considers whether and how an IA system with constrained choice could be set up to benefit from these same economies. We outline the elements of such a system—which include worker choice among a limited number of money managers chosen through a competitive bidding process (or through fee ceilings that discourage marketing expenditures). We estimate that such a system could operate with approximately the same investment costs as the centralized fund. However, additional R&C costs will necessarily be incurred if workers have individual accounts with differing asset managers. Using data from the transfer-agent function of mutual funds and the experience of the federal employees' Thrift Savings Plan (TSP), we find a relatively fixed R&C dollar cost per account that falls rapidly as a percentage of assets as average account size grows.

Thus, the steady-state cost in a constrained IA system in countries with well-developed financial markets is likely to be 0.14–0.18 percent of assets annually for a passively managed investment strategy (or 0.49–0.79 percent if active management is chosen), including all money-management and record-keeping fees. For the system size that has been under consideration in the United States (average annual contributions of approximately \$500), this amounts to \$31–\$39, or \$106–\$172, per account, respectively. This is only ten basis points, or \$21, per account per year higher than the cost of a centralized scheme. It is much less than the expected return to saving or the cost of voluntary or mandatory individual accounts in retail markets. Constrained choice offers large administrative cost savings combined with political insulation and is likely to imply a Pareto improvement so long as choice is not constrained “too much.”

### 3.1 How Administrative Costs Vary across Time and Systems

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

$$\text{TOTADMINCOST}_i^t = \text{STARTUPCOST} + \text{FCOST} + \text{R\&C} + \text{INV} \\ + \text{MARKETING},$$

Where  $\text{TOTADMINCOST}_i^t$  = total administrative cost for pension fund or system  $i$  in year  $t$ ,  $\text{STARTUPCOST}$  = capital costs incurred in the early years of a new system or fund,  $\text{FCOST}$  = fixed cost needed to operate in year  $t$ ,  $\text{R\&C}$  = record-keeping and communication (R&C) costs,  $\text{INV}$  = investment costs, and  $\text{MARKETING}$  = marketing cost.

Each of these cost components is determined quite differently. R&C costs tend to be technologically determined and standardized, depending

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

In comparing costs across funds or systems, it is necessary to take into account the total volume of assets and the number of accounts that determine costs and to ascertain how these are likely to change in the future.<sup>2</sup> Table 3.1 illustrates the total administrative cost and its breakdown between R&C and INV in three hypothetical systems as they evolve through time. Two cost measures are used—dollars per account and basis points per unit of assets (one basis point = 0.01 percent). The first measure is useful because it tells us how much it costs to operate an account for an average worker, while the second measure tells us how much gross returns are being whittled away by administrative costs. While economies of scale are probable (see James and Palacios 1995; Mitchell 1998; and sec. 3.3 below), in this section, for the purposes of exposition, we assume that R&C cost per account and INV cost per unit of assets are constant. Scale economies would slow down the growth and/or accelerate the decline in all these cost measures. We also abstract from annual fixed costs and high

2. Additionally, different countries face differing relative factor prices and productivities. 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. In international comparisons, costs are sometimes expressed as a percentage of the average wage, to normalize for differences in labor price and productivity across countries. Because of their relatively cheap costs of capital combined with the prevalence of capital intensive technologies as well as the availability of legal and capital infrastructure, we would expect industrial countries to have lower administrative costs than others (*ceteris paribus*) as a percentage of average wage and also in terms of dollars per account and basis points per unit of assets.

**Table 3.1 Hypothetical Administrative Costs over Time as a Percentage of Assets and Dollars per Account**

A. The Institutional Approach with Passive Management*							
Year	Year-End Accumulation of Individual (\$thousands) <sup>b</sup>	Average-Size Account in System (\$thousands) <sup>c</sup>	R&C as % of Assets	R&C + Investment as % of Assets	Investment Expenses per Account (\$)	R&C + Investment per Account (\$)	R&C/Total Expenses 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	0.71
20	16.7	12.1	0.17	0.27	12.1	32.1	0.63
25	24.1	15.4	0.13	0.23	15.4	35.4	0.57
30	33.6	18.5	0.11	0.21	18.5	38.5	0.52
35	45.6	20.8	0.10	0.20	20.8	40.8	0.50
40	61.0	22.0	0.09	0.19	22.0	42.0	0.47

**B. The Institutional Approach with Active Management<sup>d</sup>**

Year	Year-End Accumulation of Individual (\$thousands) <sup>b</sup>	Average-Size Account in System (\$thousands) <sup>c</sup>	R&C as % of Assets	R&C + Investment as % of Assets	Investment Expenses per Account (\$)	R&C + Investment per Account (\$)	R&C/Total Expenses per Account
1	0.5	0.5	4.00	4.60	3.0	23.0	0.87
2	1.0	1.0	2.03	2.63	5.9	25.9	0.77
3	1.6	1.6	1.28	1.88	9.3	29.3	0.68
4	2.1	2.0	0.99	1.59	12.1	32.1	0.62
5	2.7	2.6	0.78	1.38	15.4	35.4	0.57
10	6.1	5.4	0.37	0.97	32.2	52.2	0.38
15	10.4	8.4	0.24	0.84	50.2	70.2	0.29
20	15.7	11.4	0.18	0.78	68.4	88.4	0.23
25	22.3	14.4	0.14	0.74	86.1	106.1	0.19
30	30.5	17.0	0.12	0.72	102.0	122.0	0.17
35	40.7	19.0	0.11	0.71	114.2	134.2	0.15
40	53.5	20.0	0.10	0.70	119.8	139.8	0.14

*(continued)*

**Table 3.1** (continued)

C. The Retail Approach <sup>a</sup>								
Year	Year-End Accumulation of Individual (\$thousands) <sup>b</sup>	Average-Size Account in System (\$thousands) <sup>c</sup>	Costs as % of Assets			Costs in \$ per Account		
			R&C	R&C + Investment	R&C + Investment + Marketing	Investment	R&C + Investment + Marketing	R&C/Total Expenses
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

<sup>a</sup>Assumptions: \$520 is contributed each year. R&C costs are \$20 per account, so net contribution (NCON) = \$500. Gross rate of return = 5.1%, and investment costs are 0.1 percent of assets, so net return (NR) after subtracting investment costs = 5.0 percent.

<sup>b</sup>Individual's account accumulates at the following rate:  $A_t = A_{t-1}(1 + NR) + NCON$ , where NR = net return, and NCON = net contribution.

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

<sup>d</sup>Assumptions: \$520 is contributed each year. R&C costs are \$20 per account, so net contribution = \$500. Gross rate of return = 5.1 percent, and investment costs are 0.6 percent of assets, so net return after subtracting investment costs = 4.5 percent.

<sup>e</sup>Assumptions: \$2,020 is contributed each year. R&C costs are \$30 per account, so net contribution = \$1,990. Gross rate of return = 5.1 percent, investment costs are 0.6 percent of assets, and marketing costs are 0.5 percent, so net return after subtracting investment and marketing costs = 4 percent.

start-up costs at the beginning. While at this point these cost functions are hypothetical, we will see later that they are not implausible.

Panel A of table 3.1 illustrates a stylized cost profile for an IA system that uses the institutional approach, with passive investing that costs 0.01 percent of assets annually plus R&C costs of \$20.00 per account. Panel B illustrates an institutional approach with active investing—INV cost rises to 0.6 percent. Panel C illustrates the retail approach, with marketing and investment expenses totaling 1.1 percent of assets plus R&C costs of \$30.00 per account.<sup>3</sup> We see in table 3.1 the following: (1) Average (dollar) cost per account starts relatively low and rises through time as average account size grows, owing to increased investment costs. (2) In contrast, average cost as a percentage of assets starts high and falls as average account size grows, owing to constant R&C costs per account. (3) R&C costs dominate at the beginning, but their effect on net returns becomes much smaller in the long run, when investment and marketing costs dominate (particularly if a high contribution rate and expensive investment strategy are chosen [panels B and C]). (4) If an institutional approach with low investment costs is chosen, costs per account remain small, and costs as a percentage of assets become very small in the long run (panel A). (5) An expensive investment and marketing strategy increases dollar costs per account by a larger amount as time passes, although the negative effect on net returns is constant through time (panel C). And (6) a larger contribution amount leads to a more rapid increase in dollar cost per account, but it decreases cost per unit of assets at the same time (panel C).

While we have been defining costs to the fund and the system, costs (fees) to consumers may vary from this. In the short run, at the start-up of a new system, funds may run temporary losses in the expectation that they will increase their market share and recoup their capital expenses later on. In the medium term, they may earn profits that offset the earlier losses. We would expect that, in the long run, competition will eliminate pure profits so that fees to investors will just cover costs to the fund. But the existence of marketing competition, as well as potential skill and wage

3. For panel A, the annual contribution is assumed to be \$520, the neighborhood of many IA systems in Latin America that feature decision making by the individual worker. The United States has been considering an IA contribution rate of about \$500 per year. R&C cost is \$20 per account, which might be the fee for a modest-quality system, and INV cost (including brokerage and custodian fees) is 0.1 percent per unit of assets, which is on the high side for a passive investment strategy. In panel B, INV cost rises to 0.6 percent, which might be charged by active asset managers in an institutional IA system. Panel C illustrates the retail approach. The annual contribution is \$2,020 per year, the neighborhood of mandatory IA systems in several OECD countries. R&C cost is \$30, INV cost is 0.6 percent, and MARKETING costs of 0.5 percent of assets are introduced. In all cases, a gross rate of return (before fees) of 5.1 percent is assumed. In order to abstract from the effect of a changing age distribution, we assume that participants are evenly distributed across forty age groups and take their money out of the system when they retire.

differentials across asset managers, makes it difficult to predict the cost and fee level at which this zero-profit equilibrium will occur. Moreover, price discrimination, used to recover fixed costs when heterogeneous consumers have different price elasticities, means that marginal cost and average cost may have different relations to price for different groups of investors. In this paper, we focus on fees that are paid by the average investor, we presume that, in the long run, these fees will bear a close relation to real costs, and costs depend on how the system is organized.

A well-run centralized fund without IAs has the cost advantage of lower R&C expenses since it features only one investment account (although additional records must be kept of the benefit entitlements of each worker) and potential use of bargaining power to secure low investment and marketing costs (as in panels A and B minus R&C costs). But it has the disadvantage of creating a principal-agent problem and lack of political insulation if it is managed by the government: for these reasons, it may not end up minimizing costs or maximizing returns or being run in the workers' best interests. In contrast, the retail market for IAs incurs R&C costs for many small accounts, expensive investment strategies may be chosen, and marketing costs are often high (as in panel C). We argue that, by operating in the institutional market, an IA system may achieve most of the cost advantages of centralized funds, but with greater political insulation and responsiveness to workers' preferences. The institutional approach to IA systems aggregates many small accounts into large blocs of money and negotiates fees on a centralized basis—via a competitive bidding process or open entry with price ceilings. This can keep costs and fees low by (1) constraining worker choice to low-INV-cost portfolios and strategies; (2) minimizing incentives for MARKETING cost by reducing allowable fees; (3) dampening R&C expenditures; (4) cutting STARTUPCOST and FCOST by avoiding excess capacity; and (5) increasing bargaining power, hence decreasing oligopoly profits. When these strategies are utilized, the cost of an IA system is only minimally higher than that of a well-run centralized fund without IAs.

### **3.2 How High Are Administrative Fees in Chile, and How Are They Spent?**

In this section, we examine the administrative costs and fees of Chilean AFPs, which have been operating since 1981. These fees have been subject to great criticism by opponents of IA systems. In Chile, the worker pays a fee to the AFP, which is an administrator that sets up the fund and runs it. Practically all expenses are paid by the AFP, not the worker or the fund directly.<sup>4</sup> So fees do not necessarily represent real costs of operating the

4. An exception is the fees paid by AFPs to foreign mutual funds, which invest about 10 percent of the AFP assets abroad. These mutual fund fees are subtracted from the workers' accounts.

fund, especially in the short run, nor do they represent a long-term commitment. AFPs incurred losses in the early years of the new system when start-up costs exceeded revenues, but the industry as a whole is quite profitable and more concentrated at this stage (table 3.2). We might expect price competition to eliminate these profits, but price insensitivity among investors and entry barriers to new firms may prevent this from happening quickly. Deregulation and oligopoly may alter costs and their relation 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 do not know whether they will increase or decrease as the industry grows more concentrated.<sup>5</sup> As regulations are liberalized, portfolio diversification increases, and managerial skill is deemed increasingly important, wages may rise for managers who are perceived as more skillful, costs to the AFPs that employ them may increase, expenditures to advertise their superior skills may become more costly, and fees to their members may rise. Despite this uncertainty about the future, the current fee structure poses costs to investors that reduce their net returns, so, in this section, we take them as given and examine their implications.

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

This fee structure means that, if a worker enters the system for a year but then drops out (e.g., to become self-employed or to withdraw from the labor market), he or she ceases to pay fees while keeping his or her assets in the system. For new systems (e.g., Poland, Uruguay), the number of contributors and affiliates is very close, but, for more mature IA systems (e.g., Chile, Singapore), the number of affiliates is roughly double the number of active contributors. (Inactive affiliates require the AFP to incur expenditures for annual statements and asset management, while active

5. The recent spate of mergers in Chile has decreased the number of AFPs from twenty-one in the early 1990s to eight currently. In Argentina, the number has decreased from twenty-five to sixteen and will probably decrease even more. This suggests that the market is gradually responding to economies of scale—as in the U.S. mutual fund industry.

**Table 3.2 Assets, Fees, and Expenditures in Chile through Time**

Year	No. of Affiliates (millions)	Contributors/ Affiliates	Assets (1998 U.S.\$millions)	Total Assets/ Contributors (1998 U.S.\$)	Total Assets/ Affiliates (1998 U.S.\$)	Marketing Costs as % of Total Expenses
1982	1.44	.74	1,277.74	1,205	887	46
1983	1.62	.76	2,212.50	1,799	1,366	40
1984	1.93	.70	2,842.46	2,090	1,473	36
1985	2.28	.68	2,290.61	1,470	1,003	30
1986	2.59	.68	3,112.55	1,779	1,201	24
1987	2.89	.70	3,812.46	1,884	1,319	21
1988	3.18	.68	4,868.26	2,246	1,529	23
1989	3.47	.65	5,844.70	2,577	1,684	22
1990	3.74	.61	8,144.61	3,558	2,178	24
1991	4.11	.61	11,999.98	4,825	2,920	26
1992	4.43	.61	14,265.43	5,292	3,217	30
1993	4.71	.59	17,839.38	6,389	3,788	35
1994	5.01	.57	24,206.33	8,406	4,827	38
1995	5.32	.56	27,039.54	9,129	5,082	43
1996	5.57	.56	28,366.44	9,088	5,091	49
1997	5.78	.57	31,133.98	9,445	5,386	52
1998	5.97	.53	31,060.16	9,861	5,206	46

Year	Fee per Contributor (1998 U.S.\$)	Expenses per Contributor (1998 U.S.\$)	Fee per Affiliate (1998 U.S.\$)	Expenses per Affiliate (1998 U.S.\$)	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*; authors' calculations.

contributors incur additional expenses for periodic contributions and fund switches.)

According to table 3.2, after the period of high start-up costs, cost and fee per account drop precipitously but then rise gradually as average account size grows, consistent with the hypothetical model presented in section 3.1. In 1998, average cost per contributor was \$112 and per affiliate \$71, and fees were slightly higher. As we shall see, these numbers are lower than in mutual funds in the United States, corresponding to the much higher average account size in the latter. Fees and costs as a percentage of assets have also been falling through time, but much more gradually, as predicted in the hypothetical retail model. They are now 1.36 percent (fees) and 1.13 percent (costs). We observe, too, that marketing costs are large.

Table 3.3 presents the results of a panel-data (fixed-effects) analysis that sums up this relation between assets, affiliates, costs, and fees over time and across AFPs. 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 number of affiliates grows, costs and fees relative to assets grow (because of R&C costs); and (3) as average account size increases, (investment) cost per account also increases but (because of scale economies) cost per dollar of assets (which ultimately determines the net return) decreases. This is consistent with the hypothetical retail market depicted in table 3.1 above. We infer from this that (1) it is misleading to extrapolate costs and fees from the first years of a new system, which unfortunately has often been done; (2) investment costs play an increasingly dominant role but scale economies stemming from large asset bases limit this increase; and (3) in comparing the administrative efficiency of systems across countries, it is essential to take into account whether they are in their start-up period and what their size is in terms of assets and affiliates since two systems that are equally efficient in the long run under similar conditions will differ at any point in time depending on their maturity and scale. Chile, and even more so other Latin American countries, will probably benefit further from maturation and scale economies in the future.

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

**Table 3.3 Fixed-Effects Panel Regression Analysis: Determinants of Costs and Fees, Chile, Disaggregated by AFP and Year, 1982–98**

Independent Variables	Dependent Variables					
	Total Administrative Cost	Total Cost/ Assets	Total Cost/ Affiliates	Total Fee Revenues	Total Fees/ Assets	Total Fees/ Affiliates
Assets/affiliates	.002 (10.42)*	-.0003 (-3.83)*	.009 (4.56)*	.002 (10.56)*	-.0002 (-5.82)*	.01 (12.81)*
No. of affiliates	48.89 (21.96)*	2.34 (2.63)**	11.71 (.49)	62.79 (23.22)*	-.43 (-1.03)	-3.72 (-.36)
Dummy, start-up year = 1982	11.28 (6.12)*	14.02 (19.00)*	96.33 (4.89)*	10.72 (4.79)*	5.20 (15.23)*	32.77 (3.87)*
Dummy, start-up years = 1983–84	6.71 (4.74)*	3.48 (6.13)*	47.80 (3.15)**	8.56 (4.98)*	2.84 (10.83)*	44.29 (6.81)*
Constant	-8.41 (-8.04)*	3.18 (7.61)*	51.18 (4.57)*	-12.5 (-9.83)*	3.34 (17.21)*	33.24 (6.92)*
<i>R</i> <sup>2</sup> :						
Within	.81	.68	.17	.82	.70	.50
Between	.56	.21	.04	.65	.74	.88
Overall	.78	.47	.21	.80	.69	.83
<i>N</i>	234	234	234	234	234	234

*Note:* *t*-statistics are given in parentheses. Units of measurement: costs, fees, and assets are 1998 U.S. dollars in millions; number of contributors and affiliates are in millions; cost/assets and fees/assets are in percentages; cost/affiliates, fees/affiliates, and assets/affiliates are in 1998 U.S. dollars.

\*Significant at the 0.1 percent level.

\*\*Significant at the 1 percent level.

**Table 3.4** Annual Asset-Based Fee Equivalent to 15.6 Percent Fee on New Contributions (as a percentage of assets)

Starting Age	Contribution Made for 1 Year Only at Given Age (1)	Contributions Made for 20 Years Only, Starting at Given Age (2)	Contributions Made Every Year until Age 65, Starting at Given Age (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

*Note:* This table shows the annual fee based on assets that will yield the same capital accumulation at age sixty-five as would a 15.6 percent front-loaded fee on incoming contributions. In col. 1 a single year of contributions is assumed at the starting age. The annual fee for age sixty-four is 33.37 percent because contributions and fees are assumed to be paid monthly, including the last month. In col. 2 the worker continues contributing a fixed percentage of wage for twenty years. In col. 3 the worker continues investing a fixed percentage of wage from starting age until age sixty-five. A rate of return of 5 percent is assumed. For cols. 2 and 3, annual wage growth of 2 percent is assumed. (Similar results were obtained for 3 percent rate of return and 1 percent rate of wage growth.) In U.S. dollars, the average contributor paid \$134 in 1998 in Chile. The fee would increase 2 percent per year under these assumptions.

We have simulated the average annual fee on assets that is equivalent to the front-loaded 15.6 percent fee on contributions for workers of different ages at the point when the contribution was made (table 3.4). This simulation assumes that the same fee schedule remains in effect over the worker's lifetime, although of course there is no guarantee that this will be the case. For a twenty-five-year-old worker (who contributes for one year only but whose money stays in the system for another forty years), the 15.6 percent one-time fee is equivalent to 0.45 percent of assets annually; for a forty-five-year-old worker, it is 0.91 percent; and, for a worker who contributes monthly in his final year, it is 32.4 percent (col. 1). For a worker who contributes every year for forty years (e.g., from age twenty-five to age sixty-five), paying a fee on each new contribution, the annual equivalent of all these front-loaded fees is 0.76 percent of assets (col. 3).<sup>6</sup>

Many workers will contribute for twenty years only because this is the period that makes them eligible for the minimum pension guarantee. For these workers, the equivalent annual fee depends on whether the contributions were made early or late in their careers, which determines how many years their money will be under management. If a worker contributes only

6. These calculations assume a 5 percent gross rate of return and a 2 percent rate of wage growth. Calculations with 3 percent and 4 percent rates of return and/or a 1 percent rate of wage growth yield very similar results. These simulations show that workers with different employment histories will end up paying different annual equivalent fees as a subtraction from their gross returns even if they impose the same real cost on the fund—which may not be a desirable feature for a mandatory system to possess.

for his first twenty years of employment, the equivalent average annual fee for all his contributions is 0.57 percent, while, if contributions are made only in the last twenty years, the equivalent average annual fee is 1.65 percent (col. 2). (The latter is roughly consistent with the 1.4 percent of assets that is paid by the average worker today, eighteen years after the system got started.) Suppose that half of all workers contribute for forty years, one-quarter each for their first and last twenty years. The systemwide annual equivalent expense ratio would be 0.94 percent, almost 1 percent of assets per year.

These estimated lifetime fees are similar to but somewhat lower than average mutual fund fees in the United States (see sec. 3.3 below). American mutual funds, of course, provide greater diversification and service than Chilean AFPs, which would make their costs higher. But they also benefit from greater economies of scale and better infrastructure, which would make their costs lower. AFP costs are much lower than the 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 1990s, averaged around 6 percent per year for equity funds and 2 percent 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 United States. Chilean AFPs are therefore relatively inexpensive if the standard of comparison is fees in other financial institutions that invest individuals' savings in a diversified portfolio. However, they are more expensive than savings accounts in commercial banks, either in Chile or elsewhere (Valdes 1999).

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

Finally, AFP fees are much higher than are the fees paid by institutional investors (see sec. 3.4 below), and they have a substantial effect on ultimate pension amounts. This leads one to wonder whether it is possible to organize a mandatory IA system so that it captures the lower costs of the institutional market and, if so, what the trade-offs are.

### **3.3 Costs in the Retail Market of American Mutual Funds**

The mutual fund in the United States has been a hugely successful financial institution. Assets have grown from less than \$1 billion in 1949 to almost \$140 billion in 1980 to over \$4 trillion by the end of 1997 and now

exceed the combined total of savings bank deposits and life insurance assets (Pozen 1998). The variety of fund objectives and ancillary services has also escalated, with equity funds expanding much more quickly than bond or money market funds over the last twenty years. Savers apparently feel that investing through mutual funds gives them advantages in terms of convenience, liquidity, and diversification that justify the fees.

Our object was to analyze the determinants of mutual fund fees and how they are spent in order to shed light on how costs might evolve or might be shaped in a reformed social security system with individual accounts. We used simple cross-tabulations, regression analysis, and frontier analysis based on a large data set of mutual funds (4,254 funds in 1997 and 1,300–2,000 each year for 1992–96) that we obtained from Morningstar. We also culled information from annual reports, fund prospectuses, and financial statements filed by the funds' investment advisers as well as surveys conducted by the association of mutual funds and discussions with fund officials and their transfer agents.<sup>7</sup>

In the United States, as in Chile, mutual funds are organized by sponsors, but they are not owned by these sponsors. Instead, the assets are owned by the shareholders who invest in them. A board of directors (most of whom are affiliated with the sponsor) chooses the investment adviser, who, in almost all cases, is the original sponsor of the fund. Often, the same sponsor starts multiple funds in a fund complex such as Fidelity or Vanguard. The adviser makes key strategic decisions, hires analysts and portfolio managers (who handle day-to-day investment activities), advertises the fund, and provides other administrative services. Competition takes the form of investors exiting and entering funds rather than funds choosing and reevaluating investment advisers (Baumol et al. 1990).

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

### 3.3.1 Costs in the Mutual Fund Industry

The fund pays annual fees to the investment adviser and much smaller amounts to distributors (12b1 fees), lawyers, auditors, transfer agents, and others (table 3.5). By regulation, the charges are passed on to shareholders

7. Money market funds, which constitute about one-quarter of the fund universe, were largely excluded from this study because they involve short-term deposits, high transactions levels, and related costs that would not be applicable to IAs in social security systems. Mutual funds with missing data for important variables were also excluded. We included only "open-end funds" whose shares are bought and sold at net asset value—total assets divided by total shares.

**Table 3.5**                      **Composition of Mutual Fund Expenses, 1997 (as percentage of assets unless noted)**

	Simple Average	Asset Weighted		
		Average	Active	Passive
Expenses included in expense ratio:				
Investment adviser	0.56	0.49	0.52	0.08
Distributor for 12b1 fees <sup>a</sup>	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 <sup>b</sup>	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 <sup>a</sup>	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 <sup>b</sup>	463	360	375	80

<sup>a</sup>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 percentage of their new investment. It is not included in the fund's expense ratio. The average front-loaded fee is 4.48 percent. It is charged by about one-third of all funds. In this table, this one-time fee has been annualized according to the procedure described in n. 8. These numbers are averaged over all funds, ignoring the big distinction in costs to shareholders between funds that impose sales charges and those that do not (see table 3.10 below).

<sup>b</sup>For average account size = \$25,000.

proportional to their assets and determine the fund's reported "expense ratio," which it subtracts from its gross return to obtain the investors' net return. Thus (unlike in Chile), shareholder fees paid to the fund equal the costs of the fund, although they may yield large profits to the investment adviser. In addition, for many funds, front-loaded and back-loaded commissions are paid directly by individual investors to brokers on purchase or sale; these entry and exit fees are part of the price to relevant shareholders, although they are not received or paid by the fund and are not included in the expense ratio. Brokerage fees paid for securities transactions are also excluded from the expense ratio, although they are indirectly paid by shareholders in the form of reduced gross returns.

We have constructed a "total investor-cost ratio," which equals the reported expense ratio plus average brokerage (trading) costs and annualized front-loaded sales commissions (table 3.5).<sup>8</sup> In 1997, the total inves-

8. 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 twenty-six and twelve basis points, respectively.

Annualized front-loaded sales commissions were estimated as 0.2 times the front-loaded

tor cost was 1.85 percent of assets, compared to the reported expense ratio of 1.28 percent. Weighted by assets, these numbers fall to 1.43 and 0.91 percent (or \$360 and \$228 per average account), respectively. Asset-weighted numbers are more relevant for our purposes because they indicate the expense incurred by the average dollar invested. The lower asset-weighted figures are consistent with economies of scale and/or a selection of clients into low-cost funds. The variation in costs is also great. For example, the average dollar invested in passively managed funds incurs a cost ratio that is only one-fifth the expense of a dollar invested in actively managed funds.

Table 3.6 converts these numbers into the cost categories set forth in section 3.1—R&C costs, investment costs, marketing expenses, and fixed costs—both in terms of dollars per account and as a percentage of assets. Comparing table 3.6 with the hypothetical numbers in table 3.1 above for an average account size of \$25,000, we see that the costs are somewhat larger than but very close in breakdown to panel C of table 3.1. Investment

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commission on new sales. An annualization factor of 0.2 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 seven years and that the discount rate is 10 percent. A high discount rate is used because the alternative for these investors may be an additional mutual fund purchase, over a period in which the three-year asset-weighted net return was 20 percent. The annualization factor and the annualized fee are not very sensitive to the discount rate; a discount rate of 5 percent would have made a difference of only three basis points.

The seven-year average holding period is a guesstimate since good data are not available on this variable. A sample of redemption rates for equity funds purchased in 1974 showed that 50 percent of original shares were sold within five years, 76 percent within fifteen years, which is roughly consistent with our seven-year assumption (Wyatt Co. 1990). However, the mutual fund industry and its clientele have changed substantially since 1974, so it is likely that redemption behavior has also changed. An average holding period of ten to twelve years would have reduced the annualized fee by five to ten basis points, while an average five-year holding period would have increased it by a similar amount. Holding periods and therefore annualization factors may vary among funds. For example, evidence suggests that loads discourage movements out of funds, so the holding periods of funds with loads may be higher than average (Ippolito 1992; Chordia 1996). However, we did not have the disaggregated data that would allow us to take these differences into account.

Back-loaded sales charges are omitted from this calculation because they fall as a function of the time the shares are held. Investors self-select into funds with back loads if they expect to hold their shares for long periods. The average deferred load paid for assets held more than five years is negligible, and we do not have a more detailed distribution of holding periods. This omission slightly understates total costs.

The total fund-expense profile calculated here is very similar to the total shareholder-cost ratio calculated by Rea and Reid (1998), although they use slightly different data sets and definitions. The most important differences are that they deal only with equity funds (which are more expensive than bond funds) and that they do not include brokerage fees in their measure, probably because they are interested in changes through time and data on brokerage fees were not reported before 1996. These two effect may cancel themselves out in terms of a comparison with our numbers. Their simple average-cost ratio is 1.99 percent and their asset-weighted average 1.44 percent, very similar to our numbers of 1.85 and 1.43 percent, respectively. According to their calculations, marketing fees are 40 percent of total costs, while, in our calculations (which include brokerage costs in the denominator), the simple average is 36 percent and the weighted average 43 percent.

**Table 3.6 Mutual Fund Expenses by Cost Components, 1997**

	A. As a Percentage of Assets		
	Weighted Average	Actively Managed	Passively Managed
Investment	0.61	0.64	0.11
R&C	0.12	0.12	0.05
Marketing	0.61	0.65	0.03
Fixed and miscellaneous	0.09	0.08	0.13
Total	1.43	1.50	0.32
	B. In Dollars per Account		
Investment	153	160	28
R&C	30	30	13
Marketing	153	163	8
Fixed and miscellaneous	23	20	33
Total	360	375	80
	C. Percentage of Total Expenses		
Investment	43	43	34
R&C	8	8	16
Marketing	43	44	9
Fixed and miscellaneous	6	5	41
Total	100	100	100

Source: Table 3.5 above.

Note: For conversion into dollars, average account size = \$25,000. Investment = investment adviser + brokerage fees. R&C = transfer agent. Marketing = 12b1 fees + loads. Fixed & miscellaneous = other. Marketing costs are understated and investment costs overstated because part of the investment adviser's fee is spent on advertising and organizing sales efforts. Totals differ slightly from some of subcategories owing to rounding errors.

costs far exceed R&C cost, and marketing cost is the largest component for many funds.

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

Other problems related to measuring and understanding mutual fund costs are the following (except for the last point, we do not believe that these problems bias our major results): (1) Disclosure of brokerage costs (for securities transactions) was not required until 1996, and brokerage costs are reported for only a subset of our funds for 1996 and 1997. (2) Some brokerage fees cover research or other expenses of the fund or

its adviser (i.e., the “soft-dollar” issue), thereby reducing the reported cost that goes into the expense ratio and understating real expenditures on these items. (3) Some investment returns are reported net of cost, without data for the cost of producing them. (4) Income from securities lending operations is sometimes used to offset custodial and other expenses, which are therefore underestimated by reported fees. (5) Some funds do not report number of shareholders, and the growing use of omnibus accounts that consolidate many shareholders further complicates the use of this explanatory variable. (6) Investment advisers temporarily waive some fees, especially fees of new funds, as a business strategy to attract new customers but may later reinstate them; these temporary fees may not reflect real costs. (7) The data set includes only funds that were still operating in 1997, and it therefore suffers from survivorship bias. Many expensive or poorly performing older funds have terminated, which may lead to an understatement of costs or an overstatement of expected returns. (8) Many shareholders pay a front-loaded one-time sales charge directly to brokers or other sales agents. These charges are not reported as fund expenses. To include them, we had to annualize them on the basis of estimated holding periods for which we lack good data, so caution is needed to interpret these estimates of marketing expenses. (9) The invisible diseconomy of scale—the effect of a fund’s buying and selling activities on security price—is not measured here. This may lead to an overstatement of scale economies, especially in small-cap and thin markets where the fund owns a large part of total capitalization. (10) Most funds are members of a mutual fund complex (e.g., Fidelity and Vanguard). Certain activities, such as advertising, research, and new product development, are jointly supplied to all members of the complex by the common investment adviser. The allocation of these expenses among the funds may be influenced by estimates of where the expenses can be absorbed with least loss of clients (see point 6 above). Thus, the relative fees paid by members of a fund complex do not necessarily reflect the real cost of producing them. Perhaps most important for our purposes, business strategy concerning joint cost allocation may be different in a mandatory system given its different clientele.

### 3.3.2 Specification of Regressions

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

We sought to determine the extent to which cost variation is random or

**Table 3.7 Mean, Median, and Standard Deviation of Variables in Sample, 1997**

	Asset-Weighted Mean	Simple Mean	Simple Median	S.D.
Expense ratio (as % of assets)	0.91	1.28	1.17	0.61
Assets (\$billions)	9.94	0.59	0.09	2.35
No. of shareholders (thousands)	453.62	23.55	2.19	115.38
Assets in family funds (\$billions)	151.15	42.06	12.30	86.00
3-year net return (%)	20.16	14.30	11.44	9.22
3-year gross return (%)	21.79	16.16	13.45	9.19
3-year standard deviation	11.67	9.85	8.68	6.59
Turnover (%)	69.40	98.00	65.00	117.00
Fundage	19.90	8.97	5.35	9.58
Percentage of funds that are:				
Bond funds	30	51		
Small cap	5	6		
Specialty	7	7		
International	10	11		
Emerging market	1	3		
Institutional	5	7		
Initial investment (\$10,000–\$100,000)	1	1		
Index	6	2		
Low 12b1 fee (0.25 percent or less)	36	41		
High 12b1 fee (between 0.25 and 1 percent)	10	21		
Front load	42	35		
Back load	12	27		
Bank advised	5	16		

systematic, to identify the factors that lie behind the systematic variation, and to assess the implications for IA systems. Our independent variables fall into three main groups—a core group capturing economies of scale and scope for the key outputs (investment of assets and R&C services per account) as well as the possible relation between costs, returns, and risk; an asset-allocation group acknowledging that different real costs are implied by different portfolios; and a business- and marketing-strategy group reflecting decisions made by the fund's adviser, such as whether the fund should be actively or passively managed, whether it should seek large (institutional) investors, etc. (table 3.7):

*Core Group*

Assets (in billions of dollars)

Asset<sup>2</sup>

Assets in entire fund complex

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

Three-year gross return or, alternatively, three-year load-adjusted net return

Three-year standard deviation of returns

*Asset-Allocation Group*

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

*Business- and Marketing-Strategy Group*

Minimum investment required

Stock turnover rate

Fund age

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

We ran the OLS regressions separately for each year from 1992 to 1997. We also conducted a frontier (envelope) analysis for 1992–97, which included a time trend as an additional variable. Tables 3.8 and 3.9 report results from the OLS regression for 1997 and the frontier analysis for 1992–97, which yield a consistent picture of the determinants of mutual fund costs. The OLS regressions explain 64 percent of the variance when all the variables listed above are included, with the business- and marketing-strategy group accounting for more than half the predictive power. Most of the variance in costs is therefore systematic rather than random. Costs faced by investors vary in large part because of business choices made by fund managers, and these same costs could be substantially influenced by policy choices in a mandatory IA system.

### 3.3.3 Economies of Scale and Scope

Expense ratios fall when total assets in the fund, assets in the entire fund complex, and assets per shareholder increase. For funds with assets under \$10 million, the simple average expense ratio is 1.54 percent, while, for funds with assets over \$1 billion, it is 0.96 percent. All funds need industry analysts, portfolio managers, computers, and access to electronic trading facilities. Large funds, however, can be managed with virtually the same staff and trading access as smaller funds. The scale economies come from marketing costs as well as investment management: large funds spread their advertising expenses (and, less important, their legal, accounting, and audit expenses) over a larger asset base. Partly for these reasons, the largest and fastest-growing mutual funds also experienced the greatest drop in operating expenses over the last twenty years (Rea and Reid 1998).<sup>9</sup>

9. For more on sources of scale economies, see Baumol et al. (1990) and Sirri and Tufano (1993).

**Table 3.8 Regression Analysis: Determinants of Expense Ratios of Mutual Funds in the United States, 1997**

	(1)	(2)	(3)	(4)	(5)
Core group:					
Intercept	113.7*	112.1*	111.0*	83.4*	125.0*
	(59.63)	(55.35)	(22.22)	(22.03)	(26.09)
Assets (\$billions)	-9.2*	-7.9*	-9.1*	-3.9*	-5.2*
	(-9.55)	(-10.03)	(-9.61)	(-5.65)	(-5.67)
Asset <sup>2</sup>	0.1*	0.1*	0.1*	0.1*	0.1*
	(5.22)	(7.20)	(5.48)	(-6.17)	(4.51)
No. of shareholders (thousands)	0.1*		0.1*	0.0	0.0
	(3.14)		(3.02)	(-1.48)	(0.89)
Assets/shareholders		-0.4*			
		(-4.9)			
Assets in fund complex (\$billions)	-0.1*	-0.1*	-0.1*	-0.1*	-0.1*
	(-7.99)	(-7.61)	(-8.66)	(-7.31)	(-10.07)
3-year net return <sup>a</sup>	-1.5*		-0.9*	-0.7*	-0.7*
	(-13.73)		(-6.26)	(-6.37)	(-4.84)
3-year gross return		-1.1*			
		(-9.73)			
3-year standard deviation	4.6*	4.4*	3.5*	3.1*	3.3*
	(29.56)	(27.93)	(14.24)	(17.94)	(14.32)
Asset allocation:					
Bond			-1.9	-9.6*	-8.0**
			(-0.52)	(-3.71)	(2.35)
Small cap			3.2	11.6*	-0.2
			(0.76)	(3.98)	(0.05)
Specialty			23.0*	11.7*	16.4*
			(6.01)	(4.33)	(4.61)
International			28.9*	24.1*	24.5*
			(7.61)	(8.96)	(6.89)
Emerging market			37.6*	37.5*	39.9*
			(5.25)	(7.43)	(5.53)

*(continued)*

**Table 3.8** (continued)

	(1)	(2)	(3)	(4)	(5)
Investment and marketing strategy:					
Institutional				-15.4*	-52.8*
				(-4.23)	(-11.45)
Initial investment				-0.4*	-0.4**
				(-3.22)	(-1.9)
Index				-38.5*	-51.7*
				(-8.72)	(-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*	6.0*
				(8.21)	(8.65)
Bank advised				-8.1*	-18.7*
				(-4.44)	(-7.88)
Fundage				-0.2*	-1.1*
				(-3.26)	(-12.37)
Adjusted $R^2$	23.8	22.2	26.9	64.2	38.0
Dependent mean	127.6	127.6	127.6	127.6	127.62
$N$	3,609	3,609	3,609	3,610	3,610

*Note:* Brokerage fees and front and deferred loads are not included in expense ratios. The dependent variable is total expenses/total assets, in basis points (1 basis point = 0.01 percent).  $t$ -statistics are given in parentheses.

\*Three-year net returns are gross returns adjusted for expense ratio and loads.

\*Significant at the 0.2 percent level.

\*\*Significant at the 5 percent level.

**Table 3.9**                      **Frontier Analysis: Determinants of Expense Ratios of Mutual Funds in the United States, 1992-97**

	(1)	(2)	(3)	(4)
<b>Core group:</b>				
Intercept	22.6* (12.73)	23.0* (12.31)	26.4* (9.17)	65.0* (31.91)
Assets (\$billions)	-3.5* (-5.97)	-2.2* (-5.97)	-2.7* (-7.05)	-2.3* (4.64)
Asset <sup>2</sup>	0.1* (5.77)	1.0* (5.33)	0.1* (6.18)	0.1* (6.21)
No. of shareholders (thousands)	0.03** (2.68)			0.0 (1.3)
Assets/shareholders		-1.0* (-3.11)	-0.1* (-3.17)	
Assets in fund complex (\$billions)	-0.1* (-6.27)	-0.1* (-8.47)	-0.1* (-8.23)	-0.1* (-12.94)
3-year net return <sup>a</sup>		-0.6* (-16.25)	-0.5* (-13.5)	
3-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)
<b>Asset allocation:</b>				
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)
<b>Investment and marketing strategy:</b>				
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)

(continued)

Table 3.9 (continued)

	(1)	(2)	(3)	(4)
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)

Note: Brokerage fees and loads are not included in expense ratios. The dependent variable is total expenses/total assets, in basis points (1 basis point = 0.01 percent). *t*-statistics are given in parentheses.

\*Three-year net returns are gross returns adjusted for expense ratio and loads.

\*Significant at the 0.2 percent level.

\*\*Significant at the 5 percent level.

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

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

### 3.3.4 Fixed R&C Costs per Account

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

R&C costs are \$20–\$25 for an average-size account, according to these regressions. According to corroborating evidence from periodic surveys of transfer agents (the organizations that provide these services for mutual funds), average R&C costs per account have been quite constant in this range during the 1990s. In 1995, the average cost was \$21, and 80 percent of all funds reported R&C costs between \$10 and \$32 (see sec. 3.5 below).

Fixed costs per account associated with R&C pose a potential problem for IA systems if the accounts are small; \$20 is 4 percent of a \$500 account but less than 0.1 percent of a \$25,000 account, approximately the current level for mutual funds. These fixed costs help explain the high expense ratios of new AFPs and mutual funds in developing countries. This raises the question of whether an investment option with lower R&C costs (basic service, limited transferability) should be used initially or whether these fixed costs should be amortized over a long time period, to avoid imposing a heavy burden on early cohorts, in new IA systems.

### 3.3.5 High Marketing Costs

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

The major marketing expense incurred by shareholders consists of sales commissions. Over two-thirds of all funds are sold through third parties (brokers, insurance agents, financial planners) who receive some kind of commission (through front or deferred loads or annual 12b1 fees). However, the proportion of assets managed as no loads through direct marketing is larger and has been increasing through time (table 3.10).

How much do marketing fees add to total expenses? It is possible that sales commissions may substitute for other costs, such as advertising or communication costs. Our regressions, however, show little trade-off. Most of the 12b1 fee is passed on to consumers as an additional cost. A low 12b1 fee (usually 0.25 percent), which is included in the expense ratio,

**Table 3.10 Marketing Expenses of 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 front load	50.00	35.00	52.00	42.00
Funds with deferred load	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 front load	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 front load):				
Average 12b1 fee	0.38	0.52	0.36	0.37
Average front load	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
Marketing expenses as % of total expenses	46.82	44.55	59.04	56.77
Expenses as % of assets (funds without 12b1 or front load): <sup>a</sup>				
Average 12b1 fee	0	0	0	0
Average front load	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

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

For 12b1 fee, front load, and total expenses, see table 3.5 and n. 8 above. Deferred load is a back-loaded sales charge that is paid to the distributor by investors. Usually, the deferred load falls as a function of time the shares are held; therefore, the average deferred load paid by investors ends up being small (but we do not have precise data). Neither front load nor deferred load are included in the fund's expense ratio since they are paid by the shareholder, not the fund.

Annual marketing expenses are defined here as 12b1 fee + 0.2 (front load). 0.2 is annualized front load for reasons given in n. 8 above.

This table overstates marketing expenses if investors hold their front-loaded shares longer than assumed or if the discount rate is lower than assumed. On the other hand, given that deferred load is excluded (on the grounds that most people hold their investments long enough to avoid most of the deferred load) and advertising costs are excluded (because they are not reported), this table probably understates marketing expenses.

<sup>a</sup>These funds have no explicit marketing expenses in the form of sales commissions. Advertising costs are present but not reported.

raises the expense ratio by 0.2 percent, a high 12b1 fee (usually 1 percent) raises it by 0.4 percent, and the latter is usually found together with a deferred load, which raises it another 0.5 percent, implying that most of the 12b1 fee is an added cost. A front load (a one-time sales fee of 4–5 percent) that is paid by investors directly to brokers does not reduce the reported expense ratio paid by the fund. (For corroboration of the cost-raising effects of sales loads, see Ferris and Chance [1987] and Trzcinka and Zweig [1990].)

If we define *total annual marketing cost* (paid by the shareholder) as the 12b1 fee plus the annualized front load, it is 0.61 percent of assets—43 percent of all fund expenses (table 3.10). This is very similar to the marketing proportion of total cost in Chile's AFP system. For funds with front loads or 12b1 fees, total investor costs are over 1 percentage point higher than for funds that pay no sales commission, and more than half of total investor expenses can be attributed to marketing costs. These numbers undoubtedly understate true marketing costs as they do not include the salaries of the staff who manage the marketing efforts or the advertising costs that are paid for out of the adviser's fee. Marketing costs played an even more important role in the early years of the mutual fund industry, before no loads developed.

Investors have the option, of course, to purchase no loads. This implies that, rightly or wrongly, they believe that they receive value from the third-party intermediaries with whom they deal. (For corroboration, see Kihn [1996], and Capon, Fitzsimmons, and Prince [1996].) From a social point of view, marketing probably provides a mixture of useful information, misleading information, an impetus to good performance, and zero-sum game raiding. Other studies have shown that the funds that 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. Nevertheless, most methods to keep IA costs low involve a reduction in marketing expenses, under the assumption that it is zero or negative sum and not the most efficient way to provide useful information to new investors.

### 3.3.6 Lower Expenses for Institutional Funds

A small number of mutual funds or special classes within a large mutual fund are limited to institutional investors (i.e., bank trust departments, corporations, small pension funds, etc.). Usually, the minimum investment for these funds is \$100,000 or higher. These funds have a significantly lower expense ratio as compared with funds for individual investors. The same assets can be amassed with much lower marketing and R&C costs from one large institution than from numerous small individuals. Institutions are much less likely to pay 12b1 (or front-loaded) fees to brokers

because they have more efficient ways of gathering information. On the rare occasions when they do pay these fees, they obtain lower rates. As a result, the expense ratio of institutional funds is 0.6 percent lower than that of other funds in the regression specifications where sales commissions are not controlled, and the total investor cost (as a percentage of assets) for the average institutional fund is less than half that for retail funds (table 3.11).

Some funds have an initial investment requirement that is high (over \$10,000), albeit not as high as that for institutions. These funds also have a significantly lower expense ratio (0.4 percent) than funds that cater to smaller investors, albeit not quite as low as institutional funds. These observations led us to investigate the institutional market in greater detail in order to determine whether IAs could also benefit from the low expense ratios that would result from the large aggregate amounts in the mandatory system.

### 3.3.7 Lower Costs of Passive Management—for Some Assets

Also important is the significant negative sign on passively managed funds, known as *index funds*, which do not have to pay the high fees that popular active managers command. Passively managed funds mimic or replicate a stated benchmark, such as the Standard and Poor's 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 judgment. 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 and more likely to rely on price (cost) competition (see below). In the regressions, expense ratios of index funds are 0.5 percent less than those of other funds. On average, their fees are less than one-third those of actively managed funds in the retail market (table 3.11). Better-informed institutional managers realize this and hold a disproportionate share of index funds.

The low cost of index funds should be interpreted with some caution, however. It could mean that fund complexes view these funds as the products that are designed to capture price-sensitive consumers, and, for this reason, they may allocate much of their joint expenses (advertising, new product development) to the other members of their complex.<sup>10</sup> R&C charges also tend to be less for passively than for actively managed funds; this may be a business-strategy decision rather than a reflection of real cost differentials. The real cost savings to the economy and the potential savings in a mandatory IA system from index funds may therefore be

10. For example, in 1998–99 Fidelity waived part of its normal management fee on its Standard and Poor's 500 index funds in order to make them more competitive.

**Table 3.11 Institutional versus Retail Mutual Funds: Average Expense Ratios and Total Investor Cost as Percentage of Assets, 1997**

	A. Expense Ratio—Unweighted						
	All	All		Active		Passive	
		Retail	Institutional	Retail	Institutional	Retail	Institutional
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						
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 Cost, Including Annualized Front Loads and Brokerage Fees—Weighted by Assets						
Domestic stock funds	1.44	1.47	0.63	1.55	0.97	0.35	0.22
Domestic bond funds	1.30	1.35	0.65	1.36	0.65	0.29	0.34
International stock funds	1.83	1.87	1.08	1.89	1.09	0.45	0.71
Emerging market funds	2.29	2.33	1.37	2.38	1.37	0.60	
All funds in universe	1.43	1.48	0.68	1.52	0.71	0.35	0.23

*Note:* In this table, international stock funds include emerging market funds.

overstated by our regression results. If index funds become a larger share of the total market, opportunities for cost saving and cost shifting may decline. Finally, in separate regressions by asset class, the lower costs of index funds were not statistically significant for small-cap and emerging market funds. This suggests that IA systems in large-cap stock and bond markets in industrialized countries can keep their costs down and increase their net returns by using index funds, although this effect may be smaller than indicated by these regressions and less true of developing and transitional countries, where emerging markets and small-cap stocks dominate. Passive investment strategies would have the additional advantage in a mandatory system of reducing the variance in returns among participants.

### 3.3.8 Asset Allocation: International Funds

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

### 3.3.9 Brokerage Fees

Brokerage fees paid for securities transactions average 0.26 percent of assets for the subset of funds in our sample that included these data. Weighted by assets, average annual brokerage fees fall to 0.12 percent. Recall that these fees are not included in the reported expense ratio but are deducted from gross returns and are therefore part of total investor cost. Separate regressions on this subset show that, as do other expenses, brokerage fees exhibit economies of scale with respect to assets as large fund families use internal trading and spread the fixed costs of electronic trading over a larger base. Brokerage costs are higher for international

funds, especially in emerging markets, and they are, of course, strongly dependent on securities turnover rates.<sup>11</sup>

### 3.3.10 Net Returns, Gross Returns, and Risk

Of course, the investor ultimately cares about net returns, not the expense incurred in earning them. If higher costs led to higher returns, they would be worth incurring. However, a large literature indicates that this is not the case (see Carhart 1997; Elton, Gruber, and Hlavka 1993; Malkiel 1995; Malhotra and McLeod 1997; *Washington Post*, 13 September 1998, B1). While this paper focuses on costs, we also carried out regressions on net and gross returns for 1992–97. These indicate that some of the same factors that increase costs actually reduced returns during this period (James et al. 1999).

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

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

### 3.3.11 Changes over Time: Will Price Competition Reduce Investor Costs?

The question of whether expense ratios have been going up or down over time has been hotly debated (see Lipper 1994). This is an important question because it tells us whether policy makers can rely on market forces to reduce costs. In our regression analysis for 1992–97, time has a

11. The typical brokerage fees paid by mutual funds apparently exceed the “best execution fees” charged by deep-discount brokers or commissions paid by large institutional investors by a factor of three or four (see Livingston and O’Neal 1996; and table 3.12 below). One possible reason is that brokerage fees are not included in the expense ratio, which is the most widely reported expense figure. They were not even disclosed until 1996. Reported expenses could be reduced by covering some research and marketing services out of transactions fees paid to brokers—the controversial soft-dollar issue. It will be interesting to see whether disclosure and, in fact, a glaring spotlight will change fund behavior in this respect.

small significant positive effect on the reported expense ratio (one to two basis points per year), after controlling for all our other variables.

These estimates do not take into account changes in sales commissions that are included in the total investor-cost ratio but not in the reported fund-expense ratio. Between 1992 and 1997, a shift of investors toward no loads and a decrease in the size of front loads led to a small fall in the total investor-cost ratio, despite the rise in the reported expense ratio (table 3.10 above). 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 the total dollar cost per account (expense ratio times average assets per account) has gone up dramatically over the same period, primarily as a result of asset growth and secondarily as a result of the rise in nonmarketing expenses. More recently, investors have been shifting into cheaper passively managed funds, but, in 1997, these still held only 6 percent of all assets.

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

Why is this the case? We hypothesize that competition through marketing rather than through price cuts may be a consequence of volatility combined with the nonseparability between cost and benefit in equity markets (where the "benefit" is the net return and the "cost" is one of the ingredients of net return).<sup>12</sup> High volatility creates a high noise-to-signal ratio that makes it difficult for investors to distinguish between random luck versus skill and low costs that are likely to repeat, in predicting net returns, and leads funds to spend on marketing rather than to cut price. A small example will illustrate this point.

Suppose a fund manager has a low expense ratio that, *ceteris paribus*, leads to an alpha (i.e., a net return above the fair return given the risk involved) that is 0.1 percent per month or 1.2 percent per year. This incre-

12. In financial markets, consumers are basically purchasing an expected net return, which equals the gross return minus the expense ratio. They will be willing to pay a higher expense ratio (price) if this is correlated with higher gross and net returns, and stock market volatility enables some high-cost funds to argue that this is the case (even though our regressions show that, on average, this is not the case).

ment to net return will ultimately increase accumulations of lifetime investors by 24 percent, but, given the volatility of the portfolio, it is realized with a monthly standard deviation (of the nonsystematic risk) of 1 percent. In any given month or year, some other managers will outperform this manager, although, over time, he will outperform the market. How do investors distinguish the true ability of this manager to yield excess returns over the long run, owing to his lower costs, from the random short-run gains that accrue to other managers? If we take each month as an independent observation, regress this fund's return on the market return, and are fortunate enough to secure the true alpha as the estimated alpha, 384 observations, or almost twenty years, are needed to convince investors that this alpha is significantly higher than zero, at the 5 percent significance level.<sup>13</sup>

In the intervening years, other funds will be advertising their performance, choosing some convenient time period when they experienced above-average returns, and arguing that these superior returns more than justify their higher fees. Given the wide divergence between price and marginal cost in the industry and the fertile possibilities for shaping information in a favorable way, each fund has an incentive to spend substantially on marketing to increase the assets under its management. The proliferation of new funds that are kept alive if they randomly experience high returns at their beginning exacerbates the difficulty in separating noise from signal and the long time periods needed to do so. In view of these calculations, it is not surprising that it has taken no loads twenty years to gain barely half the market and that low-cost index funds are still only a tiny fraction of the market.

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

13.  $1.96 = (0.1 \text{ percent}) (\sqrt{384}/.01)$  (adapted from Bodie, Kane, and Marcus 1989).

atic 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.

### 3.4 Costs in the Institutional Market

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

#### 3.4.1 How Much Do Institutional Investors Pay for Asset Management?

Table 3.12 presents illustrative sliding-scale data on costs of money management provided by a large manager of assets for institutions. It also shows median costs for 167 large and 10 of the largest U.S. pension funds (median large fund = \$1.5 billion; median assets per money manager = \$113 million; median largest fund = \$42 billion; median assets per money manager = \$543 million). These rates show clear evidence of scale economies, the cost efficiency of passive management, and the effect of asset allocation.

Fees as a percentage of assets decline over large ranges with volume of assets managed. Marginal fees are as low as 1 basis point for passive management of large-cap stocks and 2.5 basis points for small and mid caps, once assets in an account reach \$200 million. Fees for active management are higher but still far less than mutual fund rates. For large-cap domestic equity exceeding \$25 million, investors must pay 35 to 50 basis points. Not surprisingly, fees for emerging market investments are much higher than those for domestic investments, but advantages to large institutional investors remain. For active management, they pay a marginal fee of 0.8 percent and, for index funds, only 0.4 percent. The largest pension funds pay still less. But even these funds use multiple money managers (an average of thirty-four) and allocate less than \$1 billion 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 \$1 billion.

Table 3.12

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

	Large Cap	Small and Mid Cap	
<b>Passive domestic equity:</b>			
< \$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 U.S. pension funds <sup>a</sup>	4.0	7.0	
Median cost, largest U.S. pension funds <sup>b</sup>	1.0	6.0	
	<b>Value</b>	<b>Growth</b>	<b>Small Cap</b>
<b>Active domestic equity:</b>			
< \$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
	<b>Index</b>	<b>Active</b>	
<b>International equity:</b>			
< \$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	
<b>Emerging market:</b>			
< \$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	
<b>Fixed income:</b>			
< \$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	

(continued)

Table 3.12 (continued)

	Index	Active
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 Investors <sup>c</sup>	
Internal administrative costs:		
Median cost, large pension funds		6
Median cost, largest pension funds		2
Brokerage costs (trading costs):		
Median cost, large pension funds		10
Median cost, largest pension funds		7

*Note:* Sliding-scale fees for institutional commingled funds, the BT Pyramid funds, were graciously supplied by Bankers Trust, a large money manager of indexed and actively managed institutional funds. Data on large U.S. pension funds is from CEM (1997).

<sup>a</sup>These are median costs of external money management for given type of assets, reported by 167 large U.S. 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.

<sup>b</sup>These are median costs for the 10 largest U.S. pension funds, excluding Calpers, ranging in size from \$29 to \$65 billion. Average of 34 external money managers per fund managing \$646 million each (\$543 million median).

<sup>c</sup>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.

If we add to these asset-management costs another 3 to 10 basis points for brokerage fees and internal administrative costs that are incurred by large institutions, this brings the total cost to 0.04–0.65 percent, depending on investment strategy. This may be compared with retail costs ranging from 0.3 percent to 1.5 percent for the average passively and actively managed mutual fund, respectively.

### 3.4.2 Why Do Institutions Get Better Rates?

In an imperfectly competitive market, large investors have greater reasons and resources to seek out asset managers who will provide good performance at low cost. They are better able to separate noise from signal, to evaluate whether a particular fee is warranted by the expected returns, and, therefore, to respond sensibly to price differentials. They also have the credible threat of managing their money in house if they do not get good terms from an external manager. Thus, if marginal costs are less than

average because of fixed costs, to attract an institutional investor the asset manager is likely to charge only a small fee above marginal cost per unit invested; this adds up to a large contribution toward total fixed costs where large sums are involved.

Besides possessing greater information and bargaining power, institutional investors 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 individual retail investors, advertising expenses must be incurred, numerous brochures and statements sent to households, and follow-up with personal communications must be made to convince them to invest and to choose a particular fund. Often, commissions are paid to motivate sales agents to spend the time and effort needed to carry out this task. In contrast, marketing in the institutional marketplace is likely to consume fewer resources because of the concentration of investors, their greater financial expertise, and their price sensitivity; sales commissions are rare. And, once the contract is secured, only one investor need be served in the institutional market. Even if the billion-dollar investor gets better service than the thousand-dollar investor (as is likely the case), total R&C demands relative to assets are much smaller for one institution than for a million small investors.

These factors lead to costs for institutional investors as low as 0.04–0.65 percent of assets, depending on asset category and investment strategy chosen. These would be the costs in a centrally managed social security fund—if it is well run.

### **3.5 Capturing Institutional Rates for a Mandatory IA System: Constrained Choice**

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

### 3.5.1 How Would It Work?

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

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

Later, as aggregate assets increase, entry could be opened up to a larger number of asset managers, including active managers who agree to operate below a specified price ceiling. The ceiling would be set high enough to cover marginal cost plus part of fixed costs but low enough to discourage marketing expenses—not an easy target to achieve. It might vary according to benchmark chosen: higher for small caps and emerging market portfolios than for domestic large caps. (If only one price ceiling is set, this is tantamount to restricting the available portfolios and strategies to those that are profitable at low cost.) For example, the ceiling might be set at the mean or median money-management cost, by asset class, of the largest pension funds in the country. R&C services would be provided elsewhere to keep small accounts attractive to asset managers and to avoid service deterioration under incomplete contracts. The Swedish system of fee ceilings moves directly to this second stage: it involves numerous mutual funds and centralized R&C. This scheme is also consistent with the two-tiered plan for the United States outlined in Goldberg and Graetz (chap. 1 in this volume). Their plan would initially give workers a choice among six index funds (SPIFs, or simple personal investment funds) but would allow workers to opt out into a broader set of qualified options (Q-funds, or qualified private funds) once their accounts reach a specified size.

### 3.5.2 Marketing Expenses

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

Is this attempt to reduce marketing expenses efficient? This depends on whether the cuts come mainly from the informational content of marketing or its zero-sum game competitive elements. It seems likely that the socially optimal amount of marketing is less in a mandatory IA system than in the voluntary market. First, since the total investable amount is predetermined by law, marketing is not needed to induce people to save or to invest in financial markets. Second, mandatory centralized collections can aggregate savings into large blocs for efficient investment without marketing expenses. Third, while information is imparted by marketing, investment companies and brokers have a clear incentive to impart misleading information that is in their rather than the consumer's interest. For example, broker-salespeople may lead clients to "their" funds rather than to the "best" or the "least-cost" funds. This could be a big problem in a new mandatory system with many small, inexperienced investors. Such a system should include other, more cost-effective ways to impart less biased information relevant to investment choices, such as government publications and the popular media. The incentives for good performance and innovation imparted by marketing could continue to be provided in the voluntary marketplace. Reducing marketing expenses may be less efficient in countries with low tax-collection capacities and fewer sources of information, particularly those that wish to use marketing as a tool to increase coverage and reduce evasion. However, for others, the potential savings from cutting marketing costs seems to be about 0.4–0.5 percent of assets.

### 3.5.3 Constrained Choice of Investment Portfolios

A second consequence of this cost-cutting method is restricted choice regarding investment portfolios and strategies. The institutional approach to IA systems limits the range of options available to workers in order to obtain better rates from fund managers. In developed financial markets, this is likely to mean ruling out expensive portfolios in illiquid assets such as small-cap stocks and foreign emerging markets and directing workers toward index funds in liquid domestic instruments instead. The Thrift Savings Plan (TSP) in the United States does this directly. Sweden's new IA

system does it indirectly by setting price ceilings that will restrict the supply of “expensive” funds and cross-subsidies that will push consumers toward cheaper funds. In James, Smalhout, and Vittas (1999), we show that most of the cost saving achieved by these systems is due to the portfolio and strategy changes that they require or induce.

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

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

We estimate that asset-management costs in this system of constrained choice would be similar to those in a single centralized fund—0.04–0.65 percent of assets, depending on the range of strategies allowed—with a small addition for advertising costs. R&C costs would, however, be considerably larger in an IA system since numerous individual accounts, rather than one big pension fund, would have to be tracked. We move on now to discuss how this could be handled in a cost-effective manner.

### 3.5.4 How to Keep R&C Costs Low

While R&C costs are a small component of total costs in mutual funds, they are likely to be a relatively larger cost component in an IA system that has successfully cut its marketing and investment expenses. The magnitude of these costs are, to a substantial extent, a policy choice, a function

**Table 3.13** Transfer Agent (R&C) Costs in Dollars per Account

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

*Source:* ICI and Coopers Lybrand (1995, 1997).

of level and types of services provided, rather than an exogenously given variable. In this section, we consider some of the policy choices that can keep R&C costs low.

According to periodic surveys of transfer agents (i.e., the organizations that provide these services for mutual funds), average mutual fund cost per account and per open account has been quite constant, at \$21 and \$25 per account, respectively (table 3.13). However, they are not uniform across all funds. They tend to be lower for funds that contract out the transfer-agent function rather than performing it internally. This may result because pricing in internal arrangements is not an arm's-length competitive transaction and because internal control is designed to provide more personalized service, to inculcate loyalty to the fund. Costs per account are 33 percent higher for money market than for equity funds because of the greater transaction volume and check-writing facilities offered by the former. They are twice as high for direct market retail funds as for funds that sell through brokers, who perform some of the customer-communications functions that are otherwise provided by the fund (\$33 vs. \$17). Transfer-agent costs are 20 percent higher for accounts where dividends are paid monthly rather than annually. Size of account does not appear as a factor influencing R&C costs.

Competition in the U.S. mutual fund industry has resulted in a high and expensive level of R&C service, in part because shareholder service and building shareholder loyalty (a form of marketing) are closely intertwined. Service innovations include the ability to make frequent telephone exchanges, to wire funds, to write checks, and to speak to a representative twelve or even twenty-four hours per day. Each of these services costs, but

the costs are hidden.<sup>14</sup> They are free of charge to the individual user—although, of course, not to users as a group.

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

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

Centralization immediately reduces systemwide costs by avoiding the setup and systems-integration problems that occur when members switch their accounts from one fund complex to another. It allows workers to divide their money among two or more funds without the cost of maintaining duplicate records. It keeps a single record of a worker's lifetime contributions and returns. This is particularly important in a mandatory system, where such a record should be readily available, error free, on retirement. The separation of R&C from the asset-management function would actually increase the choice of asset managers available to small accountholders since R&C costs, which are relatively expensive for such accounts, would be covered elsewhere.<sup>15</sup> It would facilitate a cross-subsidy

14. Processing the application for a new account costs about \$10; a personal telephone call costs \$7; check writing costs \$5 to set up and \$1 per draft thereafter. Technology (the Internet, automated phones) is ostensibly being used to reduce costs, but so far the savings have not materialized. Instead, the greatest effect has been to increase investment costs and improve service still further. Additional electronic options are available, while the utilization of expensive personal services has not diminished. This helps explain why, in the regressions for 1992–97, a period that has seen great technological strides, expense ratios rose slightly and total expenses (expense ratio times assets) rose dramatically.

15. Most mutual funds would not be interested in small IA accounts or would charge them a very high annual fee (thereby cutting benefits commensurably) unless some new means is developed of handling R&C costs. For the small accounts currently under consideration in the United States, average mutual fund fees of 1.4 percent would not cover the real marginal R&C cost of the bottom half of the worker population for more than five years. Fees in low-priced index funds would not cover these costs for more than twenty years. So these funds or their counterparts are unlikely to serve as asset managers for small accounts if the R&C

to small accounts, which may be socially desirable, without competitive pressures that might oppose this. Moreover, centralization would allow personalized services to be reduced without generating inefficient competitive pressures to upgrade. (But note that government capacity and trust in public agencies are necessary preconditions for centralized R&C, and these are lacking in many developing countries.)

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

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

Additional economies may, in some case, be achieved by piggybacking on existing tax-collection facilities. Contributions to IAs could be sent in together with other payroll taxes, thereby saving on incremental collection costs. This might also facilitate compliance checks, as a central agency knows whether the contribution has arrived while a decentralized fund may have little reason to report this information to the government accu-

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function is decentralized. They might, however, welcome their asset-management business if R&C is carried out and paid for elsewhere.

**Table 3.14** Hypothetical Annual R&C Cost per Account—Breakdown of Services (\$)

	Typical Direct Market Mutual Fund	IA System with Central Records
Account setup (annualized) <sup>a</sup>	2.00	0.10
Annual record keeping and update	1.00	1.00
Personal phone calls <sup>b</sup>	7.00	2.00
2 automated phone calls per account	2.00	2.00
4 quarterly statements	6.00	...
1 annual statement or tax statement	1.50	1.50
2 transactions with written confirmation	5.00	5.00 <sup>c</sup>
1 dividend + capital gains distribution with statement	2.50	1.00 <sup>d</sup>
Distribution of prospectus, semiannual and annual reports	3.00	1.00 <sup>e</sup>
Queries and mailing about other funds in complex	2.50	...
General educational material	...	2.50
Total	32.50	16.60

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

<sup>a</sup>We assume that the investor switches to a new mutual fund every seven years but would stay in the centralized records of an IA system for forty years.

<sup>b</sup>We assume one phone call per year per account in a mutual fund, one-third per account in the IA system.

<sup>c</sup>Possible fee for additional transactions.

<sup>d</sup>Dividends and capital gains are credited to account in the IA system and are included in the annual statement.

<sup>e</sup>Two-page statement substitutes for prospectus.

rately. However, utilizing existing tax agencies must be approached with caution as it involves hidden costs such as long delays (as much as nine months) before the worker's contribution is allocated to his or her account and money manager. If the new contribution loses, say, an incremental 3 percent rate of return in the interim, this is equivalent to a loss of 0.15 percent of assets per year over a worker's lifetime. Moreover, this approach may not be an option for countries that have weak tax-collection mechanisms and a distrust of public agencies. In these countries, workers may be more likely to contribute if they can put the money directly into their own accounts. This was the case, for example, in Chile at the time of its reform; only a decentralized approach was feasible under those circumstances. Piggybacking, however, can greatly reduce collection costs as well as facilitate compliance and record keeping in countries that have the capacity.

Table 3.14 compares the R&C composition of a high-cost mutual fund

account and a modest-service account proposed for an IA system that exploits all these cost-saving opportunities. It seems likely that collection and R&C costs will total less than \$20 per account, which is at the low (but not the lowest) end of the mutual fund spectrum.<sup>16</sup>

### 3.5.5 Comparison with the TSP

Our \$20 figure is also consistent with R&C costs of the TSP, a retirement savings plan for federal employees in the United States. The TSP began in the late 1980s. It now has 2.3 million participants, approximately \$65 billion in assets, and an average account size of \$27,000 (table 3.15). TSP R&C costs have remained fairly stable, at \$18–\$21 per account, since 1988, although total administrative costs have increased to \$30 per account as assets have grown. (These numbers are in 1998 dollars, and they cover gross costs, including trading and other investment costs, although these are partially offset on TSP books by account forfeitures.)

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

But the biggest cost saving for the TSP is due to the constraints that it places on portfolio choice and investment strategy: workers must choose among a money market fund, an equity fund indexed to the Standard and Poor's 500, and an indexed long- and medium-term bond fund. (For comparison, Standard and Poor's 500 index funds are available in the retail

16. This \$20 figure may be contrasted with the \$50 per account figure in Diamond (chap. 4 in this volume), which is much higher than either the TSP or mutual funds. The \$50 number is Diamond's estimate of the political equilibrium, under the assumption that political pressures will drive up service levels and costs. While we do not try to estimate a political equilibrium—which is highly subjective—it should be noted that the equilibrium service level and cost can be influenced by process and disclosure. For example, if the charge is prominently displayed on the annual statement, if the basic service is financed by cross-subsidization from large to small accounts via an asset-based fee, and if services are unbundled so that incremental services are paid for by the user, the political equilibrium may result in a relatively small common service charge.

Also, Diamond's \$50 may include some of the costs that we cover in a different category. Our total dollar cost for an average account in steady state, including money-management and brokerage fees that are tied to money management, is \$31–\$39 for passive management and \$106–\$172 for active management. These costs would hold when the average account size is \$22,000 (in 1999 dollars).

**Table 3.15 Administrative Costs of the Thrift Savings Plan, 1988–98**

Year	Expense Ratio (basis points) (1)	Average Size Account (\$thousands) (2)	Administrative Cost per Account		Investment Cost per Account (\$) (5)	R&C Cost per Account	
			\$	1998 \$		\$	1998 \$
			(3)	(4)		(6)	(7)
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 <sup>a</sup>	.11	27.4	30.1	30.10	11.1	19.2	19.2

*Source:* TSP publications and authors' calculations.

*Note:* Expense ratio in col. 1 is gross expense ratio as reported in TSP publications (before adjustment for forfeitures) plus three basis points imputed by authors for brokerage (trading) fees. Cols. 5 and 6 are authors' estimates separating R&C from investment expenses. Investment expenses are assumed to be three basis points of trading costs plus one 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.

<sup>a</sup>Based on January–August annualized.

market for twenty-two basis points, but most investors choose higher-cost funds.) Moreover, the right to manage these funds has been auctioned off to only one company, on a monopoly basis. Marketing costs therefore are virtually absent, and investment costs are minimal—estimated by us to be four basis points, including brokerage (trading) fees. Total administrative costs (including R&C) have fallen to only 0.11 percent of assets as average account size has grown. (For a more detailed analysis of the TSP, see James, Smalhout, and Vittas [1999].)

### 3.5.6 Cost Implications for a New IA System

Suppose that, in the year 2000, the United States were to institute a similar structure (but preferably with greater choice, corresponding to the greater volume of assets in the system) for a mandatory IA system with an annual contribution of \$500. If this amount were put in escrow pending tax reconciliation and establishment of the new information system, three to four years of contributions and interest would accumulate before the IAs became operative. By that time, the \$20 R&C cost would be only 1 percent of assets for the average account. Following panel A of table 3.1 above, in steady state forty years later it would be only nine basis points.

After adding these nine basis points to the investment cost derived in section 3.4 above, the total cost for an IA system based on constrained choice is projected to be 0.14–0.18 percent if passively managed or 0.49–0.79 percent if actively managed. In constant dollars, the steady-state cost for the average-size account would be \$31–\$172. This cost is much lower than an IA system run through the retail market with unconstrained choice among investment portfolios, resulting in a pension accumulation that is 15–25 percent larger. It is lower than that of similar portfolios in the voluntary market to which individual investors have access, primarily owing to reduced marketing and secondarily to bulk buying power and no-frills service.<sup>17</sup> It is slightly more than a single centralized fund would

17. It may be useful to compare the cost of passive management under constrained choice with the cost of the Standard and Poor's index funds offered by Vanguard and Fidelity to individuals and institutions. These are among the lowest-cost mutual funds available, marketing themselves to a cost-conscious clientele and making business-strategy and cost-allocation decisions accordingly. Their marketing expenses are kept low by the absence of 12b1 fees, front loads, or back loads. The Vanguard institutional fund has a six-basis-point expense ratio, and we impute three basis points in brokerage fees, bringing the total cost to nine basis points. The Vanguard and Fidelity Standard and Poor's index funds have an expense ratio of nineteen basis points plus an imputed three basis points for brokerage fees, bringing the total to twenty-two basis points. (Actually, Fidelity's fees are higher, but fees above nineteen basis points have been waived to enable Fidelity to compete with Vanguard. Asset management for Fidelity's index fund has been contracted out to Banker's Trust for less than one basis point.)

In contrast, for an IA system under constrained choice, we have estimated a cost of fourteen basis points for passive management of large-cap stocks, including brokerage fees. The IA system would be five basis points more expensive than the institutional fund because of the greater R&C costs associated with numerous IAs. The IA system would be eight basis

cost but, in exchange, offers much greater adaptability to individual preferences and insulation from political risk (table 3.16).

### 3.6 Conclusion

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

The evidence in this paper demonstrates that large cost savings can be realized by investing IAs through the institutional market with constrained choice. This would involve moving money in large blocs rather than as small individual investments while still giving workers considerable choice among asset managers. In the early years of a new system, a competitive bidding process could be used in which a limited number of managers are chosen for differentiated portfolios. Subsequently, an open-entry process could be used in which companies agree to restrict their fees in exchange for the right to participate. Further economies might be achieved by centralized R&C and collections. The cost savings to participants come partly from reducing marketing expenses, economizing on R&C costs, and exploiting bargaining power regarding the distribution of the fixed-cost burden. Limiting investment strategies to passive management in the early phase would produce the largest cost reduction.

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

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points cheaper than the index funds for individual investors because of the lower level of service provided by centralized R&C, the spreading of fixed costs across a larger asset base, and the bulk buying power of large money blocs.

Importantly, for the first fifteen years of the IA system, most accounts will be below the \$10,000 minimum investment required by Fidelity and Vanguard for these funds. This minimum investment was set by Fidelity and Vanguard precisely because of the R&C cost per account (discussed in the text). Smaller investors are either excluded or required to pay an additional \$10 fee, equivalent to another ten to one hundred basis points depending on account size, to help cover R&C. In getting access to a similar index fund without this fee, small investors have an investment opportunity under a constrained-choice IA system with centralized R&C that they did not have, or that would have been much more expensive for them, in the retail market.

**Table 3.16**      **Costs of Retail, Centralized, and Institutional IAs with Constrained Choice Compared (in basis points per unit of assets unless specified otherwise)**

	Retail		Centralized		Constrained Choice, Institutional	
	Passive	Active	Passive	Active	Passive	Active
Asset management	8	52	1–5	25–55	1–5	25–55
Marketing	3	65	...	...	1	5
R&C	5	12	...	...	9	9
Brokerage fee and other	16	20	3	10	3	10
Total cost	32	150	4–8	35–65	14–18	49–79
\$ cost per average account of \$22,000 in steady state (see panel A of table 3.1 above)	70	329	9–18	77–142	31–39	106–72

*Note:* Retail costs are taken from tables 3.5 and 3.6 above. Centralized costs are taken from table 3.12 above. Institutional constrained-choice costs are taken from tables 3.12–3.15 above. Marketing costs under constrained choice are based on the assumption that fee ceilings or the competitive bidding process will keep them low.

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

The most expensive service involves communication and education. It is not reasonable to expect consumers to make complicated financial choices without information. Our R&C cost estimate included an allocation for preparing and distributing published materials. However, we would argue that, especially for workers who are saving for the first time in their lives, the best education will come from practice—with small amounts. This is another reason for simplifying and limiting choice, especially at the beginning of the new system. By the time accounts have grown and greater choice is permitted, most workers will already have learned from experience. No doubt the popular press (newspapers, magazines, television talk shows) would also play a significant role in educating the public as it would surely face a huge demand once everyone had an IA.

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

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## Comment      David A. Wise

The authors have presented an enormous amount of information on the cost of operating mutual funds. The data are drawn from a broad range of sources. Some of the information is, I believe, especially relevant with respect to the projected administrative cost of operating a social security individual account system. Given the information provided by the authors, I am inclined to believe that the costs of operating individual account programs—which might evolve as part of social security reform—are likely to be very low. Indeed, it seems to me that, whatever the pros and cons of individual accounts, a proper interpretation of the data on administrative costs suggests that such costs should not be a determinant of whether such accounts are adopted.

The data on Chile I found interesting in that these data show that it can be done, but perhaps the costs are not so relevant to prospective costs in the United States.

Much of the information about the cost of operating “retail” mutual funds in the United States is presented in the form of regressions showing the relation between mutual fund expense ratios and attributes of the fund. The results confirm that there are economies of scale with respect to the size of the fund, that actively managed funds (with substantial turnover) are associated with large administrative costs (especially emerging market funds), that funds for institutional investors (with large minimum investments) incur lower costs, and that index funds operate with very low administrative cost.

But the most relevant information, in my view, pertains to the cost of operating specific funds. As far as I can tell, no one expects that individual

accounts would have participants choosing from the thousands of mutual funds available in the United States. Instead, it seems to me that investment options would likely be limited. It also seems to me that individual contributions could be “bundled” in some way to reduce the number of very small transactions, although I was not exactly clear what the authors had in mind in this respect. In addition, there is enormous room for varying the “services” that funds provide, as the authors emphasize.

The authors conclude that competition with respect to client service has resulted in high administrative cost among many “retail” mutual funds. Many of these services would appear to be unnecessary in the case of universal compulsory contributions.

Thus, it seems to me that the information most relevant to social security individual accounts is the cost of operating specific types of plans like the federal employees’ Thrift Savings Plan or index funds in general. For such options, the administrative cost is very low.

Exactly how to “keep the records” would have to be solved, but it is hard to believe that, in this world of technical capacity, that infrastructure cannot be worked out. Indeed, I believe that the computer facilities that the NBER uses to keep track of medicare and employer-provided medical insurance claims records could handle the job.

It seems to me, however, that, even without the evidence of specific very low-cost plans, competition for individual accounts would tend to produce many more low-cost options. And more index funds are an obvious example. If there is money to be made—and surely there will be with so many participants—I believe that firms will compete for it.

But, what is more, I believe that what is happening independent of social security reform is likely greatly to facilitate the adoption of individual social security accounts. In the early 1980s, few people were actively involved in the equity market. That is no longer true, and it will be even less true in coming years. Now, perhaps 45 percent of *families* participate in a 401(k) plan, and these plans are still spreading rapidly. Including IRAs, an even larger number of families are gaining acquaintance with the equity market and, in particular, with mutual funds. Poterba, Venti, and Wise (1998) suggest that the cohort retiring in 2025 will have 401(k) assets at least as large as social security assets (under current provisions) and probably much more. Those retiring in 2035 will have even greater 401(k) assets.

There are two things that are important about the spread of individual retirement saving, independent of social security. One is that individual accounts are less and less a new thing with which most families do not know how to deal. Indeed, there is a substantial amount of “investment” education provided by firms to employees. This education is just as applicable to social security individual accounts as to 401(k) accounts. Second, I suspect that, as a larger and larger proportion of persons become more

sophisticated about investing and investment returns, there will be increasing competition to provide low-cost mutual funds, as many firms already do (although the authors here do not seem to see that, thus far, their data are really not appropriate for addressing this issue). Thus, I would look for lower administrative costs in response to greater awareness on the part of the rapidly growing number of IRA savers. I would guess that social security individual accounts would work in the same direction. In addition, it seems to me that there is substantial room for piggybacking on the 401(k) infrastructure. For example, employees in a firm with a 401(k) plan might choose the individual account investment from the same menu of options provided for the 401(k).

Finally, assuming that a logical way to run individual accounts is through the IRS, this provides substantial possibility for increasing saving, especially among low-income households. It would be easy—once the system is set up—to allow tax filers to increase their contribution beyond the “minimum” requirement. In Canada, for example, each tax filer now receives a letter each year from the minister of national revenue advising the recipient of the allowable registered retirement saving plan contribution—which could be described as a combination of U.S. IRA and Keogh plans—for the year. Although this practice was adopted because of the complex Canadian contribution limits, it is evident that the practice may also serve to promote the program and thus increase saving. My guess is that any similar arrangement operated through our IRS would have the same effect.

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### Discussion Summary

*Michael Graetz* expressed doubt regarding the ability of a system of individual accounts to “piggyback” on the existing 401(k) infrastructure, noting that, while 62 percent of wage earners earned less than \$15,000, only 8.3 percent of workers held 401(k) accounts. Consequently, Graetz reiterated the claim of the Graetz and Goldberg paper that the system should piggyback on the social security and IRS infrastructure. He also commented that he was not as sanguine as David Wise regarding the potential for reduction in marketing costs as a result of competition between fund managers under a system of individual accounts. Graetz claimed that one

advantage of the Goldberg and Graetz paper's two-tiered approach (i.e., offering both a default plan and an opt-out plan) would be to hold down costs in the opt-out plan (Q-fund, or qualified private fund) as a result of the low-cost alternative of the default (SPIF, or simple personal investment fund) plan. *Fred Grauer* added that the marketing costs of passively managed funds are significantly lower than those of actively managed funds.

*James Poterba* offered a comment regarding the proper interpretation of the James et al. paper's regressions analyzing the determinants of expense ratios of mutual funds. In general, he cautioned that looking cross-sectionally at the effect of various *currently permissible* activities on expense ratios is quite different from analyzing the likely effect on expense ratios of restricting the mutual fund market's set of permissible activities. He noted that the exact relation between the regressions and this latter question is not clear.

*Olivia Mitchell* cited evidence from a recent Lipper study (Lipper Analytical Services 1998) suggesting that, on average, older mutual funds have lower costs than newer ones. She suggested that James et al. may want to focus on the older funds as a benchmark, not the newer funds, which may still be amortizing start-up costs. *Estelle James* agreed, noting that the authors had performed regressions in which the age of the fund was included and had a negative coefficient. James also suggested that the older funds' lower costs may reflect a survival bias.

Echoing James Poterba's cautionary note on the interpretation of the expense-ratio regressions, *Stephen Zeldes* noted that the negative coefficient on fund size had a causality problem. That is, large size may be driving lower costs, but lower costs may also attract investors and thus lead to large size. He cited Vanguard as a possible example of this latter effect.

*Peter Diamond* cited a recent ICI report (Rea and Reid 1998) that examined average administrative costs of mutual funds with some equity component. Based on a dollar-weighted (on deposits) average, they arrived at a mean figure of 150 basis points for 1997. Diamond suggested that it would be interesting to contrast this analysis with that of the James et al. paper.

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