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Sociodemographic and Economic Characteristics**

by Christopher R. Tamborini, Emily Cupito, and Dave Shoffner

This article presents the sociodemographic and economic characteristics of Social Security child beneficiaries. Using data from the Survey of Income and Program Participation matched with administrative benefit records, we find important differences in the incidence of child benefit receipt and average benefit amount across a number of individual and family-level characteristics. We also examine the demographic and income characteristics of the three beneficiary types: child of deceased worker, child of disabled worker, and child of retired worker.

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A PROFILE OF SOCIAL SECURITY CHILD BENEFICIARIES AND THEIR FAMILIES: SOCIODEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

by Christopher R. Tamborini, Emily Cupito, and Dave Shoffner*

Using a rich dataset that links the Census Bureau's Survey of Income and Program Participation calendar-year 2004 file with Social Security benefit records, this article provides a portrait of the sociodemographic and economic characteristics of Social Security child beneficiaries. We find that the incidence of benefit receipt in the child population differs substantially across individual and family-level characteristics. Average benefit amounts also vary across subgroups and benefit types. The findings provide a better understanding of the importance of Social Security to families with beneficiary children. Social Security is a major source of family income for many child beneficiaries, particularly among those with low income or family heads with lower education and labor earnings.

Introduction

The US Social Security system provides benefits to children of insured workers who die, become disabled, or retire. At the end of 2008, approximately 3.1 million children under age 18 received monthly benefits from Social Security, representing about 6 percent of Social Security beneficiaries (SSA 2010a, Table 5.A1.4).

In-depth analysis of Social Security child beneficiaries is surprisingly limited. Data published by the Social Security Administration (SSA) provide useful aggregate information, but offer little insight into the characteristics of children receiving benefits and the importance of these benefits to the financial security of their families. In this study, we use a restricted-use dataset that matches respondents in the Census Bureau's Survey of Income and Program Participation (SIPP) calendar-year 2004 file with Social Security (Old-Age, Survivors, and Disability Insurance, or OASDI) benefit records. These matched data allow more accurate identification and measurement of Social Security child beneficiaries and their benefit types, benefit amounts, and family income than survey data alone.

Our primary objective is to provide a portrait of the sociodemographic and economic characteristics of recent Social Security child beneficiaries. Newcomb (2003/2004) analyzes child beneficiaries using a matched 1996 SIPP-SSA file; however, additional analysis using more recent data is needed, given potential demographic and economic changes in the population. In addition, the current study adds new empirical insight by disaggregating child benefit income from total (adult and child) benefit income within a family unit. This study also uncovers important heterogeneity in outcomes across the three main child benefit types.

The results yield a number of important insights. Although Social Security rules treat persons with

Selected Abbreviations

OASDI	Old-Age, Survivors, and Disability Insurance
PIA	primary insurance amount
SIPP	Survey of Income and Program Participation

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Selected Abbreviations—Continued

SSA	Social Security Administration
SSI	Supplemental Security Income

identical earnings histories and life events (for example, the death of a parent) uniformly, we find that the likelihood that a child will receive a benefit, and the amount of his or her benefit, vary widely across different population segments. The results also advance our understanding of the economic status of child beneficiaries in the OASDI program. In general, child beneficiaries have lower economic status than all children, in part because the qualifying event (death, disability, or retirement) likely relates to diminished capacity to generate earnings and other forms of income. Social Security benefits, therefore, constitute a substantial portion of the family income of many child beneficiary families, even when only child benefits are counted. Although attention often centers on how Social Security reforms might affect the economic status of aged adults, policy changes may also influence child recipients because child benefit computations are based on the parent's benefit. Children constitute an important and often economically vulnerable share of OASDI beneficiaries.

The next section provides a brief background on Social Security child benefits. A description of our data and analytic approach follows. Then, we present our empirical results. The final section summarizes our findings and suggests further avenues of research.

Social Security Child Benefits

Just 4 years after the passage of the Social Security Act, the 1939 Social Security Amendments established child benefits and began to change Social Security from a retirement program for workers to an economic security program for the whole family (DeWitt, Béland, and Berkowitz 2008; Martin and Weaver 2005). Under the current program, monthly benefits are payable to children of insured workers who have either died, become disabled, or retired. This article focuses on minor children; that is, children under the age of 18. To be eligible, a child must be the biological or adopted child of an insured worker or, in some cases, a dependent stepchild or grandchild.¹ In addition, a child generally must be unmarried to receive child benefits.² Child benefits are additional to payments to the disabled or retired workers themselves.

Table 1 outlines the eligibility requirements for Social Security child benefits. Three types of Social Security benefits are available to qualifying persons under age 18. The first of these is for children of deceased workers. To qualify, the child's deceased parent must have earned at least one of the following: (a) 40 quarters of coverage throughout his or her lifetime, (b) 1 quarter of coverage for every year between age 21 and death, or (c) 6 quarters of coverage over the 13 calendar quarters prior to death.³ The benefit amount for the surviving child equals up to 75 percent of the base amount of the parent's benefit, called the primary insurance amount (PIA). The second type of benefit is for children of disabled workers. To be entitled, the child's parent must be receiving Social

Table 1.
Eligibility rules and benefit amounts for Social Security child benefits

Beneficiary type	Conditions parent must meet for child to be eligible	Benefit amount
Child of—		
Deceased worker	One quarter of coverage for every year between age 21 and death (maximum of 40); or 6 quarters earned in the last 13 calendar quarters.	Up to 75 percent of parent's PIA
Disabled worker	One quarter of coverage for every year between age 21 and the year of disability (maximum of 40), plus 20 quarters in the last 10 years (or fewer if under age 31).	Up to 50 percent of parent's PIA
Retired worker	Claiming Social Security benefits, age 62 or older, fully insured with 40 quarters of coverage.	Up to 50 percent of parent's PIA

SOURCE: SSA 2010b.

NOTES: "Eligible parent" can also be a grandparent if the child is under the grandparent's legal guardianship.

Benefits are also available to children who are under age 19 and full-time high school students and to disabled adult children. Disabled adult children can receive benefits at age 18 or older if they are unmarried and the disability began before age 22.

Security disability benefits. Program rules limit the benefit for children of a disabled parent/guardian to 50 percent of the disabled worker's PIA. The third benefit is for children of retired workers who are fully insured (have earned 40 quarters of coverage) and are receiving Social Security benefits. Program rules also limit the benefit for a child of a retired worker to 50 percent of the parent's PIA.

Child benefits are subject to a family maximum, which limits the total monthly amount payable from the primary beneficiary's earnings record. The family maximum for retirement and survivor benefits ranges from 150 percent to 188 percent of the worker's benefit, and the family maximum for disability benefits ranges from 100 percent to 150 percent of the worker's benefit. If the total amount payable to the primary and auxiliary recipients exceeds the family maximum, then child benefits, along with any spouse or widow benefits, are reduced proportionally.⁴ For example, if a disabled worker's PIA is \$1,000 and he has a spouse and 1 child who are each eligible for \$500 (50 percent of the worker's PIA), then their total benefits plus his worker benefit would equal \$2,000 (200 percent of the PIA). If his family maximum were 150 percent of his benefit, however, his spouse and child would each receive only \$250 (25 percent). Although it is not as common, child benefits can be reduced by the earnings test if the child earns more than the allowed amount or if the parent providing the child benefit is a retired beneficiary who is younger than the full retirement age and earns more than the allowed amount.

Data and Methods

We use data from the 2004 SIPP calendar-year longitudinal file matched one-to-one with SSA's benefit record for that year.⁵ The SIPP is a large panel survey of a nationally representative sample of the civilian noninstitutionalized US resident population conducted by the Census Bureau. The survey collects detailed information on an array of topics including demographics, income, labor force participation, and government program participation. Respondents are interviewed in staggered 4-month cycles called waves, and individual SIPP panels last between 2 ½ years and 4 years (Census Bureau 2006).

The SIPP calendar-year 2004 file combines monthly data for several waves, allowing us to sum monthly observations to derive annual estimates.⁶ This technique likely provides more accurate measures of family income and poverty than annual recall data from a single interview (Bound and Krueger 1991).

Data on Social Security benefits come primarily from SSA's Master Beneficiary Record, with some additional data from the Supplemental Security Record.⁷ The Master Beneficiary Record provides data on monthly OASDI benefits throughout 2004. The Supplemental Security Record provides similar information on Supplemental Security Income (SSI) payments. Linked administrative data provide the information needed to determine the precise types and amounts of child benefits received. Household surveys such as SIPP and the Current Population Survey provide large samples and rich demographic detail at the microdata level, but do not allow for the precise identification of children receiving benefits or the reasons for benefit receipt.

One limitation of the matched dataset is that not all SIPP respondents can be linked to their SSA benefit records.⁸ The unweighted match rate for the calendar-year 2004 SIPP file is approximately 82 percent (84 percent for individuals aged 18 or older and 77 percent for individuals under age 18). If the propensity to be matched varies in a systematic, nonrandom way, it could introduce bias into the estimates. To address this issue, we treat nonmatched SIPP respondents as a unit nonresponse (Nicholas and Wiseman 2009; Holt and Elliot 1991). Preliminary analyses found that the respondent child's race and the family head's education and income significantly predicted whether data for individuals under age 18 would match. We perform a logistic regression to estimate the effect of the aforementioned characteristics on the logarithmic odds of being matched. We then use these estimates to adjust the sample weights (Groves and Couper 1998; Carlson and Williams 2001). The appendix provides more detailed information on this procedure.

We restrict our sample to all children under the age of 18 (and their families) in the matched SIPP-SSA calendar-year 2004 file. Our unit of analysis is each child, not the child's family. The sample of Social Security child beneficiaries consists of individuals under age 18 in December 2004 who received a child benefit every month of the calendar year. We exclude individuals who did not receive a child benefit in every month in 2004 to gauge the program's economic impact over a calendar year rather than at one point in time.⁹ This method avoids conflating children who receive low benefits because their parents had low earnings and those who receive low annual amounts because they only receive benefits for part of the year. With these restrictions, we identify 778 child beneficiaries from the 17,152 individuals under age 18 (unweighted) in

the SIPP-SSA matched dataset. Using SIPP methodology we define families as persons living in the same household and related by blood, marriage, or adoption.¹⁰ If only one parent or guardian is present in the family, we consider that person the family head; if two parents or guardians are present, we consider the individual with higher personal annual earnings the family head.

Information on sociodemographic and economic characteristics is from the SIPP. We use the administrative data to identify benefit receipt, amounts, and benefit type (child of deceased worker, child of disabled worker, and child of retired worker). Prior research has shown that survey respondents, particularly those in families with child recipients, underreport OASDI and SSI income (Huynh, Rupp, and Sears 2002; Nicholas and Wiseman 2009). To account for this, we replace matched respondents' self-reported OASDI and SSI income with their SSA-reported income. This technique leads to higher quality estimates of both Social Security and total family income.

Our analysis uses descriptive methods to profile the Social Security child beneficiary population. We examine the pattern of child benefit receipt across key demographic and socioeconomic subgroups at the individual and family levels. To add perspective, we include comparative estimates for the overall child population. In addition, to ascertain how the characteristics of child beneficiaries may have changed in recent years, we compare our findings with estimates based on the 1996 SIPP, as reported by Newcomb (2003/2004). A final point of the analysis considers the ratio of Social Security income to total income in the families of child beneficiaries. Unlike previous work, we disaggregate a family's reliance on OASDI child benefits alone, which reflect payments to all children in the family, from their reliance on total OASDI benefits, which reflect payments to all adults and children in the family.

Our analysis does not capture all of the ways in which Social Security may affect children. Children may receive Social Security as students between ages 18 and 19 or as disabled adult children. We omit these groups to focus on minor children, the predominant share of child beneficiaries. The analysis also does not assess children who do not receive Social Security benefits directly, but nevertheless live in a family in which at least one member receives Social Security. Children who also qualify for other forms of assistance, such as SSI, are also outside this study's scope.

All statistics reported herein apply the adjusted sample weights. Estimates based on fewer than 30 unweighted observations would raise disclosure and statistical reliability concerns and are not reported. Because of SIPP's complex sample design, we computed standard errors (available upon request) using STATA's survey command procedure, which takes into account both stratification and clustering within the sample. Unless otherwise noted, all declarations of difference between estimates underwent statistical tests and were found significantly different at a 90-percent level.¹¹

Results

Our findings are described below, with separate sections addressing the sociodemographic and the economic characteristics of child beneficiaries.

Sociodemographic Characteristics of Child Beneficiaries

Table 2 compares child beneficiary information from our matched SIPP-SSA file with SSA administrative counts published in the 2004 *Annual Statistical Supplement to the Social Security Bulletin*. A comparison of these two data sources verifies that our sample is reasonably representative of the overall child beneficiary population. The weighted count of Social Security minor child beneficiaries in 2004 in the matched SIPP-SSA sample was about 3.0 million, a figure similar to the published administrative total. Of these, 1.2 million (40.2 percent) were children of deceased workers, 1.5 million (50.5 percent) were children of disabled workers, and 278,972 (9.3 percent) were children of retired workers. Published SSA administrative totals based on a 10-percent sample of the Master Beneficiary Record indicate a slightly higher percentage of children of deceased workers and a slightly lower percentage of children of disabled workers; average monthly benefit amounts, however, are similar for all child beneficiaries and for each benefit type.¹² Modest differences are expected because of differences in the two populations and the time frames of the data.¹³ Overall, the relative trends in data from both sources are analogous, suggesting that the matched SIPP-SSA sample accurately approximates the child beneficiary population in 2004.

Table 3 documents the incidence of child benefit receipt and the average amount of child benefits, and compares child beneficiaries with all children, by selected sociodemographic characteristics. Table 4 shows the distributions and average benefit amounts

Table 2.
Social Security child beneficiaries: Number and average monthly benefit by benefit type and data source

Measure	Matched SIPP-SSA data records, calendar year 2004	2004 <i>Annual Statistical Supplement</i> (December 2003) ^a
Total child beneficiaries		
Number	3,013,498	3,081,260
Average monthly benefit (\$)	408	411
	Benefit type	
Child of deceased worker		
Number	1,211,934	1,339,820
Percentage of all child beneficiaries	40.2	43.5
Average monthly benefit (\$)	600	591
Child of disabled worker		
Number	1,522,593	1,468,110
Percentage of all child beneficiaries	50.5	47.6
Average monthly benefit (\$)	252	246
Child of retired worker		
Number	278,972	273,330
Percentage of all child beneficiaries	9.3	8.9
Average monthly benefit (\$)	426	417

SOURCES: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file; and SSA (2005, Table 5.A1.4).

NOTE: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for nonmatch rates. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

a. Average monthly benefits include the 2004 cost-of-living adjustment.

for each benefit type by these characteristics. In total, we find 4.4 percent of US children received Social Security child benefits throughout 2004.¹⁴ The average individual monthly benefit in 2004 was \$252 for children of disabled workers, \$426 for children of retired workers, and \$600 for children of deceased workers; the overall average was \$408. Children of disabled workers may have had lower benefits because their parents had less time to accumulate earnings and because the family maximum limits are lower for disability benefits (100–150 percent) than for retirement or survivor benefits (150–188 percent). Surviving children receive larger benefits in part because the child survivor benefit is more generous (up to 75 percent of insured worker's PIA) than those of the other benefit types (up to 50 percent).

As Tables 3 and 4 show, the sociodemographic characteristics of the child, the family head, and the entire family associate with different probabilities of child benefit receipt and average benefit amounts for entitled children.

Characteristics of child. Table 3 shows important associations between the race and age of the child and both the likelihood of benefit receipt and the average

benefit amount. A larger share of black children received a child benefit in 2004 (5.8 percent) than did white children (4.3 percent) and Hispanic children (3.6 percent). Table 4 shows that black children were also disproportionately likely to receive all types of benefits, particularly children of a deceased or retired worker. This could be because black individuals, as a group, exhibit relatively high mortality and disability rates (Bound, Schoenbaum, and Waidmann 1995; DeCesaro and Hemmeter 2008; Dunlop and others 2007; Garrett 1995).

Because the probability of parental death, disability, or retirement cumulates over time, older children were more likely than younger children to receive a child benefit in 2004. In addition, older children received higher average benefits than their younger counterparts (Table 3), which could reflect more extensive earnings histories among their parents.

Characteristics of family head. The education and marital status of the family head associate with child benefit receipt and amount. Children whose family head lacked a college degree were more than twice as likely to receive benefits as were children whose parents graduated from college (Table 3). Further, among

Table 3.
Selected characteristics of all children and of Social Security child beneficiaries, 2004

Characteristic	All children (percentage distribution)	Child beneficiaries		
		Percentage distribution	Incidence of benefit receipt (%) ^a	Average monthly child benefit (\$)
All children younger than 18	100.0	100.0	4.4	408
Characteristics of child				
Sex				
Male	50.7	52.1	4.6	417
Female	49.3	47.9	4.3	401
Age				
Under 5	23.2	5.9	1.1	175
5 to 9	28.0	16.9	2.7	337
10 to 14	30.3	39.2	5.7	441
15 to 17	18.4	38.1	9.1	442
Race/ethnicity				
White	59.1	57.2	4.3	448
Black	15.0	19.7	5.8	388
Hispanic	18.7	15.1	3.6	332
Other	7.1	8.1	5.0	317
Living with an adult beneficiary				
Yes	5.1	46.5	40.5	334
No	94.9	53.6	2.5	472
Characteristics of family head				
Educational attainment				
Did not finish high school	11.5	13.6	5.3	329
High school graduate	62.6	72.1	5.1	389
College graduate	26.0	14.2	2.4	579
Marital status				
Married	71.6	47.0	2.9	372
Widowed	1.2	14.4	53.0	667
Divorced/separated	15.0	26.1	7.7	360
Never married	12.2	12.5	4.5	344
Age				
18 to 29	13.2	5.2	1.8	226
30 to 44	62.3	47.7	3.4	380
45 to 61	23.3	38.7	7.4	458
62 or older	1.1	8.4	33.5	451

(Continued)

those child beneficiaries living in families headed by a person with a college degree, the average amount was higher (\$579) than that for children of high school graduates (\$389) and for children of parents who did not finish high school (\$329). Compared with 1996, child beneficiaries in 2004 were more likely to have a family head with at least a high school diploma (Newcomb 2003/2004, Table 2).

The educational attainment of the family head also varied according to the child benefit type (Table 4). Children of disabled workers had the lowest share of

college-educated family heads, which likely coincides with lower disability incidence among higher-educated adults (Bound, Schoenbaum, and Waidmann 1995). Children of retired workers had relatively higher proportions of family heads who were high school dropouts or who were college graduates, reflecting a somewhat bimodal distribution between low and high socioeconomic status. However, because of the small sample size, the standard error for educational attainment of the family head of children of retired workers is quite large; therefore, we urge caution

Table 3.
Selected characteristics of all children and of Social Security child beneficiaries, 2004—Continued

Characteristic	All children (percentage distribution)	Child beneficiaries		
		Percentage distribution	Incidence of benefit receipt (%) ^a	Average monthly child benefit (\$)
Characteristics of family				
Number of children				
1	22.0	34.1	6.9	481
2	40.5	38.1	4.2	436
3	23.2	18.8	3.6	268
4 or more	14.3	9.0	2.8	301
Number of child beneficiaries				
1	3.0	47.4	69.1	480
2	1.6	32.9	92.3	405
3	0.7	16.5	97.7	260
4 or more	0.2	3.2	92.1	157

SOURCE: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file.

NOTES: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for nonmatched respondents. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

Totals do not necessarily equal the sum of rounded components.

a. Share of children in category who are child beneficiaries.

when comparing children of retired workers by family head's education.

We also find important variation by the marital status of the family head (Table 3). Compared with all children, child beneficiaries were more likely to have a divorced or separated family head (26.1 percent versus 15.0 percent). This pattern could reflect, in part, higher divorce rates in the disabled population (Martin and Davies 2003/2004; Singleton 2009). Not surprisingly, given the survivor component of child benefit entitlement, a substantial share of child beneficiaries lived in families headed by a widow or widower (14.4 percent).

Characteristics of family. In 2004, 34.1 percent of child beneficiaries lived in single-child families, compared with 22.0 percent of all children (Table 3). Likewise, 9.0 percent of child beneficiaries lived in families with 4 or more children, versus 14.3 percent of all children. This trend may occur because the life events through which children become eligible for benefits (parent's death, disability, or retirement) eliminate or reduce the likelihood of further childbearing.

Families with only 1 or 2 child beneficiaries received higher average individual child benefits (\$480 and \$405, respectively) than families with 3 or 4 (or more) child beneficiaries (\$260 and \$157, respectively).

These disparities may capture the effects of the family maximum, which is more likely to affect families with multiple Social Security child beneficiaries, and to affect them more deeply.

Interestingly, the majority of child beneficiaries in 2004 (53.6 percent) lived in families without an adult beneficiary (Table 3). Table 4 shows that children of disabled and retired workers were far more likely to live with an adult beneficiary than were children of deceased workers. The absence of an adult beneficiary in a child beneficiary's family can occur for a number of reasons. For example, a child beneficiary could live in a different household from the beneficiary parent; or, a survivor child beneficiary could live with a surviving parent who is not eligible for benefits.¹⁵

Economic Characteristics of Child Beneficiaries

Table 5 compares the economic characteristics of child beneficiaries with those of the overall child population. The families of child beneficiaries, as a whole and by benefit type, have substantially lower incomes than those of all children.

Table 5 indicates that the family income disparities between child beneficiaries and all children are driven in part by reduced labor earnings in child beneficiary families. By all measures, the personal

Table 4.
Selected characteristics of Social Security child beneficiaries by benefit type, 2004

Characteristic	Child of deceased worker		Child of disabled worker		Child of retired worker	
	Percentage distribution	Average monthly child benefit (\$)	Percentage distribution	Average monthly child benefit (\$)	Percentage distribution	Average monthly child benefit (\$)
All	100.0	600	100.0	252	100.0	426
<i>Characteristics of child</i>						
Sex						
Male	54.3	600	52.3	261	41.6	a
Female	45.7	600	47.7	242	58.4	419
Age						
Younger than 5	1.4	a	10.3	149	1.9	a
5 to 9	13.0	527	21.2	235	9.6	a
10 to 14	47.9	626	33.6	244	31.8	a
15 to 17	37.7	602	35.0	299	56.6	459
Race/ethnicity						
White	54.7	682	61.1	275	46.5	489
Black	21.2	557	17.2	243	26.5	a
Hispanic	16.9	449	12.3	197	22.7	a
Other	7.3	a	9.4	186	4.3	a
Living with an adult beneficiary						
Yes	22.0	552	60.4	251	76.6	416
No	78.0	613	39.6	253	23.4	a
<i>Characteristics of family head</i>						
Educational attainment						
Did not finish high school	14.8	446	10.3	151	26.3	a
High school graduate	68.8	581	78.3	257	52.6	368
College graduate	16.4	819	11.4	306	21.1	a
Marital status						
Married	34.1	574	56.1	257	53.0	472
Widowed	34.5	674	0.9	a	1.3	a
Divorced/separated	17.8	595	31.2	251	34.2	a
Never married	13.7	483	11.7	219	11.6	a
Age						
18 to 29	5.7	a	5.4	a	1.9	a
30 to 44	47.8	592	55.8	234	2.7	a
45 to 61	41.4	642	37.1	301	35.8	a
62 or older	5.1	a	1.7	a	59.6	427

(Continued)

earnings of heads of families with children receiving Social Security were sharply lower than the earnings of the heads of all families with children. For example, at the 25th percentile, personal earnings for the family heads of child beneficiaries were zero, compared with \$15,300 for the family heads of all children. In fact, 19.4 percent of child beneficiaries had no family members with any labor earnings in 2004, compared with only 4.3 percent of the overall child population. Because this study does not include the earnings records of workers prior to their receipt of Social

Security benefits, it is difficult to pinpoint the cause of reduced labor earnings for child beneficiary families. Lower earnings could relate to the income shock that child beneficiaries' families experienced when a parent retired, died, or became disabled. Conversely, low-income workers may be more likely to experience a qualifying life event, so their children are more likely to become child beneficiaries. Additionally, a higher rate of SSI receipt among families of child beneficiaries (12.9 percent) than the families of all children (5.9 percent) suggests relatively low assets

Table 4.
Selected characteristics of Social Security child beneficiaries by benefit type, 2004—Continued

Characteristic	Child of deceased worker		Child of disabled worker		Child of retired worker	
	Percentage distribution	Average monthly child benefit (\$)	Percentage distribution	Average monthly child benefit (\$)	Percentage distribution	Average monthly child benefit (\$)
Characteristics of family						
Number of children						
1	29.1	669	34.0	348	56.4	500
2	43.4	646	36.2	242	25.8	a
3	17.3	466	20.4	139	16.6	a
4 or more	10.2	435	9.4	187	1.2	a
Number of child beneficiaries						
1	47.0	648	43.6	330	64.1	498
2	37.8	603	31.5	229	23.4	a
3	14.3	454	19.2	144	12.6	a
4 or more	0.9	a	5.7	a	0.0	a

SOURCE: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file.

NOTES: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for nonmatched respondents. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

Totals do not necessarily equal the sum of rounded components.

a. Not calculated because base unweighted sample size is less than 30.

and low income, as does child beneficiary families' Food Stamp receipt rate (26.3 percent) relative to that for all children (18.1 percent).

Table 6 presents the annualized family incomes of child beneficiaries and all children relative to the federal poverty threshold. Somewhat similar shares of child beneficiaries (16.7 percent) and all children (15.5 percent) lived in poverty in 2004.¹⁶ However, the economic status of Social Security child beneficiaries was generally lower than that of all children. This is evident in the lower mean and median incomes relative to the poverty threshold. It is also indicated by the prevalence of near-poverty (income between 100 and 150 percent of the threshold), where the share of child beneficiaries (17.6 percent) exceeds that of children overall (12.1 percent). As further evidence, family income at the upper end of the distribution—that is, at least 300 percent of the poverty threshold—was less prevalent among beneficiary children. Nevertheless, child beneficiaries were more protected from deep poverty. Only 3.9 percent of child beneficiaries had family income below 50 percent of the poverty threshold, compared with 5.6 percent of all children.

Economic characteristics also vary *within* the child beneficiary population. The poverty rate is greatest

among children of disabled workers. Poor health conditions, among other factors, make it difficult for disabled workers to engage in labor market activity. This low labor force participation, along with the stricter family maximum on disability benefits, results in lower Social Security benefits.

For children of retired workers, family income trends appear somewhat bimodal—relatively low at the 25th percentile, but relatively high at the 75th percentile (Table 5). Moreover, a relatively large segment of the children of retired workers was decidedly poor (4.1 percent were in families with income below 50 percent of the poverty threshold), but at the same time, a much larger segment was decidedly well off (41.8 percent in families with income at least 300 percent of the poverty threshold) (Table 6). These findings are consistent with Table 4, which shows that the family head of children of retired workers often had relatively low or high (as opposed to midrange) educational attainment.

Children of deceased workers experienced the lowest poverty rate (14.8 percent) (Table 6). This could be in part because children of deceased workers live in families whose head has higher levels of personal earnings, as shown in Table 5. In addition, children of deceased workers receive higher benefit amounts

Table 5.
Selected economic characteristics of families of all children and of Social Security child beneficiaries by benefit type, 2004

Income measure	All children	Social Security child beneficiaries			
		All	Child of deceased worker	Child of disabled worker	Child of retired worker
Annual family income (\$)					
Median	50,627	39,852	38,330	39,978	39,075
Mean	64,836	49,999	55,590	45,332	51,261
25th percentile	27,703	22,039	24,036	22,039	18,640
75th percentile	82,356	63,351	72,402	59,234	76,837
Annual personal earnings of family head (\$)					
Median	30,845	11,828	14,550	9,201	9,630
Mean	41,671	20,396	24,656	17,614	16,854
25th percentile	15,300	0	0	0	0
75th percentile	51,335	31,802	34,692	28,908	28,000
Percentage of families with any member receiving income					
Earned income	95.7	80.6	85.4	78.5	71.2
Property, interest, or dividend income	69.9	58.3	58.6	56	70.4
Social Security	8.3	100.0	100.0	100.0	100.0
SSI	5.9	12.9	8.9	14.9	19.7
Food Stamps	18.1	26.3	20.9	30.7	25.6
Public assistance	5.4	7.0	7.2	7.5	3.1

SOURCE: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file and on SIPP unmatched data.

NOTES: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for nonmatch rates. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

than other child beneficiaries, further protecting them from poverty.

Table 7 reports the share of family income derived from Social Security for the 2004 child beneficiaries. Social Security child benefits constitute an important part of the income of child beneficiary families. For example, child benefit payments alone comprised an average of 23.4 percent of total family income.¹⁷ For 67.1 percent of beneficiaries, child benefits constituted less than 25 percent of family income; but for 11.1 percent, they accounted for 50 percent or more of family income. This shows that child benefits alone constitute a substantial portion of family income for a sizable segment of child beneficiaries.

Not surprisingly, families are more reliant on total (adult and child) Social Security benefits: An average of 37.4 percent of the income of child beneficiary families originates from Social Security.¹⁸ For 28.3 percent of child beneficiaries, Social Security comprised more than half of family income. The greater reliance on Social Security income when also counting adult

benefits, rather than child benefits alone, underscores the fact that 46.5 percent of child beneficiaries lived with an adult beneficiary.

Among beneficiary types, child benefits comprised a greater average source of total family income for children of deceased workers (30.2 percent) than for children of disabled workers (18.1 percent) and retired workers (22.0 percent). Almost 17 percent of children of deceased workers relied on child benefits for 50 percent or more of their family income, while only about 7 percent of families with children of disabled or retired workers did so. Survivor child benefits are more generous (75 percent of the worker's PIA) than those of the other benefit types (50 percent of the worker's PIA), partially explaining the greater reliance on child benefit income among surviving-child families.

The families of children of retired workers receive the highest proportion of their income from total Social Security benefits. For 12.5 percent of these child beneficiaries, Social Security accounted for almost all of their annual family income (95 percent or

Table 6.
Poverty measures of all children and of Social Security child beneficiaries by benefit type, 2004

Measure	All children	Child beneficiaries			
		All	Child of deceased worker	Child of disabled worker	Child of retired worker
Poverty rate	15.5	16.7	14.8	18.3	16.5
Family income as a percentage of federal poverty threshold					
Median	250.1	209.4	222.6	205.7	205.1
Mean	325.8	273.1	311.6	239.2	291.8
<i>Percentage distribution of children</i>					
Family income as a percentage of federal poverty threshold					
Under 50	5.6	3.9	2.9	4.6	4.1
55–99	9.9	12.8	11.9	13.7	12.4
100–149	12.1	17.6	15.4	18.9	20.6
150–199	11.6	11.2	13.5	9.4	11.1
200–299	20.2	21.9	19.3	26.1	10.1
300 or more	40.6	32.6	37.0	27.4	41.8

SOURCE: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file.

NOTES: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for non-matched respondents. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

Totals do not necessarily equal the sum of rounded components.

more). Only 7.0 percent of the families with children of deceased workers and 5.7 percent of the families with children of disabled workers reported such a high reliance on Social Security.

Concluding Remarks

Using rich data that matches SIPP respondents with their SSA administrative records, this article provides empirical insights into the Social Security child beneficiary population. We find noteworthy variations in the incidence of child benefit receipt across different population segments. The analysis also sheds light on the economic characteristics of child beneficiaries. An important overall finding is that Social Security child benefits, although not targeted toward low-income families, provide income maintenance for many such families, in part because the conditions that give rise to child benefit eligibility—death, disability, and retirement—often lead to family income loss.

To summarize the relevant findings: First, child beneficiaries in 2004 differed from the overall child population in several demographic and economic status measures. Social Security child benefits were particularly important to black children. Children with unmarried family heads represented a disproportionate

share of child beneficiary recipients. Compared with all children, child beneficiaries had relatively similar poverty rates but lower economic status in general, marked by a higher share with family incomes at 100–149 percent of the poverty line and lower family income and earnings levels. Families with child beneficiaries also had higher SSI and Food Stamp receipt rates than the families of all children. Conversely, deep poverty (family income below 50 percent of the poverty threshold) was more prevalent among all children than among child beneficiaries.

Second, important demographic and economic differences are also evident among child beneficiaries across benefit types. Children of disabled workers live in families headed by individuals least likely to have higher educational attainment. Accordingly, family incomes are somewhat lower than those of the other beneficiary types. Children of retired workers exhibit bimodal distributions in terms of parental education, income, and poverty outcomes. Although some children in this category are well off, a substantial segment exhibits financial vulnerability. Children of deceased workers, the subgroup that receives the highest average amount from child benefits, exhibit the lowest poverty rates of the beneficiary types.

Table 7.
Role of Social Security in family income of child beneficiaries, by benefit type, 2004

Income	All child beneficiaries	Child of deceased worker	Child of disabled worker	Child of retired worker
Social Security child benefits as a percentage of family income				
Median	15.0	24.7	11.1	16.1
Mean	23.4	30.2	18.1	22.0
<i>Percentage distribution of children</i>				
Percentage of family income attributable to child benefits				
Under 25	67.1	49.7	80.0	72.7
25–49	21.8	33.7	12.7	20.2
50–74	4.7	8.9	2.1	0.0
75–94	3.2	2.7	3.3	5.2
95–100	3.2	5.1	2.0	1.9
Social Security benefits (adult and child) as a percentage of family income				
Median	30.5	28.3	30.9	37.4
Mean	37.4	36.2	36.8	45.8
<i>Percentage distribution of children</i>				
Percentage of family income attributable to adult and child benefits				
Under 25	40.7	42.3	42.6	22.7
25–49	31.0	30.4	28.6	47.6
50–74	14.8	16.4	15.7	2.4
75–94	6.7	3.9	7.5	14.8
95–100	6.8	7.0	5.7	12.5

SOURCE: Authors' calculations based on SIPP calendar-year 2004 file matched to SSA's Master Beneficiary Record file.

NOTES: SIPP-SSA matched data are weighted using calendar-year survey weights adjusted for non-matched respondents. SIPP-SSA matched data are restricted to child beneficiaries receiving benefits in every month of 2004; children must be under age 18 through December.

Totals do not necessarily equal the sum of rounded components.

Third, Social Security is a major source of family income for many child beneficiaries. The family income for child beneficiaries is lower than that for the general population, and child beneficiaries would be far worse off without the Social Security benefits. Direct OASDI child payments constituted an average of 23.4 percent of total annual family income of child beneficiaries. For children of deceased workers, child benefits alone accounted for an average of 30.2 percent of family income. For families in which a child beneficiary lives with a parent or guardian who also receives benefits, the reliance on Social Security income is obviously even greater.

Our results raise a number of policy implications. The data show major differences in the economic well-being among the three child beneficiary types. The economic challenges for children of disabled workers are particularly notable. One way to address

differences across beneficiary types would be to reconsider the formula underlying child benefit payments (percentage of workers' PIA), which is lower for children of disabled or retired workers than for children of deceased workers. Another option to consider is adjusting the family maximum, which is lower for disabled worker benefits than for retirement and survivor benefits. Other proposals may include a minimum benefit for child beneficiaries in very low-income families; or determining child benefit payments using percentages of a worker's PIA based on family income, rather than using a flat percentage based solely on the qualifying life event.

A promising avenue for future work would be to examine the factors that influence the relative economic importance of Social Security to child beneficiaries. One approach to examining these factors would be to complement our empirical work here with

multivariate regression analysis. An open question is why some children who received OASDI remain in poverty and others do not. One important variable not fully explored in this article is family structure. Another fruitful line of inquiry may be to explore the extent to which changing demographics, including higher adult disability rates or later childbearing, may affect future Social Security child beneficiary receipt. Choosing the best policy options for Social Security's child programs and understanding their distributional consequences requires further study.

Appendix

We use a logistic regression to determine which factors predict whether SIPP responses for individuals under age 18 match with SSA administrative records. After preliminary analyses, we found that child's race, family head's education, and family income were significant match predictors for individuals under age 18. Accordingly, we use the following model for the logistic regression:

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 + \beta_2 + \beta_3 + \varepsilon,$$

where p equals the probability of a given SIPP respondent being present in the matched sample, α is an intercept, and ε is an error term. The betas refer to the relative impact of a given variable on the log odds of being matched: β_1 refers to family income, β_2 refers to the respondent's race, and β_3 refers to the family head's education.

We use the logit coefficients to calculate the probability of being matched:

$$p = \frac{1 + e^{\alpha + \beta_1 + \beta_2 + \beta_3 + \varepsilon}}{e^{\alpha + \beta_1 + \beta_2 + \beta_3 + \varepsilon}}$$

We multiply the inverse of this probability by the SIPP calendar-year 2004 person weight, which yields a SIPP person weight adjusted for nonmatches.

Notes

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¹ Children may also be eligible for benefits through Supplemental Security Income (SSI). However, SSI benefits are outside the scope of this article.

² Benefits are also available to children who are full-time high school students younger than age 19; and to disabled

adult children, who can receive benefits at age 18 or older if they are unmarried and their disability began before age 22. However, the scope of this study is limited to children under age 18.

³ Quarters of coverage determine insured status. A worker receives 1 quarter of coverage (up to a maximum of 4 per year) for a designated amount of earnings reported from employment or self-employment. For more information, see SSA (2010a, 13).

⁴ Under certain circumstances, such as both parents being deceased, children in the same family may qualify for benefits on both parents' work records. Additional rules regarding the family maximum apply in these cases. For more information, see http://www.socialsecurity.gov/OP_Home/handbook/handbook.07/handbook-0735.html.

⁵ SSA and the Census Bureau restrict the use of these data and must approve all users. SSA's Title 13 Disclosure Review Board reviewed and cleared the statistics reported in this article.

⁶ Because 2004 was the first year in this panel, the 2004 file experiences less attrition than the panel's later calendar-year files.

⁷ Census Bureau assists SSA in linking SIPP data with SSA administrative records using names, birth dates, and addresses for individuals who do not opt out. To protect respondent confidentiality, potentially identifying information is removed after the data are linked. McNabb and others (2009) and Nicholas and Wiseman (2009) discuss the matching process in detail.

⁸ Some SIPP respondents opt out of the match program; others provide inaccurate information that impedes the match.

⁹ Using this method, we exclude children who became child beneficiaries over the study period, those whose benefits were suspended during the study period, and those whose benefits terminated because of age or disqualification.

¹⁰ If living together in the same household, "families" may include members other than parents and their children, such as children's grandparents, aunts, uncles, nieces, and nephews.

¹¹ The 90-percent level is a standard threshold used by the Census Bureau for comparing estimates, which are subject to both sampling and nonsampling errors.

¹² From 1996 to 2004, the distribution of child beneficiaries among benefit types showed a slight decline in the share of children of deceased workers and a slight increase in the share of children of disabled workers; the share of children of retired workers remained about the same.

¹³ The SIPP-SSA matched data used here are based on the entire year; published SSA totals are based on 1 month.

¹⁴ The rate recorded in March 1996 was 3.9 percent (Newcomb 2003/2004, Table 1).

¹⁵ A parent is ineligible if he or she remarries, exceeds the earnings limit, or is younger than age 60 and is not caring for a child younger than age 16.

¹⁶ The estimated poverty rate for all children in our SIPP sample, including unadjusted self-reported Social Security and SSI income, is 16.3 percent. Using wave 2 of the 2004 SIPP, Kreider (2008) estimates that 17.7 percent of children under age 18 were in poverty. Data from the 2005 Current Population Survey's Annual Social and Economic Supplement indicate a 17.3 percent child poverty rate in 2004 (reported in Kreider 2008).

The somewhat lower child poverty rates reported in this article are attributable to several factors. First, annual poverty rates, particularly those derived by summing monthly observations across the year, are often lower than monthly estimates. Second, substituting SSA benefit record data for self-reported Social Security and SSI income generally reduces the number in poverty because such income is underreported in surveys. The SIPP also tends to produce lower poverty estimates than the Current Population Survey because it focuses on a wider range of income sources (Cellini, McKernan, and Ratcliffe 2008; Weinberg 2005).

¹⁷ Fisher (2007) points out that the relative importance of Social Security to family income may be slightly overestimated at the higher end of the distribution because a broader range of assets includes some that are not typically reported as income in surveys.

¹⁸ Previous estimates of reliance on total Social Security benefits have been consistent with those presented here. Hill and Reno (2003) report that Social Security provides an average of 39 percent of the total income for child beneficiary families (see also Gabe 2008; Kearney, Grundmann, and Gallicchio 1995; and Lavery and Reno 2008). Newcomb (2003/2004) found that total Social Security benefits constituted less than 25 percent of family income for 36 percent of child beneficiaries in 1996, but accounted for over 50 percent of family income for almost 35 percent of child beneficiaries. For 2004, we find that total Social Security benefits constitute less than 25 percent of family income for 40.7 percent of child beneficiaries and account for over 50 percent of family income for 28.3 percent of child beneficiaries. Our somewhat lower reliance estimates at the 50-percent level relate to a slightly different methodology. We calculate an annualized reliance ratio based on a longitudinal calendar-year SIPP file; Newcomb (2003/2004) uses a monthly (March) SIPP file.

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THE DISTRIBUTION OF ANNUAL AND LONG-RUN US EARNINGS, 1981–2004

by Michael V. Leonesio and Linda Del Bene*

Numerous authors have presented evidence of increased dispersion in the distribution of annual earnings in the United States from the late 1970s through 2004 or later. However, the dispersion of long-run earnings measured over many years has received relatively little attention because of the limited availability of appropriate data. This article uses the Social Security Administration's Continuous Work History Sample, which documents the earnings histories of 3.3 million workers, to examine changes in both the annual and the long-run distributions of earnings during 1981–2004 for men and women. For men, the results indicate an increase in long-run earnings inequality of roughly the same magnitude as the trend seen in annual earnings dispersion, but there has been very little increase in the dispersion of long-run earnings among women. If calculations are restricted to a sample of women who work every year of the observation period, a trend of increased earnings dispersion emerges, but much less so than that observed for men.

Introduction

A large body of research shows that a substantial increase in the dispersion of annual earnings of American workers began around 1980 (for example, Katz and Autor 1999; Eckstein and Nagypál 2004; Goldin and Katz 2007). In a widely cited article, Levy and Murnane (1992) note two key years that marked the onset of change in prior earnings trends: 1973, which saw the end of large annual increases in real earnings for many workers; and 1979, when a large sustained increase in annual earnings inequality began. At least among prime-aged men, real earnings have declined or stagnated for low-wage earners, have increased modestly in the middle of the distribution, and have risen substantially for high earners. The trend is consistent with the view that more highly skilled and educated workers have been paid higher premiums for their labor over time, while the productivity and earnings of lower-skilled workers have not similarly benefited from improvements in technology. Moreover, this change is something of a global phenomenon, as evidenced by increases in earnings dispersion documented in many other developed economies

(for example, Gottschalk and Smeeding 1997; Atkinson 2008). Details vary among countries regarding the amount of increased dispersion, the parts of the distribution where change is most pronounced, and the timing of those changes, yet there are similarities in the increased relative earnings for high-skill workers. The increase in earnings dispersion in the United States is among the largest of the developed countries, if not the very largest.¹

Much of the research on the earnings distribution and earnings trends focuses on pretax earnings for a period of a year or less. However, the distribution of earnings over a lifetime—or at least over many

Selected Abbreviations

CPS	Current Population Survey
CV	coefficient of variation
CWHS	Continuous Work History Sample
OASDI	Old-Age, Survivors, and Disability Insurance
SE	self-employment

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Selected Abbreviations—Continued

SSA	Social Security Administration
VLN	variance of the logarithm of earnings
WS	wage and salary

years—is often of greater interest than the distribution of earnings during shorter intervals. Economic well-being is determined more by earnings over an extended period than by earnings during a relatively short interval that may reflect a temporary deviation from a longer-term average. Workers can often shift resources from higher- to lower-income periods to maintain their preferred consumption level over time. Change in the distribution of longer-period (multiyear) pretax earnings of US workers during the past three decades is the primary focus of this article.

In contrast with the attention given to the distribution of annual earnings, there is relatively little empirical research on the dispersion of lifetime earnings, most likely because of the more demanding data requirements. With individual earnings histories often spanning four decades or longer, it is unusual to have longitudinal microdata that can fully document lifetime earnings for a single birth cohort, let alone for multiple cohorts that would allow a trend to be identified. That obstacle has not deterred researchers from making inferences about lifetime earnings by using one or both of two strategies. The first takes a descriptive approach to the data and directly calculates long-run earnings with the age range or time interval circumscribed by the data set's sampling rules and observation period. In that way, a good-sized panel data set that samples a number of cohorts for a dozen or more years can yield information on completed multiyear periods for multiple birth cohorts. Using this approach in a US-based study, Haider (2001) finds an increase in long-run earnings dispersion for male household heads by comparing 10-year totals for real earnings in 1969–1978 and 1982–1991. Total 10-year real earnings for men aged 30–44 at the start of each reference period are compared using data from the Panel Study of Income Dynamics. Large declines in 10-year total real earnings are noted for men in the lower tail of the distribution (23 percent and 11 percent declines at the 10th and 25th percentiles, respectively) compared with increased real earnings in the upper tail (6 percent at the 90th percentile), with consequent increases in several inequality measures. Haider notes that the increases in earnings dispersion are somewhat

smaller when the sample is restricted to workers with positive earnings in every year of the reference period.² Björklund (1993) provides another example of this approach using data for Sweden for 1951–1989, although that paper presents results for a broader definition of income that includes pensions, capital income, and realized capital gains in addition to earnings. He concludes that lifetime income inequality is nearly as large as annual income inequality during ages 30–64. The large dispersion in income prior to age 30 largely accounts for the finding that lifetime inequality is 35–40 percent lower than that given by annual measures.

The second approach to measuring long-run earnings inequality requires the analyst to specify a statistical earnings-generating process that can be used to derive the properties of earnings histories that are only partially observed. Once the missing portions of the earnings histories have been estimated, calculating discounted totals and the moments of their distribution is straightforward. The methodology is described by Creedy (1977), who examines the lifetime earnings for various British occupational groups in the 1970s. Blomquist's (1981) study of Swedish lifetime income, which focuses on earnings and the value of leisure, is another important early contribution to this literature. A recent example of this work is Aaronson's (2002) investigation of the increase in the dispersion of US men's earnings in the first decade of work after the completion of schooling using synthetic cohort data constructed from 1968–2000 Current Population Survey (CPS) data. During 1967–1990, men's real earnings in the first decade of their careers fell except for the most educated group, and the coefficient of variation increased by one-third. Gittleman and Joyce's (1996) finding of increased US dispersion of earnings for 4-year intervals during the 1980s, especially among less educated workers, is yet another example.³

This article investigates how the distribution of long-run pretax earnings for US workers has evolved as annual earnings dispersion has risen during the past three decades. The analysis is conducted using longitudinal earnings data from the Social Security Administration's (SSA's) Continuous Work History Sample (CWHHS), a collection of files containing the earnings histories of 3.3 million workers. The article begins by presenting a set of dispersion measures for annual earnings calculated for the period 1981–2004. These measures allow us to corroborate the trends in annual earnings inequality documented primarily in CPS data. Once the extent of annual earnings

dispersion has been established, we then investigate the distribution of total real earnings for two consecutive 12-year periods, 1981–1992 and 1993–2004, and assess the extent to which the distribution of 12-year real earnings changed. Much of the previous research on changes in the distribution and variability of earnings for time periods that exceed 1 year restricts the analysis to workers who have few, if any, zero-earnings years. Our results for long-run earnings cover virtually all workers who display a multiyear pattern of earnings that indicates at least moderate long-run attachment to the labor force, and exclude only those people with very low lifetime earnings. We find evidence of increased long-run earnings dispersion during 1981–2004, although the increase is not as large as has occurred for annual earnings over the 24-year period. Results are presented for both men and women.

Data

This article uses data drawn from the 2004 CWHS 1-percent active file.⁴ The data contain the earnings and benefit records for approximately 1 percent of the population that has been issued Social Security numbers since the program's inception in 1935. The large sample size, representation of many birth cohorts, and accuracy of recorded earnings relative to the self-reported amounts provided in most surveys make the CWHS an attractive data source for the study of worker earnings.⁵ Although the CWHS was created for statistical and research purposes, the file content is drawn from administrative records that are maintained primarily for the purpose of administering the agency's programs and not with social science research in mind. Thus, the advantages of the data set come with a number of limitations, which we address where possible, usually by restricting the analysis to those data elements and time periods for which the information can be judged reliable for our purposes. Two shortcomings of the CWHS merit mention here: periodic changes in the recordkeeping rules about which earnings amounts are recorded in the data set; and changes over the years in the proportion of jobs covered by the Old-Age, Survivors, and Disability Insurance (OASDI) program. We briefly discuss these issues and our means of addressing them.

Prior to 1978, the CWHS recorded earnings only for Social Security-taxable earnings; that is, only earnings in Social Security-covered employment are available, and the annual amounts recorded are capped at each year's maximum earnings subject to OASDI payroll

taxes.⁶ This censoring of higher earnings amounts is problematic in studying the earnings distribution and for this reason we do not examine earnings prior to 1978. Wage and salary (WS) data for noncovered earnings—that is, both earnings in jobs not covered by OASDI and earnings in covered jobs that exceed the annual maximum taxable amount—are available beginning in 1978. The pre-1978 censoring of earnings, along with data quality problems for earnings amounts in 1978–1980, cause us to restrict the article's analysis to WS earnings during 1981–2004.^{7,8} Furthermore, self-employment (SE) earnings records are, to varying degrees, limited prior to 1994.⁹ From 1981 to 1990, the CWHS recorded SE earnings only up to the OASDI-taxable maximum. The taxable maximum earnings amounts for OASDI and Medicare (Hospital Insurance, or HI) were equal until 1991, at which point annual Medicare-taxable WS and SE earnings amounts were recorded separately from their OASDI counterparts. During 1991–1993, the Medicare-taxable maximum was about 2.34 times the OASDI maximum; since 1994, all Medicare-covered earnings have been subject to payroll taxes. Taken together, these and other recordkeeping rules for Medicare-taxable earnings imply that the CWHS data for SE earnings are substantially censored in varying degrees prior to 1994, posing considerable problems for researchers.¹⁰

Second, since 1950, the percentage of US employment that is covered by the Social Security program has increased greatly. Social Security coverage rates among civilian workers rose from 61 percent in 1951 to 82 percent in 1955, 86 percent in 1960, and 90 percent in the late 1970s. Coverage rates for civilian workers have been about 96 percent for the past decade. The increasing coverage rate clouds the interpretation of earnings histories that include years prior to 1978, a problem that is larger for earlier birth cohorts who have more working years during 1951–1977. Thus, for pre-1978 instances in which recorded annual earnings are zero, we cannot distinguish between nonparticipation in the labor force and work in noncovered employment.¹¹

Furthermore, some WS amounts during the 1980s and early 1990s are understated because employee-elected deferred compensation is omitted or undercounted, with the largest understatements affecting earners in the upper tail of the annual distributions.¹² Because this article's earnings data include elective deferrals for 1994–2004, the findings overstate any increase in earnings dispersion attributable to high earners during 1981–2004, but the effect should be

small. For all of these reasons, the results presented below pertain to the distribution of pretax WS earnings, which accounted for approximately 93 percent of annual total earnings (the sum of WS and SE earnings) recorded in the CWHS data during 1994–2004.

Nominal annual earnings are converted to real values denominated in 2000 dollars using the gross domestic product (GDP) implicit price deflator for Personal Consumption Expenditures (PCE).¹³ The construction of the earnings variable is more fully described in the Appendix.

The Distribution of Annual Wage and Salary Earnings, 1981–2004

We begin by examining the distribution of annual WS earnings during 1981–2004. Trends in annual earnings have most frequently been documented using data from the Annual Social and Economic Supplement (formerly known as the March Supplement) to the CPS. Calculations are most often made for WS earnings of full-time, full-year workers and require the survey’s information on both wage rates and hours of work. Hours of work are not available in the CWHS data, so the choice of which workers to include in the analysis must be made solely on the basis of annual earnings amounts. We examine earnings for a somewhat broader group than full-time, full-year workers and include anyone with “substantial” earnings during the year. Among a number of arbitrary earnings criteria that could be used, the rule adopted here is to require that real earnings be at least \$5,000.¹⁴ This criterion results in the inclusion of part-time or part-year workers in the annual earnings distribution, which is likely to increase the relative frequency of earners in the lower portions of the distribution. Applying this selection rule yields average annual sample sizes of 577,644 men and 472,487 women.

We present calculations for nine complementary earnings dispersion measures:¹⁵

- *Gini coefficient.* In an economy with n earners, the Gini coefficient (G) is equal to the arithmetic mean of the absolute values of differences between all pairs of earnings values. Or:

$$G = \frac{1}{2n^2\bar{y}} \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|$$

where \bar{y} is the calculated mean value of earnings.

The Gini coefficient is probably the most widely used inequality measure and yields a single number bounded by 0 (equal earnings) and 1 (one person

has all the earnings) that summarizes the shape of the distribution throughout its entire range. It is sometimes criticized for giving too much weight to earnings values near the mean of the distribution and insufficient emphasis to the earnings values near the tails, which may be of greater concern to policy makers.

- *Variance of the logarithm (VLN) of earnings.* This measure is calculated as

$$VLN = \frac{1}{n} \sum_{i=1}^n (\ln y_i - \overline{\ln y})^2$$

where $\overline{\ln y}$ is the mean value of $\ln y_i$. The variance is a basic statistical measure of a variable’s dispersion and is a natural choice for studying dispersion in earnings distributions. The logarithmic transformation of earnings amounts dampens the importance of higher earnings values relative to lower ones.

- *Coefficient of variation (CV).* This measure is given by the standard deviation of earnings divided by its mean.

$$CV = \frac{\sqrt{\sum_{i=1}^n (y_i - \bar{y})^2 / n}}{\bar{y}}$$

Relative to the Gini coefficient and VLN, this measure gives more weight to earnings values in the upper tail of the distribution.

- *Percentile ratios.* If n earnings amounts are ordered from smallest to largest, dividing those values into 100 nonoverlapping, equi-sized groups allows one to identify the percentile values that represent the boundaries between adjacent subsets. The 10th percentile (p10) is the data value that is the boundary between the lowest 10 percent of values and the remaining 90 percent of higher values. Specific percentile ratios allow one to measure the behavior of relative incomes at various positions in the distribution. This article uses six percentile ratios: p90/p10, p90/p50, p80/p10, p80/p50, p50/p10, and p75/p25.

For men (Table 1 and Chart 1), the Gini coefficient and VLN measures show similar percentage increases over the 24-year reference period (23 percent and 30 percent, respectively); the CV shows a considerably larger increase (251 percent). Consistent with the findings of previous studies, the Gini coefficient increases by 11 percent during 1981–1988, increases at a slower rate during 1989–1991, then increases by another 12 percentage points by 2000. The 2004 value

Table 1.
Measures of dispersion of annual wage and salary earnings for men, 1981–2004

Year	Gini coefficient	VLN	CV	Percentile ratios					
				p90/p10	p90/p50	p80/p10	p80/p50	p50/p10	p75/p25
1981	0.381	0.529	0.950	6.517	2.078	5.253	1.675	3.137	2.716
1982	0.387	0.537	0.983	6.593	2.109	5.292	1.693	3.127	2.730
1983	0.389	0.546	1.017	6.642	2.096	5.363	1.692	3.169	2.769
1984	0.394	0.555	1.059	6.752	2.132	5.430	1.715	3.167	2.809
1985	0.397	0.562	1.095	6.829	2.154	5.460	1.722	3.171	2.810
1986	0.405	0.578	1.164	6.975	2.179	5.558	1.736	3.202	2.830
1987	0.412	0.584	1.384	6.981	2.167	5.549	1.723	3.221	2.812
1988	0.421	0.593	1.508	7.025	2.189	5.582	1.739	3.209	2.845
1989	0.420	0.593	1.419	7.065	2.212	5.574	1.745	3.194	2.839
1990	0.423	0.594	1.473	7.037	2.222	5.549	1.752	3.167	2.840
1991	0.426	0.603	1.457	7.328	2.325	5.580	1.770	3.152	2.885
1992	0.436	0.618	1.669	7.441	2.349	5.652	1.784	3.168	2.915
1993	0.438	0.621	1.565	7.520	2.387	5.661	1.797	3.150	2.921
1994	0.442	0.624	1.645	7.524	2.425	5.631	1.815	3.103	2.898
1995	0.443	0.625	1.731	7.544	2.442	5.612	1.817	3.089	2.877
1996	0.449	0.632	2.432	7.622	2.459	5.638	1.819	3.099	2.869
1997	0.456	0.644	2.670	7.759	2.475	5.699	1.818	3.135	2.876
1998	0.460	0.655	3.092	7.873	2.491	5.730	1.813	3.161	2.862
1999	0.467	0.665	3.444	8.010	2.510	5.801	1.818	3.191	2.866
2000	0.472	0.673	3.475	8.134	2.539	5.851	1.826	3.204	2.857
2001	0.468	0.675	3.306	8.226	2.548	5.917	1.833	3.229	2.880
2002	0.462	0.676	2.687	8.307	2.550	5.997	1.841	3.257	2.907
2003	0.465	0.681	2.704	8.393	2.565	6.050	1.849	3.272	2.920
2004	0.470	0.690	3.331	8.493	2.582	6.117	1.860	3.289	2.946

SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

NOTE: All dispersion measures are restricted to wage and salary earnings of workers who earned at least \$5,000 (in 2000 dollars) during a calendar year. Sample sizes for each year range from 487,099 in 1982 to 646,930 in 2001, with an average annual sample size of 577,644.

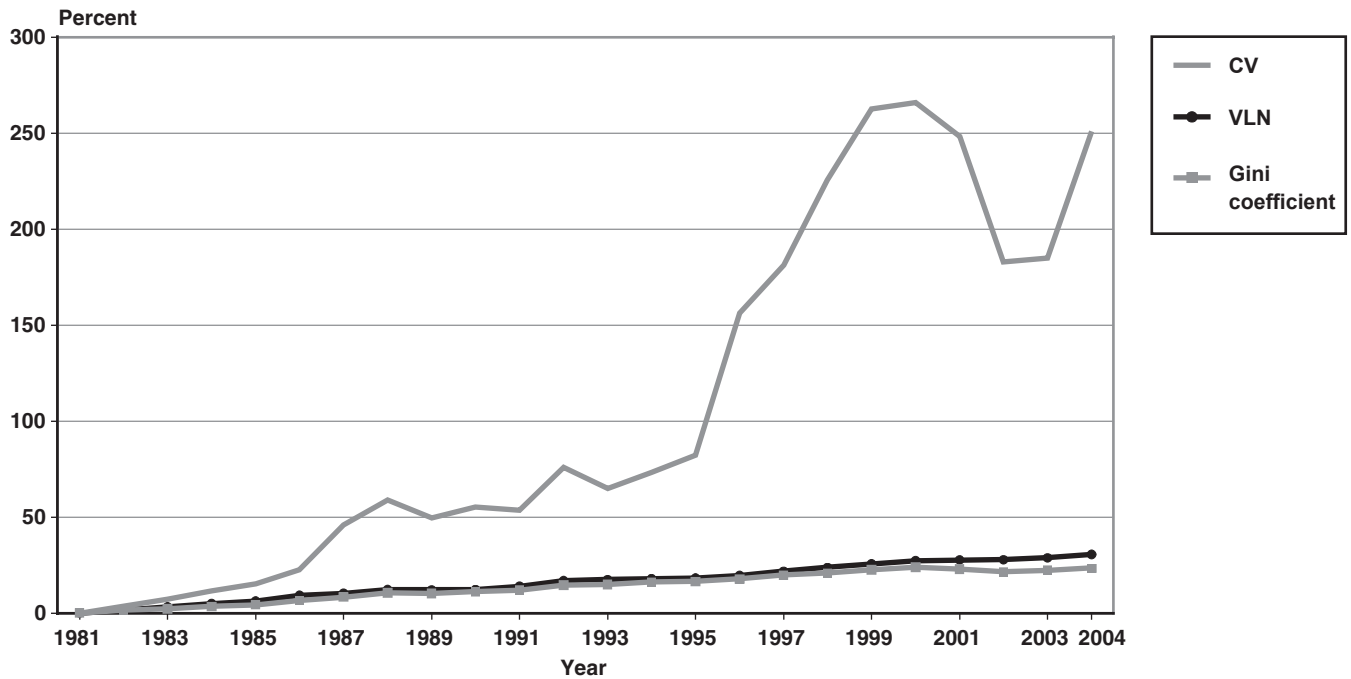
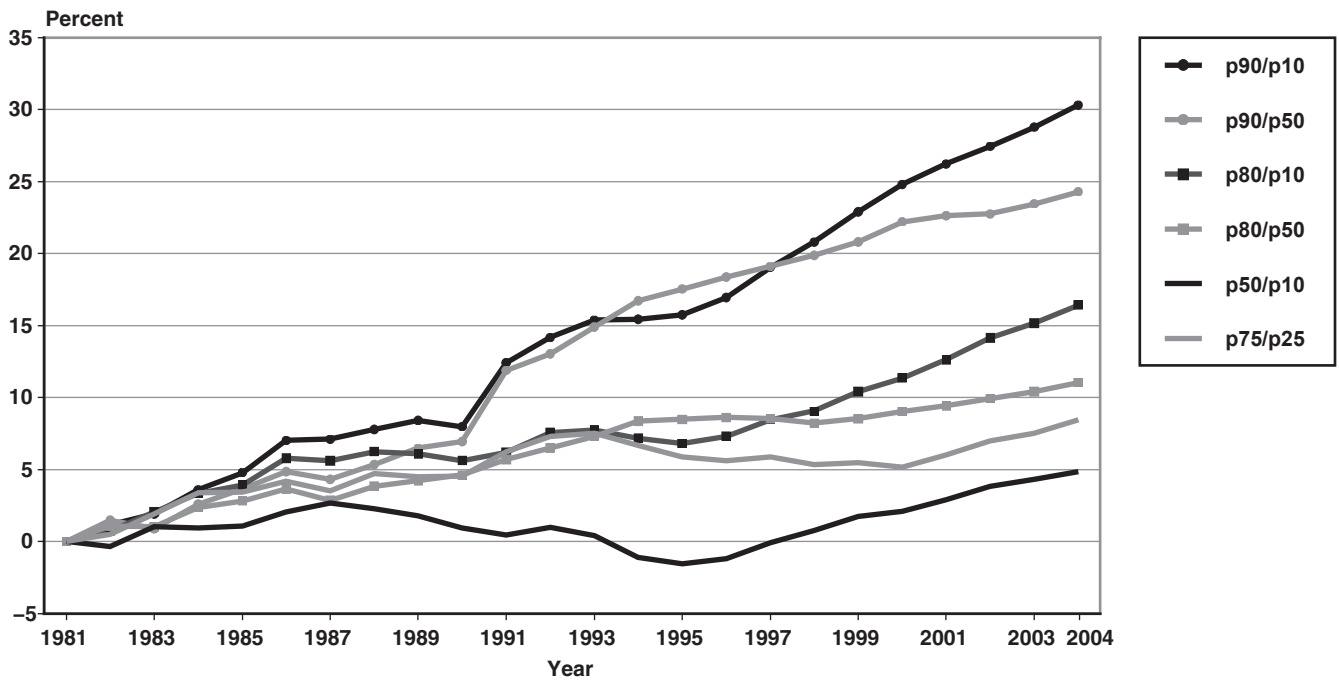
of the Gini coefficient is a little lower than in 2000, with a dip in 2001–2002. The behavior of VLN during 1981–2004 is similar to that of the Gini coefficient. The CV measure also shows a very large increase in earnings dispersion, particularly during 1996–2000, reflecting large increases in earnings near the top of the earnings distribution.

The percentile ratios for men clearly attribute much of the increased earnings dispersion to the greater relative earnings growth at the top of the earnings distribution. The p90/p10 ratio increases 30 percent and the p90/p50 ratio rises 24 percent, compared with a much smaller 5-percent increase in the p50/p10 ratio. Moving away from the distribution's upper and lower tails, the p75/p25 ratio increases by 8 percent, or about one-third of the growth in the p90/p10 ratio.

For women, all nine statistical measures indicate less dispersion in earnings at the outset of the observation period than is observed for men. However, from

that starting point, the measures generally indicate greater increases in annual earnings dispersion for women than were exhibited by men over the 24-year period, with the two exceptions being the CV and p90/p50 ratio (Table 2 and Chart 2). The CV values increase 86 percent over the 24 years, compared with the 251 percent increase for men. Comparing the behavior of the six percentile ratios for the entire period shows that the increase in women's earnings dispersion is not as predominantly located in the uppermost part of the distribution. Rather, growth in real earnings has occurred more extensively throughout the distribution. Although the p90/p10 ratio increases by 45 percent, the p50/p10 ratio increases 20 percent while the p90/p50 ratio rises by 21 percent. These differences in the nature of the increased dispersion of men's and women's annual earnings have also been documented recently by the Congressional Budget Office (2009) using CPS data.

Chart 1.
Earnings dispersion among men: Percentage change from 1981, by dispersion measure



SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

Table 2.
Measures of dispersion of annual wage and salary earnings for women, 1981–2004

Year	Gini coefficient	VLN	CV	Percentile ratios					
				p90/p10	p90/p50	p80/p10	p80/p50	p50/p10	p75/p25
1981	0.313	0.331	0.635	4.738	2.002	3.790	1.601	2.367	2.309
1982	0.318	0.344	0.641	4.855	2.021	3.882	1.616	2.402	2.352
1983	0.322	0.354	0.651	4.971	2.040	3.958	1.625	2.436	2.381
1984	0.330	0.370	0.677	5.135	2.074	4.073	1.645	2.476	2.441
1985	0.334	0.381	0.681	5.257	2.106	4.147	1.661	2.496	2.480
1986	0.342	0.398	0.710	5.433	2.130	4.276	1.676	2.551	2.527
1987	0.342	0.402	0.736	5.488	2.123	4.335	1.677	2.585	2.547
1988	0.347	0.409	0.799	5.546	2.142	4.367	1.687	2.589	2.565
1989	0.349	0.414	0.803	5.602	2.164	4.386	1.694	2.589	2.570
1990	0.352	0.420	0.796	5.664	2.191	4.413	1.707	2.585	2.583
1991	0.358	0.431	0.796	5.772	2.222	4.477	1.724	2.597	2.615
1992	0.363	0.440	1.028	5.865	2.241	4.529	1.730	2.618	2.628
1993	0.366	0.447	0.919	5.939	2.265	4.566	1.741	2.622	2.642
1994	0.367	0.447	0.849	5.918	2.267	4.538	1.738	2.610	2.637
1995	0.370	0.454	0.917	5.986	2.286	4.581	1.750	2.618	2.649
1996	0.374	0.461	0.954	6.047	2.296	4.618	1.753	2.634	2.655
1997	0.379	0.472	1.010	6.155	2.308	4.699	1.762	2.666	2.674
1998	0.383	0.483	1.053	6.265	2.318	4.762	1.762	2.702	2.682
1999	0.387	0.491	1.053	6.321	2.327	4.803	1.769	2.716	2.692
2000	0.392	0.501	1.214	6.421	2.339	4.858	1.770	2.745	2.698
2001	0.393	0.508	1.108	6.547	2.352	4.937	1.774	2.783	2.713
2002	0.393	0.515	1.083	6.673	2.369	5.025	1.784	2.817	2.742
2003	0.396	0.523	1.104	6.783	2.390	5.086	1.792	2.839	2.765
2004	0.399	0.530	1.181	6.853	2.413	5.120	1.803	2.840	2.779

SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

NOTE: All dispersion measures are restricted to wage and salary earnings of workers who earned at least \$5,000 (in 2000 dollars) during a calendar year. Sample sizes for each year range from 343,667 in 1981 to 568,420 in 2001, with an average annual sample size of 472,487.

In sum, the annual distributions of WS earnings as recorded in the CWHS data confirm the increased dispersion of earnings for both men and women since 1981. For men, much of the increase is due to large increases in the earnings of workers in the upper tail of the annual earnings distribution; the increased dispersion for women has occurred throughout the earnings distribution.

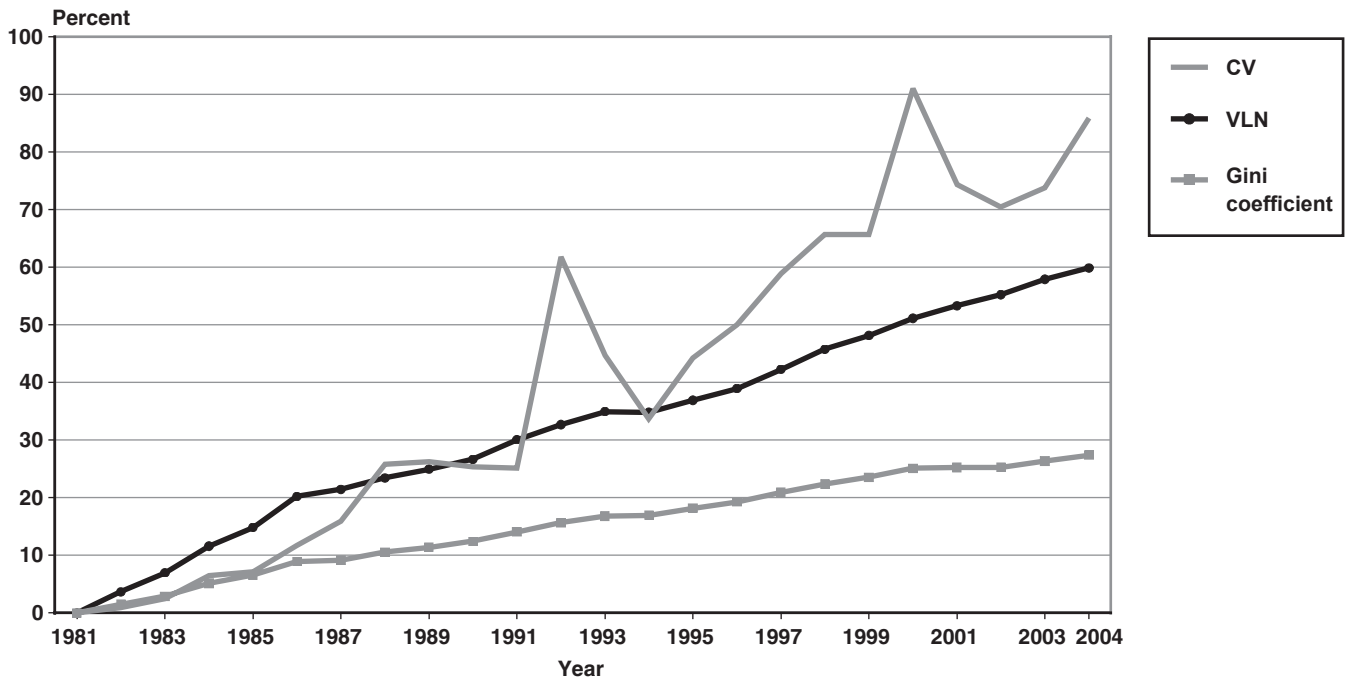
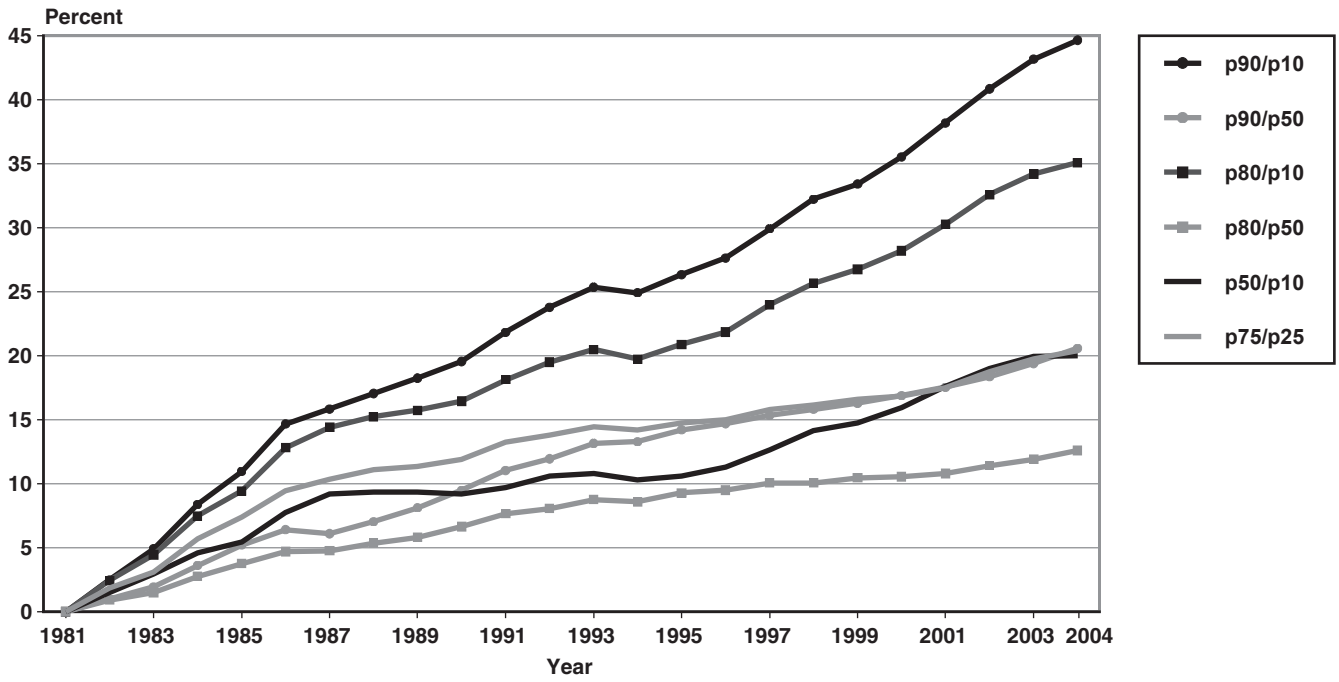
The Distribution of Long-Run Earnings, 1981–2004

Over time, economywide earnings levels tend to increase with worker productivity. Individual workers also change relative positions in the annual earnings distribution as they become more or less productive relative to other workers. Year-to-year worker mobility during a sequence of years means that the dispersion of total earnings over all years may be somewhat lower than the annual earnings dispersion measures

might suggest. We now examine real earnings over two 12-year periods. We limit our focus to earnings during ages 31–62, an age range that is likely to contain the bulk of career earnings for most people with substantial lifetime labor force participation. Prior to age 30, earnings histories can be difficult to compare because of voluntary absences from the labor force to pursue education and training and frequent job changes associated with starting careers. In addition, beyond age 60, retirement begins to have noticeable effects on earnings patterns.

We subdivide the 24 years into two 12-year intervals, 1981–92 and 1993–2004. Because earnings typically increase with age for much of the work life, we want to ensure that the calculations made for each 12-year subperiod pertain to similarly aged workers. Accordingly, we calculate total real earnings for workers aged 31–50 in the first year of each reference period and compare the distributions of long-run real

Chart 2.
Earnings dispersion among women: Percentage change from 1981, by dispersion measure



SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

earnings in the two periods. Although our examination of annual earnings excludes people with real earnings of less than \$5,000, those people may be included in multiyear earnings calculations because they have earnings in at least some years. The exclusion of workers with more erratic earnings histories is likely to affect the dispersion measures for multiyear periods, as evidenced in Haider (2001). In this article, the population of interest is adults who are able to work over an extended observation period and, through their earnings histories, have demonstrated more than token—and possibly substantial—labor force attachment over a number of years. We implement these considerations by applying a small set of sample restrictions for the long-run earnings calculation:

- There can be no history of disability, as indicated by participation in either Social Security’s Disability Insurance program or the Supplemental Security Income program.
- The person must survive through the last year included in any multiyear earnings calculation.
- The person must be fully insured for Social Security retired-worker benefits by age 62 or, if younger during the final year of a multiyear earnings calculation, must exhibit an earnings history that is on track to attain full insurance status by age 62.
- A person must have earned at least \$5,000 (real) in 1 of the 12 reference-period years.

The first two of these restrictions are intended to eliminate people who may have been unable to work throughout a 12-year reference period. The third restriction attempts to eliminate individuals with low lifetime labor force attachment from the calculations. Eligibility for retired-worker benefits at age 62 does not require very high earnings in any year, but it does require the equivalent of modest earnings in 10 different years or, at the other extreme, sufficient annual earnings to be awarded one Social Security credit in each of 40 years.¹⁶ We also eliminate consistently low earners by requiring that at least \$5,000 be earned in 1 of the 12 reference years. Finally, the sum of annual incomes received over many years is most appropriately expressed in present-value terms that make the time value of money explicit. Accordingly, 12-year real earnings totals were calculated three ways: as present values, using real discount rates of 3 percent and 5 percent; and as a simple sum where the implicit real discount rate is zero.

Table 3 displays the findings for men’s undiscounted total earnings.¹⁷ The table provides the sample mean,

seven percentile values, and five dispersion measures for each of the two periods. The table also contains a set of calculations restricted to “positive earners,” here defined as the subset of “all workers” who have earnings in all 12 years—respectively accounting for about 55 percent and 59 percent of all workers during 1981–1992 and 1993–2004.

Table 3 contains several key results for the distribution of men’s long-run earnings. First, mean 12-year real earnings increased a seemingly modest 10.1 percent for all workers—a geometric annual growth rate of less than 0.8 percent—and by even less (7.2 percent) for positive earners. Second, all five dispersion measures show increases in long-run earnings inequality across the two periods, more so in the case of positive earners. Among all workers, those results are driven by declines in total real earnings amounts in the lower half of the distribution, as denoted by the negative percentage changes at the 5th, 10th, 25th, and 50th percentiles, and increases in the upper half of the distribution, particularly at the 90th (14.3 percent) and 95th (18.2 percent) percentiles. For positive earners, the real earnings declines are larger at and below the median, but the percentage gains for the highest percentiles are a little smaller.

The findings for women (Table 4) differ notably from those for men. Generally, the mean total real earnings amounts for the two 12-year periods are roughly half the amounts earned by men. For women, there were large gains in total real earnings throughout the distribution of long-run real earnings. Mean long-run earnings increased by 34.4 percent for all workers and by 24.2 percent for the subgroup of positive earners. There was a much smaller increase in long-run earnings dispersion for women than was exhibited by men. For all workers, long-run earnings dispersion increased very little between the two periods, and the p75/p25 ratio actually fell by 5.9 percent. Increased dispersion is more apparent among the positive earners, although very much less so than for men. All percentile earnings values in Table 4 show substantial gains in real earnings, with larger percentage gains at the higher percentile values. For both men and women, a comparison of changes in the percentile values attributable to changing the sample composition indicates that the excluded cases (more intermittent workers) are disproportionately drawn from the lower tail of the long-run earnings distribution. Restricting the calculations to workers with more steady labor force participation strengthens the conclusion of increased long-run earnings dispersion for both men and women.

Table 3.
Distribution of long-run wage and salary earnings for men, 1981–2004

Measure	All workers ^a			Positive earners ^b		
	1981–1992	1993–2004	Percent change	1981–1992	1993–2004	Percent change
Earnings (\$) ^c						
Percentiles:						
5th	36,691	36,229	-1.3	198,072	177,347	-10.5
10th	75,684	70,900	-6.3	252,603	230,224	-8.9
25th	207,364	196,240	-5.4	360,843	337,024	-6.6
50th	391,739	384,839	-1.8	512,668	498,883	-2.7
75th	600,510	626,850	4.4	700,566	734,242	4.8
90th	846,581	967,240	14.3	978,962	1,101,270	12.5
95th	1,120,661	1,324,066	18.2	1,318,512	1,527,074	15.8
Mean	479,915	528,577	10.1	624,199	668,995	7.2
Dispersion measures						
Gini coefficient	0.436	0.488	11.8	0.342	0.401	17.3
VLN	1.066	1.174	10.1	0.357	0.455	27.3
CV	118.99	254.13	113.6	101.07	229.531	127.1
Percentile ratios:						
p90/p10	11.19	13.64	22	3.88	4.78	23.4
p75/p25	2.9	3.19	10.3	1.94	2.18	12.2
Sample size ^d						
Total	238,270	360,997	...	130,119	214,390	...
Zero-earners ^e	15,053	22,258	...	0	0	...
Very low earners ^f	7,443	10,350	...	97	210	...

SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

NOTES: Zero-earners and very low earners are included in the sample size but are omitted from the distribution calculations.

... = not applicable.

- Workers with enough quarters, or on track (in the last year of a period) to have enough quarters to qualify for retired-worker benefits.
- Workers with earnings in every year of the period.
- In 2000 dollars, not subject to discounting.
- Includes only workers who were alive and were never disabled through the last year of the period.
- Those with no earnings in the period.
- Those who never earned more than \$5,000 in any year of the period.

Tables 3 and 4 show long-run real earnings at selected percentiles throughout the distribution. Charts 3 and 4 plot the changes in the natural logarithm of real WS earnings at all percentiles in the distribution of 12-year real incomes for men and women who were aged 31–50 at the start of the reference period.¹⁸ The two charts further document very different experiences for the 12-year earnings of men and women over the 24-year period. For men (Chart 3), real earnings growth is higher throughout most of the distribution during the second 12-year period (1993–2004). During both intervals, the calculated growth in real earnings increases with few exceptions as one moves higher in the distribution, with the largest

growth occurring in the upper tail of the 12-year earnings distribution. The bottom percentiles fare particularly badly in the first period; real earnings decline up to the 25th percentile. The growth in earnings reaches 0.10 at the 67th percentile and accelerates noticeably for the top two percentiles. In the second period, earnings growth is negative only at the lowest four percentiles.

The women's results (Chart 4) differ notably from those for men, except for the similarly large growth in real earnings at the top of the earnings distribution. Although women's 12-year earnings are generally lower than men's, the growth of women's long-run earnings is higher during both periods. Earnings growth is greater in the earlier period, but in both

Table 4.
Distribution of long-run wage and salary earnings for women, 1981–2004

Measure	All workers ^a			Positive earners ^b		
	1981–1992	1993–2004	Percent change	1981–1992	1993–2004	Percent change
Earnings (\$) ^c						
Percentiles:						
5th	23,681	29,214	23.4	99,865	113,701	13.9
10th	38,878	50,262	29.3	129,030	146,238	13.3
25th	86,765	117,990	36.0	190,973	217,215	13.7
50th	182,601	236,272	29.4	280,128	326,540	16.6
75th	310,201	396,886	27.9	398,202	482,131	21.1
90th	450,378	591,394	31.3	532,088	676,288	27.1
95th	547,859	745,689	36.1	625,893	839,887	34.2
Mean	222,595	299,083	34.4	315,495	391,934	24.2
Dispersion measures						
Gini coefficient	0.423	0.440	3.9	0.298	0.340	13.9
VLN	0.927	0.974	5.1	0.322	0.389	20.8
CV	87.599	108.326	23.7	64.654	87.225	34.9
Percentile ratios:						
p90/p10	11.58	11.77	1.6	4.12	4.62	12.1
p75/p25	3.58	3.36	-5.9	2.09	2.22	6.4
Sample size ^d						
Total	204,770	334,779	...	92,601	186,735	...
Zero-earners ^e	10,639	16,098	...	0	0	...
Very low earners ^f	11,410	13,981	...	347	429	...

SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

NOTES: Zero-earners and very low earners are included in the sample size but are omitted from the distribution calculations.

... = not applicable.

- a. Workers with enough quarters, or on track (in the last year of a period) to have enough quarters to qualify for retired-worker benefits.
- b. Workers with earnings in every year of the period.
- c. In 2000 dollars, not subject to discounting.
- d. Includes only workers who were alive and were never disabled through the last year of the period.
- e. Those with no earnings in the period.
- f. Those who never earned more than \$5,000 in any year of the period.

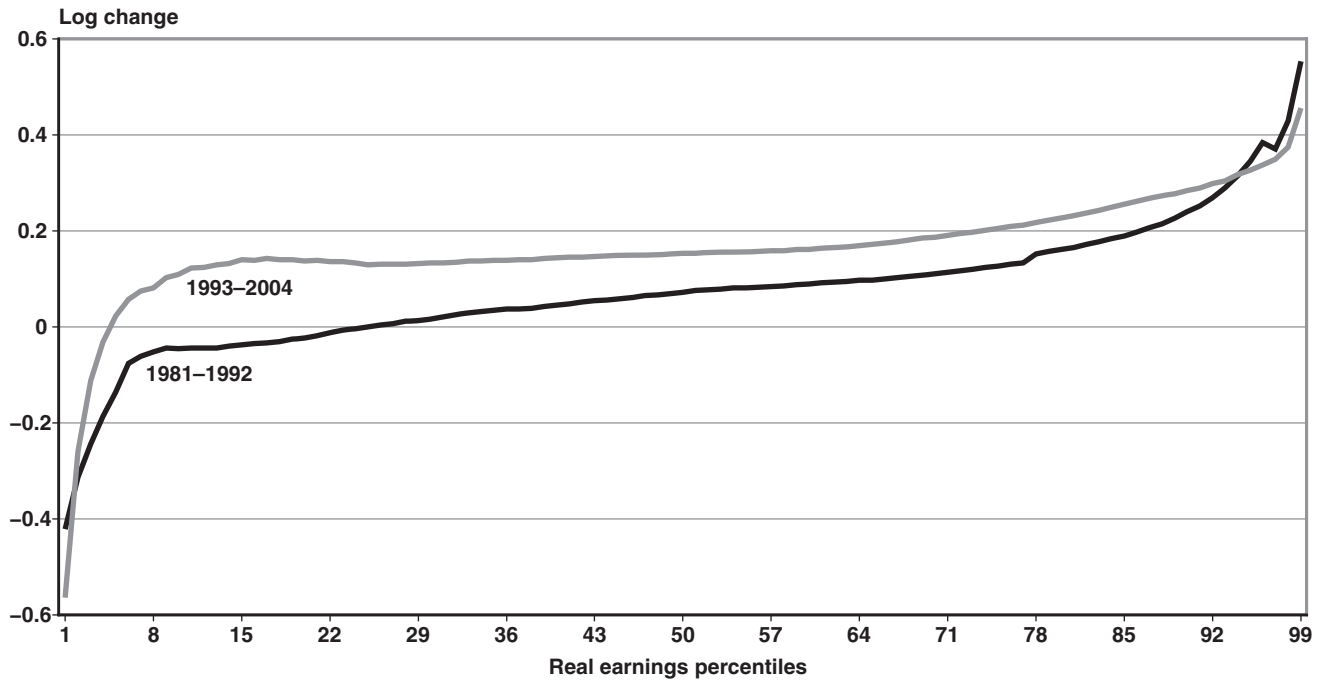
periods, real earnings grow by more than 20 percent for every percentile. In both periods, the largest growth rates are exhibited by workers near, but not at, the bottom of the distribution of total WS earnings. Except for the very lowest percentiles, the growth in real earnings declines from about the 5th percentile to the 50th percentile, in marked contrast to the earnings of men, then increases gradually until approximately the 90th percentile.

In sum, although the data indicate that the dispersion in annual WS earnings increased substantially for men and less so for women, the results for longer-period earnings dispersion are more divergent. Men's long-run earnings also exhibit increased dispersion,

which appears to be only slightly so for women unless the focus is on those with persistent labor force attachment.

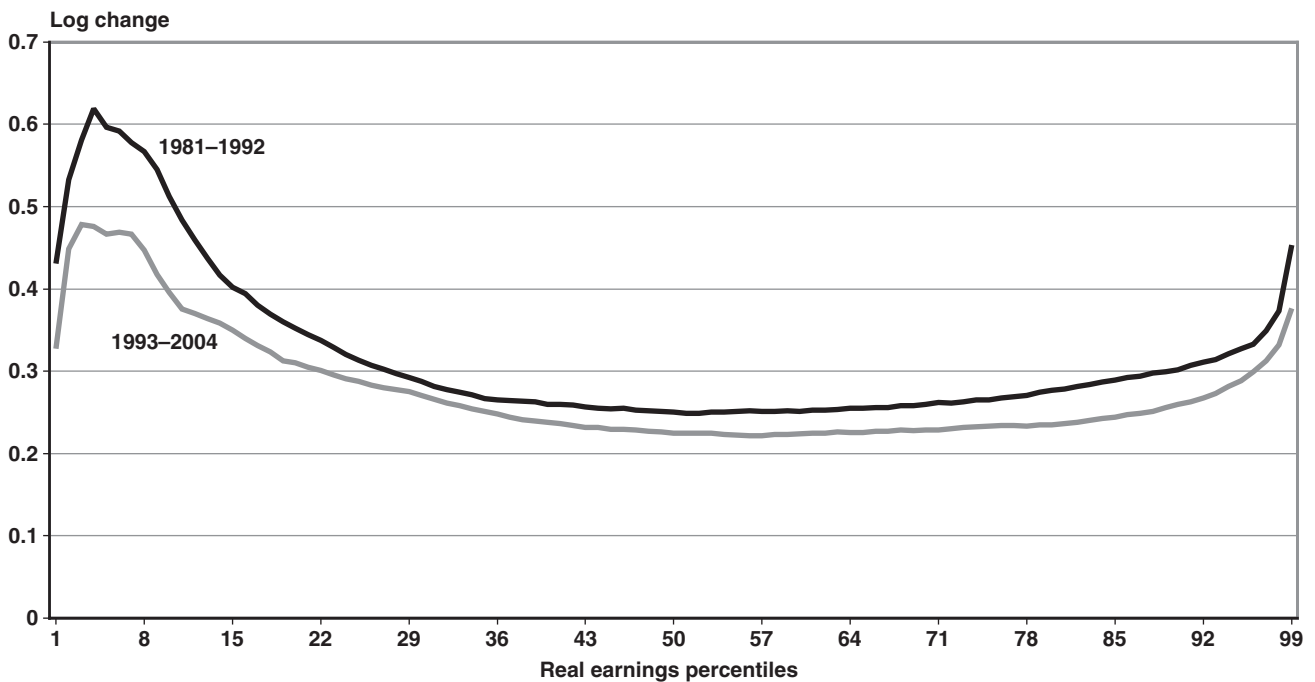
How do these findings about the dispersion of long-run earnings compare with the trends in annual earnings dispersion documented above and elsewhere in the literature? The results can be compared more directly by first calculating the mean of the annual earnings dispersion measures for the two 12-year periods and then determining the percentage change in the mean between periods. This between-period change can be compared with the percentage change in 12-year real earnings totals described in Tables 3 and 4. For men (all workers), the growth in long-run

Chart 3.
Changes in the logarithm of real wage and salary earnings for men in two 12-year periods, by percentile, 1981–2004



SOURCE: Authors' calculations based on Continuous Work History Sample, 1-percent active file.

Chart 4.
Changes in the logarithm of real wage and salary earnings for women in two 12-year periods, by percentile, 1981–2004



SOURCE: Authors' calculations based on Continuous Work History Sample, 1-percent active file.

WS earnings dispersion is about the same magnitude as one would conclude from looking at trends in annual earnings dispersion (Table 5). The percent changes in two of the long-run earnings dispersion measures (Gini coefficient and VLN) are somewhat smaller than the mean annual measures for the two periods, but the other two measures (CV and the p90/p10 ratio) show larger increases. Earnings mobility does not appear to substantially mitigate the effects of rising annual earnings inequality on longer-period earnings inequality. The women's results are quite different. The large increases in annual earnings inequality that women experienced did not translate into similarly large gains in long-run earnings inequality. The large growth in long-run earnings experienced in the lower end of the distribution, in contrast with the declines for men, resulted in small increases in the inequality of long-run earnings among women (all workers), and in considerably smaller increases in dispersion for women who are designated "positive earners" than for their male counterparts.

Final Remarks

Although the increase in annual earnings dispersion in recent decades—usually referred to as increased earnings inequality—has attained greater visibility lately, increased earnings dispersion over longer time intervals may be of greater concern. An increase in the dispersion of long-run earnings raises questions about its causes and potential consequences for economic well-being. Causal factors can include increased returns to education and skill, declining earnings opportunities for low-wage workers who are vulnerable to increased international competition, demographic shifts in labor force composition, unequal educational opportunities, and prolonged economic expansions or contractions that have disparate effects on segments of the labor force, among others. Some observers see the increased wage dispersion as providing an effective economic signal for lower-paid workers to invest in new skills that eventually lead to higher-paid work. Others see signs of increasing inequality and reductions in

Table 5.
Comparing changes in annual and long-run earnings dispersion: All workers, by sex, 1981–1992 and 1993–2004

Dispersion measure	1981–1992	1993–2004	Percent change
Men			
<i>Annual earnings dispersion</i>			
Gini coefficient	0.405	0.458	13.1
VLN	0.574	0.655	14.1
CV	1.265	2.673	111.3
p90/p10 ratio	6.932	7.950	14.7
<i>Long-run earnings dispersion</i>			
Gini coefficient	0.436	0.488	11.8
VLN	1.066	1.174	10.1
CV	118.990	254.130	113.6
p90/p10 ratio	11.190	13.640	22.0
Women			
<i>Annual earnings dispersion</i>			
Gini coefficient	0.339	0.383	13.0
VLN	0.391	0.486	24.3
CV	0.746	1.037	39.0
p90/p10 ratio	5.360	6.326	18.0
<i>Long-run earnings dispersion</i>			
Gini coefficient	0.423	0.440	3.9
VLN	0.927	0.974	5.1
CV	87.599	108.326	23.7
p90/p10 ratio	11.580	11.770	1.6

SOURCE: Authors' calculations based on 2004 Continuous Work History Sample, 1-percent active file.

NOTE: Annual earnings dispersion values are 12-year means. Long-run earnings dispersion values are for total real earnings over the entire period.

earnings mobility as social problems that should be remedied through public policies.

One important aspect of long-run (and perhaps even lifetime) individual earnings is their role in determining the resources available to retirees. Increases in lifetime earnings dispersion are likely to translate into greater income inequality in old age. Lifetime earnings generate much of a worker's capacity to save for retirement through personal savings and employer-sponsored defined-contribution pension plans. Aside from those forms of individually managed retirement saving, private and public pension plans often determine benefit amounts through formulas based on earnings during a certain number of years in a worker's earnings history. One example is the Social Security program, in which monthly retired-worker benefits depend on the highest 35 values of (wage-indexed) annual earnings. A progressive benefit formula ensures that replacement rates decline as lifetime earnings increase within any given birth cohort. Alternative distributions of lifetime earnings that display more or less earnings dispersion can affect the extent to which the program redistributes income both within and across cohorts, and affect program solvency as well.

Appendix: Creation of the Earnings Variable and Data Cleaning

The reported results pertain solely to WS earnings; all SE earnings are excluded. In cases where a worker has both WS and SE earnings during a year, the observation is kept, but only the WS earnings component is included.

The CWHS contains three variables that measure WS earnings: Federal Insurance Contributions Act (FICA) earnings (that is, Social Security taxable earnings), Medicare-taxable earnings, and total compensation. FICA earnings data are available for each calendar year 1951–2004, but the amount recorded cannot exceed the maximum taxable earnings applicable in each year, except in the case of multiple jobs (see censoring discussion that follows). Since 1978, the CWHS also contains information on total compensation for WS employment as reported on W-2 statements prepared by employers for purposes of federal income taxation. Although that amount is not top-coded, it does not contain elective deferred compensation. It is also subject to some error because of the process by which the CWHS is updated annually from the agency's Master Earnings File to incorporate the latest available year's data.¹⁹ Medicare-taxable

earnings amounts were added to the file in 1983. During 1983–1990, the Medicare and Social Security maximum taxable earnings amounts were the same, but the Medicare maximum was higher from 1991 to 1993, and was eliminated beginning in 1994.

The measure of annual earnings used throughout this article is a variable deduced from the three CWHS variables for WS earnings. For 1981–1993, we use the maximum value of the three reported earnings variables. From 1994 onward, the Medicare earnings variable is used. Once this preliminary earnings variable was created to construct the individual earnings histories used in the research, we conducted consistency checks, such as setting negative earnings values to zero and checking for outlier earnings values. Unusually large earnings amounts could potentially affect the calculated values of several of the article's earnings dispersion measures. As a check for outliers, any annual earnings amount that exceeded three times the Social Security taxable maximum was compared with values in the two prior and two following years. If none of these earnings amounts exceeded one-third the suspect value, an imputation was made by averaging the nearby positive earnings amounts. The prevalence of outliers in the earnings data was small, but not rare. When individual CWHS-recorded earnings histories were examined, instances of unusually large earnings during a single year were found for less than 1 percent of individuals; only a few cases appeared to have two outlier values. Our imputed annual earnings values are likely to have very little effect on any of the reported results. They affect a small percentage of the earnings amounts used to determine annual earnings dispersion measures and represent only one of 12 annual earnings amounts used to calculate a person's long-run real earnings.

Finally, all nominal earnings values were converted to real dollars using the GDP implicit price deflator for Personal Consumption Expenditures (PCE) with calendar year 2000 as the base period.

Notes

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¹ The precise ranking depends on the time period used in the comparison, the earnings concept that is studied, the

dispersion measure used, and the choice of which workers' earnings to include in the study.

² As noted by Atkinson (2008), the terms earnings "dispersion" or "differences" are often used synonymously with the term earnings "inequality," although there is a distinction. Differences in earnings may or may not be caused by what many people would think of as inequality. Earnings dispersion is a statistical property of a distribution that can be objectively measured in the absence of judgments about how "inequality" should be defined and measured.

³ Two closely related research areas to note are studies of earnings mobility (a key link between the differences in the dispersion of earnings as measured over time periods of different lengths) and the literature on the variability of individual earnings over time. Atkinson, Bourguignon, and Morrison (1992), Burkhauser, Holtz-Eakin, and Rhody (1997), and Fields and Ok (1999) are representative of the mobility literature, while Haider (2001), Baker and Solon (2003), Shin and Solon (2008), and a series of papers by Moffitt and Gottschalk (1993, 1998, 2002) and Gottschalk and Moffitt (1994) are important recent contributions to the study of earnings variability.

⁴ The CWHS has both active and inactive versions. The active file provides a longitudinal history of annual earnings for people who have any reported earnings in covered or noncovered employment, including earnings from self-employment. The inactive version contains records for individuals with no reported earnings. The structure and content of the CWHS are described in some detail by Smith (1989). Olsen and Hudson (2009) provide a recent overview of the agency's earnings records and discuss key strengths and limitations.

⁵ Current law restricts access to these data to researchers at SSA and to staff at the Treasury Department and the Congressional Budget Office (Olsen and Hudson 2009).

⁶ A worker's employment is said to be covered under Social Security if earnings are creditable for the retirement, survivors, and disability programs, and OASDI payroll taxes are paid accordingly.

⁷ Earnings recorded for 1978–1980 are subject to an unusual number of errors because of inconsistent compliance with the agency's change from quarterly to annual wage reporting in 1978.

⁸ There appears to be some residual censoring in recorded WS amounts, particularly for men, during 1981–1990. During that decade, approximately 1 percent of men have recorded annual earnings within \$10 of the annual maximum taxable amount each year, and in most instances exactly that amount. That percentage abruptly declines in 1991 to about 0.02 percent and remains at that lower level through 2004. There is much less censoring among women's earnings during 1981–1990, with the percentage having recorded annual earnings within \$10 of the taxable maximum ranging from 0.1 to 0.3 percent each year. The consequence for our results is that the article's

annual dispersion measures that use earnings amounts from the upper tail of the distribution are understated, which will slightly overstate the increase in annual earnings inequality during the 1980s given by those measures. To the extent that workers' annual earnings are serially correlated, the 12-years aggregate earnings dispersion measures may be slightly understated as well.

⁹ WS earnings data are obtained from employer Form W-2 Wage and Tax Statements and Form W-3 Transmittal of Wage and Tax Statements. SE earnings data are taken from Internal Revenue Service files derived from Schedule SE and from the line for unreported wage and tips on Form 1040, US Individual Income Tax Return (Olsen and Hudson 2009).

¹⁰ Examples of other complicating rules follow. First, a nonfarm SE worker must earn at least \$400 during a year for those earnings to be covered by OASDI; thus, small amounts of SE earnings are often unrecorded. Second, before 1991, SE taxable earnings were recorded only if any WS earnings were less than the OASDI annual maximum taxable earnings amount, and then, only SE amounts that brought total covered earnings (the sum of WS and SE) up to the maximum taxable amount were recorded. Therefore, SE earners prior to 1991 cannot be identified with much precision, and recorded SE earnings amounts are sometimes censored. The censoring problem continues into the 1991–1993 period, although to a lesser degree because of the higher Medicare maximum taxable earnings amounts.

¹¹ The problem also occurs in cases where the primary job is not covered, but secondary jobs may be. What appears to be a low-earnings year may reflect only partial earnings.

¹² See Pattison and Waldron (2008) for an assessment of the growing importance of elective deferrals in total compensation based on data from SSA's Master Earnings File.

¹³ Because we examine earnings histories that span three decades, this deflator is preferable to the Consumer Price Index, which measures price increases for a fixed consumption pattern.

¹⁴ The \$5,000 figure approximates half-time work (1,000 hours) at the federal hourly minimum wage during 1996–2004. During 1981–2004, the minimum wage increased from \$3.35 to \$5.15. Although our annual cutoff for sample inclusion could be more precisely tied to the prevailing minimum wage each year, its real value would change annually, as would those implied by other similar rules (for example, the earnings required for one or more Social Security credits). The inclusion of smaller earnings values in the yearly samples of earnings would nearly always increase the values of the dispersion statistics, but appear to have little effect on the trends in those statistics over time, a point recently confirmed by Kopczuk, Saez, and Song (2010).

¹⁵ These measures are widely used in the income distribution literature and have been discussed by many authors including Sen (1973) and Cowell (forthcoming).

¹⁶ Social Security insured-status rules have evolved over many decades. Since 1990 it has been necessary to accumulate 40 Social Security credits to qualify for retired-worker benefits. A credit is awarded for earning a specified amount that is adjusted annually for average wage growth in the economy, with a maximum of four credits that can be earned each calendar year. The 2010 figure is \$1,120 per credit.

¹⁷ Results for the two discounted versions were very similar to the undiscounted case and are consequently not shown. Haider (2001) uses a similar table design.

¹⁸ The change in the natural logarithm of earnings gives the proportional change in real earnings over the period. The plotted values in Charts 3 and 4 represent the difference in the natural logarithms of real earnings in the 12th and 1st years of the period observed at each percentile value.

¹⁹ Most errors in the total compensation variable result from employer reporting errors. Subsequent corrections are made in the Master Earnings File but not in the CWS. In contrast, corrections for initial errors in the FICA- and Medicare-taxable earnings amounts are made in the CWS.

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NEXT GENERATION OF INDIVIDUAL ACCOUNT PENSION REFORMS IN LATIN AMERICA

by Barbara E. Kritzer, Stephen J. Kay, and Tapen Sinha*

Latin America led the world in introducing individual retirement accounts intended to complement or replace defined benefit state-sponsored, pay-as-you-go systems. After Chile implemented the first system in 1981, a number of other Latin American countries incorporated privately managed individual accounts as part of their retirement income systems beginning in the 1990s. This article examines the subsequent “reform of the reform” of these pension systems, with a focus on the recent overhaul of the Chilean system and major reforms in Mexico, Peru, and Colombia. The authors analyze key elements of pension reform in the region relating to individual accounts: system coverage, fees, competition, investment, the impact of gender on benefits, financial education, voluntary savings, and payouts.

Introduction

By the year 2000, several countries in Latin America had followed Chile’s lead in setting up individual retirement savings accounts intended to complement or replace defined benefit, state-sponsored pension systems (Sinha 2000; Kay and Kritzer 2001). Over the past decade, the world has continued to look to Latin America as these maturing pension systems confront ongoing policy challenges related to coverage, contribution rates, costs, and competition. In the intervening years, issues related to gender equity, financial education, and payouts have become more prominent. Meanwhile, significant next-generation reforms have taken place in Chile, Argentina, and Bolivia and are under consideration in other countries, including Uruguay (Bertranou, Calvo, and Bertranou 2009).

In this article we describe the “reform of the reform” of pension systems, with particular emphasis on countries that have in recent years made significant revisions in their systems of individual

accounts. We pay special attention to Chile, which is the region’s pioneer in pension reform; however we also analyze major reforms in Mexico, Peru, and Colombia.¹ Specifically, and as described briefly in the remainder of this introduction, this article analyzes key elements of pension reforms that feature individual accounts, including system coverage, fees, competition, investment, the impact of gender on benefits, financial education, voluntary savings, and payouts.

Selected Abbreviations

AFORE	Administradora de Fondos para el Retiro (pension fund management company in Mexico)
AFP	Administradora de Fondo de Pensión (pension fund management company in Bolivia, Chile, Dominican Republic, El Salvador, and Peru)

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Selected Abbreviations—Continued

CONSAR	Comisión Nacional del Sistema de Ahorro para el Retiro (National Commission for Retirement Savings in Mexico)
EPS	Encuesta de Protección Social (Social Protection Survey)
IADB	Inter-American Development Bank
IMSS	Instituto Mexicano del Seguro Social (Mexican Social Security Institute)
PAYG	pay as you go
RBS	risk-based supervision
ROE	return on equity
SSA	US Social Security Administration
UF	unidad de fomento (a unit of account in Chile)

We begin by examining the issue of coverage, which has become a primary concern given disappointment that rates of coverage have not improved and have in fact declined after the move to individual accounts, as the informal sector remains persistently large. Improving coverage remains one of the primary challenges for policy reform (Gill, Packard, and Yermo 2005; Ribe, Walker, and Robalino 2010).

The region's pension systems have received considerable criticism for high fees and weak competition, even as the pension fund industry has itself been highly profitable. We next examine trends in fees and competition in the pension fund industry and discuss the steps that some governments in the region have taken to lower fees. Then we assess how pension funds are invested. Under systems of individual accounts, a worker's pension is ultimately determined by his or her returns on investment. In the early years of the region's pension funds, investment was largely directed toward government bonds; however, there has been an effort to diversify investment portfolios in recent years. Also, some countries have expanded the range of investment options available to workers in order to better match workers' risk tolerance and life-cycle stage.

We then discuss the issue of financial education, which is increasingly recognized as a critical component of pension reform. Under systems of individual accounts, workers are asked to make well-informed decisions that will affect their future lives, although as social protection surveys reveal, most individuals lack the basic knowledge necessary to make such decisions.

The differential impact of pension reform on men and women has also emerged as a pressing topic for policy reformers and was cited as a primary motivation for the Chilean reform by President Michelle Bachelet (Mensaje 558-354, 2006). Because women tend to earn less than men, spend time outside the labor force in care-giving activities, retire earlier, and live longer, their pension benefits are systematically lower. In this section, we assess the differential impact of gender, and how the Chilean reform seeks to remedy gender bias.

Almost all of the systems of individual accounts include a voluntary savings option, although very few workers participate. The 2008 Chilean reform creates incentives for firms to create employer-sponsored voluntary savings plans; however, as we discuss, even with new incentives to contribute, voluntary savings plans have not caught on in Latin America.

When a worker retires after having contributed to an individual savings account, he or she must choose among a range of payout options, including phased withdrawals, a choice of annuities, or a combination thereof. The choice can be complex and costly, with serious and often irreversible consequences. Yet, policymakers have only recently begun to focus on payout options and how they might best be structured. In short, this study assesses the range of pension reforms that have been implemented over the past decade.

The Chilean Model and the First-Generation Reforms It Inspired: An Overview

In 1981, Chile introduced a new system of privately managed individual accounts, replacing its public pay-as-you-go (PAYG) pension system. Since 1990, 10 other countries in Latin America, as well as countries in Central and Eastern Europe, have adopted some form of what has become known as the "Chilean model."²

Under a Chilean-type system of individual accounts, workers contribute a certain percentage of their income each month to a pension fund management company of their choice (administradora de fondo de pension, or AFP).³ An AFP is a private company, with functions limited to managing pension funds and providing and administering certain pension benefits. Table 1 shows the contribution rates in each country, who must contribute (only employees or both employee and employer), and whether or not workers receive some type of compensation

Table 1.
Financing individual accounts in Latin America

Country	Contribution rates (%) ^a		Recognition of accrued rights under the PAYG system
	Employee	Employer	
Bolivia	10	None	Yes
Chile	10	Voluntary	Yes
Colombia ^b	3.85	11.625	Yes
Costa Rica	1	3.25	PAYG is first pillar
Dominican Republic	2.87	7.1	Yes
El Salvador	6.25	4.05	Yes
Mexico ^b	1.125	5.15	At retirement, choice of PAYG or individual account benefit
Panama	c	d	PAYG is first pillar
Peru	10	None	Yes
Uruguay	e	None	PAYG is first pillar

SOURCE: SSA (2009).

NOTE: Until the end of 2008, Argentina had a mixed system where all insured workers were in the first-pillar public PAYG system; for the second pillar, workers had a choice between contributing to an individual account or the PAYG defined benefit system. A 2008 law closed the second-pillar individual accounts and transferred all workers back to the PAYG system.

- a. As a percentage of employee's monthly income.
- b. The government also provides a subsidy.
- c. 8.5 percent of gross monthly earnings above 500 balboas (US\$490).
- d. 4 percent of gross monthly earnings above 500 balboas (US\$490).
- e. 15 percent of gross monthly earnings above 19,805 pesos (US\$974).

for the value of their accrued rights under the old public pension system. In some countries, employers are required to make contributions, while in Chile, employer contributions on behalf of the worker are voluntary. Each month, AFPs charge contributors an administrative fee (some systems allow more than one type of fee) and a premium for survivors and disability insurance, which are often a percentage of the worker's income.⁴ The Mexican and Colombian governments also provide subsidies to the individual accounts. In Mexico, the "social quota" is a flat-rate government contribution for those who actively contribute to an individual account. In Colombia, the government provides a partial subsidy to the solidarity fund that subsidizes low earners. High earners in Colombia also contribute to the solidarity fund (SSA 2009; Reyes 2008).

In all the individual account systems in the region, workers may change from one AFP to another; the number of times per year varies (Table 2). In most countries, workers may also make voluntary contributions to either their individual accounts or to separate, voluntary retirement savings accounts. AFPs collect workers' contributions, credit them to the workers' accounts, and invest these monies according to regulations set by the government. AFPs also often contract

with an insurance company to provide survivors and disability insurance for their members in some countries. (See the Appendix for a more detailed description of survivors and disability insurance in the region.)

Across countries in the region, there is a great deal of variation with respect to pension fund markets (Table 2). Mexico has the most pension funds, with 15, compared with only 2 in Bolivia (see Von Gersdorff (1997) for details).⁵ Furthermore, as will be discussed later, some countries allow workers to choose among different types of investment funds, while in other countries only one type of fund is available. Table 2 also shows that in many cases, funds are regulated with respect to their minimum rate of return.

At the normal retirement age (between 60 and 65 in most countries), workers in most countries can use the balance in their individual accounts to do one of the following:

- Purchase an immediate annuity from an insurance company to provide lifetime benefits, or
- Set up programmed withdrawals to provide income over the expected life span. If the retiree dies early, dependents may inherit the balance in the deceased's individual account.

Table 2.
Characteristics of Latin American pension fund management companies

Country	Acronym for pension fund management company	Year system began	Number of companies ^a	Allowable funds per company	Allowable transfers per year ^b	Minimum rate-of-return requirement
Bolivia	AFP	1997	2	1	1	No
Chile	AFP	1981	^c 6	5	6	Yes
Colombia	SAFP	1993	8	3	2	Yes
Costa Rica	OPP	1995	5	1	1	No
Dominican Republic	AFP	2003	5	1	1	Yes
El Salvador	AFP	1998	2	1	1	Yes
Mexico	AFORE	1997	15	5	1	No
Peru	AFP	1993	4	3	4	Yes
Uruguay	AFAP	1996	4	1	2	Yes

SOURCES: AIOS (1999–2009), FIAP (2008 and 2009), and Tapia (2008).

NOTE: Until the end of 2008, Argentina had a mixed system where all insured workers were in the first-pillar public PAYG system; for the second pillar, workers had a choice between contributing to an individual account or the PAYG defined benefit system. A 2008 law closed the second-pillar individual accounts and transferred all workers back to the PAYG system.

AFAP = Administradora de Fondos de Ahorro Previsional; AFORE = Administradora de Fondos para el Retiro; AFP = Administradora de Fondo de Pensión; OPP = Operadora de Pensión Privada; SAFP = Sociedad Administradora de Fondos de Pensiones.

a. As of December 2009.

b. In several countries, a worker may transfer at any time to another company with a lower administrative fee.

c. A new AFP began operation in August 2010.

Some countries offer variations and combinations of those two options, such as—

- Purchasing a deferred annuity, which means setting a future date for purchasing an annuity and, until then, making programmed withdrawals from the individual account.
- Purchasing an immediate annuity with a portion of the funds in the individual account and making programmed withdrawals with the remaining funds.

This model was the basis for reforms throughout the world. While some countries adopted defined contribution individual accounts to replace financially troubled state-run PAYG pension systems, other countries adopted mixed systems or have made individual accounts optional and supplementary. In short, there has been a range of reforms in the region and elsewhere, all of which were inspired by Chile's reform. More recently, Chile has once again led the region with a second generation of pension reforms. In the 2000s, policy debates turned to coverage for the poor and informal sector, gender equity, financial education, and payouts (Gill, Packard, and Yermo 2005), while issues related to coverage contribution rates, costs, and competition remained unresolved. Chile implemented a comprehensive reform that

sought to address these challenges, while Argentina took a contrasting approach when the government ended the system of individual accounts and transferred all workers back to the state-run PAYG system.⁶ Other countries that have debated or implemented next-generation reforms to their systems of individual accounts, including Bolivia, Peru, and Uruguay, are discussed later.

Coverage

Coverage is a key indicator of how well a reformed system is functioning. As Gill, Packard, and Yermo (2005, Box 5.2) noted, improving low rates of coverage in developing countries was a core objective listed in the World Bank's (1994) landmark report,⁷ in later World Bank documents, and in the discussions among Chilean policymakers designing the 2008 reform (Holzmann, Robalito, and Takayama 2009; Chile, Presidential Advisory Council on Pension Reform 2006). Yet measuring coverage is complex. Rofman and Lucchetti (2006) noted that in the past it was difficult to compare coverage among countries because there was no consistent definition and even within a country, the definition changed over time. However, since 1990, a series of household surveys have been conducted for most countries in the region.⁸ These

surveys used a consistent definition making it possible to compare coverage across countries at a given point in time or data across time for the same country.

One way to measure coverage is to examine the number of affiliates⁹ in the system of individual accounts as a percentage of the labor force. With few exceptions, this percentage has risen (for most countries from 2004 through 2009 (AIOS 2009)) for two reasons. First, because most of these countries have relatively immature systems, most register entry of new affiliates, but do not register many exits. Second, once an affiliate signs up for the system, he or she remains in the system regardless of whether or not they are actively contributing to an account.

When we measure the number of contributors as a percentage of the total labor force, as shown in Table 3, coverage is far lower because the figures only refer to the system of individual accounts and not other special social security systems that exist in these countries for certain groups, such as public employees, the military, and police. For example, in Uruguay, both the banking sector and notaries have separate systems.

Another way of viewing the system is to examine the number of contributors as a percentage of the total number of affiliates of the system, shown in Table 4. This table indicates that in 7 of the 10 countries listed, less than half of affiliates have made regular contributions, while Costa Rica and Uruguay are the only 2 countries where approximately 2 out of 3 affiliates have made regular contributions. Furthermore, as Tables 3

and 4 indicate, significant portions of the labor force have not made regular contributions to their accounts.

In assessing coverage, it is important to consider whether pension system coverage has increased in the region because of the first round of reforms. It is instructive to compare coverage before and after the reform in each country, especially when considering that increasing coverage was one of the primary goals of pension reform (World Bank 1994). Such a comparison leads us to the following conclusion: With the exception of Bolivia, none of the countries increased coverage as a result of reform (Mesa-Lago 2004; AIOS 2006). In Bolivia, coverage before and after reform remains about the same, but is very limited. Overall, it appears that the changes in the system did not result in improved coverage.

In Argentina, coverage rates declined rapidly for the lowest-income workers after the 1994 pension reform. Rofman, Fajnzylber, and Herrera (2008) examined coverage by income quintile in Argentina and found that although coverage for both the lowest and highest quintiles was around 50 percent in 1992, by 2006 coverage had increased to over 60 percent for the highest-income quintile, but had decreased to less than 13 percent for the lowest quintile.

Labor Force in the Informal Sector

Pension coverage (in *any* pension system) is negatively correlated to the size of the informal sector. The larger the informal sector, the smaller the number of workers

Table 3.
Proportion of contributors as a percentage of labor force, June 2004 through June 2009

Country	2004	2005	2006	2007	2008	2009
Argentina	21.3	23.1	24.7	26.1	19.8	a
Bolivia	10.5	10.6	12.1	13.2	12.8	13.4
Chile	55.5	59.8	58.1	60.3	62.2	59.9
Colombia	13.5	11.8	12.7	15.7	17.3	18.4
Costa Rica	48.3	51.1	51.5	53.8	59.1	58.0
Dominican Republic	16.5	17.6	17.8	19.1	20.5	21.3
El Salvador	17.2	17.4	17.9	18.3	19.3	18.6
Mexico	29.0	30.8	31.2	32.0	31.7	29.6
Peru	11.5	11.2	11.6	12.9	13.6	13.3
Uruguay	23.6	25.6	27.5	29.1	32.0	34.2

SOURCE: AIOS (1999–2009).

NOTE: A contributor is defined as a person who has contributed in the last month in question. This definition does not apply to Mexico where a contributor is defined as a person who has contributed in the last 2 *months* in question. The difference is because Mexico follows a bi-monthly accounting procedure (see Sinha (2003)).

- a. Until the end of 2008, Argentina had a mixed system where all insured workers were in the first-pillar public PAYG system; for the second pillar, workers had a choice between contributing to an individual account or the PAYG defined benefit system. A 2008 law closed the second-pillar individual accounts and transferred all workers back to the PAYG system.

Table 4.
Proportion of contributors as a percentage of affiliates, June 2004 through June 2009

Country	2004	2005	2006	2007	2008	2009
Argentina	37.3	38.7	39.6	40.0	37.9	a
Bolivia	42.7	42.2	47.1	48.0	43.9	43.8
Chile	48.0	51.9	50.7	52.8	54.3	51.4
Colombia	49.5	39.3	40.0	43.3	44.9	44.9
Costa Rica	66.8	69.8	65.1	68.4	71.0	66.4
Dominican Republic	66.8	55.8	52.6	51.0	49.8	47.7
El Salvador	42.5	40.5	38.3	36.5	34.5	29.6
Mexico	38.9	38.5	37.4	37.9	37.1	34.1
Peru	40.0	37.7	37.5	40.3	41.4	40.1
Uruguay	56.1	59.4	61.6	63.3	65.1	64.5

SOURCE: AIOS (1999–2009).

NOTE: A contributor is defined as a person who has contributed in the last month in question. This definition does not apply to Mexico where a contributor is defined as a person who has contributed in the last 2 *months* in question. The difference is because Mexico follows a bi-monthly accounting procedure (see Sinha (2003)).

- a. Until the end of 2008, Argentina had a mixed system where all insured workers were in the first-pillar public PAYG system; for the second pillar, workers had a choice between contributing to an individual account or the PAYG defined benefit system. A 2008 law closed the second-pillar individual accounts and transferred all workers back to the PAYG system.

that contribute to and are covered by social security because this particular sector is rarely covered by social security. Even in the Organisation for Economic Co-operation and Development (OECD) countries, the relationship holds. What is more disturbing is the relationship between the social security contribution rate (as a percentage of wages) and the size of the informal sector.

Chart 1 plots the informality as a percentage of the labor force along with the regression line fitted to the data. It clearly demonstrates that informality is positively correlated with social security contributions as a percentage of the wages.

The counterpart to increasing coverage is decreasing the size of the informal sector in the economy. However, there has been very little research on whether a system of individual accounts reduces the size of the informal sector. Schmidt-Hebbel (1999) argued that the reason Chile was the only 1 of 13 Latin American countries without a steadily growing informal-sector share of the economy is that it has a growing fully funded pension system, suggesting that “pension reform may contribute significantly to employment formalization—as reflected in expanding pension system coverage—in countries where initial informality is large.” In other words, Schmidt-Hebbel suggested that a fully funded pension may lead to more formalization of the labor market based on the evidence of a higher formal labor market associated with the introduction of pension reform in Chile.¹⁰ However, Sinha (2000,

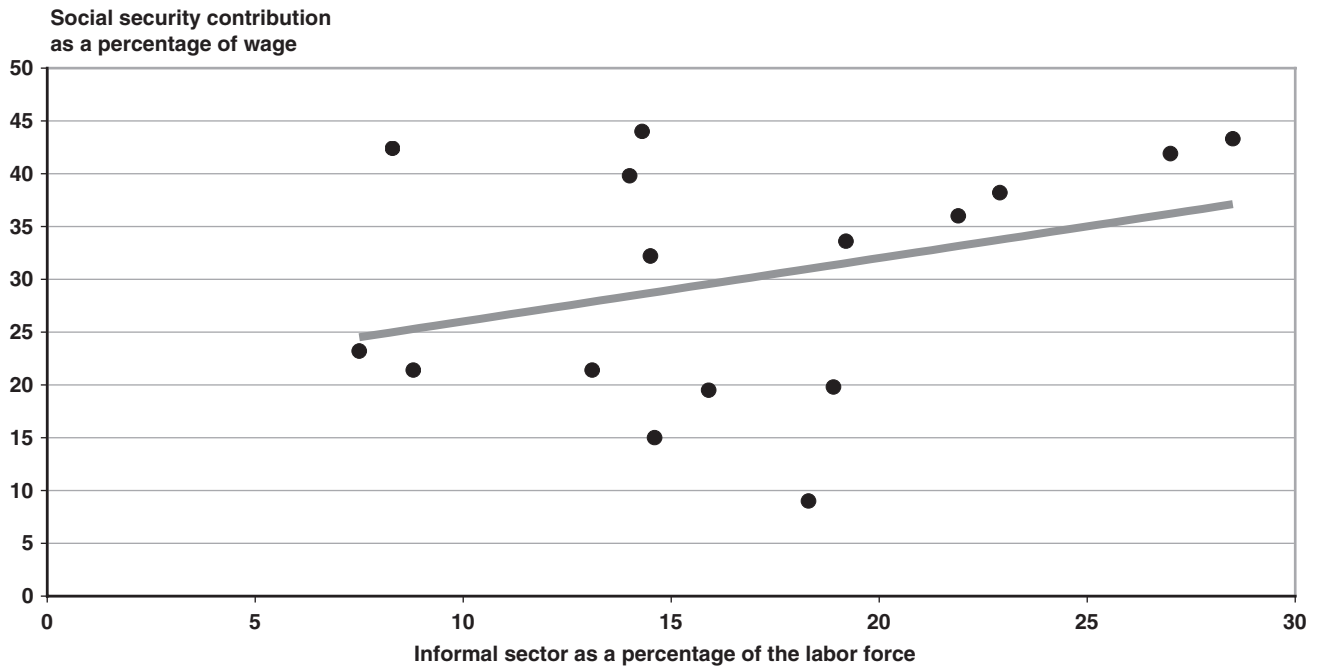
Figure 4.3) came to the opposite conclusion. From 1990 through 1995, the informal market grew in Chile and the formal market expanded in Colombia. During the same period, Chile strengthened its reformed system and Colombia only managed a partial reform in 1994.¹¹

More recently, Tokman (2008) presented a comparison of informal employment between 1990 and 2005 in 16 Latin American countries and found that the informal sector has grown. Using that data in Chart 2, we compare the informal sector in 2005 to that in 1990. The diagonal line represents what the results would have been had there been no change in the proportion of the informal sector in the labor market. The chart shows that there are three countries in which the size of the informal sector has shrunk during the 1990–2005 period: Argentina, Brazil, and Chile. The other countries (on the opposite side of the diagonal line) have seen their informal sectors increased, demonstrating that reformed pension systems have not systematically resulted in a reduced informal sector.

From a theoretical point of view, moving from a PAYG to a fully funded system is not equivalent to starting a fully funded system from scratch. Thus, there is no clear economic incentive for *all* workers in the informal sector to move to the formal sector. For example, moving to the formal sector may mean higher income tax (although not for all levels of income).

A theoretical model to measure such incentives was proposed by Orszag and others (1999) in a slightly different context. They found that despite claims that

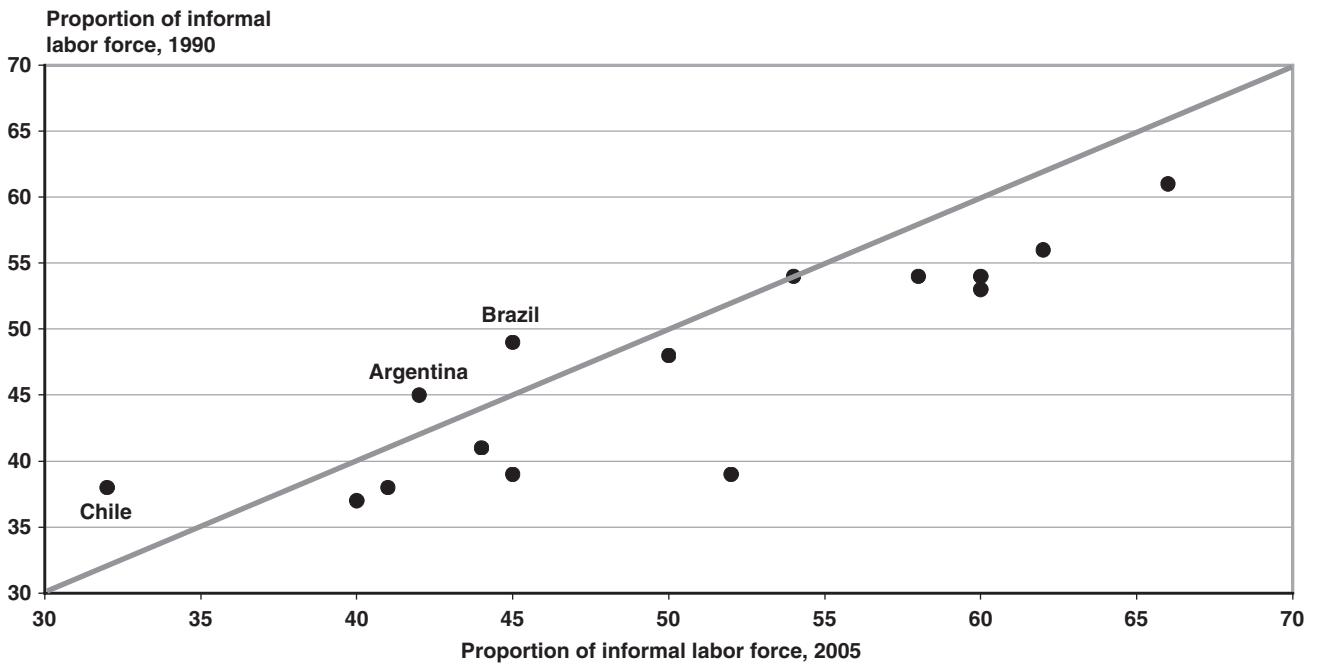
Chart 1.
The informal sector and social security contribution rates in OECD countries, 1996



SOURCE: Schneider (2002).

NOTE: OECD = Organisation for Economic Co-operation and Development.

Chart 2.
The informal labor force in Latin America: 1990 compared with 2005



SOURCE: Tokman (2008).

“individual accounts would improve labor market incentives relative to a defined benefit pension system ... the incentive effects of reforms can be complex and, in particular, that in a type of second-best scenario, moving only the pension system to individual accounts may not improve incentives.” In other words, a defined contribution system is no guarantee that rates of formal employment will improve, a phenomenon that is demonstrated by the empirical evidence cited earlier.¹²

Coverage of the Informal Sector

It is possible to provide pension coverage to workers in the informal sector, but it is very difficult to incorporate informal-sector workers into the pension system. Hu and Stewart (2009) suggested the following ways of doing so based on experiments conducted in countries with very large informal sectors (such as India, where 90 percent of the labor force work in the informal sector).

1. Offering old-age pension guarantees (provided in some countries, such as Bolivia and Chile).
2. Allowing flexible plans where workers can withdraw money in emergencies and contribute when they have seasonal work. (Pilot programs are underway in China.)
3. Targeting and giving incentives to those who save. This scheme could include tax incentives or matching contributions by the government, although there is no guarantee that such a scheme will be successful. (In Mexico, a pilot scheme was attempted, but it did not last because of lack of interest.)
4. Utilizing existing infrastructure from a broad range of sectors and financial-sector players: Microfinance institutions or rural banks have been mobilized in Bangladesh and the Philippines for this purpose.

Ribe, Walker, and Robalino (2010, 85) noted that the reality of Latin America with large informal sectors should be confronted directly by introducing social insurance programs (for example, pensions, health insurance, unemployment insurance) to the informal sectors as a matter of course with financial and institutional incentives. They argued that behavioral models suggest that moving from a minimum pension guarantee to matching contributions could increase contribution densities and reduce fiscal costs. Given limited international experience with such ex-ante subsidies, the authors called for governments to introduce pilot programs and suggested financial incentives and subcontracting the collection of contributions to aggregators to increase participation. However, a previous

experiment with such policies in Mexico suggests that implementation is quite challenging. A pilot plan to incorporate the marginal population in Mexico into a contributory pension program by offering a peso-for-peso subsidy failed primarily because most marginal workers were budget constrained and did not participate.¹³ That is, they could not afford to save anything on their own even with the incentive of a matching contribution from the government. Most of the workers in the informal sectors in Latin America are at the lower end of the income distribution, so these incentives would be problematic elsewhere as well.

Low Density of Contributions and Coverage

Contribution density refers to the proportion of months that a worker makes contributions compared with the maximum number of months the worker could have contributed. As noted in the Coverage section, a recurring problem in the region is that workers have low contribution densities; they do not contribute regularly to an individual account. Low density means that at retirement a worker may be eligible for a minimum or low benefit or may not qualify for any type of benefit at all. Chile, Colombia, Mexico, and Uruguay have conducted studies (based on surveys) on workers' contribution patterns in individual account systems, which has led to a series of projections on how density will affect pensions.

Of the workers surveyed in Chile, about half were affiliates of the individual account system. Of the affiliates, men contributed on average about 60 percent of the time and women about 40 percent. Workers in general contributed about 75 percent of the time that they were employed (Bravo and others 2008). Also about 30 percent of low-income workers contributed to social security, compared with about 70 percent of high-income workers (Chile, Presidential Advisory Council on Pension Reform 2006). The density achieved in Chile stands in sharp contrast with what was assumed when the system started: The assumption was that the average density of contribution would be 80 percent (Piñera 1992).

A 2006 study, conducted by several Superintendent of Pension Fund Management Company (the system's regulator) officials in Chile, estimated that—based on the proportion of AFP members who have contributed to an individual account—about 45 percent were expected to have a pension that is below the minimum pension, and most of that group would not have qualified for the lowest benefit level (Berstein, Larrain, and Pino 2006). In 2005, about 66 percent

of these workers had fewer than 10 years of contributions. The study predicted that without any changes, by 2025 about 85 percent of these workers would not have enough years of contributions for the guaranteed minimum pension.¹⁴

Valencia (2007) noted that the average contribution density for a Mexican worker is 51.5 percent, which would require almost 47 years of contributions to qualify for a minimum benefit. In other words, workers with up to a 60 percent density are unlikely to receive a minimum benefit. That means 58 percent of workers have such low densities that they would not be eligible for a retirement benefit. Only about 20 percent of workers (19 percent of men and 21 percent of women) would meet the actual requirements (24 years) for a retirement benefit because they regularly contribute to an account. In general, workers aged 45 to 60 have the highest densities, and those under age 30 have the lowest. But those in the two highest-income quintiles have higher rates for both men and women.

The findings in Uruguay were similar to other countries. Bucheli, Forteza, and Rossi (2008) used administrative data for 1996–2004 from the Banco de Prevision Social (which supervises and administers the country's main social security program) to simulate life-time contribution patterns among different groups of workers. According to their findings, close to 30 percent of workers contributed to an individual account 100 percent of the time, and more than 40 percent did not make contributions for at least half of the time. Workers in the poorest quintile contributed almost 38 percent of the time, while the richest quintile contributed 80 percent. However, unlike in Chile, the rates for men and women were very close: Men contributed 61 percent; and women, 58 percent. As a result, men working in the private sector in the poorest quintile would have a 1 percent chance of reaching the required number of years of contributions at age 65, compared with 64 percent for those in the richest quintile. For women, the figures are 4 percent and 56 percent, respectively.

In Colombia, a 2007 pilot survey found that about 46 percent of workers (42 percent men and 50 percent women) reported not paying contributions, and 20 percent of the labor force regularly contributed to social security. Similar to Chile and Uruguay, less-educated younger workers are more likely to be in the informal sector. But unlike in Chile, in Uruguay the percentage of men and women in the informal sector is about the same (Peracchi, Perotti, and Scarpetta 2007). In addition, most workers in Colombia have very low earnings: 60 percent of affiliates contribute on an income

that is equal to the legal monthly minimum wage, and 20 percent contribute on an income of between one and two times the monthly minimum wage (Tuesta 2009).

Measures to Extend Coverage

A few countries in the region have established measures to improve coverage and the level of benefits; indeed this has been a critical component of next-generation reform. Chile's reform is the most extensive. It added a new pillar, known as Sistema de Pensiones Solidarias (System of Solidarity Pensions) to the existing mandatory individual accounts system to expand coverage and provide a basic benefit to a larger percentage of the population. A noncontributory benefit will eventually cover 60 percent of the poorest individuals. In addition, a supplement is available to those who have made contributions to an individual account, but do not qualify for a minimum benefit.¹⁵ In Bolivia, a December 2010 pension reform law creates a solidarity benefit for those workers who do not qualify for a guaranteed minimum benefit (180 months of contributions) but have at least 10 years of contributions. A solidarity fund subsidizes these benefits (*La Razón* 2010). Other examples include Colombia's Periodic Economic Benefits program (Beneficios Económicos Periódicos, or BEP) for workers who have reached the normal retirement age, but do not qualify for a minimum benefit; Bolivia's universal Renta Dignidad benefit for everyone aged 65 or older; and Peru's special pension program for microenterprises (companies with 1 to 10 employees).

Coverage for the Self-Employed

Improving low coverage rates for self-employed workers is a significant policy challenge. Aguila, Attanasio, and Quintanilla (2010) found that the absence of compulsory contributions for the self-employed is a key explanatory factor for low overall coverage in Chile, Colombia, and Mexico. In most of the region, participation for the self-employed is voluntary.¹⁶ As a result, coverage is low and in many countries, about 1 in 10 self-employed affiliates contribute to an individual account (Auerbach, Genoni, and Pagés 2007).

In Chile, the self-employed represent about one-quarter of all workers, 60 percent of whom have been AFP affiliates. By 2007, close to 40 percent of self-employed affiliates actively contributed to an individual account (Bertranou and Vásquez 2007). Chile's recent reform gradually extends mandatory coverage to the self-employed. Beginning January 1, 2012, contributions by the self-employed will be

based on 40 percent of taxable earnings, increasing to 100 percent by January 1, 2014. Beginning January 1, 2015, all self-employed persons will be required to contribute 10 percent of their taxable earnings to an individual account (Gobierno de Chile 2008).

In sum, providing adequate coverage remains a challenge for the region's pension systems. Although some have argued that workers would be more motivated to contribute to individual accounts (presumably leading to higher rates of coverage) and given the fact that workers would see a direct link between contributions and pensions (Piñera 1992, 20), the evidence cited earlier suggests that coverage has not improved, especially given the low ratios of contributors to affiliates. Sizable informal sectors, low density of contributions, and low rates of compliance by the self-employed all present challenges to improving coverage.

Fees, Profitability, and Competition

Administrative fees for defined contribution plans in Latin America are generally perceived by industry observers to be high by international standards (see, for example, Christensen (2007)) and have been a major preoccupation of policymakers. High fees contribute to high profits for pension funds (compared with other industries) and reflect a pension funds market with low levels of competition. Policymakers in the region have pursued reforms aimed at increasing competition and lowering fees. This problem of high fees has been identified since the 1990s (Kritzer 1996; Shah 1997). As Queisser (1998) noted, "The financial condition of the private fund management companies has been disappointing despite the fact that workers have been paying high fees and commissions for the pension fund management services. Out of the total contribution rates, workers pay on average from 3 to 3.5 percent of wages for insurance coverage against the risks of disability and survivorship and for the services of the fund management companies. Depending

on the level of contribution rates, this amounts to between 20 and 30 percent of workers' contributions.¹⁷

Administrative Fees

Pension funds can charge fees on contributions, account balances, or returns. All three types of fees are permitted in the region's pension funds; in some countries, the funds may charge account holders more than one type of fee. In most of the region, the AFPs charge a fee on contributions as a percentage of a worker's income (flow), which is the case in Bolivia, Colombia, Chile,¹⁸ El Salvador, Peru, and Uruguay. By contrast, Mexico eliminated this fee in March 2008, and now pension funds are *only* allowed to charge a fee based on the account balance (not on the income flow or as a percentage of the rate of return that was permitted earlier). Bolivia, Costa Rica, and Uruguay also charge a fee on assets, and El Salvador has a fee on returns.¹⁹ In El Salvador, both employers and employees contribute to the individual account, but only the employer pays the administrative fee.

Most countries have set a ceiling on both administrative fees and contributions that is often a multiple of the legal minimum wage (or in the case of Chile, the ceiling is a multiple of the *unidad de fomento* (UF), a monetary unit adjusted daily to reflect changes in the consumer price index that is used in most financial contracts including pensions). Peru is the only country in the region that does not have a ceiling on either administrative fees or contribution rates; that means account holders must pay both administrative fees and contributions as a percentage of total gross earnings (SSA 2009).

Because of the wide range of fees charged, it is difficult to compare them across the region. Table 5 shows a history of average administrative fees as a percentage of earnings in five countries (Bolivia, Chile, El Salvador, Peru, Uruguay) in selected years from 1999 through 2008. Bolivia's rates are the lowest

Table 5.
Average administrative fees as a percentage of earnings from 1999 through 2008, by selected countries and years, December

Country	1999	2001	2003	2005	2007	2008
Bolivia	0.50	0.50	0.50	0.50	0.50	0.50
Chile	1.90	1.77	1.55	1.54	1.71	1.74
El Salvador	2.05	1.69	1.71	1.71	1.40	1.20
Peru	2.36	2.39	2.27	1.99	1.81	1.87
Uruguay	2.02	1.98	1.93	1.85	1.79	1.71

SOURCE: AIOS (1999–2009).

among the group and have remained exactly the same over the period because the two AFPs, which have monopoly rights in two separate regions, are required to keep their fees at a set level.²⁰ At the same time, the rates in the other countries have fluctuated, but still remain quite high. In June 2009, in all of these same countries except Bolivia, administrative fees represented between close to 12 and 18 percent of an individual's total contribution, a figure that remains high (see Table 6).

Peru, Chile, and Uruguay also used to charge a flat fee, which was proportionately larger for lower earners than higher earners. Peru eliminated this fee in 1997, although the other two countries abolished their flat fees about 10 years later. Also, until 1988, AFPs in Chile were permitted to charge a fee on the individual account balance. Bolivia, Costa Rica, Mexico, and Uruguay charge a fee on assets, and El Salvador has a fee on returns (Tapia and Yermo 2008).

Bolivia, Colombia, Costa Rica, and El Salvador have set statutory limits on fees. The limits for both Colombia and El Salvador apply to combined administrative fees and premiums for survivors and disability insurance (Tapia and Yermo 2008). There are no limits on the amount of fees in Chile, but all members of one AFP must be charged the same fees.

When account holders only pay a fee upon contributing to their account, in effect, the contributors are subsidizing the noncontributors from whom no fees are received. (Using this logic, a 2008 study calculated

that about 40 percent of all individual accounts in Chile were subsidized (Asociación AFP 2008a). This phenomenon does not occur in El Salvador, where noncontributors are charged a fee on inactive accounts (which could deplete the account value (Tapia and Yermo 2008)).

The average fee in each country at given points in time is shown in Tables 5 and 6. But those tables give an incomplete picture for each country. First, there is tremendous heterogeneity within each country that is not captured in the tables. Second, in each country, there are different types of fees, which can be on the flow or balance, and it is not easy to compare fees cross-nationally given such variation. Finally, some funds allow a "loyalty bonus"—the longer an affiliate stays with a fund, the less he or she pays. Corvera, Lartigue, and Madero (2006) and Impavido, Lasagabaster, and García-Huitrón (2010) provided a more complete picture of fees by taking into account all these factors, and their results are summarized in Tables 7 and 8. Table 7 projects fees—assuming an affiliate stays with a given fund for 25 years. For each country, this table gives the charges (as a percentage of the balance) for the fund, the fund that charges the lowest (minimum) and the highest (maximum) fees, a weighted average (proportional to the market share in capital) of each fund, and the variability (as measured by the standard deviation). Examining the minimum and the maximum values reveal that in the Dominican Republic, the least expensive value is 20 percent less than the most expensive, but the weighted average

Table 6.
Administrative fees and contributions in selected countries, June 2009

Country	Administrative fee as a percentage of earnings	Mandatory contribution as a percentage of earnings	Administrative fees as a percentage of total contributions
Bolivia	0.50	10.00	4.76
Chile	1.73	10.00	14.75
El Salvador	1.50	10.30	12.71
Mexico	^a 1.87	^b 8.50	18.03
Peru	1.87	10.00	15.75
Uruguay	1.63	12.17	11.81

SOURCE: AIOS (1999–2009).

- Calculated after converting all numbers as a percent of earnings.
- This figure includes the "social quota," which is set at 5.5 percent of the value of the minimum wage in Mexico City and applied to the average wage.

Table 7.
Equivalent fees: 25-year average as a percentage of fund balance

Country	Minimum	Maximum	Weighted average	Standard deviation
Argentina	1.20	1.45	1.35	0.09
Bolivia	0.53	0.53	0.53	0.00
Chile	0.98	1.21	1.07	0.08
Colombia	0.81	1.01	0.92	0.08
Costa Rica	0.75	1.10	1.02	0.16
Dominican Republic	0.81	1.01	1.01	0.09
El Salvador	0.86	0.86	0.86	0.00
Mexico	0.67	1.51	0.89	0.20
Peru	0.94	1.22	1.10	0.13
Uruguay	0.74	1.14	0.90	0.19

SOURCES: Corvera, Lartigue, and Madero (2006); and Impavido, Lasagabaster, and García-Huitrón (2010).

NOTE: Data up to 2007, projected 25 years.

Table 8.
Equivalent fees: 40-year average as a percentage of fund balance

Country	Minimum	Maximum	Weighted average	Standard deviation
Argentina	0.69	0.83	0.77	0.05
Bolivia	0.39	0.39	0.39	0.00
Chile	0.56	0.69	0.61	0.04
Colombia	0.46	0.58	0.53	0.04
Costa Rica	0.69	0.98	0.92	0.13
Dominican Republic	0.64	0.84	0.84	0.09
El Salvador	0.49	0.49	0.49	0.00
Mexico	0.46	0.88	0.62	0.12
Peru	0.54	0.70	0.63	0.07
Uruguay	0.42	0.65	0.51	0.11

SOURCES: Corvera, Lartigue, and Madero (2006); and Impavido, Lasagabaster, and García-Huitrón (2010).

NOTE: Data up to 2007, projected 40 years.

is close to the most expensive range, showing that affiliates have not flocked to the least expensive funds. Mexico and Uruguay show large variability. The average fee in Chile turns out to be higher than that of Mexico over the 25-year horizon.

When we examine the figures projected over 40 years, the panorama changes as Argentina,²¹ Costa Rica, and the Dominican Republic turn out to have the most expensive funds. Bolivia, Uruguay, Colombia, and El Salvador have the least expensive plans and exhibit low variability of fees across funds. Corvera, Lartigue, and Madero (2006) cited another important finding: Fees have largely stagnated over the years and are unlikely to decline in the medium term because of insufficient competition, especially in Bolivia and El Salvador with entrenched duopolies. Finally, in comparing fees more broadly, Impavido, Lasagabaster, and García-Huitrón (2010) noted that the fees of pension funds in Latin America (shown in Table 8)

have charges that are 50 and 100 basis-points higher than what large US occupational funds and mutual funds charge.

Other Fees: Premiums for Survivors and Disability Insurance

In addition to administrative fees, most AFPs also charge a percentage of earnings for survivors and disability insurance. For many years, each AFP would contract with an insurance company to provide separate insurance for these two contingencies. In some countries like Chile, the amount of the premiums has varied from one AFP to another, and the average premium among all AFPs has fluctuated over time. Table 9 shows average premiums for several countries in selected years. The rates in Bolivia and Mexico have remained the same since 2003, but are higher than the other countries. During the 1999–2008 period, the rates in Uruguay have steadily increased.²²

In Mexico, the premiums for survivors and disability insurance are two-to-three times higher than other countries in Table 9 (and have remained the same since the system’s inception in 1997) despite the fact that it has a younger population than both Uruguay and Chile.²³ This can be explained by the fact that unlike other countries, there is no competition, as disability insurance is still managed by the Instituto Mexicano del Seguro Social (IMSS)—the government agency that managed the PAYG system before 1997.²⁴ Although a private market for disability and survivors insurance was created under the 1997 law, the IMSS remains the main administrator and dispenser of such pensions in Mexico.²⁵ Sinha (2008) has shown how the private market for annuities in Mexico did expand rapidly from 1997 through 2001, only to shrink in the subsequent years. When the regulations for the new individual account system were implemented, the initial plan called for buying single premium annuities for widows and disabled workers under the new

Table 9.
Average survivors and disability insurance premiums as a percentage of earnings from 1999 through 2008, by selected countries and years, December

Country	1999	2001	2003	2005	2007	2008
Bolivia	2.00	1.71	1.71	1.71	1.71	1.71
Chile	0.65	0.67	0.71	0.76	0.73	0.94
El Salvador	1.13	1.29	1.28	1.28	1.30	1.50
Mexico	2.50	2.50	2.50	2.50	2.50	2.50
Peru	1.36	1.34	0.92	1.00	0.91	0.88
Uruguay	0.64	0.76	0.90	0.98	0.99	1.00

SOURCE: AIOS (1999–2009).

system. IMSS dominated the market because it was able to provide benefits more quickly than private companies. This change meant that almost all of the eligible affiliates opted for the IMSS option, which led to an exit of annuity companies from the market and a subsequent collapse of the private market (see Pérez and Sinha 2008).²⁶

Until 2009 in Chile, each AFP contracted with a separate insurance company to provide survivors and disability insurance for its members through a periodic public bidding process. Reyes (2010) found that a typical contract did not encourage competition for prices and that in most cases, the insurance company that won the bid belonged to the same conglomerate as the AFP. Also, AFPs often used a number of measures to control insurance costs, which include the following:

- Monitoring the application process. While this would discourage fraud, AFPs could also prevent a claim from being processed or recommend another product that the AFP provides such as an early retirement pension.
- Passing increases in insurance costs on to its affiliates instead of absorbing the increase.
- “Cream-skimming” or selecting lower-risk, lower-cost members such as high-income and younger workers.

According to an AFP Association report (Asociación AFP 2008b), the design of the insurance contracts permitted certain groups to subsidize others. For example, the premiums for men and women were the same even though women generally have lower risks than men.

The 2008 Chilean pension reform changed the way premiums are set in order to lower the cost. Since 2009, all AFPs must conduct one joint annual bidding process to establish uniform premiums for all affiliates of every AFP. At the same time, coverage for these programs was expanded to include the following:

- Women up to age 65, provided they continue working. Until 2009, women were covered only up to age 60, the normal retirement age for women.
- Widowers and students up to age 24. Previously, only disabled widowers and students up to age 18 were eligible for a benefit (SSA 2006–2010).

The premiums have been divided into seven categories for men and four for women, which permit multiple companies to participate. To date, two annual competitions have been held, and the rates have gone

down by 20 percent on average between the first and second years (Asociación AFP 2010; Reyes 2010).

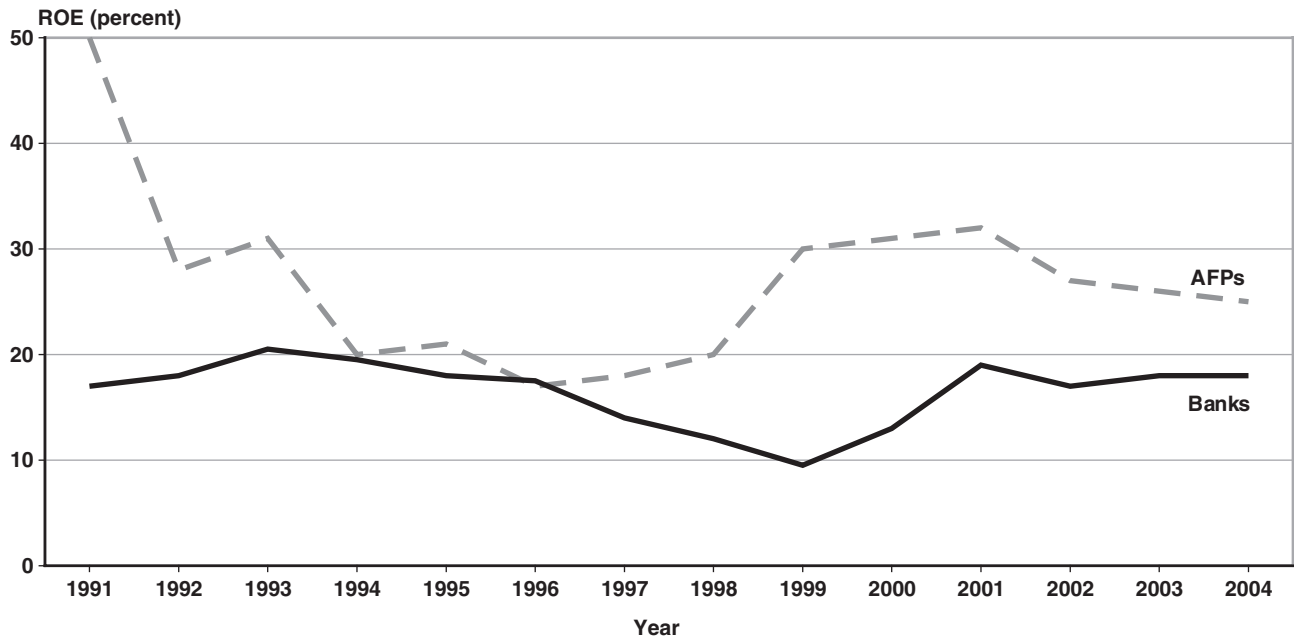
Profitability

Economists have long argued that without barriers to entry, firms in competitive markets will earn “normal” profits. That does not preclude some firms from earning above normal profits in the short run if they innovate; however, the only way that a firm would be able to generate above-normal profits in the long run is to have monopoly power.²⁷ In this section, we examine the profitability of pension funds in Chile, Mexico, and Peru. In all three countries we observe that over more than a decade, these pension funds have shown persistently higher profitability than comparable industries. We compare returns on equity in the pension fund industry with comparable financial-sector industries and find that pension funds are three times more profitable than other sectors. These pension funds earn profits that are consistently well above what might be expected in a competitive marketplace. This observation suggests that pension fund markets lack competitive pressure. As noted later in the section, recent reforms in the region have sought to increase competition.

Return on Equity (ROE) gives us a measure of the profitability in an industry. A comparison of the ROE in two distinct but related industries is instructive. In Chart 3, we examine the ROE for the AFPs and the banks in Chile from 1991 through 2004. The chart shows that the ROE for the AFPs are consistently higher than the ROE for banks over the entire period, and at times, by a substantial margin. This gives us a reason to suspect that AFPs might be earning supra-normal profits.

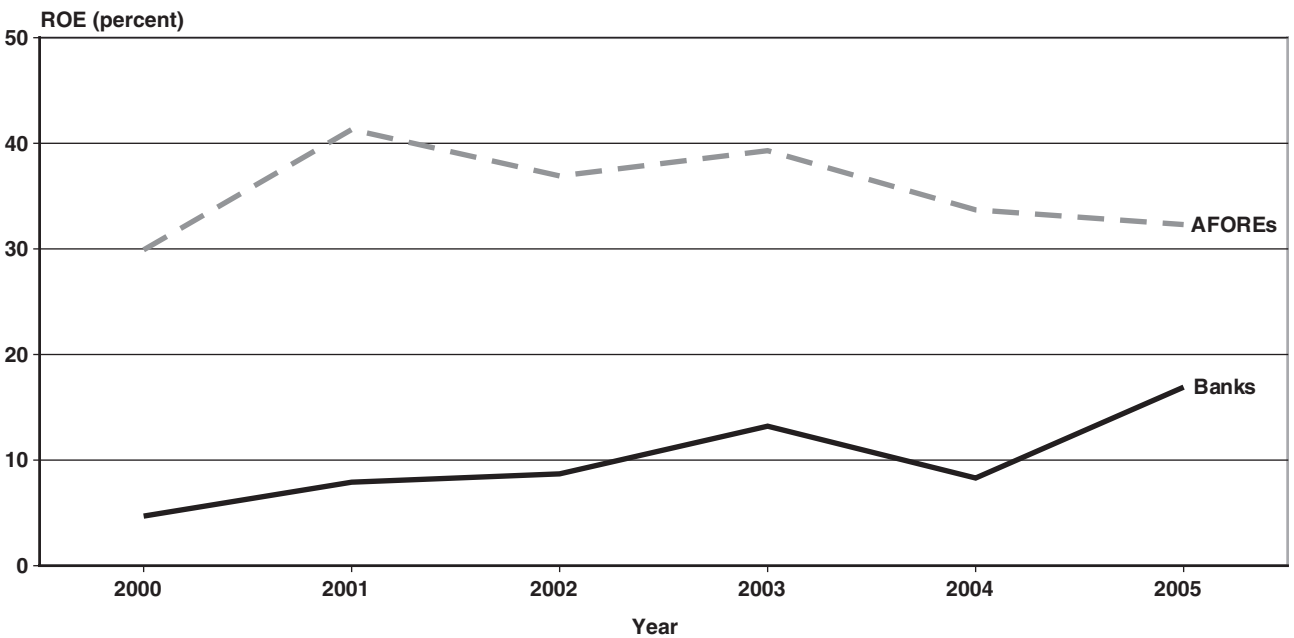
In Mexico, regulators noted with alarm the high ROE of the pension funds industry. The Federal Commission for Competition (Comisión Federal de Competencia 2006) reported to the Senate in 2006, “The AFOREs have earned extraordinary profits that are difficult to attribute to their competitiveness or to the value generated for the workers. For example, during the 2000–2005 period, the largest six AFOREs generated a return on equity (ROE) of 35.6 percent. This rate of return is high by any standards—especially if one considers that it did not come with an accompanying value generated for the workers. As a reference, this ROE is 3.6 times higher than the banking operations undertaken by the same financial groups to which these AFOREs belong” [authors’ translation]. Around the same time, Levy (2006, 2008) presented data demonstrating the same phenomenon (see Chart 4).

Chart 3.
Chile's return on equity for AFPs and banks, 1991–2004



SOURCE: Chile, Presidential Advisory Council on Pension Reform (2006).

Chart 4.
Mexico's return on equity for AFOREs and banks, 2000–2005



SOURCES: Levy (2006, 2008).

NOTE: Includes data from Afore Banamex, Bancomer, Banorte, Inbursa, ING, and Santander, which jointly account for 70 percent of all invested funds.

In Peru, there is an even more pronounced gap between ROE for pension funds versus banking and other financial service industries, as Table 10 illustrates. Return on equity averaged 61.7 percent from 2001 through 2005 in the pension sector, compared with 11.9 percent in banking and 14.3 percent in insurance.

In sum, we find the AFPs in Chile to be almost twice as profitable as banks from 1990 through 2004; in Mexico, the AFOREs were more than three and a half times more profitable during the 2000–2005 period; and in Peru, the AFPs were more than four and a half times as profitable from 1996 through 2005. All of this is evidence that these markets are not as competitive as similar financial industry markets.

Competition

The higher profitability of pension funds compared with other financial services can be explained by limited competition. First, given minimum capital requirements and high fixed costs, there are economies of scale in the pension industry. There is a clear first-mover advantage for the firms that entered the market when the system began. They had the chance to enroll affiliates at once when formal-sector workers were forced to select a pension fund management company. In some countries (like Mexico), those workers who did not make a choice were assigned to one. The only way for an AFP to acquire new affiliates afterward was to persuade affiliates to switch from one AFP to

another or get new entrants to the job market (formal) to sign up for their company. However, it is extremely costly to get an affiliate to change companies, and AFPs are left competing for new entrants to the workforce—a majority of whom are in the informal sector. (Of those that enter the workforce, many decline to choose a pension fund and are assigned one.)

Chile’s pension reform commission (known as “The Marcel Commission”) listed several reasons why competition in the pension fund market was weak (Chile, Presidential Advisory Council on Pension Reform 2006). It argued that because most workers do not compare administrative fees before choosing an AFP, firms have less of an incentive to compete by lowering fees. Rather, AFPs often used gifts and other inducements to lure new members. Also, AFPs are required to charge all of their members the same fees, giving them an incentive to target higher-income earners, from whom profit margins are higher. As described earlier, barriers to entry make it hard for new firms to enter the market; and banks, which could be expected to be strong competitors in the AFP market, are specifically prohibited from setting up AFPs.

It is important to develop a measurement of competition. Bikker and Spierdijk (2009) have put forth a set of criteria that marks the level of competition in the financial markets. They list important factors that impede competition, with the primary impediment being the number of firms available. The number of funds in a pension market is dictated by the size of the market, although any variation in the number of funds *within* a given market is endogenous to the market. Thus, one simple way of measuring competitive pressure in a market is to examine the relationship between the number of funds operating in a market against the profitability of the funds in that market. Absolute profitability of the pension funds is influenced by the general economic conditions. Thus, it is necessary to have a benchmark against which the profitability needs to be measured in order to evaluate “excess profit” that the pension funds are earning. One benchmark to measure “excess” profitability of the pension fund market would be a measure of the *difference* in profitability between pension funds and banks.

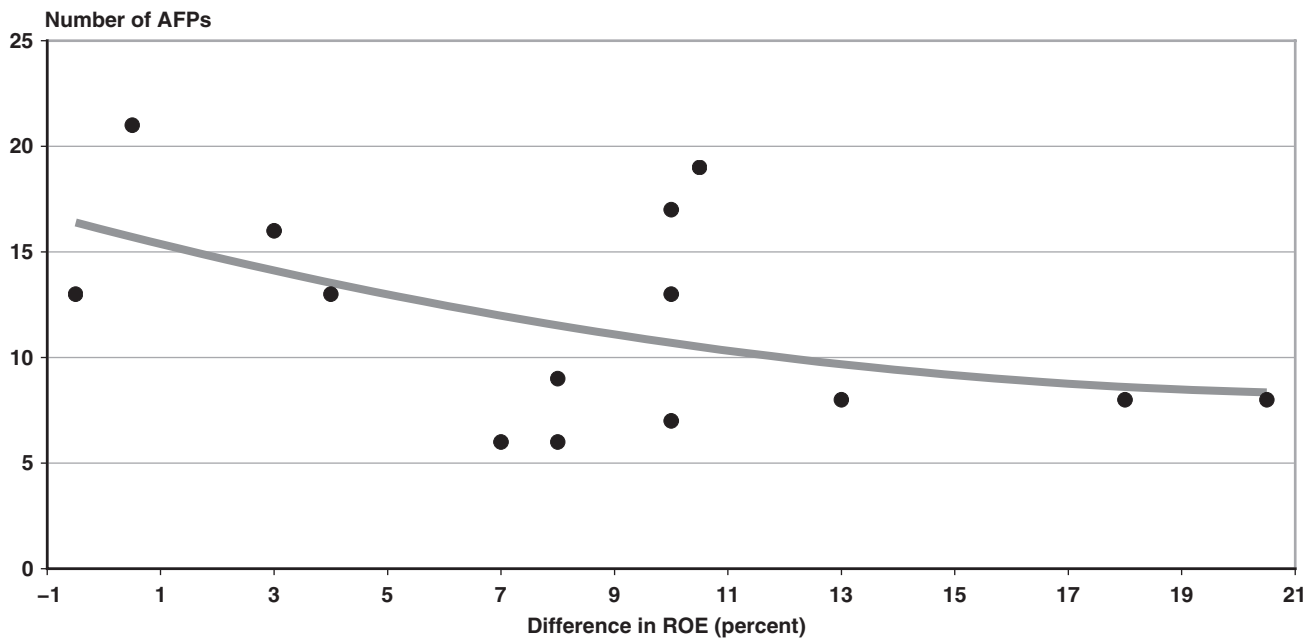
In Chart 5, we show the results of this exercise. In the years when there were more pension fund firms in the market, the excess profit of the industry was lower. This is a crude measure because it does not take into account the lagged effects of entry of funds (that is, the impact of the entry of a fund in a given year on the excess returns of the following years). If the

Table 10.
Return on equity in different industries in Peru,
by selected time periods, 1996–2005

Industry	Return on equity		
	1996–2000	2001–2005	1996–2005
Pension	21.8	61.7	46.7
Banking	9.7	11.9	10.9
Financial services	14.2	11.5	13.0
Insurance	7.4	14.3	12.5
Ocean transport	18.3	30.3	25.3
Marketing	23.1	25.3	24.2
Oil and mining	13.2	27.5	22.0
Confectionary	19.6	14.1	15.6
Refineries	13.2	14.5	14.0
Informatics	9.5	18.8	13.1
Construction	11.5	13.6	12.6
Media	15.1	10.2	12.1
Others	8.0	13.7	11.5
General commerce	7.4	12.4	10.8
Surface transport	9.8	10.4	10.0

SOURCE: Gerens Escuela de Gestión y Economía (2007).

Chart 5.
Profit differential and number of AFPs in Chile, 1992–2004



SOURCE: Authors' calculations using data from the Chilean Superintendent of Pensions.

relationship holds, then it suggests that a small number of companies operating in the system would lead to excess profits in the industry.

Mexico and Chile have tried various experiments to encourage pension funds to reduce their fees or increase their net rate of return for the affiliates (net of fees). Before the 1997 reform, Mexico tried to promote competition by a relatively liberal policy for issuing licenses (compared with banking licenses). Although 42 companies expressed interest, less than half of them actually entered the field when AFOREs were allowed to operate. The second experiment came with the assignment of affiliates who had not chosen any AFORE. The initial take-up rate by the formal-sector workers in Mexico in the first 3 years was much higher than that of Chile. (Perhaps this was the result of Mexican workers having previous experience with private individual accounts from the 1992 Sistema de Ahorro para el Retiro (SAR) reform, which required formal-sector workers to contribute 2 percent of wages to retirement accounts.) Approximately 10 million people opened 65 million accounts. There was a lack of cross validation on the part of the employers, and many people ended up with multiple accounts. However, 6 million people were still in the consolidated account of the Central Bank of Mexico (cuenta concentradora).²⁸ The Comisión Nacional del

Sistema de Ahorro para el Retiro (CONSAR) devised a formula for distributing these accounts to the 25 percent of AFOREs with the lowest administrative fees. In June 2001, these accounts were handed over to the AFOREs using this formula. Ever since then, the CONSAR has followed the same procedure for assigning AFOREs to workers who do not choose one. By the end of 2007, the CONSAR had assigned over 17 million affiliates to AFOREs.

Although unexpected, this process provided an incentive for some AFOREs to enter the market with the sole strategy of getting workers' accounts assigned to them. These AFOREs did not invest in marketing or promotion, nor did they seek to provide any service to any affiliate. Their business model depended on collecting fees from the assigned accounts. AFORE de la Gente obtained 99 percent of its affiliates from direct assignment from the CONSAR, while Ahorra Ahora had virtually 100 percent of its affiliates assigned by the CONSAR. The CONSAR considered this practice to be against the spirit of operating an AFORE and forced these pension funds into mergers in 2009 (CNN Expansión 2009).

In the first decade of its existence, the CONSAR has stayed away from explicitly criticizing the AFOREs for their lack of competition or for charging "too much." However, since 2008, the CONSAR

has been taking an increasingly activist stance with respect to fees. In 2008 alone, the Board of Governors of CONSAR issued a bulletin, where it took six AFOREs to task by declaring that their management fees were “way above average” (CONSAR 2008). In order to promote more competition, the CONSAR has also changed the way information is presented in the quarterly statement (mandatory) sent out to the affiliates to more clearly state investment returns and fees (described later in the Financial Literacy section).

Along with contributing to pension funds, Mexican workers in the formal sector also contribute 5 percent of their base salary to a housing fund. In April 2010, this housing fund, managed by Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT), proposed starting its own AFORE and charging an administrative fee of 0.52 percent of the fund balance (Sinha 2010). This proposal is controversial as it is not clear if INFONAVIT can legally be permitted to operate a pension fund because it may contravene its charter, managing funding for housing. Because INFONAVIT already manages nearly 30 percent of national long-term mandatory saving (the AFOREs manage the rest), the proposal will certainly create a concern for CONSAR about monopoly power. Moreover, because INFONAVIT is owned by the federal government, the government may not want to expand its role in the pension market after earlier efforts to privatize it. (As of December 20, 2010, no decision has been made on this matter.)

Lack of competition among the AFPs has also been a problem in Chile. The number of AFPs operating in Chile fell from 22 in the mid-1990s to 5 in 2008. In March, 2010, three of those five firms had 87 percent of the pension fund affiliates (Chile, SP 2010e). As part of its 2008 pension reform, Chile sought to lower fees and induce competition by assigning the cohort of 350,000 annual new entrants to the labor force to the AFP with the lowest administrative fee. The bidding process is held every 24 months, and the AFP selected must maintain the lowest fee among all AFPs for 2 years, with all of its account holders being charged the same fee. New workers must remain with their assigned AFP for 2 years unless: (1) another AFP offers a lower fee for at least 2 consecutive months; (2) another AFP provides a higher rate of return sufficient to make up for a higher administrative fee; or (3) the assigned AFP does not maintain the required minimum rate of return, is declared insolvent, or must liquidate its assets. Workers already in the system may switch to the AFP with the winning low bid.

This provision was implemented in March 2010. The first company to win the competition had a bid of 1.14 percent of an account holder’s income, which is 24 percent lower than the average fee of 1.51 percent charged by the five current AFPs. The other AFPs that participated in the competition also offered fees below the current average (SSA 2006–2010). On August 1, 2010, Modelo, whose owners also control the information technology services firm Sonda, became the first AFP to enter the market in 15 years.²⁹

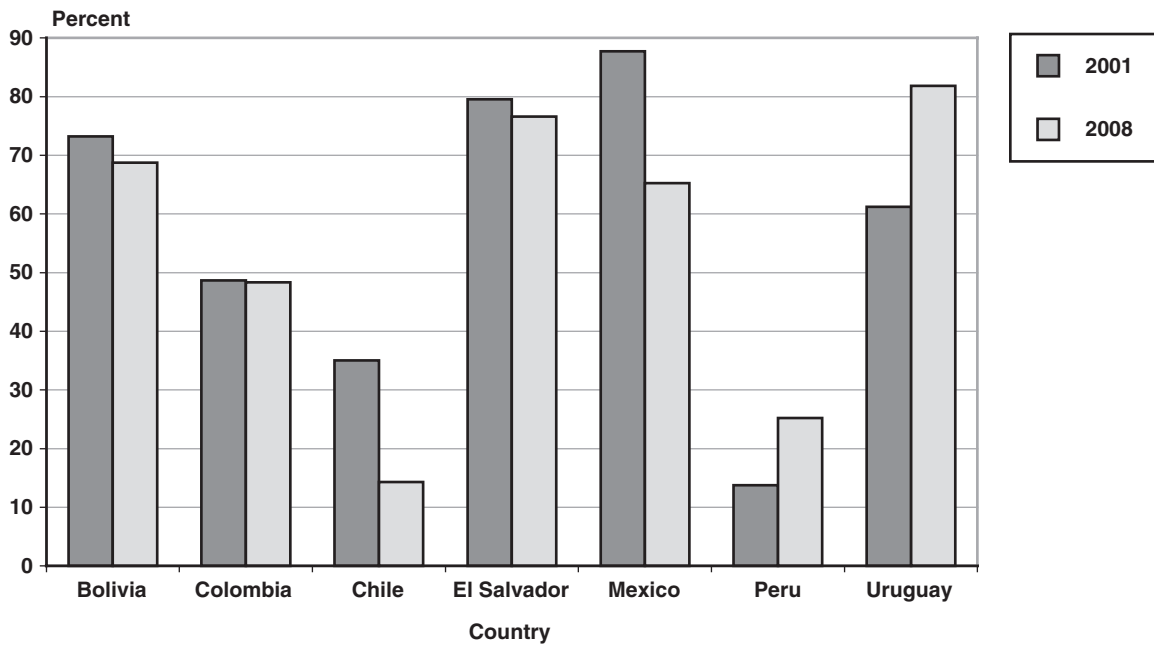
In sum, to achieve the efficiencies that its planners envisioned, pension fund markets must be competitive. As described earlier, the region’s pension markets are often oligopolies, charging fees and earning profits that are in excess of what one would expect in a competitive market. Improving competition is critical for reducing fees and costs and improving efficiencies, and recent reforms in Chile and Mexico will be closely watched to see how well they address these policy challenges.

Investment Diversification

A diversified investment portfolio is fundamental to managing investment risk. When the defined contribution systems in the region were first established, investment tended to be concentrated in state-issued bonds, and as Chart 6 shows, that is still the case in many countries. Because investment-grade instruments remain in short supply in emerging capital markets, there is little alternative to investing in government bonds (Uthoff 1997). During the 1990s, firms with investment-grade status found it cheaper to borrow from banks, both at home and abroad, than to turn to the capital markets, while small and medium-sized firms typically did not meet investment-grade requirements. In other words, those firms that could access capital markets did not want to, and those firms seeking such investments did not qualify as investment grade. Consequently, government-issued securities remained the investment of choice for pension funds in most countries (Kay 2009).

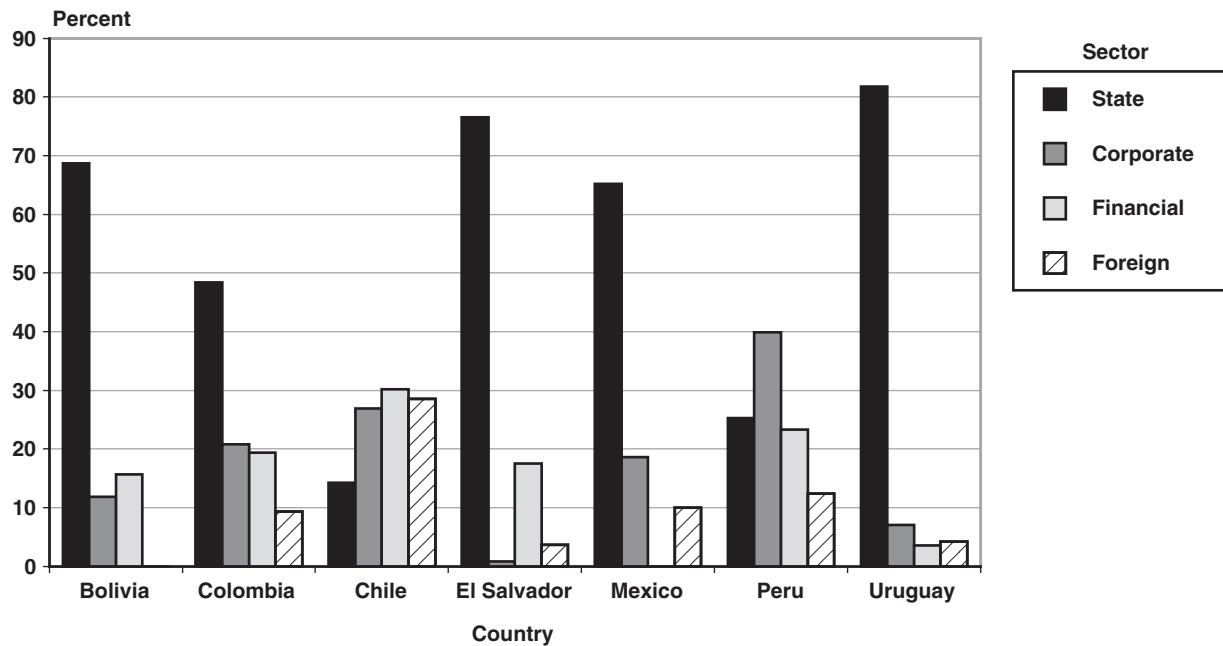
Concentration in government bonds does carry investment risk given that governments can default on their obligations, as Argentina did in 2002 when 80 percent of pension fund investment was in government bonds. Some countries, like Mexico, have encouraged pension funds to diversify away from government bonds (see Chart 7), leading to reduced concentration in government bonds. Nevertheless, in Bolivia, El Salvador, Mexico, and Uruguay, investment in government bonds is well over 50 percent.

Chart 6.
Investment in government securities as a percentage of total pension fund investment, 2001 and 2008



SOURCE: FIAP (2010).

Chart 7.
Pension fund investment, by investment sector, 2009



SOURCE: FIAP (2010).

Foreign investment offers another opportunity to diversify investments and reduce country and currency risk. It has generally been the case that, in part for political reasons, foreign investment is restricted or not permitted during the early years of individual account systems, but is then later permitted as the systems mature. For example, as Chart 7 demonstrates, Colombia and Mexico now have about 10 percent of invested funds in foreign securities, while Peru has 12.5 percent—up from virtually zero in 2001. Meanwhile in Chile, pension fund foreign investment has risen from 5.7 percent in 2001 to 28.5 percent in 2009. (The 2008 pension reform permits up to 80 percent of assets to be invested abroad.)³⁰

Multifunds

Over time, some countries have broadened the rules for pension fund investments. As the country with the oldest system of mandatory individual accounts, Chile was the first to increase the type and number of funds available to an individual account holder. In March 2000, Chile introduced a second fund that invested in fixed instruments for workers within 10 years of retirement.³¹ Then in 2002, the number of allowable funds was expanded to five in Chile's new multifund system. Since then, both Peru and Mexico have also set up multifunds, and Colombia introduced them at the beginning of 2011.³²

Chile. In the early stages of the Chilean individual account system, investments were restricted to government bonds, mortgage bonds, bonds of financial institutions, and a very limited amount of corporate bonds; investment in foreign securities was not permitted. As the system matured and became better established, Chile gradually liberalized investment rules, and restrictions on investments in foreign securities have gradually been eased.

For the first 20 years of Chile's program, individuals did not have meaningful investment choices among the AFPs, which could only invest in limited asset classes and had to meet minimum profitability rules. Both requirements effectively forced all AFPs to adopt nearly identical investment strategies, commonly referred to as a "herd effect." As a result, AFPs had to set their investment policy for the short term, thus eliminating any longer-term and potentially more profitable strategies. Furthermore, AFPs were only allowed to offer one type of investment fund, providing no choice for workers in terms of investment time horizons and risk tolerance (Kritzer 2003).

In January 2001, Chile introduced a second type of fund, which is now known as Fund E. Soon after that, in August 2002, Chile's multifund law changed the rules to allow more choice and expand the minimum and maximum rates-of-return requirement. Under the law each AFP must offer four different types of funds—called Funds B, C, D, and E—with varying degrees of risk. AFPs also offer Fund A, with up to 80 percent of its assets in equities. The 2002 law permits account holders to allocate their contributions between two different funds within one AFP. A voluntary savings account can be in a different AFP than the mandatory account. The funds differ in the amount or maximum percentage that they may invest in variable-rate instruments (such as equities) and fixed income (such as bank deposits, mortgages, or government paper that offer a low level of risk or variability) as shown in Table 11. The limit on foreign investment, which applies to all of the funds in a particular AFP, is calculated as the percentage of foreign investment within an AFP's investment portfolio. Each AFP must maintain a minimum and maximum rate of return for each type of fund over the previous 36 months. The rates are calculated separately for each type of fund. The government also guarantees account holders a minimum rate of return (Kritzer 2003). Most affiliates—workers who have enrolled with an AFP and have an individual account—can select any of the

Table 11.
Characteristics of multifunds in Chile

Fund	Limits on investment in equities (percent) ^a		Default age designation (years) ^b	
	Minimum	Maximum	Men	Women
A	40	80	c	c
B	25	60	Up to 35	Up to 35
C ^d	15	40	36 to 55	36 to 50
D	5	20	56 or older	51 or older
E	e	e	f	f

SOURCES: FIAP (2007) and Chile, SP (2010b).

- a. Applies to mandatory accounts only.
- b. For members who do not choose a fund or do not actively contribute to their mandatory retirement account.
- c. Since August 2010, affiliates up to age 30 may sign a contract with an AFP to automatically enroll in Fund A.
- d. Through 2002, Fund C was the only investment fund.
- e. Mainly fixed instruments.
- f. Since August 2010, male affiliates aged 61 or older and female affiliates aged 56 or older can sign a contract with an AFP to automatically enroll in Fund E.

five funds throughout their working lives. Affiliates who do not choose a fund are automatically placed in one according to their age. Those who have not been actively contributing to their accounts and who reach the next age bracket without choosing a fund are automatically enrolled in the fund corresponding to their age bracket. Their assets are transferred gradually—20 percent per year—from one fund to the next (Kritzer 2003). As of December 2009, 69 percent of account holders in Chile had been assigned to a fund according to their age, about 25 percent of account holders chose the higher-risk Funds A and B (split evenly among the two funds), and about 8 percent opted for Fund C (Asociación AFP 2009). Beginning in August 2010, account holders were given another option; they can sign a contract with an AFP to automatically enroll them in a fund according to their age. This contract permits affiliates up to age 30 to be automatically enrolled in the highest-risk Fund A and workers aged 61 or older (men) and 56 or older (women) in the most conservative Fund E (Chile, SP 2010a).

Mexico. When Mexico introduced the system of AFOREs in 1997, affiliates had no choice of funds, and investments were limited to almost all government bonds. Over time, highly rated corporate bonds were permitted, but most AFOREs did not pick them because there were not enough of those bonds in the market until 2002. Soon afterwards, each AFORE was allowed to offer affiliates a choice between two subfunds. One of the riskier funds would invest in structured notes (notas estructuradas)—futures contracts, where the funds would have zero probability of losing the nominal value of the principal. The riskier fund would limit its risk on the return, but protect the principal by the use of the structured notes.

More options were introduced in 2008: SIEFORE Básica 1 through SIEFORE Básica 5, with varying degrees of risk (Table 12). Each affiliate is allowed to choose exactly one fund, with restrictions according to age. An affiliate aged 26 or younger can choose any one of the five funds, whereas an affiliate aged 56 or older can only pick SIEFORE Básica 1, which is invested in fixed instruments. There is no distinction in age for men and women. The idea is that as a worker ages, he or she will be transferred into funds with fewer risks. Many mutual funds in the United States offer these kinds of “life-cycle funds.” Account holders are limited to one fund for both their mandatory and voluntary contributions. The types of investments and levels of risk are much more limited in Mexico than in Chile. In Mexico, the medium-risk

Table 12.
Characteristics of multifunds in Mexico

SIEFORE Básica (fund)	Limits on investment in equities (percent)	Age designation (years) ^a
1	b	56 or older
2	15	46–55
3	20	37–45
4	25	27–36
5	30	Up to age 26

SOURCE: FIAP (2007).

NOTE: SIEFORE Básica (Sociedad de Inversión Especializada de Fondos para el Retiro) = basic pension fund in Mexico.

- Members may choose to transfer their accounts to a fund type for an older worker in another AFORE. There is no restriction on transferring from one fund to another within the same AFORE.
- An affiliate aged 56 or older can only pick SIEFORE Básica 1 (the original fund when there was only one), which is invested in fixed investments.

fund permits a maximum of 20 percent of investment in equities, compared with 40 percent in Chile; and for the highest-risk fund the ceiling is 30 percent, compared with 80 percent in Chile. Each fund has a maximum limit with respect to type of security, but no minimum. Also, the age restrictions are different in Mexico than in Chile, and the retirement age is 65 for both men and women. The SIEFORES have no required minimum rate of return, and the government does not provide any guarantees.

Peru. Multifunds introduced in Peru in December 2005 consist of three types of funds: Fund 1, preservation of capital; Fund 2, balanced; and Fund 3, growth. Workers up to age 60 may choose any fund they wish, but those who do not make a choice are assigned a fund according to their age: up to age 60, Fund 2; and older than age 60, Fund 1. A proposal to add Fund 4, with only fixed investments, was under discussion in Congress in 2010. Of the 4.3 million Peruvian account holders, only 10 percent had chosen a fund in 2008.

Just as in Mexico, in Peru each fund has a maximum limit on the type of allowable investments, but no minimum (Table 13). A worker may choose one fund for the mandatory contribution and may set up a second account with another AFP for any voluntary contributions. In 2005, the government replaced the guaranteed minimum rate of return with a new system based on benchmarks set up by the AFPs for each type of fund. If an AFP’s rate of return falls below the benchmark

Table 13.
Characteristics of multifunds in Peru: Ceiling on investments (in percent)

Fund	Fixed instruments	Variable instruments
1	100	10
2 ^a	75	45
3	70	80

SOURCES: FIAP (2007), Bernal and others (2008), and SSA (2006–2010).

a. The original fund when there was only one.

for any of its funds, it must make up the difference with its own resources. Also, just like in Mexico, there is no government guarantee (FIAP 2007).

Colombia. AFPs in Colombia are required to offer three types of funds with varying degrees of risk: conservative, moderate, and high risk. Since January 2011, account holders can choose one of the three types of funds for their contributions. But those who do not make a choice are automatically assigned to the moderate fund. Account holders can change from one type of fund to another every 6 months. In addition, according to the “rule of convergence,” a certain percentage of an older worker’s individual account must be invested in the conservative fund, based on age and sex, ranging from a minimum of 20 percent for women aged 52 and men aged 57, to 100 percent for women aged 56 or older and men aged 61 or older (SSA 2006–2010), as shown in Table 14.

Unlike in Mexico where account holders have age restrictions whether or not they choose a fund type. Colombians who make a choice will not be limited and the default is the moderate fund regardless of age; the only requirement begins 3 years before the normal retirement age when at least 20 percent of an account must be held in the conservative fund. Also, in both

Table 14.
Required percentage in conservative fund in Colombia, by sex and age

Required minimum percentage	Accounts	
	Women	Men
20	52	57
40	53	58
60	54	59
80	55	60
100	56 or older	61 or older

SOURCE: Colombia (2010).

Chile and Peru, there is a default fund that depends on age for those workers who do not choose a fund.

Multifund participation rates and performance. In comparing the distribution of affiliates in Chile and Peru with respect to fund type, 90 percent of Peruvians are in the intermediate fund, which is the default fund (Arthur 2009). In Chile, 37 percent of affiliates are in the intermediate C fund, with 54 percent of affiliates in the two funds on the riskier end of the spectrum (Asociación AFP 2010); see Table 15. This outcome is no doubt the result of the varying default options. As described earlier, in Chile there are three default options according to age (Funds B, C, and D), while in Peru, the intermediate fund is the default option for all workers up to age 60.

In Chile, 61 percent of the multifund accounts were assigned as a default option, while the remaining accounts were the result of workers’ choices (workers have the option of contributing to two accounts in Chile). Of the 39 percent of accounts that were actively chosen by workers, 72 percent of the selections were the higher-risk A and B funds (Asociación AFP 2010); see Table 16 for the actual figures.

Table 15.
Distribution of Chilean and Peruvian affiliates, by type of fund, December 2008 (in percent)

Type of fund	Chile	Peru
Most conservative	2	3
Conservative	8	...
Intermediate	37	90
Risky	40	...
Riskiest	14	7

SOURCE: Arthur (2009).

NOTE: ... = not applicable.

Table 16.
Default versus actively chosen accounts in Chile, February 2010

Fund	Accounts		Total
	Assigned	Chosen	
A	--	1,384,737	1,384,737
B	2,353,549	1,344,620	3,698,169
C	2,789,179	797,421	3,586,600
D	730,440	140,310	870,750
E	--	118,095	118,095
Total	5,873,168	3,785,183	9,658,351

SOURCE: Asociación AFP (2010).

NOTE: -- = data not available.

The returns of the multifunds in Chile since 2003 are listed in Table 17. Although Fund A fell the most (40.3 percent) in 2008 in the wake of the financial crisis, it increased in value at the highest rate among the other types of funds in 2009, returning 43.5 percent. Since their inception, higher returns are correlated with the higher-risk funds.

In sum, investment diversification remains a challenge in the region, where capital markets are still emerging, and many countries continue to have a majority of investment in government paper. Increasingly, countries are diversifying into foreign investment, as a hedge against country and currency risk. Starting with Chile's introduction of multifunds in 2001, several countries have provided workers with investment options that vary with respect to risk, which offers the potential for a better match between workers' life cycles and risk profiles.

Gender Equity

The differential impact of gender on pension benefits in defined contribution systems in the region has been well documented (see Arenas de Mesa and Montecinos (1999); James, Edwards, and Wong (2008); and Dion (2008)). In this section, we discuss the link between gender and pension outcomes and measures undertaken in Chile and elsewhere to reduce the gender gap.

As Arenas de Mesa and Montecinos (1999, 8–9) noted, under the defined benefit system that Chile had until 1981, “women received more generous benefits with fewer requirements, and the gap in benefits between men and women was smaller” because women could qualify for a minimum old-age pension with a shorter period of affiliation and without making

contributions. They could retire earlier than men and receive similar benefits for a longer period of time (given greater average longevity). Pensions were calculated based on salaries earned in the last years of working life, so that workers were not punished for time spent out of the labor force (favoring women who on average have lower rates of labor participation and fewer years of making contributions).

In contrast, under defined contribution systems, which are based on a tighter link between contributions and benefits, gender inequalities in labor markets are exacerbated upon retirement. Women generally earn lower wages than men because of factors such as gender discrimination, occupational differentiation, and because of time spent outside the paid labor market that is due to care-giving responsibilities. For example, in Chile, 29 percent of women earn the minimum wage, compared with 9 percent of men. Furthermore, women are disproportionately represented in the region's informal labor markets, meaning they are not making contributions to their accounts. As Table 18 shows, women's informal employment as a percentage of nonagricultural employment ranges from 44 percent in Chile and Colombia to 74 percent in Bolivia. Employees in the informal economy do not (by definition) contribute to pension fund savings accounts, with devastating consequences. According to Chile's Social Protection Survey—Encuesta de Protección Social (EPS)—prior to Chile's 2008 reform, 70 percent of those not affiliated with the pension system were women.

With the switch to defined contribution accounts, pensions are determined by the investment performance of actual contributions, so the tendency for women to have both fewer total contributions and

Table 17.
Chile's multifund real annual returns (in percent)

Year	Fund					Total
	A	B	C	D	E	
2003	26.9	16.0	10.5	8.9	3.3	11.9
2004	12.9	10.3	8.9	6.8	5.4	9.1
2005	10.7	7.3	4.6	2.8	0.9	5.7
2006	22.3	18.8	15.8	11.5	7.4	17.0
2007	10.1	7.5	5.0	3.3	1.9	6.5
2008	-40.3	-30.1	-18.9	-9.9	-0.9	-22.0
2009	43.5	33.4	22.5	15.3	8.3	27.7
2010 (January–March)	4.0	3.8	3.6	3.2	3.3	3.7
Cumulative	93.2	70.2	56.8	47.0	32.4	--
Annual average	9.2	7.3	6.2	5.3	3.8	--

SOURCE: Asociación AFP (2010).

NOTE: -- = data not available.

Table 18.
Informal employment in nonagricultural
employment, by sex, 1994–2000

Country	Informal employment as a percentage of nonagricultural employment		
	All	Women	Men
Latin America	51	58	48
Bolivia	63	74	55
Brazil	60	67	55
Chile	36	44	31
Colombia	38	44	34
Costa Rica	44	48	42
Dominican Republic	48	50	47
El Salvador	57	69	46
Guatemala	56	69	47
Honduras	58	65	74
Mexico	55	55	54
Venezuela	47	47	47

SOURCE: ILO (2002).

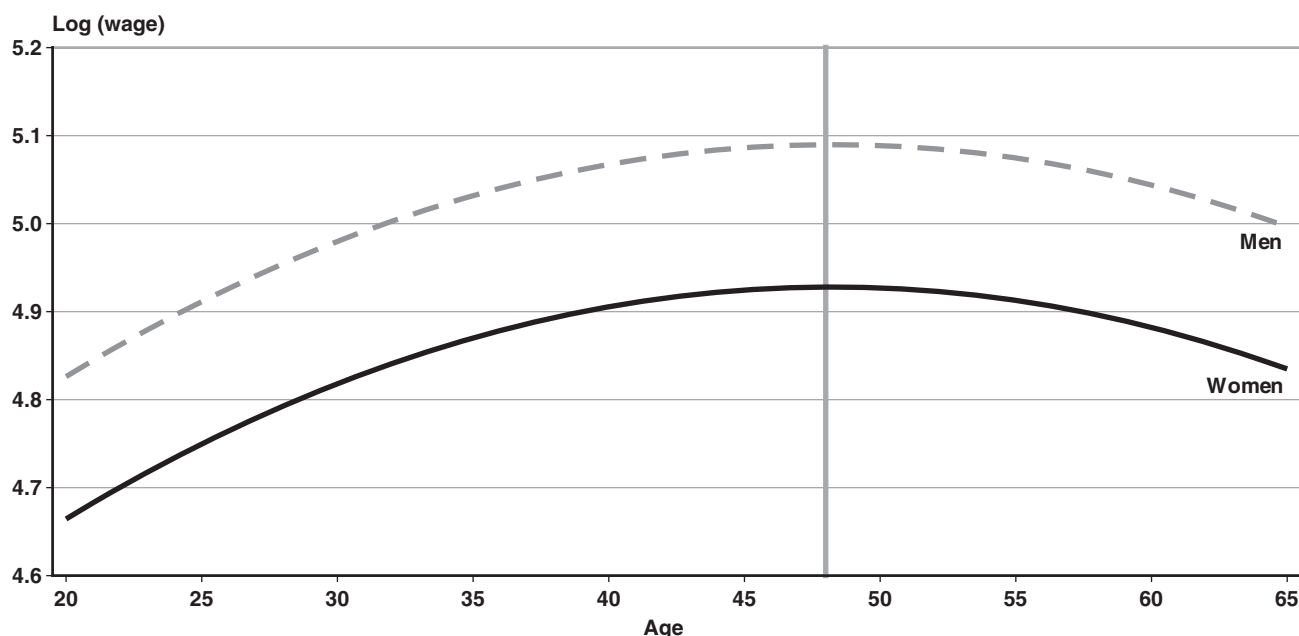
overall lower wages means that women accumulate significantly less capital in their accounts than do men. Wage differentials have a serious impact; for example, Sinha (2009) examined the income patterns of a random sample of men and women in Mexico who made regular, uninterrupted contributions to their AFORE (pension fund savings accounts). For the whole population in the data set, the author found

that women earn on average 17 percent less than men and would accumulate commensurately fewer funds in their retirement accounts (Chart 8).

Sinha (2009) also found, in comparing trends in income inequality among men and women in Mexico, that inequality is actually growing worse for younger workers. The author grouped men and women between ages 18 and 25 and noted the ratio of their average income from August 1997 through February 2005 (see the w20/m20 graph in Chart 9). Then he examined the same for men and women between ages 55 and 65 (see the w50/m50 graph). For the older generation, the income ratio did not show any trend. However, for the younger generation, the income ratio has been declining over time, meaning that inequality between men and women has been rising over time.

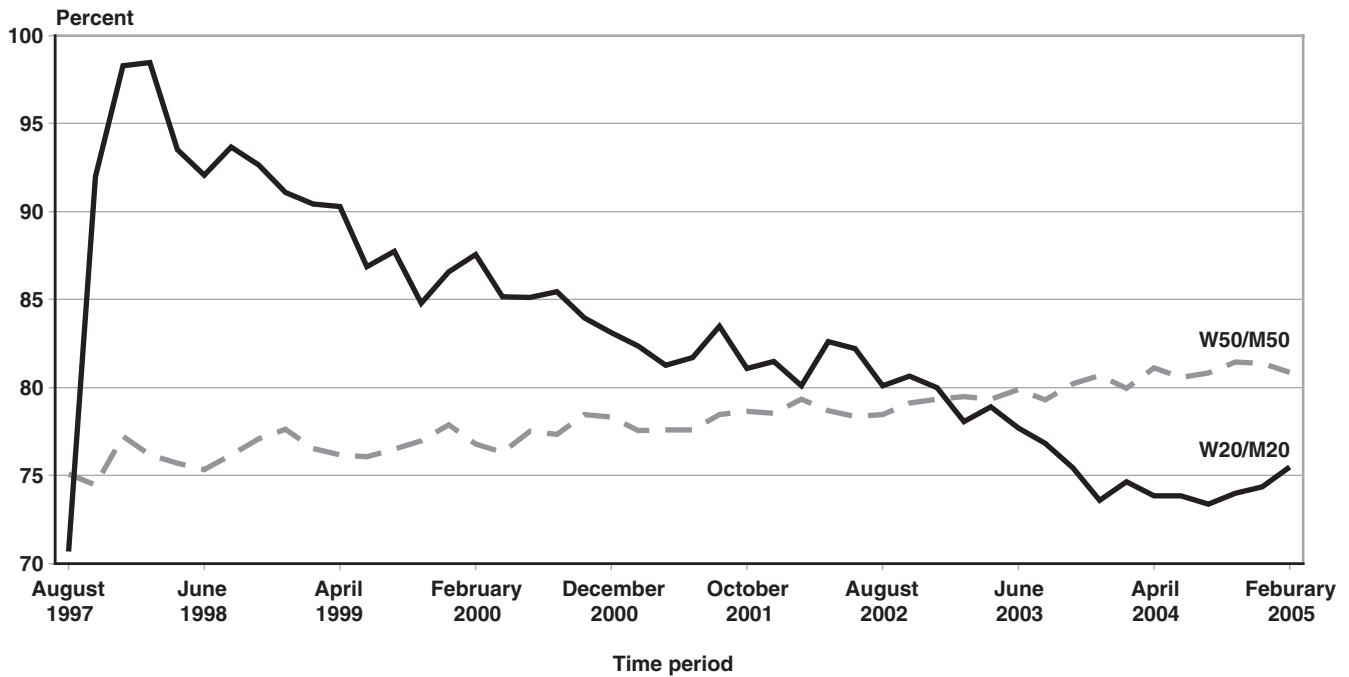
Reforms that introduced individual accounts also raised the number of years of contributions required for a pension, which meant that fewer women qualified for pensions given years spent out of the labor force (Dion 2008). Berstein, Larrain, and Pino (2006) showed that women are inactive in the labor force for an average of 35 percent of their potential working lives, compared with 10 percent for men. Furthermore, Arenas de Mesa and others (2008) found that in Chile, an average man's contribution density is 60 percent, while contribution density for a woman is 43 percent. By age 40, working women will have

Chart 8.
Estimates of wage equation in Mexico, by sex and age



SOURCE: Authors' calculations using data from CONSAR.

Chart 9.
Evolution of income ratio of men and women in Mexico, by selected time period



SOURCE: Authors' calculations using data from CONSAR, based on a random sample of about 500,000 affiliates of the system.

NOTE: W50/M50 stands for the ratio of income of women and men in their fifties. W20/M20 stands for the ratio of income of women and men in their twenties.

made contributions in less than half as many years as working men.

Earlier retirement ages also mean that women have fewer years to accumulate capital in their accounts (Peru, the Dominican Republic, Mexico, and Uruguay have equalized retirement ages, ameliorating this problem). These gender differences are further widened by the fact that pensions for men and women are determined by separate actuarial tables, which increases the gap even more so because women tend to live longer than men.

Projections for the Chilean pension system before the 2008 reform showed clear disparities in pension levels between men and women. Based on their projected contribution patterns, 61 percent of women were not likely to qualify for a minimum pension, compared with 32 percent of men, although the numbers were nearly reversed with respect to workers expecting to receive a benefit above the minimum pension (Table 19). The overall numbers were not encouraging, with nearly half of all workers not expected to get a minimum pension.

Marco (2004) assessed gender inequality in the region's pension systems and made several policy

recommendations. These included using single mortality tables to calculate pensions for both men and women, gradually equalizing the retirement age for men and women, setting up unemployment subsidies that replace the monthly contribution to an individual account (or to social security), and reducing the number of years required for a pension in recognition of women's time spent in child rearing (out of the paid labor force).

A competing perspective on gender inequality and pension reform is reflected in James, Edwards, and Wong (2008), which stresses actuarial fairness. They emphasized lifetime benefits as a metric for measuring

Table 19.
Chile's projected pension levels from 2020 through 2025, before the 2008 reform (in percent)

Projected pension level	All	Men	Women
Above the minimum	52	67	37
At the minimum	2	1	2
Below the minimum	46	32	61
Total	100	100	100

SOURCE: Chile, Presidential Advisory Council on Pension Reform (2006).

fairness, which would mean that if women live longer than men, then their contributions to the pension system (beyond the requirement for the minimum pension) should reflect this. Furthermore, the authors argued that because women are also recipients of net public transfers and private intra-household transfers, then they have gained more from the region's pension reforms than men.

The conclusions of Marco (2004) and of James, Edwards, and Wong (2008) represent competing views of the role of pensions; in the latter, the principle of actuarial fairness comes first, while in the former, the link between contributions and benefits is loosened to account for social and labor market inequalities. As Fornero and Monticone (2010) noted, reforms that emphasize actuarial fairness are "at odds with measures that tend to compensate, at the pension level, inequalities originating from the labour market." Chile's 1981 reform placed more emphasis on actuarial fairness, and the 2008 reform sought to improve equity, as policymakers sought to reduce the gender gap.

The gender gap was a primary motivation for the 2008 pension reform in Chile, as President Bachelet stated bluntly when the Marcel Commission report was released (Mensaje 558-354, 2006) that the pension system discriminates against women. The report noted that women receive annuity benefits equivalent to just 42 percent of what men receive because women spend less time in the formal labor market, have lower income than men, have an earlier retirement age (60 years for women and 65 for men), and yet live longer than men. Also, insurance companies use gender-specific mortality tables to calculate annuities, which result in lower benefits for women as well (Chile, Presidential Advisory Council on Pension Reform 2006).

Consequently, the 2008 pension reform included several measures designed to ameliorate gender inequality. Recognizing time spent out of the labor force to care for children, the government pays women a bonus for each child born—from the child's birth until the mother reaches age 65—equivalent to 18 monthly contributions based on the minimum wage at the time each child was born, plus Fund C's net return. For the first time, assets in an individual retirement account may now be divided between the spouses in the case of divorce or annulment, and widowers (in addition to widows) are now eligible for a survivorship pension. With respect to survivors and disability insurance, women had been paying the same rates as men, even though costs were lower given greater expected longevity. Since the reform, the

difference in costs will now be refunded into women's retirement accounts (Mensaje 588-354, 2006).

Other countries also initiated measures to compensate women for time spent out of the paid labor force because of caregiving. Uruguay now has a credit for child rearing, and a similar measure was adopted recently in Bolivia.

In sum, with defined contribution accounts, women will receive lower pensions than men based on the structure of labor markets, as lower wages, employment in lower paid professions, higher rates of participation in the informal sector, and fewer years in the paid labor force will lead to lower capital accumulation. Separate actuarial tables and a lower retirement age can deepen these inequalities. Chile's 2008 reform directly addressed labor market inequalities that lead to pension benefit inequalities by including the measures described earlier and through el Sistema de Pensiones Solidarias (System of Solidarity Pensions), which benefits women more than men (described earlier in the Measures to Extend Coverage section). Other measures, such as unifying actuarial tables and having a single retirement age for men and women, would further minimize pension differentials.

Financial Literacy

Financial illiteracy is a universal problem. Lusardi and Mitchell (2007) found in a US survey that less than 18 percent of those who had successfully done a simple interest calculation and a simple division problem could do a simple compound interest calculation. (Respondents were asked the total balance of a US\$200 account that earned 10 percent interest over 2 years.) Furthermore, evidence of lower levels of financial literacy among the poor, less-educated, and minority households puts these groups at a further disadvantage economically (Hung, Mahaly, and Yoong 2010). This widespread financial illiteracy and a demonstrated link between financial literacy and household decision making are especially problematic for pension systems where individuals are required to make investment decisions by choosing among a range of competing pension plans (Lusardi 2009).³³

In Latin America, governments have increasingly required pension fund managers to provide more transparent information to members about their individual accounts. For example, individual account statements in Chile must indicate the rate of return after deducting administrative fees. In Uruguay, the Central Bank has to publish the net real rate of return for each AFAP and the average fees for all AFAPs. Also, the Mexican

regulator, CONSAR, is required to report the gross and net rates of return separately, as well as administrative fees for each AFORE. However, despite these efforts, it is evident that in general, workers do not have sufficient understanding of individual account systems.

Chile

According to Chile's EPS survey,³⁴ most respondents did not know how their pensions were calculated, did not understand the relationship between contributions to an individual account and their pensions, and were not familiar with the basic facts about the guaranteed minimum pension and its requirements.

EPS findings included the following:

- Fewer than 35 percent of those surveyed reported that they knew the percentage of their taxable income that was directed to the pension system every month, and less than half of those respondents provided accurate answers.
- Of the 50 percent who reported that they were aware of how much they had in their individual account, the amount that two-thirds of them reported was more than 20 percent different from the actual amount.
- Only about 8 percent of those surveyed knew how pensions were calculated.
- Even though half of the respondents stated that they knew about the multifunds, only 20 percent knew how many fund options existed. About 40 percent correctly identified Fund A as the highest risk, and about 33 percent knew the fund with the highest rate of return (in the medium term).
- Those with less education and the poor were less likely to have knowledge about the system.
- The majority of those surveyed knew the correct normal retirement age.
- About 66 percent of the pensioners surveyed were aware of what kind of benefit they received, but the amount they reported receiving ranged from 20 percent less to 20 percent more than the actual benefit amount (Arenas de Mesa and others 2008; Bravo and others 2008).
- The percent of respondents who calculated how much they needed for retirement rose from 1 percent in 2006 to 6 percent in 2009 (Reyes B. 2010).

Since 2005, AFPs in Chile have been required to send out an annual personalized pension projection (PPP) to each member based on the individual account balance and some conservative assumptions regarding

rates of return. The PPP is based on the member's age—the effect of making additional voluntary contributions (continuing compared with stopping these contributions) for younger workers, of retiring at the normal retirement age, or of postponing retirement for 3 years. A 2009 study found that this new information changed some behaviors. Some workers aged 40 to 50 who received the projections did increase their voluntary contributions, while younger workers did not (Fajnzylber, Plaza, and Reyes 2009).

To improve financial literacy in Chile, the 2008 pension reform included a provision to set up a social security education fund—financed by contributions from the state and private donations—to develop a series of financial education programs through a competitive process. The program is supervised by the Ministry of Labor and Undersecretary of Social Security (Law 20.255; see Chile (2008)).

The first initiative, which began at the end of December 2008, focused on establishing a dialogue on social security between workers and employers and creating “a new social security culture” in the workplace. The government hoped to reach some 300,000 workers through trade unions and other labor groups, with 34 separate projects for a total cost of US\$ 2.7 million. The 2010 initiative had US\$2.9 million in funding (Berstein 2010).

The 2008 reform also requires the government to set up an accreditation system for pension advisors to create a network of advisors that provide professional and independent financial advice to account holders, overseen by both the Superintendents of Pensions and of Securities and Insurance. As of April 2010, there were 480 authorized advisors (Berstein 2010).³⁵ The law (20.255) also limits fees to 2 percent of the worker's individual account balance, up to a maximum of 60 UF (US\$2,714); see Chile (2008).

Mexico

Hastings and Tejeda-Ashton (2008) examined consumer behavior in Mexico in making choices among pension fund managers (AFOREs) from September 2004 through December 2006. They found that the amount of the administrative fee generally had no influence on the decision to switch from one AFORE to another, and workers did not switch companies frequently even though fees increased. A change in employment was the most likely reason to switch. For lower-income workers, peer influence, advertising, and name recognition were the most important factors; for higher-income workers, past rates of return were key factors.

The authors also used a sample of Mexican workers to ask a number of questions relating to their level of financial literacy in general. Several of the results follow.

- About 33 percent of respondents correctly answered the question on compound interest.
- Over 65 percent correctly answered the inflation question.
- Close to 25 percent demonstrated knowledge of investment returns terminology by selecting “past returns do not predict future performance.”
- More financially literate workers tended to choose funds with lower fees.

A survey commissioned by CONSAR evaluated the effect of certain changes to the system on the account holders’ level of understanding since 2003. For example, the survey, conducted in 2006, found that since 2005—when AFOREs were required to send out account balance statements twice a year, instead of just once, and when the heading “Estado de Cuenta” (account statement) had to be more prominent on the page—the percentage of individuals that recognized the account statement rose from 12 percent to 62 percent. Also, the percentage of account holders who found the information in their statement to be confusing dropped from 41 percent to 27 percent, while those who considered the information complete rose from 64 percent to 79 percent (Consulta Mitofsky 2006).

Calderón-Colín, Domínguez, and Schwartz (2008) conducted a survey of about 1,000 individuals (a stratified sample of people in Mexico City) to see if the affiliates made the “optimal” choice if data were presented clearly in a table. The results showed that with proper information, people were able to choose the “optimal” AFORE. Armed with this evidence, CONSAR has now included a section, in the quarterly statements that AFOREs send out to their affiliates, with a table that lists the rates of return for all the AFOREs in operation. It also points out where the AFORE in which the affiliate is enrolled stands with respect to the others.³⁶ This is one instance where a financial education experiment has resulted directly in a policy change by the regulatory body.

Calderón-Colín, Domínguez, and Schwartz (2008, Figure 3) also examined fund switching in Mexico. Using administrative data from the CONSAR, the authors divided the switches based on the difference in the administrative fees and the difference in the rates of return (between the old and the new AFORE). They

found that of the 3.87 million affiliates in 2006 who switched from one AFORE to another, 39.9 percent moved to a new AFORE with a *higher* fee and a *lower* return. The authors also used CONSAR’s calculator—which produces a comparative table of AFOREs including income, account balance, age, and other specific characteristics for those same affiliates—and found that 95.7 percent of them did not switch to the best AFORE (called “optimal” by the authors; see Figure 6).

CONSAR has also taken steps to control the AFOREs sales agents who help workers make decisions regarding their individual accounts. In July 2009, the agency published rules (Circular CONSAR 2009) for AFOREs sales agents. The key responsibilities include the following:

- Familiarize oneself with and inform workers about financial mechanisms that generate retirement savings, and present truthful information about the products that the AFOREs offer.
- Offer workers products and services that meet their needs.
- Have full knowledge of the information provided to workers so that they can make an informed decision about enrolling in or transferring to an AFORE.
- Keep workers’ personal information strictly confidential.

The rules for selecting sales agents require AFOREs to have a rigorous selection process and periodic exams to test their knowledge.³⁷ As of December 2010, these measures had not been fully implemented, nor had an evaluation of their impact taken place.

Peru

The Inter-American Development Bank (IADB) conducted a survey in Metropolitan Lima of 6,000 heads of household between ages 25 and 55 in paid positions (either as an employee or self-employed). Results of the portion of the survey regarding knowledge of the country’s pension system include the following:

- Some 40 percent knew the correct retirement age for men, while only 8 percent were aware of the retirement age for women.
- Only 12.2 percent were aware of the monthly contribution rate, and 16.5 percent knew who paid the administrative fees.
- Only 3.2 percent knew how pensions were calculated in the system of individual accounts, while

8.2 percent knew how pensions were calculated for the public PAYG system.

- Older workers (aged 50–55) had the highest percentage of correct answers for the retirement age and pension calculation questions, while younger workers (aged 25–34) had the highest percentage for the contribution rate and administrative fees questions.
- Generally, women knew less than men except for the retirement age for women.
- Almost half of the group could not answer any of the questions correctly, and less than 1 percent answered all the questions correctly.

In addition, close to 50 percent of those surveyed never thought about how to finance their old age, and only 16 percent thought about it “a lot.” Of the 43 percent who had taken concrete measures to save for retirement, 41 percent contributed to either pension system, almost 28 percent owned their own business (more women than men), 14 percent had a savings account in a bank, and almost 12 percent had bought a house. As in the rest of the world, Peru has relatively low levels of financial literacy, and knowledge of pensions and financial markets is extremely low (Pagés and others 2009).

Other Countries in the Region

In the past few years, El Salvador has set up an inter-agency financial education program, which involves government organizations such as the Superintendent of Pensions, the Central Reserve Bank, and the Superintendent of the Financial System. Each agency focuses on the aspects of their mission relating to financial literacy. The materials relating to pensions on the financial education website include a coloring book, brochures on the basic features of the program, a video entitled “Your Money in the Future,” and a manual for employers (SPES 2009).

Colombia’s 2009 financial reform bill created multi-funds (in 2011) and required the government to set up regulations that include incentives for various groups (such as labor unions and consumer organizations) to establish low-cost financial education programs in conjunction with institutions such as universities (SSA 2006–2010). An April 2010 draft law requires each AFP to implement a permanent financial education plan for its members on the risks associated with each investment alternative. The plan could involve training, conferences, talks, or “entertainment.” Members could also ask their AFP for some form of pension calculator (*Portafolio* 2010).

In addition, Uruguay intends to set up a Social Protection Survey similar to the one conducted in Chile. An IADB project to train professionals to administer an EPS survey was approved in 2008 and was scheduled for 2010 (IADB 2008).

In recent years, the challenge of improving financial literacy has become widely recognized throughout the globe.³⁸ As described earlier, policymakers in Latin America have undertaken a range of initiatives that seek to improve financial education. Because the region’s pension systems are based on a model that assumes that well-informed and financially literate workers will respond to incentives in a competitive marketplace, improving financial literacy in the region is of vital importance.

Voluntary Savings for Retirement

Latin American pension systems offer a range of options for voluntary savings. Within the framework of individual account systems, voluntary contributions are often allowed and are under the same regulatory framework as the mandated contribution. In many countries, participation is encouraged through tax incentives. Some countries also have private pension plans sponsored by the employer and are subject to different regulations.³⁹ Mexico is the only country in the region where the supervisory authority (CONSAR) is now regulating the AFORES (both mandatory and voluntary), as well as separate employer-sponsored pension plans for workers. The focus of this section is voluntary contributions to an individual account (CONSAR 2006, 2007).

Most of the Latin American countries with individual account systems allow voluntary retirement contributions in addition to the mandatory contribution. The method of saving varies: Workers can make additional contributions to either the same mandatory individual account or to a separate voluntary account. The government often provides some form of tax incentive to the employee to encourage additional saving for retirement. However, Uruguay offers tax incentives only to employers. Table 20 gives an overview of those provisions in nine countries. To illustrate examples of voluntary savings, the next two sections contain a brief description of the voluntary programs in Chile and Mexico.

Chile

Since 1987, Chile has permitted various options to supplement the mandatory individual account.

- A separate savings account with the same AFP as the mandatory account.

Table 20.
Voluntary contributions to individual accounts

Country	Additional contribution ^a	Separate account	Employer	Tax incentives ^b
Bolivia	Yes	No	Yes	No
Chile	Yes	Yes	Yes	Yes
Colombia	No	Yes	No	Yes
Costa Rica	Yes	No	No	Yes
Dominican Republic	Yes	No	No	^c Yes
El Salvador	Yes	No	Yes	Yes
Mexico	No	Yes	Yes	Yes
Peru	No	Yes	No	Yes
Uruguay	Yes	No	Yes	^d Yes

SOURCES: FIAP (2006) and SPES (2009).

a. To the mandatory individual account.

b. For employees.

c. For those older than age 45.

d. For employers only.

- Additional contributions above the mandatory 10 percent of earnings.⁴⁰ These contributions may be regular or periodic, but withdrawals are limited to four per year.
- Employers' contributions to employees' mandatory accounts. These are agreements (called "fixed deposits") between employees and employers that allow employers to deposit either a lump-sum or a periodic payment.

It was not until 2002 when tax incentives for these voluntary contributions were established. These tax incentives benefited mainly higher-income workers (Berstein, Larrain, and Pino 2006); by February 2010, about 16 percent of the 8.6 million AFP members had voluntary accounts, but 45 percent of those accounts had a zero balance (Chile, SP 2010c, 2010d).

In October 2008, the government introduced employer-sponsored, voluntary pension plans, known as *Ahorro Previsional Voluntario Colectivo* (APVC), which target the middle class and supplement the existing voluntary retirement savings accounts.⁴¹ Both employers and employees can contribute to an APVC. In addition, workers enrolled in an APVC plan who contribute up to about (US\$3,150) a year to a voluntary account (and regularly contribute to a mandatory retirement account) are eligible for an annual government subsidy of 15 percent of the amount that the worker has voluntarily saved for retirement.⁴² If the worker withdraws any of the funds from an APVC account before retirement, the entire government subsidy must be returned to the General Treasury (Chile,

SP 2008). The take-up rate for the APVC has been very low since the inception of the program. By the end of February 2010, there were a total of 126 APVC accounts, mainly in utility supply companies (Chile, SP 2010c).

Mexico

A voluntary savings option with a given AFORE, called complementary contributions, has been permitted in Mexico since the inception of the system in 1997. In addition, the affiliate now gets a tax break on complementary contributions of up to 10 percent of income with a maximum of five times the minimum salary (around US\$7,700) in 2010. Since 2003, CONSAR, the system regulator, has implemented some other measures to encourage voluntary savings. Any worker (not just affiliates of AFORES) is permitted to open a voluntary retirement account with any AFORE. In addition, workers are allowed to borrow money from this voluntary account to buy a house, for weddings, or during periods of unemployment. CONDUSEF, the consumer protection agency of the federal government (and the organization that handles disputes concerning AFORES), reported in 2008 that 1.4 percent of the affiliates opted for voluntary accounts (CONDUSEF 2008). By 2009, 0.45 percent of the total savings in the AFORES were voluntary savings (CONSAR 2009).

Overall, the individual account systems in both Chile and Mexico have not been successful in encouraging workers to save more for retirement. Unlike in Chile, in Mexico there is a sizeable number

of employer-sponsored pension plans, which cover approximately 1 million workers. These plans have existed for many decades without any regulation; since 2006, they have been supervised by CONSAR. These plans offer benefits over and above what is legally required by the Mexican government, and contribution requirements vary: Only the employer contributes in 40 percent of these plans; the employer and employee in 53 percent; and both employer and employee in 4 percent. More than 60 percent of the plans are defined contribution systems, 13 percent are defined benefit systems, and an additional 25 percent are hybrid plans. Large banks manage almost half of the funds, while more than one-quarter are run by *casas de bolsa* (investment firms). Total assets under management accounted for 2.8 percent of gross domestic product (GDP) in 2009, compared with 9.6 percent of GDP for the AFORES (CONSAR 2009).

Private companies offer these plans to encourage workers to stay with their company. To be vested, typically a worker will need at least 15 years of service. However, if a worker leaves before retirement, at best, most of these funds will pay a benefit based on only the workers portion of the contribution. These plans offer a good test case for measuring the cost of fund management because they are privately operated for the private sector. Sinha (2010) and Hamden (2010) provided some evidence on the cost of managing these employer-sponsored private pension funds. Based on a sample of around 30 funds from 2000 through 2006, both authors noted that on average, these companies charged an annual fee of 0.41 percent of the value of the fund at the beginning of the year. This figure can be contrasted with the AFORES average charges of more than double, estimated by Impavido, Lasagabaster, and García-Huitrón (2010).

As is apparent from the discussion earlier, although these countries have implemented systems to encourage voluntary pension savings, the take-up rates have been extremely low, despite the incentives. This suggests that additional steps are necessary to encourage voluntary savings beyond the institutional and incentive frameworks that have recently been established.

Payout Phase

Much of the literature on pension reform focuses on the risks and costs of individual account systems during the accumulation phase when workers are contributing to their individual accounts. Yet, there is increasing attention being paid to the policy challenges

of the payout phase and its associated risks. Even though Chile's system of individual accounts was established in 1981, it has not matured—as 30 percent of pensioners receive benefits from the old PAYG system—and recognition bonds for contributions made to the old system still figure prominently (Corripio 2010).

As Rocha and Vittas (2010) noted, the payout phase has not received much attention in the literature. The authors point out that pensioners face longevity and bequest risks, as well as investment and liquidity risks, while the retirement products that they may choose carry their own specific risks. Purchasing an annuity can protect against longevity, but reduces the possibility for a bequest, while investments that bring higher returns may bring liquidity risks. As Rocha and Thorburn (2007) noted in their Executive Summary, “longevity risk remains one of the most difficult issues to be addressed by regulators and participants in annuities markets, requiring a constant effort to track mortality improvements and reflect these improvements in capital and product regulation.”

Meanwhile, there is a range of types of payouts, including phased withdrawals, lump-sum, and self-annuitization; and a range of real, nominal, and variable life annuities—all of which offer differing degrees of protection against the aforementioned risks. As Antolin (2008, 16) noted, given different levels of risks and guarantees of differing annuity products, “in situations where a stable retirement income is already provided by the public PAYG pension, it may be appropriate to allow individuals to purchase annuity products that entail greater risks.”⁴³ In fact, selecting the default risk level and payout requires an analysis of the level and security of other retirement income sources, wage and employment profiles, bequest motives, and liquidity preferences (Antolin, Payet, and Yermo 2010). Further complicating the creation of a default option is the fact that the relative performance of investment strategies depend on the payout phase. As Antolin, Payet, and Yermo (2010) argued, life-cycle investment strategies do best when benefits are paid as life annuities, and are less valuable when benefits are paid as programmed withdrawals. Given the complexity of payout decisions and low levels of financial literacy, the default options for payouts are of critical importance (Rocha and Vittas 2010, 35), especially because there is evidence that workers may view default options as being a recommended option (Beshears and others 2008, 76). Also critical is the presence of an effective regulatory and supervisory authority.

As Table 21 demonstrates, there is a range of payout options in Latin America. For example, every country except for Panama offers an annuity; all but Uruguay and Bolivia offer programmed withdrawals; while Costa Rica, the Dominican Republic, and Panama do not offer programmed withdrawals combined with a deferred annuity. Mexico has a small annuities market in part because it has a very small insurance market overall and because private-sector annuities are only available for individuals with workers' compensation or disability claims (Impavido 2007, 34). Before 2004 in Chile, workers could choose between phased withdrawals, indexed life annuities, or a combination of the two. Since 2004, workers can use a combination of a minimum pension fixed real annuity with either a phased withdrawal or a variable annuity.

Chile has high rates of annuitization with nearly 66 percent of retired persons choosing annuities and 60 percent of pensioners retiring early (of whom 85 percent annuitize, compared with 34 percent among people retiring at normal retirement age). Two separate studies attribute different causes for these high rates: (1) detailed rules that encourage annuitization, such as the prohibition on lump-sum withdrawals (James, Edwards, and Iglesias 2010), and (2) marketing of

annuities by insurance companies, which is directed at higher-income workers (Rocha and Thorburn 2007, 138). The lower rate of annuitization for those retiring at the normal retirement age is due to the minimum pension guarantee, which provides a form of longevity insurance, as well as rules prohibiting annuities for low-value accounts (James, Edwards, and Iglesias 2010). Given concerns about high commission costs, illegal marketing practices, and high levels of early retirement, regulations implemented in Chile in 2004 and 2008 placed a 2 percent cap on annuity commissions, promoted competition by allowing banks entry into the market, and introduced an electronic quotation system designed to reduce the influence of individual brokers (Rocha and Vittas 2010, 23). The latter was structured to provide unbiased advice given that insurance brokers were especially aggressive in marketing annuities because they received commissions on premiums. In contrast, insurance brokers received no commissions for programmed withdrawals from pension funds, and the funds were not allowed to charge a front-end fee to workers who kept their funds in their accounts, giving brokers little incentive to promote programmed withdrawals. Furthermore, the electronic quotation system was also designed to discourage early retirement, given

Table 21.
Payout options for Latin American individual account systems

Country	Retirement age		Type of retirement payout options				
	Men	Women	Early retirement	Annuity	Programmed withdrawals	Programmed withdrawals with deferred annuity	Guaranteed minimum benefit
Bolivia	65	65	No	Yes	No	No	Yes
Chile	65	60	Yes	Yes	Yes	^a Yes	Yes
Colombia	^b	^b	No	Yes	Yes	Yes	Yes
Costa Rica	^c 62/65	^c 62/65	No	Yes	Yes	No	^d
Dominican Republic	60	60	Yes	Yes	Yes	No	Yes
El Salvador	60	55	Yes	Yes	Yes	Yes	Yes
Mexico	65	65	Yes	Yes	Yes	Yes	Yes
Panama	62	57	Yes	No	Yes	No	^e
Peru	65	65	Yes	Yes	Yes	Yes	Yes
Uruguay	^f 60/65	^f 60/65	No	Yes	No	No	No

SOURCE: SSA (2009).

- a. Temporary income with a deferred life annuity and an immediate life annuity with programmed withdrawals.
- b. Paid if the accumulated capital in the individual account is sufficient to purchase an annuity greater than 110 percent of the minimum wage.
- c. Depending on the number of monthly contributions.
- d. For the first-pillar PAYG system.
- e. If the pensioner lives beyond the estimated life expectancy and the individual account is depleted, collective insurance tops up the accumulated capital in the individual account to finance the old-age pension.
- f. Age 65 has no coverage requirement.

the close link between early retirement and annuitization discussed earlier. Mitchell and Ruiz (2009) suggested that the 2008 reform, which expands access to a minimum benefit and raises its level, would reduce the high level of annuitization in Chile.

In short, the complex set of policy challenges associated with the payout phase listed by Rocha and Vitas (2010) require close attention from policymakers. The appropriate mix of products needs to be available (and oftentimes must be created in markets where they do not yet exist), and they must be effectively regulated and supervised. Chile has a head start in managing the payout phase, given the greater longevity of its system of personal accounts, but every country using such a system will need an effective set of policies. Deciding among a mix of product options is a complex decision even for the most sophisticated workers. However, given the low levels of financial literacy (see Arenas de Mesa and others (2008) and Rocha and Vitas (2010)), the call for appropriate default options is especially urgent.

Survey of Other Reforms

Risk-based supervision (RBS), now being developed in Chile, offers a new approach to the supervision of pension funds. Beginning in July, 2010, Chile began implementing a transition to risk-based supervision of pension funds rather than rules-based supervision, with the goal of improving transparency and efficiency in the supervisory process. Under RBS, the supervisory authority assesses the capacity of pension funds to appropriately measure and manage risk with adequate levels of controls at all levels of the firm (Chile, SP 2010b). Specifically, it means the quantitative restrictions (such as limits on investment in equities and default age designations) are being phased out and are being replaced with limits in terms of total risk assumed by the funds. RBS remains a challenge because there is no universally accepted measure of risk (Artzner and others 1999). Chile's innovations with RBS will no doubt be closely monitored by other countries in the region.

Since Chile's comprehensive reform of its pension system in 2008, other countries have also considered measures intended to reform the reforms that they implemented in the 1990s. In Uruguay, the labor ministry initiated a social dialogue in May 2010, with the intention of proposing reforms in the second half of 2010. A 2009 Peruvian government study considered measures to incorporate independent workers and noncontributory social pensions, but at the present

time there is no legislative effort underway to reform the pension system. Both Uruguay and Peru allowed certain workers who switched to systems of individual accounts to switch back to the public PAYG system.⁴⁴

Meanwhile, in December 2010, a new law passed in Bolivia that allows a state takeover of the two private pension funds that had been created in 1996. This provision is part of a larger reform that lowers the retirement age for both men and women from 65 to 58 (even lower for miners and mothers) and creates a solidarity fund to help increase the benefit level for lower earners. This fund is financed by an employer's 3 percent of payroll contribution, 0.5 percent of earnings for workers, and an additional contribution for higher earners.

Bolivia's nationalization of its private pension funds is following in the footsteps of Argentina, which became the first country to reverse the switch to individual savings accounts when it placed the US\$24 billion in assets managed by the 10 pension funds under government control and incorporated all workers into the public PAYG defined benefit system.

The 2008 presidential decree (Argentina, National Executive Power 2008 (Poder Ejecutivo Nacional)) announcing the takeover cited the private system's low rates of coverage and high commission costs and argued that the private system would leave workers at the mercy of the markets during a time of financial crisis.⁴⁵ Furthermore, the new law stated that under the new Integrated Argentine Pension System (Sistema Integrado Previsional Argentino—SIPA), benefits would be equal to or better than benefits under the private system (Boletín Oficial de la República Argentina 2008).

Fiscal concerns were an important consideration during the 2008 renationalization of pension funds in Argentina, given government financing needs in the wake of a sharp fall in revenue that was due to lower export taxes and commodity prices during the financial crisis in the second half of 2008 (Reuters 2008). Taking over the pension funds provided fiscal support for the government, and because 55 percent of pension fund assets were invested in government bonds, the government was essentially taking control of around US\$13 billion of its own debt. Workers were promised benefits that would be equal to or better than the benefits that were provided by the private system. Legislative approval was no doubt aided by the lack of widespread political support for the private system. The legislative opposition, realizing it was not going to be able to block the measure, demanded that the funds be prudently managed and not used for political ends.

Mesa-Lago (2009) argued that the system's problems did not merit its complete dismantling: The funds' historic 6.6 percent real returns were far better than characterized by the government; pension funds were in relatively strong shape and underexposed to equities in the face of the economic crisis; despite a short-term financial boost from the takeover, the long-term pension burden would increase for the government; and that the reforms did not adequately safeguard how the newly acquired funds would be invested, which could further undermine confidence in (and compliance with) the public pension system.

The 2008 pension renationalization in Argentina can be contrasted to Chile's 2008 pension reform (Kay 2009). The performance of Chile's privatized pension system also faced its share of criticism with respect to efficiency and equity (Gill, Packard, and Yermo 2005), and both presidential candidates in the 2006 Chilean election pledged to initiate a reform. President Bachelet created a reform commission that held public hearings, solicited input from stakeholders, and ultimately presented a package of measures aimed at improving coverage, increasing competition, lowering costs, and reducing gender inequity (Chile, Presidential Advisory Council on Pension Reform 2006). In Argentina, there was no public debate or any hint that a core social program would be reformed before the legislation was introduced and quickly approved.

In short, recent events suggest great divergence in the direction of policy in the region. In some cases, like Chile's, the new system of individual accounts was strengthened by measures to improve competition and lower costs; at the same time, a significant public benefit was added to include the majority of workers who were not likely to have sufficient savings. Meanwhile other countries, including Argentina, ended their systems of individual accounts, while other countries, like Bolivia, are moving in that direction.⁴⁶

Conclusion

During the past decade, there has been a new generation of reform measures designed to address some of the principle policy challenges of Latin America's systems of individual accounts. Kay and Kritzer (2001) described how high administrative fees, limited competition, investment rules that discouraged diversification, evasion and low density of contributions, the need to extend pension coverage, and the role of gender were policy challenges that confronted the region's pensions systems. Since that time, policymakers in the region have taken significant steps

to address those very issues, and in this article we have described this "reform of the reform" in some detail, with particular emphasis on countries that have taken significant steps, including Chile, Mexico, Peru, and Colombia.

In the case of Argentina, the government chose an alternative path—rather than a next-generation reform, the system of individual accounts was ended, and workers were placed back into the state-run PAYG system. The Argentine path remains the exception in Latin America. For example, even though the state has taken over the private pension fund administrators, the individual accounts appear set to continue.

Expanding coverage remains the most significant policy challenge. Coverage is a key indicator of how well a reformed system is functioning, and improving coverage rates was a core objective of the reforms that led to individual accounts. With the exception of Bolivia, coverage rates for workers in the region did not improve.⁴⁷ Low density of contributions (the proportion of months that a worker makes contributions compared with the maximum number of months the worker could have contributed) is a persistent problem in the region, and workers who do not contribute regularly may find themselves receiving low benefits, or no benefits at all. Although a 2000 law would have led to the creation of individual accounts in Nicaragua, high transition costs and anticipated low rates of coverage led to a 2004 government decision (supported by the World Bank) not to introduce the new system. Economy Minister Eduardo Montiel noted that only one in seven workers would have benefited from individual accounts (Enríquez and Bow 2004).

Although reforms in the 1990s focused on the creation of individual savings accounts, a number of recent reforms have emphasized poverty prevention. As Gill, Packard, and Yermo (2005) argued, the poverty-prevention pillar of pension systems did not receive the attention it deserved under the original pension reforms in Latin America, and in recent years, "closing the coverage gap" (as Holzmann, Robalito, and Takayama (2009) titled their study) to incorporate lower-income and informal-sector workers has become a top priority. With only 20 percent of the world's elderly receiving pensions and 25 percent of the labor force contributing, it is clear that expanding basic antipoverty pension coverage will continue to be a top priority. Given these challenges, improving pension coverage remains a critical component of the next generation of pension reforms. For example, Chile's Sistema de Pensiones Solidarias (System of Solidarity

Pensions) is one such model that will no doubt continue to receive attention from other countries seeking to expand coverage to their poorest citizens.

Administrative fees and limited competition have also been an issue of concern for many years (Shah 1997; Queisser 1998), and the 2008 Chilean reform includes measures with incentives for pension funds to compete for an entire cohort of workers, while allowing firms to lower their cost structures through outsourcing administrative functions. Although pension funds in Chile, Peru, Mexico, and Colombia once offered only one investment portfolio, workers can now choose among the “multifondos,” and limits on foreign investment have been liberalized, allowing for greater diversification of risk. The new Chilean system offers workers greater incentives to participate; some workers once had little incentive to contribute beyond what was required for the minimum pension, but the recent reform provides an array of incentives and subsidies for young and lower-income workers to contribute. The reform also seeks to bring the self-employed into the system, which remains a problem that is widespread throughout Latin America. Finally, recent reforms in Chile contain incentives for women, including subsidies for having had children, to ameliorate the gender gap.

We have also described policy challenges that were not widely discussed 10 years ago, but are now on the frontier of policy reform, including financial education, default options for payouts, and the creation or improvement of the basic universal pensions to cover the lowest-income workers. Because workers are being asked to make critical choices about their financial future despite, as surveys demonstrate, very low levels of knowledge about finance, financial education is prominent in policy discussions throughout the hemisphere. Translating this concern to concrete results continues to be an extraordinarily difficult task.

Developing appropriate default options is another key challenge. Low levels of financial education make default options critical to the functioning of the pension system (Beshears and others 2008), not only during the accumulation phase, but also during the payout phase, when workers often must make an irreversible choice in the face of an array of complex options (Rocha and Vittas 2010).

Risk-based supervision is another emerging trend, and Chile is the first country to implement RBS for the pension system. In 2005, the Pension Superintendent began a multiyear implementation process designed to integrate all relevant risks into supervision (fiduciary,

financial, operational, technological, and so forth) that will take a preventative approach, focusing on firms’ risk management and internal controls. Chile’s experience with RBS, which is part of a broader global move toward RBS in the financial sector, will no doubt be closely watched in the coming years.

While this study is by no means exhaustive, it has covered a wide range of next-generation reforms of systems of individual accounts in Latin America. As countries throughout the world continue to face similar policy challenges, these reforms will continue to provide lessons for policymakers.

Appendix: Survivors and Disability Insurance

All of the countries in the region with individual account systems provide some form of survivors insurance based on a percentage of the workers’ prior earnings or pension. Generally, the deceased worker must have had a minimum number of years of contributions. The amount of the survivor benefit depends on the number and type of survivors, and usually all survivors benefits combined may not exceed 100 percent of the deceased’s old-age pension (if he or she was a pensioner at the time of death, or the pension the deceased worker would have been entitled to receive). In most of the countries, the benefit is linked to the individual account balance and life insurance. Life insurance tops up the accumulated capital in the individual account if the balance is less than the required minimum to finance a benefit.

Eligible survivors include the spouse and children generally younger than age 18, unless a student or disabled. Although most of the countries provide similar benefits to both widows and widowers, in some instances, a wife is eligible for a benefit as a widow when the husband is ineligible as a widower, or a widowed husband must be disabled or financially dependent on the deceased wife to receive a benefit (SSA 2009).

Most of the countries in the region with individual account systems offer permanent and partial disability benefits based on prior earnings. The main qualifying condition for total disability is at least 50 percent loss of working capacity in Mexico and Colombia, 60 percent in Bolivia, and 66 percent in the other countries’ programs. Only three out of nine countries provide a temporary disability benefit. Chile’s 2008 reform eliminated the 3-year waiting period to be assessed as permanently disabled; only

partial disability benefits require a final assessment after 3 years. Other countries such as Mexico and El Salvador have a waiting period before a worker may be assessed as disabled, while others including Bolivia and Costa Rica may review the assessment at any time. The regulator of the individual account system generally supervises the disability program except in Mexico and Costa Rica, where the social security agency administers the program (Ferro 2009).

In most of the countries, the benefit is linked to the individual account and disability insurance. Disability insurance tops up the accumulated capital in the individual account if the balance is less than the required minimum to finance a permanent disability pension. However, in Bolivia and the Dominican Republic, the insurance company pays a disability benefit and also contributes to the insured's individual account until the pensionable age. At that point, the insured worker uses the individual account balance for some type of old-age benefit, to purchase an annuity, or make programmed withdrawals. (Bolivia allows only annuities.) In Costa Rica, disabled workers receive a social insurance benefit directly from the social security agency and may withdraw the balance from the individual account when assessed as disabled. In Mexico, if the insured worker is eligible for a disability pension and the pension (based on the value of the accumulated capital plus accrued interest) is higher than the minimum pension, the person may withdraw the sum exceeding the amount needed for the minimum pension (Ferro 2009; SSA 2009).

Notes

¹ For a comprehensive account of pension reform in the region, see Mesa-Lago (2008).

² The Latin American countries are Argentina (1994), Bolivia (1997), Colombia (1993), Costa Rica (1995), the Dominican Republic (2003), El Salvador (1998), Mexico (1997), Panama (2008), Peru (1993), and Uruguay (1996). Countries in Central and Eastern Europe and Asia that have introduced individual accounts include Hungary (1998), Kazakhstan (1998), Poland (1999), Bulgaria (2000), Croatia (2001), Latvia (2001), Estonia (2002), Kosovo (2002), Russia (2002), Slovakia (2005), and Romania (2008). For more information, see Kritzer (2005) and SSA (2008).

³ Although many countries in the region use the acronym AFP, others have different names (see Table 2). Throughout this article, we will use AFP as the generic term.

⁴ More specific information on fees and insurance can be found in the Fees, Profitability, and Competition section.

⁵ A December 2010 law nationalized the two privately managed pension funds (SSA 2006–2010).

⁶ Before the government closed the second-pillar individual accounts, Argentina had a mixed system where all insured workers were in the first-pillar public PAYG system. For the second pillar, those workers had a choice between contributing to an individual account or the PAYG defined benefit system.

⁷ See the World Bank (1994, 320) and Mitchell (1997, 15).

⁸ Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

⁹ An affiliate is a person with an individual account. A contributor is an affiliate that regularly contributes to an individual account.

¹⁰ Gruber (1997) showed that the reduction in payroll tax in Chile in the early 1980s did not increase employment in the formal sector.

¹¹ Chile's reform included phasing out the PAYG system. Colombia has a "mixed" system with a choice between the PAYG and individual account systems.

¹² Coverage and gender are strongly related issues and are discussed at greater length in the Gender Equity section. In general, because women spend less time in the formal labor force than men, earn lower wages, and have greater periods of inactivity and lower density of contributions, their rates of coverage will be lower.

¹³ A noncontributory pension program for persons aged 70 or older is being rolled out across Mexico. It pays the recipients living in rural areas with less than 30,000 people 500 pesos (US\$41) a month. For more information, see <http://www.sedesol.gob.mx/index/index.php?sec=15>.

¹⁴ The problem is more acute among women. For more details, see the Gender Equity section later in the article.

¹⁵ For a detailed description of the 2008 Chilean reform, see Kritzer (2008).

¹⁶ Argentina, Brazil, the Dominican Republic, Colombia, and Uruguay require the self-employed to participate.

¹⁷ See Table 5 below for the range of administrative fees and Table 9 for premiums for survivors and disability insurance.

¹⁸ For example, AFP income in Chile is largely derived from fees. In 2005, administrative fees represented 91 percent of an AFP's income, and the yield on investments from the reserve fund was about 8 percent (Chile, Presidential Advisory Council on Pension Reform 2006).

¹⁹ Peru, Chile, and Uruguay also used to charge a flat fee that was proportionately higher for lower earners than higher earners. Peru eliminated this fee in 1997, and the other two countries abolished their flat fees about 10 years later.

²⁰ According to the December 2010 pension reform law, account holders in Bolivia will continue to pay the same

administrative fee to the government that they paid to the privately managed AFPs. The government will review the fee every 3 years (*La Razón* 2010; SSA 2006–2010).

²¹ This refers to Argentina's system before the 2008 law that closed the second-pillar individual accounts and transferred all the workers back to the PAYG system.

²² Since 2006, the cost of survivors and disability insurance has shifted to the employer in El Salvador and Chile. In Chile the process has been in two stages: Since July 1 2009, employers with at least 100 employees are required to pay for this insurance; this will be extended to include all employers beginning June 2011.

²³ The median age in Mexico is 26.7, compared with 31.7 in Chile and 33.7 in Uruguay (CIA 2010). Thus, as the population is younger in Mexico, the premium charged for death and disability should be *lower* than in Chile or Uruguay. But, in fact, it is exactly the opposite.

²⁴ IMSS also administers the sickness and maternity, work injury, unemployment, and family allowance programs (SSA 2009).

²⁵ Because most workers have not yet retired under the individual account system, these were mainly survivors and disability annuities.

²⁶ This process led to a sudden rise in one-time payments by the IMSS because earlier that agency was paying a stream of smaller benefits over many years. In order to lower the costs, IMSS adopted a new policy: All disability pensions were treated as “provisional pension benefits” rather than “definitive pension benefits.” A definitive pension meant that the IMSS would be responsible for a 900,000 pesos up-front payment because it was obligated to buy an annuity on behalf of the widow/disabled worker. To avoid the strain on the IMSS budget, it made the benefit “provisional,” which essentially pushed the cost into the future. In terms of present value, they are the same. But it was easier on the budget process, as the IMSS does not consider long-term budgets; it only had to fund the pensions on an annual basis. In addition, definitive pension criteria were tightened. This abrupt change in regulation in 2000 led to the collapse of the annuities market in Mexico.

²⁷ For example, governments have granted monopoly power to firms through patent protection. The argument for granting patents is that it is necessary for inventions and innovations.

²⁸ Cuenta concentradora (consolidated account) was created for affiliates who did not sign up for any AFORE. Those affiliates were automatically assigned to this account, managed by the Mexican Central Bank, which paid a fixed interest rate of 2 percent on these accounts.

²⁹ From the Superintendent of Pensions' published-fees tables, accessed on December 22, 2010 (<http://www.safp.cl/573/article-6014.html>), we note that Modelo is charging 48 percent of what is being charged by the most expensive

fund, Planvital. So far, there has been no movement toward reducing the fees by other AFPs. Also, an October 2010 report found “stronger competition to improve customer service, as well as an increase in advertising, but not lower commissions in real terms” (*Business News Americas* 2010).

³⁰ Beginning in December 2010, the limit on assets invested abroad in Chile is rising by 5 percentage points every 3 months until it reaches 80 percent by September 2011 (SSA 2006–2010).

³¹ However, only 625 affiliates signed up for this fund (Homedes 2002). In 2001, Mexico allowed each AFORE to offer its affiliates a choice between two subfunds (discussed shortly).

³² As of August 2010, the Costa Rican Superintendent of Pensions expected to have multifund regulations ready by the end of 2011 (Arias 2010).

³³ Hastings and Mitchell (2010) found that level of impatience is also a key factor in decision making.

³⁴ The 2002 survey was called the History of Labor and Social Security Survey. After the 2004 EPS was conducted, to simplify the terminology, researchers began to refer to the 2002 survey as an EPS as well. The EPS was also conducted for 2006 and 2009. To date, only preliminary findings have been released for the 2009 survey. For more information on the EPS, see <http://www.proteccionsocial.cl/>.

³⁵ In October 2009, the first qualifying exam was given and only 30 percent of the 193 applicants passed. The test given at the end of May 2010 had better results: 48 percent of the 113 applicants passed. The test consists of multiple choice and true/false questions (Chile, SP and SVS 2010).

For the topics covered in the test, see http://www.safp.cl/573/articles-6049_comunicado010410.pdf.

³⁶ For a sample statement, see http://www.consar.gob.mx/principal/info_gral_trabajadores-estado_cuenta-imss.shtml.

³⁷ For part of a Mexican qualifying test for AFORE sales agents, see http://www.segurosinbursa.com.mx/gestor/cursos/afore2008/aforevoz_v2/modulo1/autoevaluacion_m1.html.

³⁸ The OECD has a Financial Education Project, http://www.oecd.org/department/0,3355,en_2649_15251491_1_1_1_1_1,00.html. For information on the US government's program, see <http://www.treasury.gov/resource-center/financial-education/Pages/commission-index.aspx>. Also, in 2009 SSA established the Financial Literacy Research Consortium, <http://www.socialsecurity.gov/retirementpolicy/financial-literacy.html>.

³⁹ For example, assets for Brazil's occupational pension funds are the seventh largest in the world (Pugh 2009).

⁴⁰ The ceiling for the mandatory contribution is currently at 66 unidades de fomento (UF). The UF is a monetary unit adjusted daily to reflect changes in the consumer price

index. (As of December 19, 2010, the UF was equal to approximately US\$45.) Since 2010, the ceiling on contributions is adjusted annually according to changes in the real wage index for the previous year.

⁴¹ Before the new law was implemented, very few Chilean companies offered occupational pension plans.

⁴² Up to a ceiling of about US\$2,800 as of December 23, 2010.

⁴³ Antolin (2008, 23) recommended that to manage longevity risk, policymakers should mandate deferred life annuities that start paying at very old ages (85 or older) with the remaining assets distributed as programmed withdrawals.

⁴⁴ In both cases, the rules apply to older workers who voluntarily switched to individual accounts and would not have enough time to accumulate a significant account balance before retirement. In Peru, the ability to switch is ongoing, while in Uruguay the time period was limited.

⁴⁵ For a comprehensive assessment of the Argentine experience with privatization, see Arza (2008).

⁴⁶ In October 2010, the Hungarian government, facing ongoing challenges from the financial crisis, moved toward taking over its system of individual accounts by freezing government payments to the private system and hinting that workers would be encouraged to return to the state-run system (Reuters 2010). Then in November 2010, the government went one step further. Those account holders who did not switch their account balances back to the state, would lose their public pension benefits (Simon and Balazs 2010).

⁴⁷ Recent reforms to the public system expanded coverage for aged individuals who had been without coverage in Argentina and Chile.

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OASDI AND SSI SNAPSHOT AND SSI MONTHLY STATISTICS

Each month, the Social Security Administration's Office of Retirement and Disability Policy posts key statistics about various aspects of the Supplemental Security Income (SSI) program at <http://www.socialsecurity.gov/policy>. The statistics include the number of people who receive benefits, eligibility category, and average monthly payment. This issue presents SSI data for December 2009–December 2010.

The Monthly Statistical Snapshot summarizes information about the Social Security and SSI programs and provides a summary table on the trust funds. Data for December 2010 are given on pages 78–79. Trust fund data for December 2010 are given on page 79. The more detailed SSI tables begin on page 80. Persons wanting detailed monthly OASDI information should visit the Office of the Actuary's website at <http://www.socialsecurity.gov/OACT/ProgData/beniesQuery.html>.

Monthly Statistical Snapshot

Table 1. Number of people receiving Social Security, Supplemental Security Income, or both

Table 2. Social Security benefits

Table 3. Supplemental Security Income recipients

Table 4. Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds

The most current edition of Tables 1–3 will always be available at http://www.socialsecurity.gov/policy/docs/quickfacts/stat_snapshot. The most current data for the trust funds (Table 4) are available at <http://www.socialsecurity.gov/OACT/ProgData/funds.html>.

Monthly Statistical Snapshot, December 2010

Table 1
Number of people receiving Social Security, Supplemental Security Income, or both, December 2010
(in thousands)

Type of beneficiary	Total	Social Security only	SSI only	Both Social Security and SSI
All beneficiaries	59,246	51,334	5,214	2,698
Aged 65 or older	38,186	36,145	894	1,147
Disabled, under age 65 ^a	13,301	7,430	4,320	1,551
Other ^b	7,759	7,759

SOURCE: Social Security Administration, Master Beneficiary Record, 100 percent data. Social Security Administration, Supplemental Security Record, 100 percent data.

NOTES: Data are for the end of the specified month. Only Social Security beneficiaries in current-payment status are included.

... = not applicable.

a. Includes children receiving SSI on the basis of their own disability.

b. Social Security beneficiaries who are neither aged nor disabled (for example, early retirees, young survivors).

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Table 2.
Social Security benefits, December 2010

Type of beneficiary	Beneficiaries		Total monthly benefits (millions of dollars)	Average monthly benefit (dollars)
	Number (thousands)	Percent		
All beneficiaries	54,032	100.0	58,048	1,074.30
Old-Age Insurance				
Retired workers	34,592	64.0	40,662	1,175.50
Spouses	2,316	4.3	1,343	580.10
Children	580	1.1	334	576.70
Survivors Insurance				
Widow(er)s and parents ^a	4,287	7.9	4,750	1,108.00
Widowed mothers and fathers ^b	159	0.3	135	848.80
Children	1,913	3.5	1,438	751.80
Disability Insurance				
Disabled workers	8,205	15.2	8,761	1,067.80
Spouses	161	0.3	46	287.20
Children	1,820	3.4	580	318.40

SOURCE: Social Security Administration, Master Beneficiary Record, 100 percent data.

NOTES: Data are for the end of the specified month. Only beneficiaries in current-payment status are included.

Some Social Security beneficiaries are entitled to more than one type of benefit. In most cases, they are dually entitled to a worker benefit and a higher spouse or widow(er) benefit. If both benefits are financed from the same trust fund, the beneficiary is usually counted only once in the statistics, as a retired-worker or a disabled-worker beneficiary, and the benefit amount recorded is the larger amount associated with the auxiliary benefit. If the benefits are paid from different trust funds the beneficiary is counted twice, and the respective benefit amounts are recorded for each type of benefit.

a. Includes nondisabled widow(er)s aged 60 or older, disabled widow(er)s aged 50 or older, and dependent parents of deceased workers aged 62 or older.

b. A widow(er) or surviving divorced parent caring for the entitled child of a deceased worker who is under age 16 or is disabled.

CONTACT: Hazel P. Jenkins (410) 965-0164 or oasdi.monthly@ssa.gov for further information.

Table 3.
Supplemental Security Income recipients, December 2010

Age	Recipients		Total payments ^a (millions of dollars)	Average monthly payment ^b (dollars)
	Number (thousands)	Percent		
All recipients	7,912	100.0	4,274	500.70
Under 18	1,239	15.7	780	596.70
18–64	4,632	58.5	2,663	517.20
65 or older	2,041	25.8	830	405.10

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

a. Includes retroactive payments.

b. Excludes retroactive payments.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 4.
**Operations of the Old-Age and Survivors Insurance and Disability Insurance Trust Funds,
December 2010 (in millions of dollars)**

Component	OASI	DI	Combined OASI and DI
Receipts			
Total	88,052	10,264	98,315
Net contributions	34,998	5,945	40,944
Income from taxation of benefits	13	0	14
Net interest	53,153	4,321	57,474
Payments from the general fund	-113	-3	-116
Expenditures			
Total	49,452	10,822	60,274
Benefit payments	49,157	10,575	59,732
Administrative expenses	294	248	542
Transfers to Railroad Retirement	0	0	0
Assets			
At start of month	2,390,443	180,465	2,570,909
Net increase during month	38,600	-559	38,041
At end of month	2,429,043	179,907	2,608,950

SOURCE: Data on the trust funds were accessed on February 17, 2011, on the Social Security Administration's Office of the Actuary's website: <http://www.socialsecurity.gov/OACT/ProgData/funds.html>.

NOTE: Totals may not equal the sum of the components because of rounding.

Supplemental Security Income, December 2009–December 2010

The SSI Monthly Statistics are also available at http://www.socialsecurity.gov/policy/docs/statcomps/ssi_monthly/index.html.

SSI Federally Administered Payments

Table 1. Recipients (by type of payment), total payments, and average monthly payment

Table 2. Recipients, by eligibility category and age

Table 3. Recipients of federal payment only, by eligibility category and age

Table 4. Recipients of federal payment and state supplementation, by eligibility category and age

Table 5. Recipients of state supplementation only, by eligibility category and age

Table 6. Total payments, by eligibility category, age, and source of payment

Table 7. Average monthly payment, by eligibility category, age, and source of payment

Awards of SSI Federally Administered Payments

Table 8. All awards, by eligibility category and age of awardee

Table 1.
Recipients (by type of payment), total payments, and average monthly payment,
December 2009–December 2010

Month	Number of recipients				Total payments ^a (thousands of dollars)	Average monthly payment ^b (dollars)
	Total	Federal payment only	Federal payment and state supplementation	State supplementation only		
2009						
December	7,676,686	5,337,340	2,085,539	253,807	4,120,127	498.80
2010						
January	7,705,071	5,358,655	2,092,282	254,134	4,085,073	498.70
February	7,739,526	5,386,683	2,098,273	254,570	4,128,360	496.70
March	7,776,667	5,417,319	2,105,179	254,169	4,274,831	498.30
April	7,774,363	5,415,628	2,104,004	254,731	4,184,114	499.50
May	7,800,015	5,435,751	2,109,071	255,193	4,205,003	498.60
June	7,837,400	5,464,724	2,116,937	255,739	4,269,596	497.50
July	7,831,046	5,460,051	2,114,890	256,105	4,190,076	499.20
August	7,892,141	5,507,862	2,127,986	256,293	4,311,454	498.90
September	7,898,515	5,513,288	2,128,504	256,723	4,256,062	498.30
October	7,905,492	5,518,761	2,129,769	256,962	4,237,780	499.70
November	7,947,752	5,551,970	2,138,811	256,971	4,296,554	499.30
December	7,912,266	5,526,333	2,129,334	256,599	4,273,680	500.70

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

a. Includes retroactive payments.

b. Excludes retroactive payments.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

SSI Federally Administered Payments

Table 2.
Recipients, by eligibility category and age, December 2009–December 2010

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2009						
December	7,676,686	1,185,959	6,490,727	1,199,788	4,451,288	2,025,610
2010						
January	7,705,071	1,190,266	6,514,805	1,199,296	4,472,499	2,033,276
February	7,739,526	1,190,016	6,549,510	1,209,641	4,494,957	2,034,928
March	7,776,667	1,188,361	6,588,306	1,215,280	4,527,056	2,034,331
April	7,774,363	1,187,763	6,586,600	1,212,272	4,527,929	2,034,162
May	7,800,015	1,188,088	6,611,927	1,221,863	4,542,049	2,036,103
June	7,837,400	1,189,172	6,648,228	1,227,732	4,570,209	2,039,459
July	7,831,046	1,188,489	6,642,557	1,222,497	4,568,938	2,039,611
August	7,892,141	1,191,591	6,700,550	1,236,644	4,609,849	2,045,648
September	7,898,515	1,191,611	6,706,904	1,235,499	4,616,558	2,046,458
October	7,905,492	1,190,909	6,714,583	1,233,911	4,624,389	2,047,192
November	7,947,752	1,192,920	6,754,832	1,245,812	4,650,603	2,051,337
December	7,912,266	1,183,853	6,728,413	1,239,269	4,631,507	2,041,490

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 3.
Recipients of federal payment only, by eligibility category and age, December 2009–December 2010

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2009						
December	5,337,340	598,193	4,739,147	958,456	3,252,098	1,126,786
2010						
January	5,358,655	601,117	4,757,538	957,892	3,268,823	1,131,940
February	5,386,683	600,988	4,785,695	966,712	3,287,084	1,132,887
March	5,417,319	599,878	4,817,441	971,340	3,313,675	1,132,304
April	5,415,628	599,330	4,816,298	968,783	3,315,068	1,131,777
May	5,435,751	599,282	4,836,469	976,745	3,326,507	1,132,499
June	5,464,724	599,370	4,865,354	981,762	3,349,104	1,133,858
July	5,460,051	598,923	4,861,128	977,452	3,348,671	1,133,928
August	5,507,862	600,387	4,907,475	988,805	3,381,935	1,137,122
September	5,513,288	600,397	4,912,891	987,846	3,387,950	1,137,492
October	5,518,761	599,866	4,918,895	986,399	3,394,511	1,137,851
November	5,551,970	600,942	4,951,028	996,244	3,415,567	1,140,159
December	5,526,333	595,546	4,930,787	990,701	3,401,733	1,133,899

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

SSI Federally Administered Payments

Table 4.
Recipients of federal payment and state supplementation, by eligibility category and age,
December 2009–December 2010

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2009						
December	2,085,539	502,433	1,583,106	239,746	1,071,361	774,432
2010						
January	2,092,282	504,173	1,588,109	239,873	1,075,186	777,223
February	2,098,273	504,005	1,594,268	241,413	1,079,151	777,709
March	2,105,179	503,752	1,601,427	242,466	1,084,747	777,966
April	2,104,004	503,713	1,600,291	241,939	1,083,803	778,262
May	2,109,071	503,992	1,605,079	243,614	1,086,242	779,215
June	2,116,937	504,818	1,612,119	244,450	1,091,621	780,866
July	2,114,890	504,667	1,610,223	243,521	1,090,373	780,996
August	2,127,986	506,063	1,621,923	246,376	1,098,125	783,485
September	2,128,504	506,017	1,622,487	246,130	1,098,554	783,820
October	2,129,769	505,882	1,623,887	245,967	1,099,625	784,177
November	2,138,811	507,046	1,631,765	248,043	1,104,651	786,117
December	2,129,334	503,206	1,626,128	246,936	1,100,080	782,318

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Table 5.
Recipients of state supplementation only, by eligibility category and age,
December 2009–December 2010

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2009						
December	253,807	85,333	168,474	1,586	127,829	124,392
2010						
January	254,134	84,976	169,158	1,531	128,490	124,113
February	254,570	85,023	169,547	1,516	128,722	124,332
March	254,169	84,731	169,438	1,474	128,634	124,061
April	254,731	84,720	170,011	1,550	129,058	124,123
May	255,193	84,814	170,379	1,504	129,300	124,389
June	255,739	84,984	170,755	1,520	129,484	124,735
July	256,105	84,899	171,206	1,524	129,894	124,687
August	256,293	85,141	171,152	1,463	129,789	125,041
September	256,723	85,197	171,526	1,523	130,054	125,146
October	256,962	85,161	171,801	1,545	130,253	125,164
November	256,971	84,932	172,039	1,525	130,385	125,061
December	256,599	85,101	171,498	1,632	129,694	125,273

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

SSI Federally Administered Payments

Table 6.
Total payments, by eligibility category, age, and source of payment, December 2009–December 2010
(in thousands of dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
All sources						
2009						
December	4,120,127	475,505	3,644,622	749,310	2,548,839	821,978
2010						
January	4,085,073	475,166	3,609,906	747,254	2,515,751	822,067
February	4,128,360	474,541	3,653,819	753,953	2,552,017	822,389
March	4,274,831	476,647	3,798,184	778,186	2,670,430	826,215
April	4,184,114	475,045	3,709,068	765,706	2,594,324	824,084
May	4,205,003	475,367	3,729,637	769,404	2,610,191	825,408
June	4,269,596	476,085	3,793,511	777,075	2,665,250	827,272
July	4,190,076	475,028	3,715,047	768,633	2,595,399	826,044
August	4,311,454	477,380	3,834,075	789,090	2,691,868	830,496
September	4,256,062	476,375	3,779,687	774,470	2,652,224	829,369
October	4,237,780	475,525	3,762,255	775,508	2,633,294	828,978
November	4,296,554	477,366	3,819,188	788,199	2,676,221	832,135
December	4,273,680	474,932	3,798,748	780,109	2,663,101	830,470
Federal payments						
2009						
December	3,812,757	395,498	3,417,259	736,024	2,378,352	698,381
2010						
January	3,778,554	395,121	3,383,433	734,090	2,346,108	698,357
February	3,819,297	394,452	3,424,845	740,633	2,380,203	698,461
March	3,960,039	396,317	3,563,722	764,484	2,493,708	701,847
April	3,874,717	395,074	3,479,644	752,347	2,422,234	700,136
May	3,894,414	395,283	3,499,131	755,935	2,437,215	701,264
June	3,955,592	395,870	3,559,722	763,468	2,489,337	702,787
July	3,880,991	394,995	3,485,995	755,300	2,423,830	701,861
August	3,996,408	396,847	3,599,561	775,338	2,515,592	705,477
September	3,943,345	396,051	3,547,294	760,966	2,477,787	704,592
October	3,926,458	395,225	3,531,233	762,067	2,460,186	704,205
November	3,982,863	396,728	3,586,135	774,563	2,501,419	706,882
December	3,960,438	394,865	3,565,573	766,520	2,488,151	705,767

(Continued)

SSI Federally Administered Payments

Table 6.
Total payments, by eligibility category, age, and source of payment, December 2009–December 2010
(in thousands of dollars)—Continued

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
State supplementation						
2009						
December	307,370	80,008	227,363	13,286	170,488	123,597
2010						
January	306,519	80,045	226,474	13,165	169,643	123,710
February	309,062	80,089	228,974	13,320	171,815	123,928
March	314,792	80,330	234,462	13,703	176,722	124,368
April	309,396	79,972	229,424	13,358	172,090	123,948
May	310,589	80,084	230,505	13,470	172,976	124,143
June	314,004	80,215	233,789	13,607	175,913	124,485
July	309,085	80,033	229,052	13,333	171,569	124,183
August	315,046	80,533	234,513	13,752	176,276	125,019
September	312,717	80,324	232,393	13,503	174,437	124,777
October	311,323	80,301	231,022	13,441	173,109	124,773
November	313,691	80,638	233,053	13,636	174,802	125,253
December	313,242	80,067	233,175	13,588	174,950	124,703

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month and include retroactive payments.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

SSI Federally Administered Payments

Table 7.
Average monthly payment, by eligibility category, age, and source of payment,
December 2009–December 2010 (in dollars)

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
All sources						
2009						
December	498.80	399.10	517.00	593.10	516.50	404.00
2010						
January	498.70	397.90	517.10	599.90	515.10	403.00
February	496.70	396.80	514.80	592.90	513.40	402.10
March	498.30	398.20	516.40	596.60	514.70	403.20
April	499.50	398.50	517.70	601.60	515.30	403.60
May	498.60	398.50	516.60	596.90	514.80	403.60
June	497.50	398.30	515.30	592.40	514.10	403.60
July	499.20	398.50	517.20	600.50	514.80	403.70
August	498.90	398.60	516.80	598.20	514.60	403.80
September	498.30	398.60	516.00	594.20	514.60	403.90
October	499.70	398.40	517.70	600.20	515.50	403.80
November	499.30	398.40	517.10	596.90	515.30	403.90
December	500.70	399.80	518.50	596.70	517.20	405.10
Federal payments						
2009						
December	476.30	357.90	497.00	583.60	495.30	365.80
2010						
January	476.30	356.50	497.20	590.40	494.00	364.80
February	474.40	355.40	494.90	583.40	492.40	363.90
March	476.10	356.70	496.60	587.20	493.70	365.00
April	477.20	357.00	497.90	592.20	494.30	365.40
May	476.40	357.00	496.90	587.40	493.90	365.50
June	475.40	356.90	495.60	583.00	493.20	365.40
July	477.10	357.00	497.60	591.10	494.00	365.50
August	476.80	357.10	497.20	588.70	493.80	365.60
September	476.20	357.00	496.40	584.80	493.80	365.70
October	477.70	356.80	498.20	590.80	494.80	365.60
November	477.30	356.80	497.60	587.50	494.60	365.70
December	478.70	358.30	498.90	587.30	496.50	367.00

(Continued)

SSI Federally Administered Payments

Table 7.
Average monthly payment, by eligibility category, age, and source of payment,
December 2009–December 2010 (in dollars)—Continued

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
State supplementation						
2009						
December	125.00	135.00	121.60	51.30	131.30	136.30
2010						
January	124.80	134.80	121.50	51.20	131.10	136.10
February	124.60	134.60	121.20	51.10	130.90	136.00
March	124.70	134.70	121.30	51.10	130.90	136.10
April	124.70	134.70	121.30	51.10	130.90	136.10
May	124.50	134.70	121.20	51.00	130.80	136.10
June	124.40	134.70	121.00	50.90	130.60	136.00
July	124.40	134.70	121.00	51.00	130.60	136.00
August	124.30	134.70	120.90	50.90	130.50	136.00
September	124.30	134.70	120.90	50.80	130.40	136.10
October	124.30	134.80	120.90	50.80	130.40	136.10
November	124.20	134.70	120.70	50.70	130.30	136.00
December	124.30	134.90	120.80	50.80	130.40	136.20

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for the end of the specified month and exclude retroactive payments.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

Awards of SSI Federally Administered Payments

Table 8.
All awards, by eligibility category and age of awardee, December 2009–December 2010

Month	Total	Eligibility category		Age		
		Aged	Blind and disabled	Under 18	18–64	65 or older
2009						
December	77,868	7,941	69,927	15,163	54,632	8,073
2010						
January	70,930	7,739	63,191	13,687	49,383	7,860
February	78,883	8,226	70,657	15,120	55,387	8,376
March	101,179	8,381	92,798	20,342	72,294	8,543
April	84,899	9,216	75,683	16,356	59,184	9,359
May	84,101	8,872	75,229	16,089	59,007	9,005
June	96,902	8,568	88,334	19,345	68,835	8,722
July	82,460	9,021	73,439	16,520	56,798	9,142
August	101,303	9,525	91,778	19,726	71,896	9,681
September	85,258	9,288	75,970	16,220	59,626	9,412
October	81,317	8,727	72,590	15,697	56,771	8,849
November ^a	91,089	8,970	82,119	18,446	63,503	9,140
December ^a	85,333	8,497	76,836	17,091	59,601	8,641

SOURCE: Social Security Administration, Supplemental Security Record, 100 percent data.

NOTE: Data are for all awards made during the specified month.

a. Preliminary data. In the first 2 months after their release, numbers may be adjusted to reflect returned checks.

CONTACT: Art Kahn (410) 965-0186 or ssi.monthly@ssa.gov for further information.

PERSPECTIVES—PAPER SUBMISSION GUIDELINES

The *Social Security Bulletin* is the quarterly research journal of the Social Security Administration. It has a diverse readership of policymakers, government officials, academics, graduate and undergraduate students, business people, and other interested parties.

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We are particularly interested in papers that:

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Papers should be factual and analytical, not polemical. Technical or mathematical exposition is welcome, if relevant, but findings and conclusions must be written in an accessible, nontechnical style. In addition, the relevance of the paper's conclusions to public policy should be explicitly stated.

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- **Synopsis**—For the *Bulletin’s* table of contents include a separate synopsis, including the title of the paper along with one to three sentences outlining the research question.
- **Abstract**—Prepare a brief, nontechnical abstract of the paper of not more than 150 words that states the purpose of the research, methodology, and main findings and conclusions. This abstract will be used in the *Bulletin* and, if appropriate, be submitted to the *Journal of Economic Literature* for indexing. Below the abstract supply the JEL classification code and two to six keywords. JEL classification codes can be found at www.aeaweb.org/journal/jel_class_system.html.
- **Text**—Papers should average 10,000 words, including the text, the notes, and the references (but excluding the tables and charts). Text is double-spaced, except notes and references, which are double spaced only after each entry. **Do not embed tables or charts into the text. Create separate files (in the formats outlined in “Tables/Charts” below) for the text and statistical material.** Tables should be in one file, with one table per page. Include charts in a separate file, with one chart per page.
- **End Notes**—Number notes consecutively in the text using superscripts. Only use notes for brief substantive comments, not citations. (See the *Chicago Manual of Style* for guidance on the use of citations.) All notes should be grouped together and start on a new page at the end of the paper.
- **References**—Verify each reference carefully; the references must correspond to the citations in the text. The list of references should start on a new page and be listed alphabetically by the last name of the author(s) and then by year, chronologically. Only the first author’s name is inverted. List all authors’ full names and avoid using *et al.* The name of each author and the title of the citation should be exactly as it appears in the original work.
- **Tables/Charts**—Tables must be prepared in Microsoft Excel. Charts or other graphics must be prepared in or exported to Excel or Adobe Illustrator. The spreadsheet with plotting data must be attached to each chart with the final submission. Make sure all tables and charts are referenced in the text. Give each table and chart a title and number consecutive with the order it is mentioned in the text. Notes for tables and charts are independent of Notes in the rest of the paper and should be ordered using lowercase letters, beginning with the letter a (including the Source note, which

should be listed first). The sequence runs from left to right, top to bottom. The order of the notes as they appear below the tables or charts is (1) Source, (2) general notes to the table or chart, if any, and (3) letter notes.

For specific questions on formatting, use the *Chicago Manual of Style* as a guide for notes, citations, references, and table presentation.

Review Process

Papers that appear to be suitable for publication in Perspectives are sent anonymously to three reviewers who are subject matter experts. The reviewers assess the paper's technical merits, provide substantive comments, and recommend whether the paper should be published. An editorial review committee appointed and chaired by the Associate Commissioner, Office of Research, Evaluation, and Statistics, makes the final decision on whether the paper is of sufficient quality, importance, and interest to publish, subject to any required revisions that are specified in a letter to the author(s). The entire review process takes approximately 12 weeks.

Data Availability Policy

If your paper is accepted for publication, you will be asked to make your data available to others at a reasonable cost for a period of 3 years (starting 6 months after actual publication). Should you want to request an exception from this requirement, you must notify the Perspectives Editor when you submit your paper. For example, the use of confidential or proprietary data sets could prompt an exemption request. If you do not request an exemption, we will assume that you have accepted this requirement.

Questions

Questions regarding the mechanics of submitting a paper should be sent to our editorial staff via e-mail at ssb@ssa.gov. For other questions regarding submissions, please contact Michael V. Leonesio, Perspectives Editor, at perspectives@ssa.gov.

OASDI and SSI Program Rates and Limits, 2011

Old-Age, Survivors, and Disability Insurance

Tax Rates (percent)	
Social Security (Old-Age, Survivors, and Disability Insurance)	
Employers	6.20
Employees ^a	4.20
Medicare (Hospital Insurance)	
Employers and Employees, each ^a	1.45
Maximum Taxable Earnings (dollars)	
Social Security	106,800
Medicare (Hospital Insurance)	No limit
Earnings Required for Work Credits (dollars)	
One Work Credit (One Quarter of Coverage)	1,120
Maximum of Four Credits a Year	4,480
Earnings Test Annual Exempt Amount (dollars)	
Under Full Retirement Age for Entire Year	14,160
For Months Before Reaching Full Retirement Age in Given Year	37,680
Beginning with Month Reaching Full Retirement Age	No limit
Maximum Monthly Social Security Benefit for Workers Retiring at Full Retirement Age (dollars)	
	2,366
Full Retirement Age	66
Cost-of-Living Adjustment (percent)	0.0

a. Self-employed persons pay a total of 13.3 percent—10.4 percent for OASDI and 2.9 percent for Medicare.

Supplemental Security Income

Monthly Federal Payment Standard (dollars)	
Individual	674
Couple	1,011
Cost-of-Living Adjustment (percent)	0.0
Resource Limits (dollars)	
Individual	2,000
Couple	3,000
Monthly Income Exclusions (dollars)	
Earned Income ^a	65
Unearned Income	20
Substantial Gainful Activity (SGA) Level for the Nonblind Disabled (dollars)	
	1,000

a. The earned income exclusion consists of the first \$65 of monthly earnings, plus one-half of remaining earnings.

Social Security Administration
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www.socialsecurity.gov/policy