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Chile's New Pension Reforms

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In 2008 Chile initiated a major reform to its personal account social security system. The personal account system, established in 1981, replaced a traditional pay-as-you-go (PAYGO) system in which workers paid taxes that financed the benefits of those who had already retired — similar to Social Security in the United States.

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Executive Summary

In PAYGO systems, as the ratio of retirees to workers increases, successive generations must pay higher taxes to cover the benefits of the previous generation. Personal account systems, by contrast, require workers to save for their retirement, invest workers' savings productively, and fund workers' benefits through their own accumulated funds.

The Chilean personal account scheme worked well for individuals who contributed on a regular basis. But like most Latin American social security systems, it provided meager benefits for those who didn't earn wages, were self-employed or worked outside the formal labor market. These groups were not required to contribute to an account or the mandate to contribute was difficult to enforce. In general, a system that links benefits closely to contributions (whether public or private, funded or PAYGO) will leave such individuals with little or no pensions.

In 2008, a council appointed by Chile's newly-elected, center-left coalition government to review the pension system reaffirmed the basic principle of reliance on private individual accounts and extended the system to groups not previously required to participate. At the same time, the new reforms expanded and restructured public benefits for individuals with little or no private pension. These changes will protect noncontributors and low contributors from a sharp drop in income after they retire.

The danger under these new reforms is that fiscal costs may grow faster than expected. Furthermore, the phaseout of the generous public benefits for those with larger private pension accounts creates an implicit marginal tax penalty that may discourage some individuals from contributing to personal accounts.

How Personal Accounts Work. Since 1981, Chilean workers have been required to contribute 10 percent of their wages to a

personal account managed by a private pension company of their choice, which invests their savings, subject to tight regulations. The mandate is enforced through payroll deductions by employers. For the first 25 years of the system, the accounts earned an average of 10 percent per year above inflation.

Upon retirement, workers must convert their accumulations into an annuity or draw down the account with scheduled monthly payments (programmed withdrawals). The vast majority annuitize, providing them with a price-indexed income for life. Even if the rate of return falls to a more normal 5 percent per year, individuals who work for most of their adult lives can expect their pensions to replace 57 percent of their final salary. Workers can start receiving their pensions and stop contributing at age 65 for men and age 60 for women, or earlier if they reach a target income replacement rate. The accounts are buttressed by a public pillar financed from the government's general budget.

Problems with Chile's Social Security System. During its 27 years of operation, several problems became apparent with Chile's system, which the 2008 reforms were designed to solve. Many individuals did not participate in the system or contributed infrequently. A high proportion of the adult population in Chile is self-employed and was therefore not required to contribute to the pension system, even if their incomes were high. Young workers often did not contribute because their wages were low and retirement seemed far away. Many low-wage earners moved in and out of informal employment, where the contributory mandate could not be enforced. Women contributed little in comparison to men because relatively few were formally employed outside the home. These are common problems in social security systems throughout Latin America.

> *"In 1981, Chile adopted a social security system with privately managed, personal retirement accounts."*

Workers who made irregular contributions accumulated small accounts that only supported meager pensions. A minimum old age pension was guaranteed by the government, but only to workers who had contributed for at least 20 years — a criterion many workers did not meet. Once the 20-year requirement was met, additional contributions by low-wage workers displaced the government subsidy rather than raising the total benefit. This was, effectively, a 100 percent implicit tax on incremental contributions, which may have encouraged workers to become informal or self-employed, or to work less and retire earlier than they would have otherwise.

The government also financed a means-tested social pension for noncontributors and those with less than 20 years of contributions. However, this was limited in coverage and barely reached the urban poverty level. Low-income individuals did not qualify for the public subsidy until they used up their own accounts. Thus, their own savings did not add much to their lifetime retirement income, which was inadequate even with the government benefit.

In addition, a long-lived person who chose programmed withdrawals could eventually run out of money. Taxpayers might then have to pay the minimum guaranteed pension to this person, even if he had started out with a substantial accumulation. Workers who were not eligible for the guarantee faced the prospect of very low incomes in very old age.

The 2008 Pension Reforms. The 2008 reforms provided more generous public benefits. These new benefits are available to individuals who live in households in the bottom 60 percent of the income distribution.

- Seniors who have no pension from a personal account are eligible for a new basic benefit (U.S. $125 monthly, compared with $80 for the old social benefit), almost doubling the number of noncontribu-

tors who receive a publicly funded retirement benefit.

- Individuals who have a modest pension account will receive a supplemental government-funded pension regardless of the number of years they contribute to their account.

- The supplementary pension is phased out as the private pension grows and is fully phased out once the private pension exceeds $425 per month, making almost everyone in the bottom three quintiles of the income distribution eligible for some public benefit.

Besides expanding public benefits, the 2008 reforms also strengthened the personal account system by requiring some self-employed workers to participate, by subsidizing the contributions of young low-income workers, and by subsidizing the employers of young workers who join the system. High-income self-employed professionals — such as doctors and lawyers — will be required to contribute beginning in 2012. These measures could add 200,000 new participants to the pension fund system.

New regulations also make it less likely that individuals who take programmed withdrawals will exhaust their accounts and fall back on public subsidies. A retiree who does not purchase an annuity must set aside a reserve large enough to fund a pension annuity equal to at least 30 percent of his initial programmed withdrawals until he is well into his 90s. In effect, the reserve finances a deferred lifetime annuity for the individual.

As mentioned previously, prior to 2008 those who received government-subsidized retirement payments to supplement the pension from their account did not benefit from their own contributions (an implicit 100 percent tax). Now, the gradual phaseout of public subsidies imposes an implicit tax of only 29.4 percent, but the implicit tax applies to everyone in the bottom three-fifths of households (income quintiles) who has some contributions.

> *"The 2008 reforms provided more generous public benefits."*

In total, the 2008 changes represent a modest and targeted shift in the direction of public tax-financed benefits for non-contributors and low-earning or irregular contributors for a system that remains largely prefunded and private — provided behavior and policies do not change. Calculations in this study, based on the age and pension structure of the elderly population in 2006, indicate:

- Under the new regime, two-thirds of all seniors will receive some government-funded public benefit (compared with 40 percent previously).

- Public benefits will comprise over half of all pension income for seniors in the bottom three quintiles of households.

- Personal accounts will provide 100 percent of the pension income of (nondisabled) retirees prior to age 65 and of all retirees in the upper two quintiles of households after age 65.

Overall, practically everyone will be eligible for some benefit and two-thirds of all pension income will continue to come from prefunded retirement accounts (compared with 77 percent previously).

Disability Reforms. In addition to the personal account system, the 2008 reforms substantially changed Chile's innovative disability insurance system. Workers previously paid about 1 percent of wages to their pension fund to purchase an insurance policy that covered preretirement disability and supported a surviving spouse and children. Because lower claims costs increased their profits, pension funds had an incentive to challenge disability claims.

Under the new system, a single disability and survivors'

insurance policy will be purchased for all workers and their employers will pay the premium — a uniform percentage of wage for everyone. It was hoped that this would reduce costs. However, because employers will not be able to reduce their premium costs, they will not have the incentive to discourage fraud and abuse as pension funds did previously. Therefore, disability rates and insurance fees are likely to rise.

This could result in a significantly higher burden on workers. Insurance costs were previously 1 percent of wages, but by 2009 they had climbed to 1.8 percent of wages. Although employers pay this premium directly, eventually the cost will be passed on to employees in the form of lower wages. Higher disability rates and lower wages could reduce formal sector work and retirement income as well.

Dangers and Challenges of the 2008 Reforms. These changes may reduce political criticism and strengthen Chile's personal account system by expanding pension coverage and buffering the elderly from large drops in the market value of their retirement savings. On the other hand, however, the new incentives may lead fewer people to work and contribute in the formal sector, and future policy changes may increase fiscal costs.

According to the Ministry of Finance, the new benefits will cost 1.4 percent of gross domestic product (GDP) by 2025. However, calculations in this study indicate that public costs could double by 2028 and triple by 2048 if political pressures lead the government to link benefits to wage growth instead of price growth, as currently planned, and to extend benefits to seniors in the top two quintiles.

Additionally, workers may try to evade contributions in the future more than in the past. Due to the higher public benefit and the 29.4 percent implicit tax on private pensions, individuals now face a greater incentive to become independent contractors, who are not required to contribute, or to work in the informal sector where productivity may be lower but compliance is difficult to enforce. If the government cannot forestall these dangers, private accounts will provide a smaller proportion of benefits and the government's fiscal obligations will grow.

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Introduction[1]

In 2008 Chile initiated a major reform to its personal account social security system. Established in 1981, the country's personal account system replaced a traditional pay-as-you-go (PAYGO) system, where workers paid taxes that financed the pensions of those who had already retired. Like Social Security in the United States today, the old PAYGO system promised a set of defined benefits independent of the contribution rate. Chile was experiencing problems that are unavoidable in such systems: Due to decreasing birth rates, increasing longevity and a formula that paid generous pensions to individuals who did not contribute for much of their adult lives, the number of workers supporting each retiree was falling, and payroll contributions did not cover all the promised benefits. General government financing was used to eliminate the gap between promised benefits and payroll contributions, placing pressure on the public treasury.

In 1981, Chile replaced its traditional system with one in which workers contribute to accounts they individually own. The money was invested by a pension fund chosen by each worker from among a number of competing, privately-owned firms. Like defined contribution pensions funded by workers' contributions to 401(k) accounts in the United States, the retirement benefits of Chilean workers were largely prefunded by their own savings, and the pension amount depended on their contributions and investment earnings. During the past two decades, Chile's individual account system has become a model for partially prefunding social security. It has been copied by many countries across the globe but criticized by supporters of PAYGO systems.[2]

In 2006, the newly-elected center-left coalition government set up a council to review the personal account system, which had already been modified 44 times in 27 years.[3] A critical assessment was expected because the system was instituted during the regime of Augusto Pinochet.[4] Instead, legislation enacted in 2008 reaffirmed the basic principle of reliance on private individual accounts and extended the personal account system to groups that were not previously required to participate. It identified as a major problem the fact that many individuals contribute for only part of their adult lives, and some don't contribute at all — mainly due to the prevalence of self-employment and informality in the labor market, and the low work propensity of women. The new reforms therefore expanded and restructured public benefits for these groups.

> *"At retirement, most workers use their account to purchase a lifetime, inflation-protected annuity."*

The changes proposed by the council and adopted by the government will have complex consequences:

- The reforms will protect many noncontributors and low contributors from a sharp income drop in old age.
- However, they may add substantially to long-term fiscal costs — depending on how the new system is implemented and evolves.
- On one hand, the changes may reduce political criticism and strengthen Chile's individual account system by expanding pension coverage and buffering the elderly from large drops in the market value of their retirement savings.
- On the other hand, the enlarged public benefit for noncontributors and the new implicit tax on private pensions of contributors may discourage compliance with the contributory mandate and encourage a shift to the informal labor market, self-employment or earlier withdrawal from the labor market.

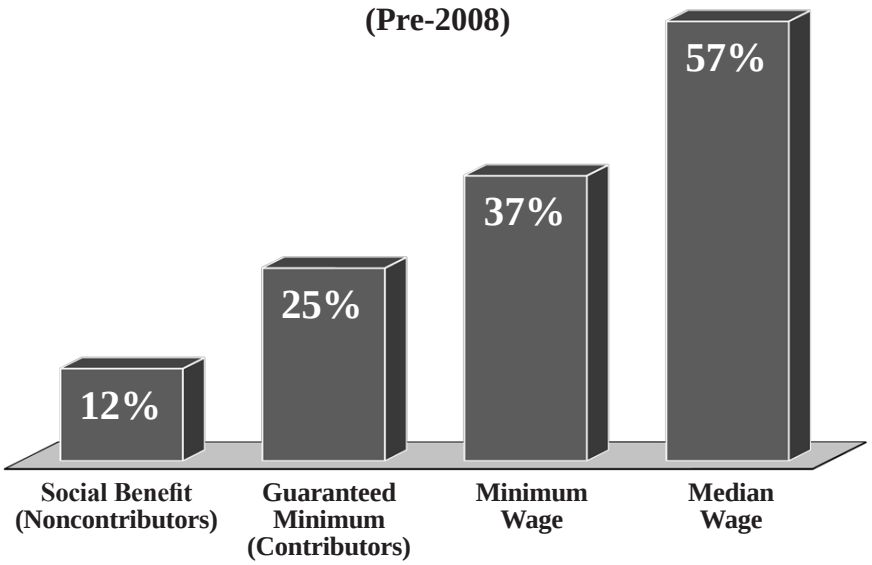
This paper will analyze the problems the 2008 changes were intended to solve and the likely impact of the reforms.

The Chilean Pension Fund System, 1981-2008

In the early 1980s, Chile replaced its traditional social security system with a prefunded system in which workers made mandatory contributions to accounts they individually owned. The system required each worker to contribute 10 percent of his or her wages to a personal retirement account, plus another 2 percent to 3 percent of wages for administrative fees and disability and survivors' insurance.[5] The money was invested by a pension company, called an AFP (Administradoras de Fondos de Pensiones), chosen by workers from among a number of competing, privately-owned firms. Pension fund investments were strictly regulated, although the range of investment choices did increase.[6] The structure of the post-2008 system is much the

FIGURE I

Public Benefits and Wages as Percent of Average Wage (Pre-2008)



Note: Based on average wage of pension system contributions in December 2007 (U.S. $655).
Source: Authors' calculations.

same as the model put in place in 1981, albeit with a somewhat greater public sector role.

Switching Systems and Transition Costs. When the system of personal accounts was implemented, all workers newly entering the labor market had to join the new system, but workers already in the labor force were given the right to choose between the new and old systems. Those who switched were compensated for their past service with "recognition bonds" that were cashed in upon retirement as part of their accumulation. The bond redemptions were funded by public treasury revenues. Most young workers switched while most older workers stayed in the old system. The old system was closed to new entrants and gradually phased out. Thus, transition costs to the treasury have been gradually declining.

Annuities and Programmed Withdrawals. Payouts were tightly circumscribed in the post-1981 system. Upon retirement, the accumulated savings were either used to purchase a price-indexed life annuity or paid out as programmed withdrawals. For annuities, workers turned their accounts over to an insurance company and received a guaranteed income for life, but forwent the right to leave a bequest to heirs. Variable annuities were authorized in 2002 (although not yet implemented), and a mechanism for electronic quotations of pension payouts was implemented in 2004. Electronic quotes enabled retirees to get payout quotes online, thereby facilitating comparison and competition among annuity companies. Monthly payouts for variable annuities depend on investment returns during the retirement period. This contrasts with fixed annuities, where the monthly payouts are fixed for life upon retirement. About two-thirds of retired workers are annuitants.

For workers who chose programmed withdrawals, the account was left with a pension fund administrator, and retirees annually withdrew an amount determined by a preset formula. These retirees could bequeath any funds remaining in their account at their death to their heirs but ran the risk of drawing down their accounts to very small amounts before they died.[7]

Minimum Pension Guarantee. Regardless of the option chosen, the government guaranteed an old-age minimum pension to all workers who contributed for 20 years or more. The minimum pension was price-indexed, but ad hoc increases kept it at about 25 percent of the average wage. [See Figure I.] The minimum guarantee amount rose to 27 percent at age 70 and 29 percent at 75. If the amount in a worker's account at retirement was insufficient to purchase an annuity providing the minimum amount of monthly income guaranteed for life, the worker was required to withdraw at the minimum level and the government paid the pension when his account was depleted. Before the 2008 reforms, approximately 23 percent of pensioners received the guaranteed minimum. Most recipients were participants in the original PAYGO system who had opted not to switch to the new private account system after 1981.

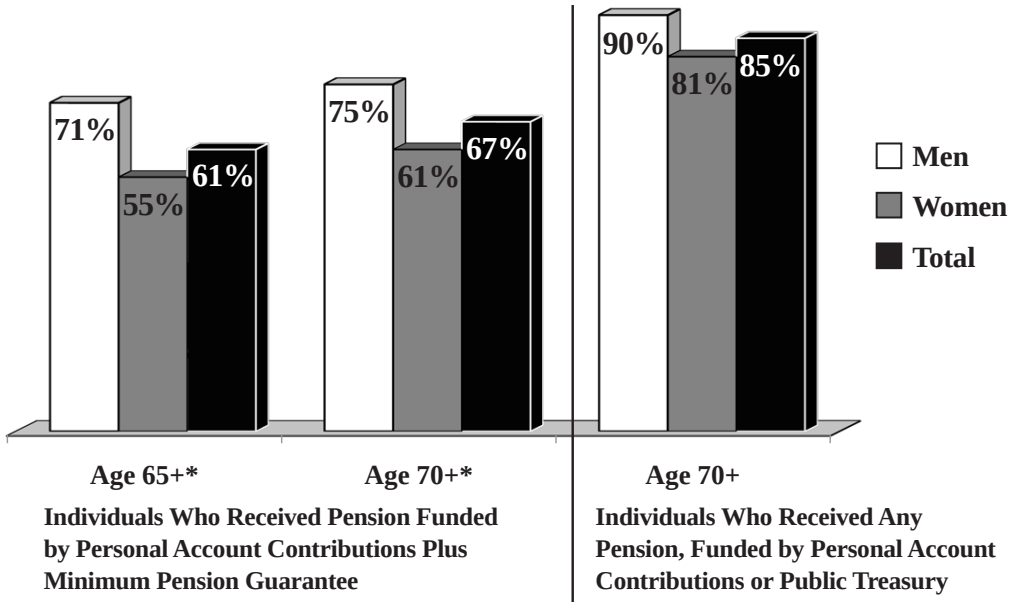
Means-Tested Social Benefit. About 18 percent of retirees with no pensions or other sources of income received a noncontributory means-tested social benefit called the Pension Asistencial (PASIS), funded from general revenues. It was about

12 percent of the average wage.[8]

Early Retirement Choices. Workers could choose the age at which they began to withdraw money from their account. The normal retirement age was (and remains) 65 for men and 60 for women. After they reached this age, workers could begin withdrawing funds regardless of the amount accumulated. Workers could retire early at any age once they had accumulated an account balance large enough to finance a pension that was 150 percent of the guaranteed minimum and 70 percent of their own average wage. (Until recently, these requirements were 110 percent and 50 percent, respectively.) In fact, the majority of male retirees met the required preconditions and started their pensions early. For these workers, further contributions were voluntary rather than mandatory.

FIGURE II

Percentage of Older Individuals Who Received Pensions (Pre-2008)



* Includes survivors' benefits — 35 percent of women 65 years and older, and 39 percent of women 70 years and older receive a pension based on their own contributions while the rest receive survivors' insurance or joint pensions.

Source: Authors' calculations. For details, see Appendix Table II.

It is important to note that early retirement from the system did not mean retirement from the labor force. Instead, it simply meant workers started withdrawing from, and could stop contributing to, their retirement accounts. Preliminary evidence indicates that the labor force participation of older workers has been rising since the mid-1980s, therefore, pension reform has likely had a positive impact on the labor supply of older workers.[9]

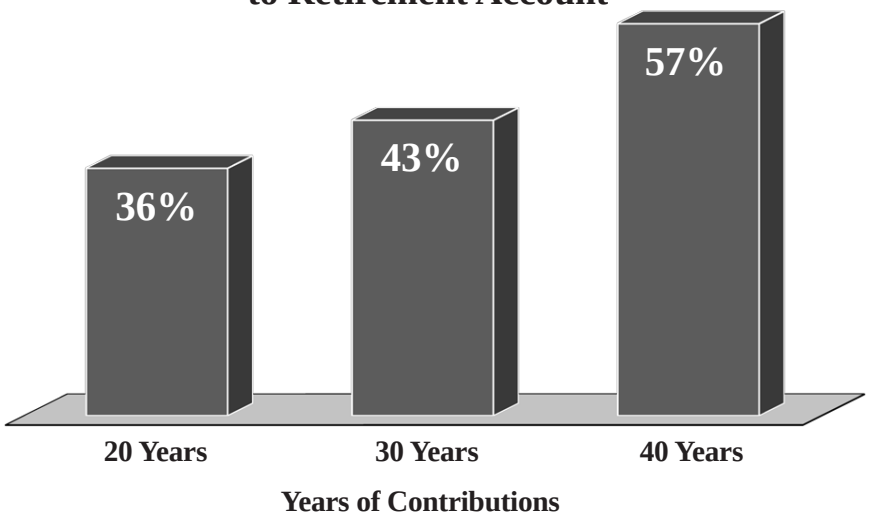
Joint Pensions for Spouses. Chile's personal account system also provided insurance for widows, financed by their husbands rather than by the public treasury. Married men who annuitized were required to buy joint annuities, which provided the surviving widow at least 60 percent of the husband's annuity (if there were surviving dependent children, the annuity provided 50 percent to the widow plus 15 percent to each child). The formula for programmed withdrawals also included these provisions for widows and other survivors.

Disability and Survivors' Insurance. Since the system's initial implementation, each pension company was required to provide disability and survivors' insurance for all of its affiliated workers. The pension funds contracted with insurance companies and eventually passed the cost on to workers as part of the fee for general administrative costs plus insurance. The insurance fee was a uniform percentage of wages for all workers affiliated with a company — usually around 1 percent.[10] Thus, disability and survivors' risks were pooled within each pension company. This insurance, plus the balance in the worker's account, financed life annuities for widows and benefits for children. Widows were also protected by a survivors' minimum pension guarantee.

Pension Coverage. The percentage of workers who receive benefits through the pension system rises sharply with age and varies by gen-

FIGURE III

Wage Replacement by Years of Contributions to Retirement Account



Note: Percentage of final or potential wage at retirement, assuming 5 percent rate of return and 2 percent annual wage growth. Twenty years of work are assumed to be the first 20 years of adult life. Thirty years are assumed to be randomly distributed over 40 years of potential working life.

Source: Simulations by authors. For details, see Appendix Table IA.

der [see Appendix Tables II and III]. As Figure II shows, for members of the pre- and post-1981 systems:[11]

- Among men 65 years old and older, 71 percent received a pension based on their own retirement accounts.
- Of men 70 years and older, three-fourths (75 percent) received a pension from their own contributions.
- By contrast, 35 percent of women over age 65 received pensions funded from their own contributions and 20 percent received a joint pension or survivor's benefit.
- And of women 70 years or over, 39 percent received a pension from their own account, while 22 percent received a joint pension or survivors' benefits.

The social benefit for noncontributors added significantly to coverage by the system, as shown in Figure II:

- An additional 19 percent of men and 26 percent of women age 70 or older received the noncontributory social benefit.
- Among seniors age 70 or older, 90 percent of men and 81 percent of women received a pension of some sort — funded from contributions or the public treasury.

Women were more likely than men to depend on the joint pension or noncontributory social benefit eventually [see Appendix Tables VI and VII].[12] More than two-thirds of women without pensions were supported after age 65 by their spouse's pension (just as they had been supported by his wages when younger). Women who worked as much as men got roughly equal lifetime pension payouts if the joint pension was included.[13]

Rate of Return and Replacement Rate. During the first 25 years of the 1981 system, the invested accounts earned an average of about 10 percent annually, after accounting for inflation. If this rate continued, it would yield a pension that was greater than the individual's wage. However, in the long run, this rate was expected to fall. With a more realistic 5 percent annual rate of return, workers who contributed regularly could expect pensions to replace 57 percent of their final salary [see Figure III and Appendix Table IA].

Problems with the Pre-2008 System

Major issues that led to the 2008 reforms included the fact that many self-employed and low-income workers did not participate in the system or contributed irregularly, leading to low benefits. There were also problems with the design of the government-funded benefits. These problems were especially great for women.

Problem: Irregular and Self-Employed Workers. Regular contributors to individual accounts could expect high wage replacement rates [see Appendix Tables IA and IB]. However, many individuals did not participate in the system or, if they did, contributed infrequently. Most were low-wage earners.

Furthermore, about one-quarter of the active labor force in Chile was (and still is) self-employed. These workers were not required to contribute — in part because the government was unable to enforce mandatory con-

tributions. Many individuals moved in and out of formal, informal and independent employment over their lifetimes, meaning more than a quarter of workers contributed to personal retirement accounts irregularly.[14]

Problem: Low Participation Rates and Pensions for Women. Only 41 percent of working age women in Chile were formally employed outside of the home at any given time, compared with 75 percent of men. By contrast, the labor force participation rate was 70 percent for women in the United States and other high-income countries.[15] It was expected, therefore, that a smaller fraction of women would receive pensions from their own accounts. Moreover, due to their lower earnings, greater longevity and earlier allowable retirement age, pension amounts for female recipients would be less than half that of men [see Appendix Tables II, III and IVB].[16]

Problem: The Minimum Pension Guarantee. The old-age minimum pension guarantee did not help individuals who contributed less than 20 years. It also discouraged additional work by low-wage workers once they met the 20-year eligibility requirement, since additional contributions simply displaced the government subsidy rather than raising the total pension. They faced a 100 percent implicit tax on their private pensions. At that point, they might become informal or self-employed workers, who were not required to contribute.

Problem: Eligibility for the Noncontributory Social Benefit. The means-tested social benefit for noncontributors was administered locally, and eligibility criteria were not always applied in a uniform manner. Furthermore, benefits barely reached the urban poverty level and budgetary constraints led to waiting lists.[17] Workers who had made small irregular contributions did not qualify for the means-tested social benefit until they exhausted the money in their accounts. Thus, the system imposed a 100 percent marginal tax on very small private pensions.

> *"Pre-2008, individuals with small accounts received a government-funded benefit."*

Problem: Disability and Survivors' Insurance. Because each pension fund paid for the disability and survivors' insurance of its affiliated workers, it had an incentive to choose a low-cost insurance company and to contest questionable claims. But it also had an incentive to try to "cherry-pick" — attracting workers with lower disability risks while discouraging high-risk workers from affiliating with them. The insurance cost was ultimately passed on to workers as part of their general pension fund fees. Depending on the pension fund with which they were affiliated, two workers with the same risk profiles might end up paying different (implicit) insurance premiums.[18]

Furthermore, women paid the same insurance rates as men but got lower expected benefits because they were less likely to die young or become disabled. Also, a male widower could not collect survivors' benefits unless he was dependent on his wife. Average costs for women were about 45 percent that of men, but their insurance rates were based on gender-neutral tables, in contrast to the gender-specific rates used for old-age annuities.

Problem: Exhausting Accounts through Programmed Withdrawals. A person who chose programmed withdrawals could eventually draw down his balance and be left with a minuscule pension if he lived a long time. Taxpayers then had to pay his pension at the minimum level, if the person was eligible for the guarantee. If he was not eligible, he faced the prospect of very low income in very old age.

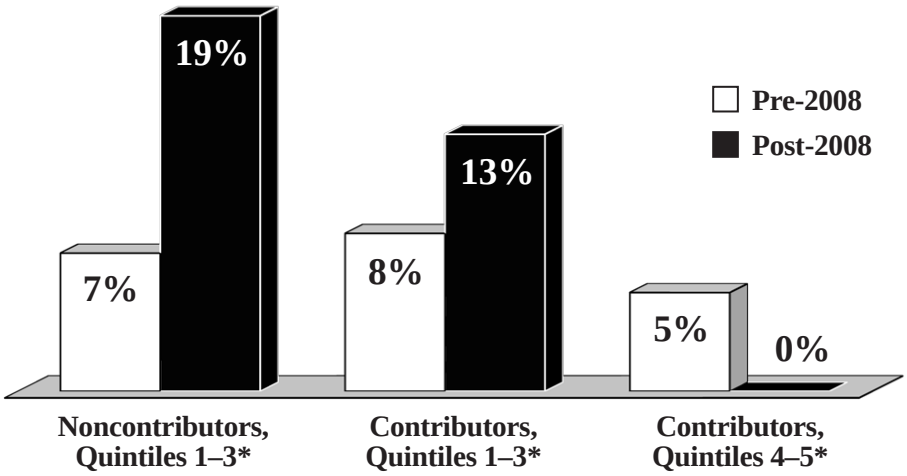
Problem: Income Inequality Among Workers Is Exacerbated in Retirement. Underlying the specific problems of the pension system was the general income inequality in Chile and the perception that personal retirement accounts do not ameliorate, and may even exacerbate, this inequality in old age.[19] Many low-income informal sector workers and women did not get an old-age benefit, were not eligible for the minimum pension subsidy or for the means-tested social benefit, and therefore fell further behind in the income distribution.

The 2008 Reforms

In 2006, newly elected President Michelle Bachelet, a member of the Socialist Party, set up a special 15-member Council to re-evaluate the pension system. The Council was expected to identify problems in the pension system and perhaps even recommend major structural changes. However, the Council was strongly influenced by academic research

FIGURE IV

Average Projected Public Benefit as Percent of Average Wage, Pre- and Post-2008



Note: Based on average wage for system contributors in December 2007 (U.S. $655).

* Pre-2008 amounts are expenditures per person on social benefits for noncontributors, minimum pension guarantee for contributors. Post-2008 amounts are expenditures per person on basic benefit for noncontributors, pension supplement for contributors. Based on the fully phased-in value of the basic benefit (expressed in 2008 U.S. dollars), which will occur by 2012.

Source: Authors' calculations. For details, see Appendix Table IVA.

showing that the personal account system was working quite well for steady contributors, although there were real problems for those with little or no contributions.

Thus, their recommendations acknowledged the success of the funded system, but greatly expanded the publicly funded benefits for low contributors. They also extended the mandate for contributing to the private system and changed incentives for contributions in positive and negative ways.

The addition of generous new benefits was facilitated by Chile's growing fiscal surplus, due in part to the declining transition costs of the 1981 pension reform and the sharply escalating world price of copper — Chile's major export. In this paper, all monetary amounts are in U.S. dollars, converted from Chilean pesos using an exchange rate of C$600 to U.S.$1, the approximate exchange rate in late 2008.

The Dual Means Test. A unique feature of the new public benefit is the dual means test for eligibility and benefit amount:

- First, eligibility for the public benefit is limited to individuals in households with incomes that put them into the bottom three-fifths of the household income distribution.
- Second, the greater an eligible individual's own private pension is, the smaller the public benefit received.

The first test means that individuals who live in households with incomes in the top two-fifths cannot receive the public benefit, even if they have no personal retirement account or only a small balance. The second test means that the level of the public benefit is based on an individual's personal retirement account pension rather than all income sources of all members of the household in which he or she lives.

Increased Coverage by New Public Benefits. The reforms replaced the minimum pension guarantee and the means-tested social benefit with two new public subsidies that are also funded from the public treasury. More people are eligible to receive the new subsidies:

- The old "social benefit" was replaced with a new "basic benefit," the Pension Basica Solidaria (PBS), for all residents over age 65 who have no pension of their own and live in households in the bottom three-fifths of the income distribution — this almost doubles coverage of noncontributors.
- The original old-age minimum pension guarantee went only to individuals with at least 20 years of contributions and whose private pensions were less than the guaranteed minimum, which was about $160 per month.
- In contrast, the new pension supplement, the Aporte Previsional Solidario (APS), goes to individuals in the bottom three-fifths (quintiles) of households whose self-funded pensions fall below $425 a month, regardless of how many years they have contributed.

Thus, the new public benefits apply to a broader range of contributory years and private pension income. As a result, a greater proportion of the elderly are projected to receive the new

basic benefit or pension supplement than received the old social benefit or minimum pension subsidy. In fact, practically all people over age 65 in the bottom three quintiles of households will get one of these new public benefits. [See Appendix Table III.][20]

Increased Benefits. The public benefit amount to both noncontributors and contributors was also increased [see Figure IV]. After a brief transition period ending in 2012, the basic benefit will be $125 a month, which is 55 percent greater than the previous social benefit. The new basic benefit is 19 percent of the average wage of pension fund contributors (38 percent of Chile's median wage).[21]

The pension supplement (APS) goes to contributors and is the phase-out stage of the basic benefit. It equals the basic benefit minus 29.4 percent of the individual's own private pension. On average, contributors in the bottom three quintiles of households will get a public benefit that is 13 percent of the average wage. This is less than the minimum pension guarantee but it goes to a broader group, including many whose own pension exceeds the minimum. It thereby raises the expected benefit of the average contributor and enables them to get a total (public plus private) pension that is larger than they received previously.

The public benefits are fully phased out for individuals with private pensions of $425, which is about 65 percent of the average wage. Currently, this ceiling is higher than the private pension of virtually everyone in the bottom three-fifths of households. Of those in the top two income quintiles, 78 percent of people also have private pensions less than $425, but they are not eligible to receive any public benefit.[22] As a result, the total pension for this group will be less on average than that for individuals in the bottom three quintiles.

Increased Tax-Financed Share and Decreased Prefunded Share of Total Pension. As a result of increased coverage and public benefit amounts, the public share of total pensions will increase — from 23 percent pre-2008 to 32 percent post-2008 — and the share based on private contributions will decrease — from 77 percent to 68 percent [Appendix Table IVA and Figure V]. This increase shows up even more sharply for the bottom three quintiles, where the new benefits are concentrated. The public share of total benefits rises from 38 percent to 56 percent for this group, while it falls to zero for the top two quintiles. In the future, the upper-third of retirees will get their entire pension from their private accounts, while the bottom two-thirds will get more than half their total pension from public transfers.

This also means that the reliance on prefunding will fall relative to what it would have been otherwise. The prefunded share of total pensions was scheduled to rise over the next decade as pre-1981 members died and were replaced by new retirees from the post-1981 system. However, that growth in the prefunded share has now been slowed down. Instead, if individual behavior is unchanged, the prefunded portion of the total is likely to eventually stabilize at the new contributory share — about 68 percent.[23]

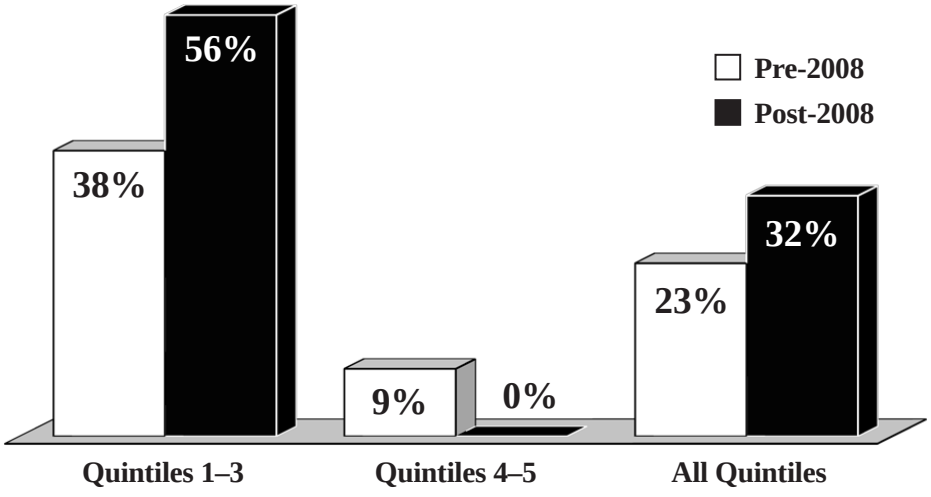
Starting Public Retirement Benefits At Age 65. In Chile, most workers cease contributing to the pension system before the "normal" retirement age of 60 for women and 65 for men, although they continue to work. To discourage workers from retiring earlier in order to get a larger government supplement, the 2008 reform law specifies that the payout of the public benefit will not start before age 65.

> *"Post-2008, a majority of workers will receive some government-funded benefits."*

Moreover, if workers retire early, the size of the entitlement they eventually receive will be reduced, based on the higher imputed private pension they would have gotten had they retired at the normal age. For instance, accumulating investment returns for five more years and paying out benefits for five fewer years increases the imputed private annuity by about 50 percent. For workers who retire five years early, this rule permanently reduces the public supplement by 15 percent of the private pension — in addition to the initial five years of forgone benefits.[24] This represents a large savings for the treasury and reduces the moral hazard problem, compared with a policy of providing access to the full supplement prior to age 65. However, it ignores the fact that life expectancy will continue to increase, that the optimum pension age will, in all likelihood, become higher than 65, and that the public obligation for

FIGURE V

Public (Tax-Financed) Share of Total Pension Income, Pre- and Post-2008



Source: Authors' calculations, based on Appendix Table IVA.

women would fall if their normal private pension age were raised to equal that of men.

Linking the Two Public Benefits. Perhaps most important, the new structure links the two publicly funded benefits: When the basic benefit for noncontributors goes up so, too, does the pension supplement for contributors. Among those eligible for some public benefit, 45 percent will receive the basic benefit and 55 percent the pension supplement. However, total government expenditures on noncontributors will be greater because the average pension supplement is smaller than the basic benefit.

A large majority of older people will receive — and a majority of young people can anticipate receiving — the new public benefits and will see the two parts as integrated. Because these benefits are paid by the public treasury, the cost of financing them is less transparent and mostly paid by others. They become ongoing obligations of the public treasury and regarded as an entitlement of the majority rather than social assistance or a stopgap measure for the minority, as they had been prior to 2008. This is likely to give the public benefits broad political support in the future.

Increased Coverage of the Personal Account System. The new law also brings more people into the personal retirement account system. Some self-employed workers will now be required to contribute and the contributions of young workers will be subsidized.

Mandatory Coverage for Some of the Self-Employed. Previously, self-employed individuals were not required to contribute due to the inability of the government to enforce mandatory contributions. However, beginning in 2012, higher-income self-employed professionals — like doctors and lawyers — will gradually be required to contribute to the social security system.[25] Their contributions to social programs will total about 20 percent of their wages — half to pensions, the rest to health and labor accident (workers' compensation) insurance — applied to 80 percent of their reported annual income. This could add 200,000 new members to the pension fund system and increase contributions by many others.[26]

Subsidies for Contributions of Young Workers. Young workers comprise another group with low participation rates. Because contributions are mandatory for workers with employment contracts, young workers are more likely to seek independent contractor status to avoid contributions. To counter this tendency, in 2008 the government began offering subsidies to employers who hire young workers as employees. The treasury pays 5 percent of the minimum wage for 24 months (about $300 total) to employers of workers between ages 18 and 35 whose income is less than 1.5 times the minimum wage — provided the employees contribute to a personal account.

Beginning in 2011, the treasury will make a similar contribution for 24 months into the worker's account. Assuming a 5 percent rate of return, a worker who begins receiving the bonus at age 25 will have an extra $2,000 in his account by age 65.

Separating the Administrative Fee from the Disability and Survivors' Insurance Premium and Pooling the Insurance Risk. Until

the 2008 reforms, contributors were charged a fee that combined the administrative fees and disability and survivors' insurance premiums. These two components were untied in 2008. Workers were obligated to continue paying the administrative fee while the obligation to pay the insurance premium was shifted to employers. The economic incidence of the mandated insurance will be determined in the medium-term by the net wage adjustment; that is, wages may fall or may not rise as much as they would have otherwise because of this added labor cost.[27]

Also starting in 2009, pension companies are required to collectively purchase pooled insurance for all their affiliates in a public auction. Premiums, as a percentage of wages, will be the same for all pension companies, eliminating the incentive to try to attract low-risk workers but also reducing the incentive to keep disability and survivors' insurance costs low. The net impact on costs will be discussed further below.

Pension funds recently announced their new administrative fees, ranging from 1.36 percent to 1.54 percent of wages — with one outlier at 2.36 percent. These will continue to be paid by workers. The new insurance fee of 1.88 percent, uniform for all workers, will be paid by employers.

Insurance rates for both genders will be based on the disability and survivors' rates for men, but women will get a rebate into their personal accounts equal to the difference between the true male and female rates. Women will retain coverage until age 65, if they do not start their old-age pension before then. Previously, they lost this coverage as soon as they became eligible for their old-age pension at age 60. Widowers are included as beneficiaries, on par with widows.

New Regulations for Programmed Withdrawals. The 2008 reforms significantly changed programmed withdrawals, making it unlikely an individual will exhaust his account. Now, in addition to his regular account balance, a retiree who opts for programmed withdrawals must set aside a reserve large enough to fund a pension equal to at least 30 percent of his initial programmed withdrawal amount for a number of years that far exceeds his expected life span at retirement.[28] It must cover a person who retires at the normal age until he is well into his 90s. (If the pensioner dies before using up that reserve, it becomes part of his estate.) This adjustment, of course, reduces the person's monthly pension.

> *"Provisions for disability and survivors' benefits also changed."*

The amount of the programmed withdrawal will be recalculated every year, based on the account balance (without the reserve fund) and future projected rates of return. After the monthly programmed withdrawal falls to 30 percent of the initial amount, the remaining balance is used to make payments at that level. After the account is exhausted, the individual draws on his reserve fund. In effect, he is self-financing his own deferred annuity. Unless he lives past his mid-90s, a person whose initial programmed withdrawals are more than $425 a month will never become eligible for the basic benefit. (That is because 30 percent of $425 = $128, which is greater than the basic benefit.)

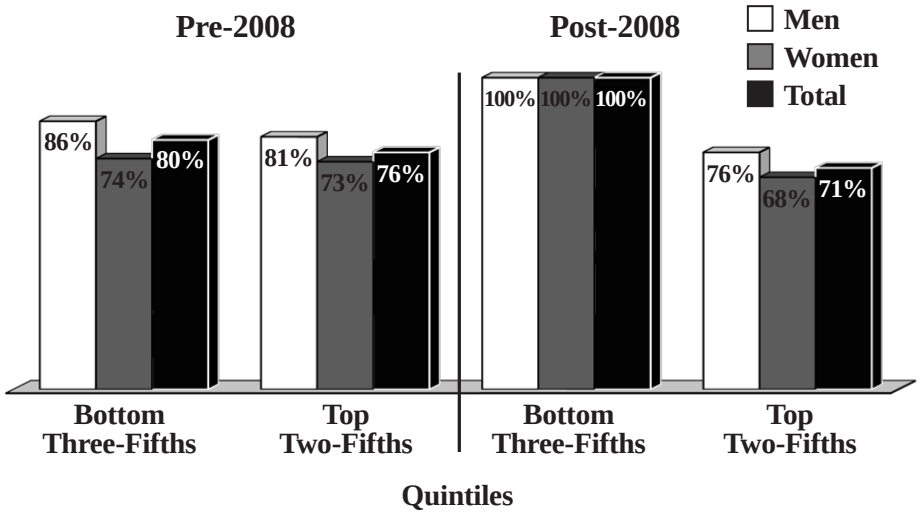
This rule protects the individual from running out of money, and it guarantees the state will not be burdened with people who take large programmed withdrawals and eventually deplete their accounts. It should encourage more pensioners to annuitize because with an annuity the initial payout will be greater and individuals will get a higher level of longevity and investment insurance from the system (discussed below).

People who qualify for a public pension supplement at retirement don't have to set aside the reserve fund — the rule only applies to those who do not receive the pension supplement. This means it applies mainly to the top two income quintiles and will prevent them from ever becoming public charges.

Other Changes. Other changes adopted include: 1) tax incentives to encourage voluntary retirement saving, especially saving out of post-tax monies — similar to the Roth IRA in the United States, 2) the possibility of opening voluntary old-age pension fund accounts financed by other family members, 3) a special fund for social security education, 4) authorization for retirees to use up to 2 percent of their accounts to pay for the services of a licensed financial adviser, 5) wage-indexation of the ceiling on maximum covered wages and 6) the creation of a new bureaucracy to manage the new public benefits.

FIGURE VI

Population Aged 65 Years and Older Receiving a Pension of Any Type (by household income and gender)



Source: Authors' calculations. For details, see Appendix Table III.

Analysis of the New Public Benefits: Coverage, Benefits and Incentives

The new system expands pension coverage and amounts, reduces poverty in old age, and redistributes to low earners and women. It cushions the elderly from the risks of low market values and low rates of return on retirement savings, and from reductions in annual pension income as longevity grows. But the new system also generates fiscal costs for the public treasury that may be larger than expected if political pressures develop to pay larger public benefits to more groups. It also imposes an implicit tax on private pensions that may discourage contributions and formal sector work.

Coverage. Because of the 2008 reforms, practically all people over age 65 are eligible to receive a pension of some kind — either public, private or a public-private mix. In particular, all noncontributors in the bottom three quintiles will receive the basic benefit — this is 30 percent of all seniors, almost twice as many as received the old social benefit, raising total pension recipients to almost 100 percent. [See Figure VI and Appendix Tables III, IVA and IVB.]

However, there are several caveats. First, the problem inherent in any nonautomatic scheme is that some individuals will probably not collect a pension, despite their eligibility, because they lack information. Second, the perception of low coverage prior to reform was, in part, an illusion — the pre-2008 system already paid some kind of pension to 85 percent of seniors age 70 and older. Third, in the upper two quintiles of households, pension coverage will actually go down because some individuals who previously received the social benefit have no private benefit and will no longer be eligible for any public benefit.[29]

Impact on Average Pension Amounts. The reforms provide an extra layer of retirement income well above the poverty floor to lower-middle class contributors and noncontributors. The basic benefit payment of $125 to each recipient is 55 percent greater than the old social benefit, and 80 percent more noncontributors are eligible. Thus, the expected public benefit — the basic benefit payment times the probability of receiving it — is more than double what noncontributors previously received [see Appendix Table III and Appendix Table IVA, row 1].

The basic benefit is also substantial compared to earnings of low-income workers — it is more than half the earnings of a full-time minimum wage worker. One-third of all workers earn the minimum wage or less and some of them cannot find work full-time.

The expected public benefit to contributors — the average pension supplement times the probability of receiving it — also rises because the probability of receiving it grows [see Appendix Table III and Appendix Table IVA, row 2]. The guaranteed minimum subsidy was received by 23 percent of the elderly, while the new pension supplement will go to 33 percent. Practically all contributors in the bottom three-fifths of households will get some pension supplement.[30]

At the same time, contributors in the upper two-fifths of households do not qualify for any pension supplement, even though only a small minority has prefunded pensions of

more than $425 per month. As a result, the expected public pension for contributors in the bottom three-fifths rises substantially, while it rises only slightly for contributors as a whole, and it disappears entirely for the upper two-fifths [see Appendix Table IVA, rows 2, 6 and 10]. Taking into account both contributors and noncontributors, total expected pension amounts have increased and more individuals depend on public subsidies than was the case previously.

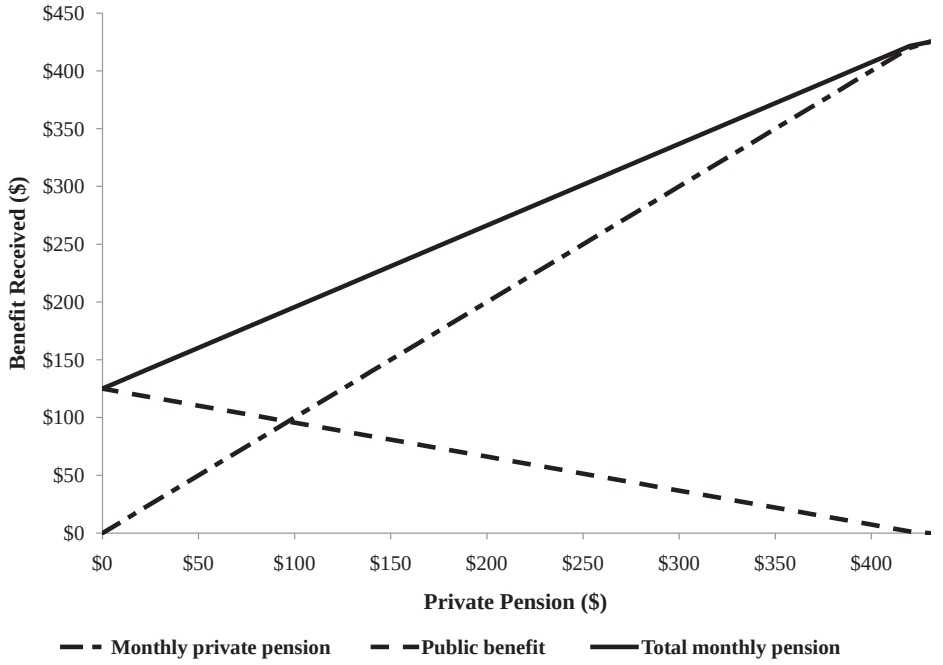
The Implicit Tax on Pensions and Contributions. The Presidential Council tried to design the pension supplement to reduce the perverse incentives of the old minimum guarantee. Under the new system workers who contribute more always get larger total pensions and a retiree in the bottom three-fifths of households who receives a public benefit also keeps his private pension, which grows with contributions.

However, the public subsidy falls as the private pension grows, creating new disincentives for a larger group. By the time a private pension hits $425, the $125 public supplemental benefit fully phases out, for an implicit marginal tax rate of 29.4 percent. That is, each dollar of contributions generates only 70.6 cents worth of incremental total benefits relative to what it would have generated in the absence of this phaseout [see Figure VII].[31] Because practically all private pensions in the bottom three quintiles are less than $425, virtually all individuals in these quintiles — two-thirds of the elderly — are subject to these reduced returns. This produces a disincentive for them to contribute.

The system before 2008 had a higher pension floor for contributors than noncontributors. The new system has the same floor for both, it provides a larger public subsidy for noncontributors, and the public benefit falls as contributions grow. Consequently, within the low-earning group the value of being a contributor has effectively been reduced.

FIGURE VII

How Public Benefit Changes as Private Benefit Rises



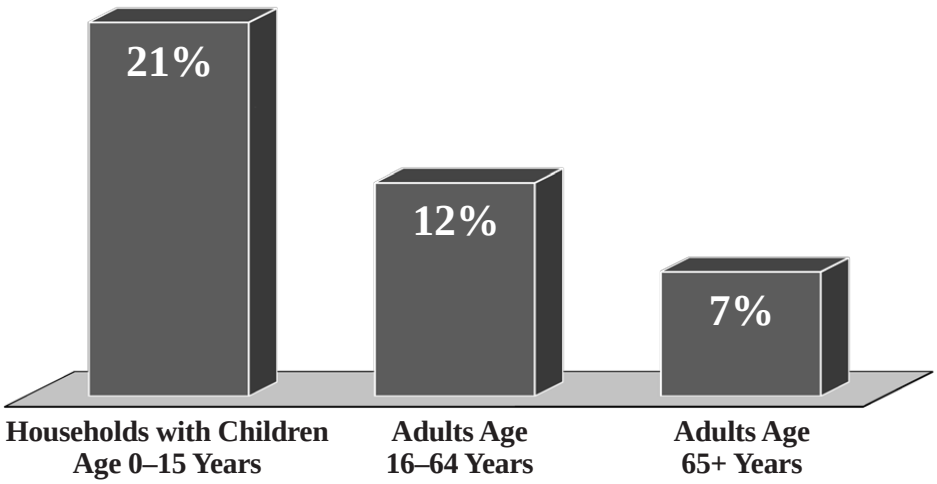
Note: This figure applies to individuals in bottom three household quintiles. Public benefit = $125 - 0.294*private pension. Total pension = private pension + public benefit. For individuals in top two quintiles, public benefit = 0 and total pension = private pension.

Source: Authors' calculations.

Comparing Disincentives under the Old and New Systems. Both the pre- and post-2008 systems discourage some workers from contributing to personal retirement accounts at some point in their lives. Workers could avoid contributions by shifting to self-employment or the informal sector, or by withdrawing from the labor force as old age approaches. For recipients of the social benefit and minimum pension subsidy, any incremental contributions simply replaced the public benefit; they faced a 100 percent implicit tax rate — likely to have a strong negative impact on work and contributions. This implicit tax rate was reduced to 29.4 percent in the post-2008 system, which seems to be a move toward positive work and contributory incentives. However, the lower implicit tax applies to many more individuals post-2008.

- Before 2008, the 100 percent implicit tax only affected noncontributors receiving the social benefit and low-earning contributors with 20 years or more of contributions who were receiving the minimum pension subsidy.

FIGURE VIII
Poverty Rates



Note: The overall poverty rate is 14 percent.

Source: Authors' calculations. For details, see Appendix Table VIII.

- Those who contributed less than 20 years were ineligible for the minimum pension and hence not subject to its disincentives.
- Workers who contributed for 20 years and earned the average wage or more would have accumulated enough to finance a private pension that far exceeded the minimum pension guarantee; hence they too would have been exempt from its disincentive effects [see Appendix Table IX].
- In contrast, the negative impact of the post-2008 scheme is smaller but reaches 65 percent of the older population — everyone who is projected to receive the basic benefit and pension supplement.
- In addition, the pre-2008 system increased work incentives for low-wage workers who were close to but had not yet reached the 20-year eligibility point, but this positive incentive disappears in the post-2008 system.
- The higher retirement income from the higher public benefit after 2008 may encourage more leisure and less formal work.
- Individuals in the top two-fifths of households will not have any disincentive stemming from the public benefit after 2008, since they do not qualify; but the majority of them also did not face any disincentive pre-2008.

Overall, informal work and self-employment, which are categories of work not subject (or only weakly subject) to an enforceable contributory mandate, would be expected to increase under the new system, leading to a decrease in contributions. Also, the pre-2008 growth in labor force participation rates of older individuals is likely to slow down post-2008. However, the magnitude of these responses is unknown [see Appendix Tables XA and XB].[32]

Public Benefits as Insurance Against Market Risks. Private pensions can be small for reasons that a person may or may not control. Evading contributions is the most obvious example of the former; market forces or a disadvantaged background exemplify the latter. The public benefit cushions against the risk of low pensions due to factors such as depressed market conditions or poor education.

For example, consider an individual who starts out earning the average monthly contributory wage today ($655) and continues receiving the average wage throughout his working life. If he works 20 years randomly distributed between ages 25 and 65, gets a real annual rate of return of 5 percent and real wage growth is 2 percent, his private pension at 65 will be $405 and his pension subsidy $7 per month. However, suppose the rate of return is only 3 percent. His private pension will be $235 and he qualifies for a pension subsidy of $57 [see Appendix Table IX, rows 4-5]. The additional $50 supplement compensates him for 29.4 percent of the private retirement income he has lost.

The public benefit insurance is particularly valuable when asset prices drop shortly before a person retires, directly affecting the size of his annuity. Chile's stringent investment regulations do not allow workers near retirement to invest in funds containing a high proportion of stocks, protecting them from market volatility and protecting the treasury from moral hazard due to the availability of a pension subsidy.[33] However, the new public pillar provided an additional layer of cushioning just as the recent financial debacle occurred.

Unfortunately, the system does not distinguish between those who have small pensions as a result of market

risks, a disadvantaged background or their own choices. For example, an educated, average-wage worker who chooses to work in the formal sector only 20 years would get the same private pension and pension subsidy as a worker who had little access to education and earned only half the average wage, but contributed for 40 years.

Politically, this public insurance against risk may make retirement accounts more sustainable. But under current rules, workers in the upper two quintiles get no protection. As a result, under the scenarios just described, the elderly in these households could end up with lower retirement income than those in the bottom three-fifths. Political pressure may therefore develop to include them.

Insurance Against Longevity Growth for Pensioners. One of the uncertainties facing workers and retirees is how long they will live. In competitive insurance markets, the monthly annuity payout from a given premium falls as longevity increases over time so that the discounted expected lifetime value is constant. This could cause pensions to decline 5 percent to 6 percent per decade. In an unsubsidized individual account system, successive new cohorts of retirees would have to decrease their living standards or work longer to maintain the same living standard.

The pension supplement reduces the impact of longevity growth on monthly annuities, and the public treasury bears the full longevity risk in the case of noncontributors who get the basic benefit. That is, the taxpayer burden increases as new cohorts of pensioners are protected via greater transfers. This may reduce the living standards of young and middle-aged individuals, who pay most taxes. For retirees, this reduces the need to adjust their living standards downward. It also may lead to less voluntary postponement of retirement and to an inefficient choice between labor and leisure.

Impact on Costs of Changed Disability Insurance Incentives. The previous survivors' and disability insurance system gave pension companies an incentive to control costs by disputing questionable claims — a lower incidence of successful claims cut their insurance costs and raised their profits if they continued to charge workers the same fee.[34] In the future they will no longer have this incentive, since all pension companies will pay the same insurance premium regardless of their separate claims experience. In fact, in the future, pension companies can gain an advantage in client satisfaction at no cost to themselves by assisting members in filing disability claims.

Similarly, because the premium rate will be the same for all employers, individual employers will have little incentive to control costs. Insurance companies will not be able to raise their premiums to recapture any losses, as pension companies could in the past, so they may raise their fees in advance. A public auction process for the entire disability and survivors' market was expected to reduce the cost of the insurance, but the effects of these changes on claims experience and risk, therefore eventually on costs and fees, were unclear a priori. Furthermore, the insurance product mix changed in ways that were sure to add to costs: survivors' benefits were newly paid to widowers, disability benefits to women until age 65, male disability and survivors' tables were used for both genders, and rebates were paid into women's accounts. Taking all these factors into account, the Ministry of Finance estimated that the insurance fee would be 1.2 percent of wages — compared with 1 percent in the old system.

> *"Costs may also rise because pension companies no longer have incentives to dispute questionable survivors' and disability claims."*

Some evidence is now available on the direction and magnitude of the impact on costs. In the first auction, held in 2009, four insurance companies were chosen for men and women, respectively, with the average rate 1.88 percent of wages for men and 1.68 percent for women. This means that 1.88 percent will be charged for everyone and the difference of 0.2 percent will be put into women's accounts. Costs will be 57 percent higher than estimated by the Ministry and 88 percent higher than they were in the past. (Part of this increase may be due to the turbulence in world financial markets at the time the bids were presented.) The fact that employers will pay this fee is a move away from transparency that, in the short run, will increase labor costs and may reduce employment.[35] In the long run, this cost will likely be passed back to workers in the form of lower wages than they otherwise would have received. This insurance cost, and the negative impact on wages, will grow as the workforce ages.

Analysis of 2008 Reforms: Poverty, Redistribution and Fiscal Costs

The 2008 reforms are projected to reduce poverty rates among the elderly. However, the reforms will create winners and losers among Chilean workers.

Impact on Poverty Rates. The new basic benefit is 150 percent of Chile's urban poverty line. Calculations based on the national survey indicate that 7 percent of older individuals were living in poverty in 2006 and 1 percent were in extreme poverty — less than 50 percent of the poverty threshold [see Appendix Table VIII]. Poverty rates were higher — 12 percent and 2 percent, respectively — for older individuals with no pension. By contrast, poverty rates were 21 percent for households with children under age 15 and 12 percent for adults aged 16-64; extreme poverty rates were 5 percent and 3 percent, respectively [see Figure VIII and Appendix Table VIII]. The new public benefits will largely eliminate poverty among the elderly, but will do little to reduce overall poverty, which is largely concentrated among young families.[36]

The old social benefit covered most of the elderly who had no other sources of income. A modest extension would have reached the rest. Most of the incremental expenditures on the new public benefit will go to those in the lower-middle class whose pensions are less than the median, rather than to the poor.

Redistributional Effects: Winners. Who are the winners and losers from this legislation? In general, the revised system shifts purchasing power away from taxpayers and contributors toward nontaxpayers and noncontributors, from the young to the old, from those working in the formal market to those in the informal market, from men to women, and from the top 40 percent to the bottom 60 percent of households.

Women. Women constitute the majority of noncontributors and comprise two-thirds of all basic benefit recipients. They make up half of all pension supplement recipients and their average public pension is larger than that of men because their average private pension is smaller [see Appendix Table IVB]. As a result, two-thirds of all expenditures on the new public benefits go to women. This is partly because women live longer, therefore older women outnumber older men. But it is also due to the structure of the new public benefits.

> *"The new public benefits will largely eliminate poverty among the elderly."*

The largest subsidies go to women who haven't worked in the market but get the basic benefit. These women got a disproportionate share of social assistance expenditures previously, but the new basic benefit is larger. Larger subsides also go to the majority of women who spent only part of their adult lives in the labor force and earned low wages, resulting in small private pensions. In most cases, their lifetime pension subsidy exceeds the guaranteed minimum subsidy they would have received in the pre-2008 scheme. In fact, many women would not even have met the 20-year eligibility requirement for the guaranteed minimum.

Finally, women who have borne many children gain because of the baby bonus, whether or not they have worked. For each child born, a woman gets a pension contribution bonus equal to 10 percent of the minimum wage for 18 months (about $440). If she chooses to stay at home, the bonus replaces her contributions during the child-bearing years. If she works, it constitutes an additional contribution. When she reaches 65 years of age, the government puts the bonus plus the imputed investment earnings into her pension fund or adds it to her basic benefit payment. At a 5 percent rate of return, if the child was born when the mother was 25, this will total about $3,000 when she is 65. For a low-earning woman with two children, this could raise her final pension by more than 15 percent.

Besides these fiscal expenditures, women workers also gain from the revised disability and survivors' system because insurance companies are required to transfer into their accounts the difference between the male-specific and female-specific insurance rates [see earlier discussion]. Women are especially big gainers because they retain their access to private pensions at the normal age of 60, and their public benefit is based on their imputed age-60 private pension, compared with age 65 for men.

Nevertheless, women's pensions will remain much lower than men's, in part because they are allowed to start their private benefits five years earlier. If women's normal retirement age were postponed for five years (to 65, like men, instead of 60) and they accumulated investment returns during that time, their annuities would

rise by about 50 percent. This illustrates the tradeoff between the goals of short-term gender equality through pension subsidies versus long-term gains through encouraging work and investment.

Men in the Bottom Three Quintiles. Most male retirees in the bottom three-fifths of households also gain from the 2008 reforms, albeit less so than women. Those who have worked as independent contractors or in the informal sector have no contributory pension and thus qualify for the basic benefit. Those who have moved in and out of the contributory system, and hence have small private pensions, get the pension supplement whereas previously they would have gotten little or no public benefit. A majority of men in the bottom three quintiles meet these criteria. In contrast, the minority — steady male contributors with secondary education or higher — will get little public benefit post-2008 and will have to pay higher income taxes to support the system.

Disabled. Disabled individuals, mainly men, previously only got their disability insurance benefit, but if they did not qualify for the guaranteed minimum they got no public benefit. Now they will be able to receive a disability-related basic benefit or pension supplement in addition to payments from their own disability insurance if they are younger than 65 years old. After 65, they qualify for the old-age public benefit.

Married Couples. Most countries that provide a flat (basic) benefit treat the household as an economic unit, so couples get less than double the individual rate in recognition of household economies of scale. Their combined income is applied toward any phaseout in recognition that it finances their joint consumption. This benefit amount is considered "marriage neutral" in the sense that it allows the same utility gain to everyone, regardless of marital status.

In contrast, Chile made the value judgment that for individuals in the bottom three-fifths of households, only the pensions received directly by the individual should count in the benefit formula and marital status or living arrangements should not count. The underlying rationale is that each person may only control his or her own income and the household may not purchase many joint consumption goods.

This means that a married individual who has no private pension or whose private pension is below the ceiling will receive the public benefit even if her spouse's income is well above the ceiling and finances their joint consumption — so long as the household is in the bottom three quintiles. Also, if both husband and wife have the same private pension, they each get the same pension supplement as an equivalent single person but enjoy a higher incremental standard of living because of household economies of scale.[37] As a result, married individuals gain a higher incremental living standard than singles and widows from the new public benefits.

Intergenerational Winners. There are also important intergenerational transfers. Public old-age benefits are financed by taxes paid over a lifetime, while the beneficiary stage is concentrated in old age. The first generation of elderly gain from the new system, which begins just as they reach old age — they miss much of the tax stage. Younger cohorts, in contrast, will pay taxes to finance the system throughout their lives and get a relatively small benefit if the basic benefit and pension supplement are price- rather than wage-indexed. Thus, the new system represents a redistribution to the current generation of elderly, who will receive benefits without paying the higher taxes that younger generations will have to pay.

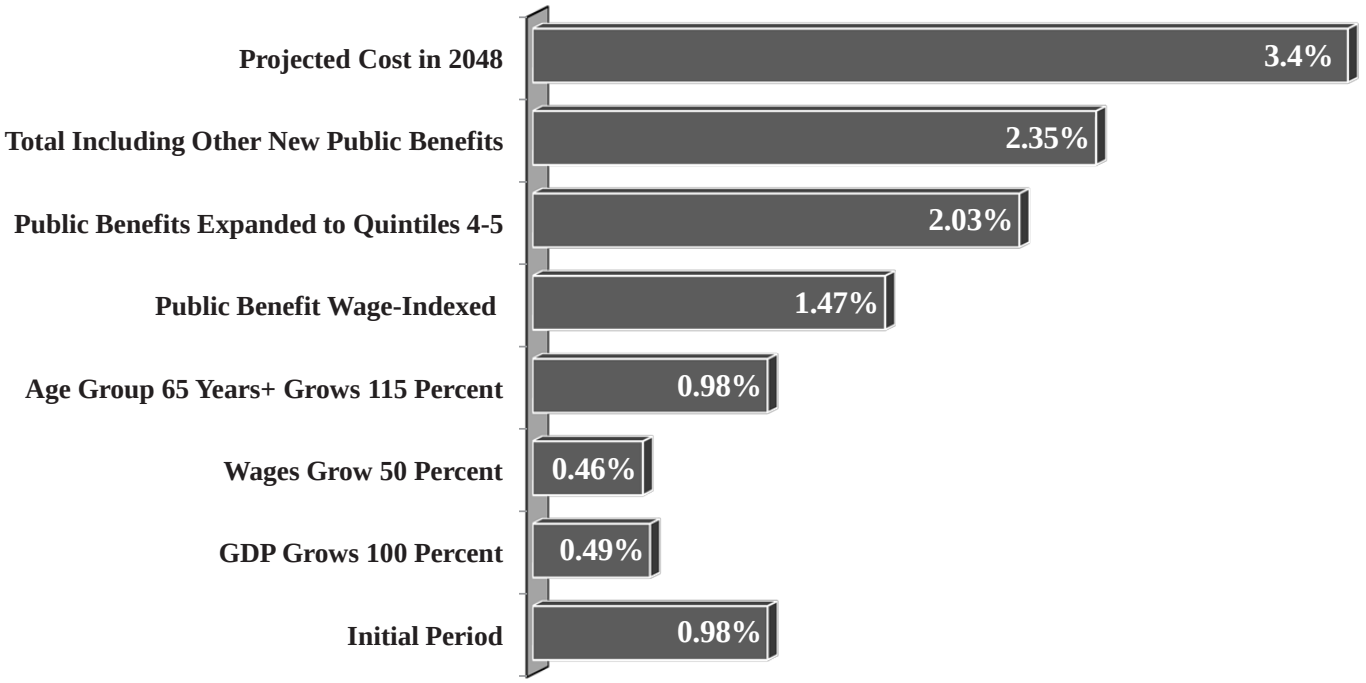
> *"Educated males who contribute steadily will get little public benefit, but will pay higher taxes to support the system."*

Redistributional Effects: Losers. Losers under the new reforms include widows and workers from upper-income households.

Young Widows and Other Pensioners Under Age 65. Prior to 2008, about 30 percent of all social benefits and guaranteed minimum payments were to individuals under age 65 — primarily disabled pensioners, young widows and other women who qualified for benefits at 60. Young widows were protected by the guaranteed minimum in case their husbands left them with little or no survivor's benefit but enough contributory years to qualify for the survivor's guaranteed minimum. Under the 2008 reforms, widows and other women must wait until age 65 to get the basic benefit and pension supplement. The mandatory private survivors' insurance remains, but it only provides small benefits to widows of young low-earning workers and is not required for many self-employed or informal workers who do not contribute to the system.

FIGURE IX

Simulated Impact of Potential Public Policy Changes on Cost of Public Benefits in 2028
(as percentage of gross domestic product)



Source: Authors' calculations. For details, see Appendix Table XIB.

Many countries have moved to reduce benefits for young widows because women now have the option to work, as evidenced by their rising labor force participation and low fertility rates. However, Chile is still a relatively traditional country with lower female labor participation rates (55 percent of men's) than in most high-income countries (80 percent to 90 percent of men's).[38] Eliminating a public safety net for widows with children seems at odds with the move toward larger public benefits for most women.

Thus, it is not clear whether this cost-saving measure will remain. In the pre-2008 system widows were originally supposed to get only 60 percent of the guaranteed minimum but this was eventually raised to 100 percent, so it is possible that post-2008 rules will also become more generous. However, for the time being, young widows are losers.

Older Widows. Before 2008, widows were advantaged relative to other women because their joint pension was underpinned by the guaranteed minimum. Most other women did not qualify for the guaranteed minimum because they had not worked long enough. This relative advantage was lost in 2008. Post-2008 widows are treated like other women, in terms of their eligibility for pension subsidies. They receive the same basic benefit or pension supplement, if applicable, at age 65. These new rules also imply that an older woman's living standard will fall when she becomes widowed. According to equivalence scales, it would cost a widow 70 percent of the couple's household income to maintain her previous living standard. But her pension subsidy is phased out against the joint annuity that she receives as a widow and the household loses her husband's pension subsidy. As a result, a widow's household income is likely to decrease by more than 30 percent and her standard of living will fall.

The Upper Two-Fifths of Households. The biggest losers from the new system are workers, retirees and widows in the upper 40 percent of households. They must pay higher taxes to support the new public benefits for which they are not eligible,

and after the transition period they lose the guaranteed minimum pension or noncontributory benefit that some received previously. Their average pension falls in absolute as well as relative terms [see Appendix Tables IVA and IVB].

Because they had the highest wages and steadiest contributions, contributors in the top two-fifths get the largest private pensions — but no public benefit. However, half the members of this group have pensions below the pension supplement ceiling, so they have a large incentive to get themselves reclassified into the bottom three-fifths in order to collect a public benefit.

Noncontributors in the top two-fifths get no public or private benefits. The presumption is that they did not work because they had and continue to have other means of support.

Fiscal Costs and Taxpayer Burden. The 2008 reforms contain many cost control mechanisms: using price- rather than wage-indexation, excluding the upper two-fifths of households and starting the public benefits at age 65. For early retirees, the pension supplement is calculated on the basis of an imputed private pension that would have been obtained if begun at age 65 for men, age 60 for women.

New regulations on programmed withdrawals make it less likely that retirees will run out of money and fall back on the guaranteed minimum scheme or the basic benefit. Programmed withdrawal pensioners must set up a reserve fund that will last into their 90s, thereby decreasing future state payouts. Also, the pension supplement is set by the first programmed withdrawal payout — or by imputed payout at age 65, whichever is larger — and does not increase as payouts become progressively smaller.

As a result of such measures, according to projections by the Ministry of Finance, the fiscal costs of the basic benefit and pension supplement will be only 0.65 percent of GDP in 2010. This will rise to 0.99 percent in 2015 and 1.2 percent by 2025. Additional expenditures on the baby bonus for women, young worker subsidies and administration raise the total to 1.41 percent of GDP by 2025 — 1 percentage point more than the old guaranteed minimum and noncontributory benefit would have cost [see Appendix Table XIA].[39]

Costs of the new public benefits will be covered out of general government revenues. Therefore one would have expected modeling of the long-term fiscal costs of alternative options to be an important part of the planning process. However, the reform Council did not have access to cost estimates during its deliberations. The Ministry of Finance ultimately estimated these costs, but they were not published until after passage of the legislation. Even now, the econometric model and full assumptions have not been announced publicly, so results cannot be verified, critiqued or tested with sensitivity analysis. [40]

Sensitivity analysis is important because current policies may not remain intact until 2025 or beyond. This study, therefore, simulates the impact of possible policy changes, behavioral changes and changes in market conditions. [See Figure IX and Appendix Table XIB.]

Price-Indexed Benefits May Be Wage-Indexed. Political pressures might lead to wage-indexation rather than price-indexation.[41] This happened with the guaranteed minimum, which was supposed to be price-indexed but turned out to be wage-linked due to ad hoc increases. Because the new system ties together the size of the basic benefit and pension supplement, the alliance between these two groups of recipients is likely to create pressures for wage-indexation. In simulations, costs after 20 years rise from 0.98 percent to 1.47 percent of GDP when price-indexation is replaced by wage-indexation.[42]

The Upper Two Quintiles May Be Covered. In addition, the upper two-fifths of households could eventually be covered under the reforms. For most members of this group, private pensions are quite similar in size to those in the bottom three groups. For example, in the bottom three-fifths, 53 percent receive a private pension below the ceiling for the pension supplement, while in the top two-fifths, 49 percent get a private pension in this range.[43] All of the former qualify for the pension supplement, which brings their total benefits above those of individuals in the top two-fifths who get no pension supplement.

Furthermore, if a financial crisis leads to a sharp drop in value of retirement accounts, the top two-fifths get no public insurance while the bottom three quintiles get implicit insurance reimbursement for part of their losses. Pressure may develop to extend protection to the top group.

In any event, many in the top group may find ways to get themselves reclassified into the bottom group, given the opportunities for strategic manipulation of the criteria (see below). For

similar reasons, public protection may be restored to widows under 65 with children — a subsidy that was eliminated by the 2008 legislation.

If policies change so that members of the top two-fifths and young widows qualify for benefits and wage-indexation is applied, the cost of the public benefit as a percent of GDP will more than double over the next 20 years:

- Fiscal costs to the public treasury of the basic benefit and pension supplement will exceed 2 percent of GDP and total costs, including other new public benefits, will reach 2.35 percent.
- Under these same assumptions, fiscal costs will grow to 3.4 percent of GDP after 40 years.
- This could eventually be equivalent to a payroll tax of more than 8 percent.

Possible Behavioral Changes. Costs may also change as an endogenous behavioral response to the new scheme. For example, work propensities of older individuals and contributions of younger individuals may fall due to the higher retirement income and the 29.4 percent implicit tax on pensions, leading to an increase in pension subsidy obligations. On the other hand, affiliation has become mandatory for some self-employed groups, contributions of young workers are subsidized, and women's pensions will increase due to the baby bonus and rebate on the new disability and survivors' insurance — which could decrease the government's basic benefit and pension supplement obligations. Three leading indicators that should be followed over the next decade are changes in the prevalence of independent contractors, in the proportion of workers who contribute, and in the work propensities of women and older individuals. These possible behavioral changes add a large element of uncertainty to the eventual fiscal costs of the 2008 reforms, but the likely direction is upward over time.

> *"Equalizing retirement ages for men and women would raise women's pensions substantially."*

Opportunities to "Game the System" and Impact on Fiscal Costs. The dividing line between households in the bottom three-fifths and top two-fifths plays a crucial role in this reform — especially in view of the on-off nature of the means test. On one side of the line, virtually everyone gets a public benefit. On the other side, all eligibility is lost.

The method for measuring the line has not yet been defined. A new instrument will be developed for this purpose. This is a challenging task in a country where extended family living arrangements are common but difficult to monitor and where means are being tested at one point in time while the results are expected to apply over long periods. The fact that some individuals in the top two-fifths received the old social benefit, which was supposed to be stringently means-tested, illustrates the practical difficulties.

Means-testing for the social benefit was based on the per capita income of all individuals living under the same roof and sharing a common budget. In contrast, the new law defines the relevant group for the household test as the family, which includes the elderly person, his or her spouse and children under 18 years of age (or 24 if in school). The individual can ask to have some of these members excluded from the calculation if they don't share the family budget or to have others included, such as the nonmarried mother of one's child, disabled children over 18 and parents over 65, if they do share the budget. Potentially, this definition opens the door to strategic manipulation of the eligibility criteria. By claiming as part of the shared budget family members who have low earnings, and excluding those with high earnings, older individuals can increase the probability that they will fall within the eligible group for public subsidies.

In order to estimate coverage and fiscal costs of the scheme, this study used the same definition of quintiles used for the old noncontributory benefit — the distribution of household income per capita, excluding social assistance and other public transfers. By this standard, 66 percent of all elderly people are in the bottom three-fifths of households. That is, households with elderly are somewhat over-represented in the bottom three quintiles. (Apparently the elderly are in lower-middle class households, although, as discussed previously, they are not in the poorest households.) This percentage may turn out to be higher as families learn about the new criteria and how to manipulate them.

Moreover, after a household has been assigned to a quintile it can

request a re-evaluation. Individuals are very unlikely to request an upward rating that may disqualify them, but may claim a downward rating. Therefore, an upward creep would be expected in the percentage of families with older members who fall into the bottom three quintiles after the instrument is developed and people learn how it works. This, in turn, will lead to an upward trend in fiscal costs, unless the criteria are tightly controlled.

Ways to Improve the Reforms

Running through this analysis is the crucial role of the double means test in determining the total cost of the new public benefit, its redistributions and its potentially distortional incentive effects. Most countries with basic benefits — for example, Australia, Canada, Denmark, Finland and Iceland — use some means-testing. This decision involves weighing the country's capacity to implement the means test and enforce compliance, while avoiding behavioral distortions, against the importance of containing fiscal pressures. Chile opted for the fiscally conservative approach of means-testing, but faces more formidable administrative and incentive challenges than other countries, given its large informal and self-employment sectors.

Most high-income countries phase out their flat basic benefit against all income beyond a threshold, since the broader the income base, the lower the tax rate needed to achieve the fiscal goal. Also, a broader base is more progressive and makes it more difficult for individuals to game the system by converting labor income into non-taxed categories. Some countries, such as Australia, go further and include assets in the base. Others, like Finland, test against pensions only. Usually, some threshold amount is exempt to avoid a poverty trap.

Also, most countries use the nuclear family as the basic unit for determining eligibility and/or benefit amount. This takes into account joint consumption and household economies of scale. However, for those who believe philosophically that each person should control his or her own benefit, the individual is the appropriate unit — as in Denmark and Iceland. Also, it may be difficult to define and monitor the relevant household unit beyond the individual in countries like Chile, where extended families are common. Multigenerational living arrangements might be discouraged if they affect the means test.

> *"The complicated means-test for benefits encourages people to 'game the system.'"*

Apparently the Council was conflicted on whether to use family or individual, total income or pensions-only in its means test, so it recommended all of these — incorporated in the dual means test. Besides the increased administrative burden, several anomalies and potential inequities are created by having two means tests and the criteria that each applies. For example:

- An individual from the lowest household income group who works hard and contributes regularly will receive a smaller public benefit than an individual from a higher income family who contributes irregularly, as long as both households are below the cutoff point.
- A person who lives alone and conscientiously builds a pension will receive a smaller public benefit than his neighbor who lives with his children or who inherited money so didn't need to work steadily — assuming they are both within the bottom 60 percent.
- If the person who lives alone moves in with his elderly brother and their combined income from former work puts them into the top 40 percent of households, they both lose their pension subsidies.
- A person who worked as an independent contractor to avoid the mandatory system and saved some of his income in a voluntary account will qualify for larger pension subsidies than one who worked as an employee subject to the contributory mandate.
- A woman whose husband worked so she could stay at home will receive a larger benefit than a single mother who had to work herself — provided they are both eligible and in the bottom 60 percent.
- If a married woman works, placing the combined family income just over the cutoff point, she and her husband lose their entire benefit subsidy.

Applying a Single Means Test Based on Family Income. If Chile reverted to a single means test based

on total family adjusted per capita income and paid a pure flat benefit (with no phaseout) to everyone in the qualifying group, it would retain most of the cost-savings, insurance and redistributions to low earners, while eliminating a good number of the anomalies described above. It would also reduce the disincentive to contribute to a retirement account. This option was apparently rejected on grounds that it cost too much. But our calculations show that if the basic benefit were cut to $105 instead of $125 it could be paid to all seniors in the bottom three-fifths for the same budget as the current structure. If the eligibility age were raised to 67 years old, $125 could be paid to all seniors in the bottom 60 percent. Either of these alternatives would eliminate disincentive effects on work without increasing total costs.

However, the on-off switch for eligibility would still mean that small differences in income would produce large differences in access to benefits. Individuals would seek out strategies for inclusion, and errors could have major distributional consequences. These problems could be mitigated if the public benefit were phased out gradually according to total family income. While this would reintroduce disincentive effects, the gradual phaseout would reduce the impact of errors and the incentive for strategic behavior to qualify for public subsidies. Basing the phaseout on total household income would recognize the existence of joint consumption and scale economies for individuals who live together, as well as the fact that all income increases welfare. It would also permit a lower implicit tax rate. Since contributory pensions would not be pinpointed as the only basis for the phaseout, individuals would have less reason to evade the mandatory system and escape into other forms of saving. Including an "exempt" range of income would allow the poorest families to move out of extreme poverty without losing part of their benefits.

"The portion of pension benefits that are self-funded will fall from three-fourths to two-thirds."

Equalizing Retirement Ages by Gender and Linking to Longevity Growth. Chile could offset the new system's cost-increasing features by equalizing the retirement ages for men and women, and by gradually raising the age of eligibility for the public benefit as life expectancy grows. For example, one-third of the entire population over age 65 is under age 70; therefore, substantial amounts could be saved if the age for receiving the new public benefit were raised to 70. This could be achieved gradually if the benefit age were automatically linked to longevity growth. These measures can be justified economically, but are difficult to achieve politically and were not attempted in the 2008 legislation. [See Appendix Table XII on design features of flat benefits in other countries.]

Conclusion

In 1981 Chile adopted a system based on mandatory personal retirement savings accounts to provide income in old age. Workers were required to contribute 10 percent of their wages to these accounts. This system worked well for individuals who contributed on a regular basis. But those who didn't earn wages or worked outside the formal labor market (including many women) accumulated meager amounts. In general, if a country doesn't have the capacity to enforce mandatory contributions, a system that links benefits closely to contributions will fail to provide benefits to many individuals.

To fill in these gaps, in 2008 Chile adopted a new public pillar — a basic benefit and pension supplement — to accompany the personal retirement account system. These public benefits will go to elderly individuals in the bottom three quintiles of households and will be phased out as the contributory pension grows. They follow the general approach of the poverty-prevention program in the 1981 reform — tax-financed benefits to those with little or no contributory pension — but they reach a broader group of people and give them larger benefits.

For members of the bottom three quintiles of households who are over age 65, more than half of their total benefits will come from the new public pillar, financed out of general taxes. Thus, the post-2008 system is more redistributional than the pre-2008 system and closer to the multipillar model — a public-private mix — used in several Nordic and Anglo-Saxon countries.

At the same time, the private personal account system was strengthened by extending the mandate to some self-employed workers, subsidizing the contributions of young

low-income workers and liberalizing regulations. Indeed, personal accounts will provide 100 percent of pension income available to (nondisabled) retirees prior to age 65 and to all retirees in the upper two quintiles of households after age 65, since these groups are excluded from the public pillar. Overall, about two-thirds of pension income will come from pre-funded retirement accounts, while one-third will come from unfunded tax-financed public benefits. Thus, the success of the private system in financing pensions for steady contributors was reaffirmed, even as the public pillar was expanded to redistribute income to the bottom two-thirds of the elderly population.

Taking the redistributional objectives as given, the question is whether they were achieved in the most cost-effective and efficient way. A priori, it appears that the same distributional goals might have been attained with lesser work and contributory disincentives by granting a flat (uniform) benefit to all retirees in the bottom three quintiles of households or by gradually phasing out the public benefit according to total family resources, rather than the individual's private pension. (Currently, the phaseout of the public benefit as the private pension grows implies a 29.4 percent tax on the latter, which might discourage contributions.) Substantial cost savings might have been achieved by linking the age for starting the public and private benefits to growth in longevity, under the same terms for both genders. (The normal age for starting the private pension has not increased since 1981 and is currently five years earlier for women than for men.)

Will political pressures lead to wage- rather than price-indexation and an expansion of public benefits to groups that are currently excluded? Will individuals try to evade contributions as a response to incentives stemming from the implicit tax in the new scheme? The biggest potential dangers in the new system are that public benefits will be further extended, increasing fiscal costs, and that behavior will change to reduce private contributions. Only the future will tell whether the system adopted in 2008 is economically sustainable, in the dual sense that contributions to the private pillar continue to grow while costs of the public pillar are contained.

Appendix A Organization of the Pension Industry

The 2008 legislation also dealt with important issues in the organization of the industry that provides retirement income: 1) high concentration and price inelasticity were perceived as leading to high profits and fees in the pension fund (AFP) industry and 2) more flexible investment regulations were seen as desirable, but would require better risk management by AFPs.

Problem: Industry Concentration, Fees and Profits. A persistent complaint about the AFP industry is its high fees and profitability, stemming in part from its concentration and lack of price competition. Mergers have reduced the number of AFPs to five. The two largest AFPs control 50 percent of the assets in the industry. The AFP industry is the largest source of institutional capital in the country.[44] This capital has contributed to Chile's economic growth, but its control by a small number of companies has been a source of concern. As of 2008, fees were about 2.6 percent of wages, of which about 1 percent was for disability and survivors' insurance. This left 1.6 percent of wages — 0.6 percent of assets — as the general administrative fee per year, which many analysts deem unacceptably high for a mandatory system. The rate of return on equity to AFP owners has been roughly 21 percent annually.[45] Given the low price elasticity of demand for financial services and the high barriers to entry, competition has taken the form of marketing expenses rather than price reductions.[46]

Solution: Auction Process for New Members. The new law takes counteracting steps. Starting in 2010, all workers entering the labor force and pension system for the first time will be assigned to the AFP that charges the lowest fee, as established through a public auction process. Workers must stay in the assigned AFP for at least two years, unless they switch to another AFP that charges a lower price or offers a greater net return over their membership period. This arrangement is expected to reduce barriers to entry because new AFPs can enter without incurring high sales expenses and can simply serve the members assigned to them. The number of members assigned may be especially large in the next few years, given the new mandate for the self-employed to join.

Existing AFPs can also enter the auction. The marginal cost of new members will be smaller than the average price old members are charged because of scale economies. However, these AFPs are required to charge old affiliates the same price they charge new members. If they charge

new members more than the marginal cost but less than their present price, they will gain a profit on new members but lose some of their revenues from each old member. For AFPs with large existing bodies of affiliates, this is unlikely to increase their profits overall. Therefore, it is expected that only one or two of the smallest existing pension companies and possibly one or two new pension companies will enter this auction. The overall impact on fees may be small.

Problem: Need for Liberalized Regulatory Regime and Improved Risk Management. The AFP industry faced stringent investment regulations when it first started in 1981. These regulations have been gradually loosened as the industry matured, allowing greater diversification and risk-return tradeoffs. This process of loosening continues in the new legislation. But as investments become more flexible, improved risk management by each AFP becomes imperative.

Solution: New Investment Regulation Regime. The new law permits pension funds to invest in new asset classes, mainly derivatives, and raises allowable limits on foreign assets to 80 percent of total investments. At the same time, pension funds are required to become more explicit about their investment policies and to monitor the risk of each portfolio. Simultaneously, much of the investment regulations that were previously embodied in law have been moved to a more flexible administrative process, and an advisory Technical Council consisting of academic, industry and Central Bank representatives has been established. This should improve the efficiency of the investment regulation regime in the future.

Appendix B
Projecting the Cost of the New Public Pillar

Some relevant assumptions were not spelled out in the projections by the Ministry of Finance. Sensitivity analysis to alternative assumptions is absent in the report and the cost projections stopped at 2025. Therefore, in addition to presenting the Ministry's data, a model was constructed to make crude estimates of the long-term fiscal costs of the new regime under various scenarios (see Appendix Table XIB).

The model starts with calculations of costs of the new basic benefit, Pension Basica Solidaria (PBS), and the new pension supplement, Aporte Previsional Solidario (APS), as a percentage of gross domestic product (GDP) in year one, based on data from the 2006 national survey (CASEN) on contributory pensions to people over 65, updated to 2008 dollars and steady state system parameters.[47] These amounts were 0.47 and 0.42, respectively, totaling 0.89 percent of GDP. This number was adjusted upward for payments to the disabled under 65 years old, included in the reform. Projections were then made 20 years forward, assuming that the distribution of pension amounts would remain constant, but the entire schedule of private pensions and the fiscal burden of public benefits would change in response to exogenous parameters like growth in GDP, wages and size of population over 65 years old.[48] The impact of possible policy changes such as a shift to wage-indexation and expansion of benefits to the upper two quintiles were also modeled [see Appendix Table XIB and Figure IX]. This is a very simple, stylized simulation designed to measure costs of the new system and how they change under changing policies and conditions.

Simulations show that if real wages rise by 2 percent per year, GDP rises by 3.5 percent, and the number of recipients remains constant, after 20 years (around 2028) costs of the basic benefit and pension supplement as a percentage of GDP will be cut in half. However, Chile's population is aging, like that in most other countries — the population 65 years and older will more than double over the next 20 years.[49] This by itself will more than double costs. Nevertheless, costs as a percentage of GDP after 20 years are almost the same as the starting values in these simulations because growth in wages, private pensions and GDP offset population aging under the initial policy assumptions.

The biggest potential impact on fiscal costs comes from policies that might change as a result of political pressures or from individual behavior that might change as a result of the new post-2008 incentives. If political pressures lead to a shift from price- to wage-indexation of the public benefits plus the extension of pension subsidies to the upper two quintiles and young widows, fiscal costs as a percentage of GDP could double in twenty years and more than treble in forty years [see Appendix Table XIB and discussion in text]. If the public benefit for noncontributors becomes more widely available, and the implicit tax on contributors' private pensions lead to a diminished propensity to work in the formal labor market and the growth of independent contractors who escape the contribution mandate, fiscal costs will increase still further.

Appendix Table IA

Simulated Pension as a Percentage of Potential Wage in Year 40

(Depending on rate of return to investments, real wage growth and years of contributions)

Wage Replacement Rate at Retirement

	Real Wage Growth = 0.5%		Real Wage Growth = 2%			
Rate of Return During Accumulation Stage	**3%**	**4%**	**3%**	**4%**	**5%**	**10%**
Contributes Years 1−40	46%	63%	33%	45%	57%	202%
Contributes 30/40 Years	34%	47%	25%	34%	43%	151%
Contributes Years 1−20	29%	42%	18%	27%	36%	165%
Contributes Years 21−40	17%	21%	15%	18%	21%	37%

Source: Authors' calculations.

Appendix Table IB

Simulated Future Monthly Pension for Male Worker Entering the Labor Force Today with Average Wage

(U.S. $655)

Monthly Pension in U.S. Dollars

	Real Wage Growth = 0.5%		Real Wage Growth = 2%			
Rate of Return During Accumulation Stage	**3%**	**4%**	**3%**	**4%**	**5%**	**10%**
Contributes Years 1−40	$365	$502	$468	$640	$808	$2,862
Contributes 30/40 Years	$270	$377	$355	$482	$610	$2,140
Contributes Years 1−20	$230	$333	$255	$383	$510	$2,338
Contributes Years 21−40	$135	$167	$213	$257	$298	$525

Assumptions:

- Person starts pension in year 40.
- Expected age of death is based on Chilean mortality data (RV2004) for men.
- Real rate of return during accumulation stage is 3, 4, 5 or 10 percent.
- Real rate of return during annuity stage is 3 percent.
- Real wage growth (w) is 0.5 percent or 2 percent, from year one to year 40.
- Wage or potential wage in year 40 = $\$655*(1+w)^{39}$ = 1.22*$655 if wage growth equals 0.5 percent; 2.17*$655 if wage growth is 2 percent. (Potential wage is wage individual would earn in year 40 if he got average economy-wide wage in each year).
- 30/40 years means 30 years worked are randomly distributed over a 40-year period.

Appendix Table II

Pension Coverage Rates by Age and Gender for Older Population, Pre-2008

(Percentage of total gender/age group receiving a pension)

Pension Coverage from Contributory Scheme

(Excluding noncontributory social benefit)

Age	Men	Women	Total
65+	71%	55%	61%
70+	75%	61%	67%
70+ (excluding survivors' benefits)	75%	39%	55%

Pension Coverage from Old Age + Survivors + Noncontributory Social Benefit

Age	Men	Women	Total
65−9	75%	62%	68%
70−74	88%	73%	80%
75−79	90%	81%	85%
80−89	91%	86%	88%
90−100	96%	91%	93%
Total, age 65+	85%	74%	79%
Total, age 70+	90%	81%	85%

Source: Authors' calculations based on CASEN 2006.

Appendix Table III

Coverage Rate in New vs. Old Regimes: Percentage of Current 65-Year-Old and Older Population Who Receive Each Pension Type, Bottom Three and Top Two Quintiles of Households

(Pre- and post-2008)

Bottom Three Quintiles: Eligible for New Public Benefits

(Percentage of each gender who get each pension type)

Benefit Type	Pre-2008			Post-2008		
	Men	Women	Total	Men	Women	Total
Old Age	63%	26%	42%	63%	26%	42%
Disability	3%	2%	2%	3%	2%	2%
Survivors[1]	--	19%	11%	--	19%	11%
Contributory Total	66%	47%	55%	66%	47%	55%
Old Social Benefit (Noncontributory)	19%	28%	24%	0	0	0
New Basic Benefit (Noncontributory)	0	0	0	34%	53%	45%
New Pension Supplement[2]	0	0	0	62%	46%	53%
Minimum Pension Guarantee[3]	--	--	25%	0	0	0
Total[4]	86%	74%	80%	100%	100%	100%

continued on next page

Top Two Quintiles: Not Eligible for New Public Benefits
(Percentage of each gender who get each pension type)

Benefit Type	Pre-2008			Post-2008		
	Men	Women	Total	Men	Women	Total
Old Age	74%	46%	58%	74%	46%	58%
Disability	2%	1%	1%	2%	1%	1%
Survivors[1]	0	21%	12%	--	21%	12%
Contributory Total	76%	68%	71%	76%	68%	71%
Old Social Benefit (Noncontributory)	4%	5%	4%	0	0	0
New Basic Benefit (Noncontributory)[5]	0	0	0	*24%*	*32%*	*29%*
New Pension Supplement [2,5]	0	0	0	*45%*	*53%*	*49%*
Minimum Pension Guarantee[3]	--	--	20%	0	0	0
Total	81%	73%	76%	76%	68%	71%

Source: Authors' calculations based on CASEN 2006 and rules for the new system under steady state amounts of new basic benefit and pension supplement (after full phase-in by 2012). It is assumed that the percentage receiving contributory pensions will be unchanged, that all minimum pension guarantee recipients switch to the new pension supplement, and all old social benefit recipients switch to the new basic benefit, if eligible. Text describes caveats. Disability and survivors' benefits for those younger than 65 years old are not included.

[1] In 2006, male survivors did not get benefits unless they were disabled and financially dependent on their wives. After the 2008 reforms, male survivors will be covered on equal terms with females. Therefore, there will undoubtedly be some male survivors in the new regime, but it is not known how many. Women live much longer than men and women tend to be younger than their husbands, so the number of male widowers will be small. Female survivors are concentrated in the 70+ age group. At younger ages, most of their husbands were alive and received pensions. Therefore, the numbers given above understate the proportion of females who will eventually receive survivors' pensions.

[2] All pension supplement recipients get an old-age pension; they are not double-counted in total.

[3] About 23 percent of the elderly receive the guaranteed minimum pension, but the breakdown by pension type, age, gender or decile is not known. Using recipients of pensions in the neighborhood of the guaranteed minimum ($150-$192) as the potential minimum guarantee-eligible group, the probability of being in this group is about 25 percent greater for the bottom six deciles than for the top four deciles (CASEN 2006). This yields a 25 percent probability for the bottom six and 20 percent for the top four, to be consistent with a weighted average of 23 percent. Most minimum guarantee pension recipients are in the pre-1981 system rather than the post-1981 system. All guaranteed minimum recipients are included under either old age, disabled or survivors' pensioners; they are not double-counted in the total. Also see Appendix Tables IVA and IVB.

[4] Total assumes no take-up problem post-2008. If take-up is less than 100 percent, coverage is less than 100 percent.

[5] Italicized numbers given for PBS or APS indicate amounts individuals would get based on their own pensions. However, in the top four deciles, they are ineligible based on household income.

Appendix Table IVA

Average Monthly Pension and Key Ratios by Income, Pre- and Post-2008, for 65-Year-Old and Older Population

(In 2008 U.S. dollars)

	Pre-2008 Regime				Post-2008 Regime	
Reported Pension[1]	**Percentage in Reported Pension Tranche[1]**	**Public Benefits: Social Benefit + Minimum Pension Guarantee[2] ($)**	**Contributory + Public Pension[3] ($)**		**Public Benefits: Basic Benefit + Pension Supplement[4] ($)**	**Contributory + Public Pension[3] ($)**
All Quintiles						
0	40%	$40	$40		$95	$95
$1–$425	52%	$52	$192		$59	$199
>$425	9%	0	$777		0	$777
Average	100%	$42	$182		$68	$210
Bottom Three Household Quintiles						
0	45%	$48	$48		$125	$125
$1–$425	53%	$55	$182		$88	$215
>$425	2%	0	$540		0	$540
Average	100%	$50	$130		$102	$182
Top Two Household Quintiles						
0	29%	$13	$13		0	0
$1–$425	49%	$43	$208		0	$165
>$425	22%	0	$812		0	$812
Average	100%	$25	$283		0	$258

Key Ratios for Population Over 65 and Sub-Groups, Pre- and Post-2008[5]

	Non-contributors	Contributors	Population		Non-contributors	Contributors	Population
	Pre-2008				**Post-2008**		
Public (Tax-Financed) Benefit as Percentage of Total Pension							
Bottom Three Quintiles	100%	27%	38%		100%	37%	56%
Top Two Quintiles	100%	8%	9%		0	0	0
All Quintiles	100%	16%	23%		100%	18%	32%
Public (Tax-Financed) Benefit as Percentage of Average Wage in Pension System							
Bottom Three Quintiles	7%	8%	8%		19%	13%	16%
Top Two Quintiles	2%	5%	4%		0	0	0
All Quintiles	6%	7%	6%		14%	8%	10%
Total Pension as Percentage of Average Wage in Pension System							
Bottom Three Quintiles	7%	30%	20%		19%	35%	28%
Top Two Quintiles	2%	60%	43%		0	56%	39%
All Quintiles	6%	42%	28%		14%	43%	32%

Source: Authors' calculations based on data in CASEN 2006. Approximate exchange rate is C$600 = U.S.$1

continued on next page

[1] Reported pension = contributory pension plus minimum pension guarantee subsidy (see below). The social benefit is not included here. Contributory pension was a defined benefit PAYGO pension in the pre-1981 system, a funded defined contribution pension in the post-1981 system.

[2] Numbers in this column give average public benefit (social benefit plus minimum pension guarantee) for members in each tranche. The social benefit is mainly for noncontributors and is almost all in the 0-reported pension group. The minimum pension guarantee is for contributors in the $1-$425 pension group. Average public benefit for group = average public benefit per recipient* percentage in group who were recipients. Different average amounts by quintile groups indicate differential percentage in group who were recipients.

Data on social benefits are given in CASEN, but the minimum pension guarantee subsidy is not given separately. Instead, the minimum pension guarantee is included in the total reported pension but it is not known how large the subsidy is, on average, or its breakdown among subgroups. The following imputation procedure was used for the minimum pension guarantee: In 2007, the ratio of average minimum pension guarantee subsidy to average social benefit per recipient was 1.37 (based on number of recipients and total spending). The ratio of total recipients to total group members was 5 percent lower for minimum pension guarantee than for the social benefit. Therefore, the imputed average minimum pension subsidy per group member is 1.37*.95 = 1.3 times the average social benefit per group member. (Approximately 30 percent of social benefit and minimum pension guarantee recipients were under age 65 and therefore not included in these calculations. It is assumed that the proportion of spending on recipients under 65 was the same for the social benefit and minimum pension guarantee subsidy.) The imputed contributory pension = total reported benefit for contributors minus imputed minimum pension guarantee subsidy.

To get the breakdown of minimum pension guarantee subsidies between the top four and bottom six deciles, the number of people over age 65 with pensions in the neighborhood of the minimum pension guarantee (2008 U.S.$150-$192) was used in the $1-$425 pension tranche in each quintile group as an indicator of relative prevalence. This allowed for the allocation of spending between the top and bottom quintiles, holding constant the overall weighted average minimum pension guarantee subsidy. The same method was used for allocating the minimum pension guarantee between men and women in each quintile group (Appendix Table IVB). These breakdowns should be used with caution because the actual breakdown of subsidies by subgroup is not known.

Note that most of the minimum pension guarantee subsidy currently goes to pensioners who belong to the pre-1981 system. The minimum pension guarantee subsidy might be expected to change as pre-1981 affiliates are phased out and the post-1981 system matures. However, the 2008 reform will eliminate the minimum pension guarantee before this happens.

[3] The public pension consists of all benefits financed by the government's general budget — social benefit and minimum pension guarantee pre-2008, basic benefit and new pension supplement post-2008. The new basic benefit for noncontributors, replacing the social benefit, is $125. The imputed pension supplement for contributors, replacing the minimum pension guarantee, is $125-0.294*imputed contributory pension. The contributory pension is the private funded defined contribution pension for workers in the post-1981 system plus the PAYGO defined benefit pension for workers who remained in the pre-1981 system. It is imputed as the reported contributory pension minus the imputed minimum pension guarantee subsidy. The contributory pension is assumed to be unchanged by the 2008 reform.

[4] Everyone in the 0-pension group gets the new basic benefit, everyone in $1-$425 group gets the new pension supplement = $125-0.294*imputed contributory pension, in bottom three quintiles only.

[5] Average wage is average pension fund wage, C$393,132 = U.S. $655 (December 2007). "All 65+" is calculated from average row. "Contributors only" is calculated from rows $1-$425 and >$425. "Noncontributors" is calculated from row 0.

These ratios pertain to the situation shortly after 2008. The ratios that will hold for young workers today, when they retire many years later, depends on the indexation policy followed by the government. The new basic benefit is supposed to be price-indexed. If this plan is followed it will retain its $125 value in terms of real purchasing power, but it will fall relative to average wage and total benefit if economic growth occurs. However, if the government decides to link the basic benefit to wages on an ad hoc basis, as it has done for the minimum pension, it will remain constant relative to the average wage and the total benefit.

Appendix Table IVB

Average Monthly Pension Pre- and Post-2008, Men vs. Women

(In U.S. dollars)[1]

		Pre-2008 Regime				Post-2008 Regime		
Reported Pension	**Percentage in Pension Tranche**	**Public Benefit ($)**	**Contributory + Public Pension ($)**	**Public Benefit/ Total Pension**		**Public Benefit ($)**	**Contributory + Public Pension ($)**	**Public Benefit/Total Pension**
Bottom Three Household Quintiles — Men								
0	34%	$52	$52	100%		$125	$125	100%
$1–$425	62%	$52	$192	27%		$83	$223	37%
>$425	4%	0	$548	0		0	$548	0
Average	100%	$50	$158	32%		$95	$203	47%
Bottom Three Household Quintiles — Women								
0	53%	$47	$47	100%		$125	$125	100%
$1–$425	46%	$57	$172	34%		$92	$205	45%
>$425	1%	0	$510	0		0	$510	0
Average	100%	$52	$108	48%		$108	$165	66%
Top Two Household Quintiles — Men								
0	24%	$13	$13	100%		0	0	0
$1–$425	45%	$40	$222	0		0	$182	0
>$425	31%	$0	$877	0		0	$877	0
Average	100%	$22	$373	6%		0	$352	0
Top Two Household Quintiles — Women								
0	32%	$13	$13	100%		0	0	0
$1–$425	53%	$45	$202	0		0	$157	0
>$425	15%	0	$712	0		0	$712	0
Average	100%	$28	$217	13%		0	$188	0

Male/Female Ratios, Public + Private Pensions

	Entire Population Over 65		Contributors Only		Noncontributors	
	Pre-2008	**Post-2008**	**Pre-2008**	**Post-2008**	**Pre-2008**	**Post-2008**
Bottom Three Quintiles	146%	123%	119%	115%	111%	100%
Top Two Quintiles	172%	187%	154%	165%	100%	100%

[1] For definitions of public benefits and methodology see Appendix Table IVA.

Appendix Table V

Percentage of Nonpensioners over Age 65 Still in Workforce

	Top Two Quintiles			Bottom Three Quintiles		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**
Age 65−69	91%	34%	56%	67%	15%	32%
Ages 65−100	84%	23%	44%	48%	10%	23%
Ages 65−100 Who Expect Future Pension	80%	35%	61%	55%	16%	40%

Source: Authors' calculations based on CASEN 2006.

Appendix Table VI

How Nonpensioners over Age 65 Plan to Finance Old Age after Leaving Workforce

	Top Two Quintiles			Bottom Three Quintiles		
	Men	**Women**	**Total**	**Men**	**Women**	**Total**
Contributory Pension	47%	19%	29%	43%	17%	24%
Rent, Insurance, Saving	22%	13%	16%	7%	6%	7%
Help from Children	5%	16%	12%	6%	12%	12%
Social Benefit & Other Government Help	8%	10%	9%	20%	26%	24%
Another Way[1]	7%	23%	17%	6%	17%	14%
No Idea or Answer	11%	20%	17%	17%	21%	20%
Total	100%	100%	100%	100%	100%	100%

Source: Authors' calculations based on CASEN 2006.

[1] For most women, this may refer to support from their husband or from the joint pension that their husband must provide. Until 2008, wives were not required to provide this for their husbands. Also see Appendix Table VII — most women who checked this source are married to men who work or have pensions.

Appendix Table VII

Marital Status of Female Nonpensioners over Age 65

	Top Two Quintiles			Bottom Three Quintiles		
Age	**65−74**	**75−100**	**65−100**	**65−74**	**75−100**	**65−100**
Married to Spouse with Pension	59%	47%	56%	61%	51%	58%
Married to Spouse, Pensioner or Worker	76%	50%	69%	72%	53%	67%
Married to Spouse, Pensioner or Worker —Among Women Who Plan to Finance Old Age 'Another Way'[1]	86%	79%	85%	88%	76%	84%

Source: Authors' calculations based on CASEN 2006.

[1] See Appendix Table VI.

Appendix Table VIII

Poverty and Extreme Poverty by Age and Pension Level

(As a percentage of groups)

Group	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
	Poverty			**Extreme Poverty**		
By Age:						
0−15	21%	21%	21%	5%	5%	5%
16−64	11%	13%	12%	2%	3%	3%
65+	7%	7%	7%	1%	1%	1%
Total	13%	14%	14%	3%	3%	3%
By Pension Level, Age 65+:						
No Pension	14%	11%	12%	3%	2%	2%
$1−$425	6%	5%	5%	0.6%	0.4%	0.5%
>$425	0.1%	0	0.1%	0	0	0
Total	7%	7%	7%	1%	1%	1%

Source: Authors' calculations from data in CASEN 2006, based on household monthly per capita income of the individual. In 2006, the poverty line was U.S.$78 monthly per capita in urban areas, $53 in rural areas. The extreme poverty line was $39 per capita in urban areas, $30 in rural areas.

Appendix Table IX

Simulated Private Pensions and Public Benefits at Retirement for Various Years of Work, Wage Levels and Rates of Return on Investments

(Bottom three quintiles of households in U.S. dollars)

	Price-Indexed Public Benefit			Wage-Indexed Public Benefit		
Rate of Return	**3%**	**4%**	**5%**	**3%**	**4%**	**5%**
Average Wage Worker, 40 Years Contributions						
Private Pension	$468	$640	$808	$468	$640	$808
Pension Supplement (post-2008)	0	0	0	$133	$83	$33
Minimum Pension Guarantee Subsidy (pre-2008)	0	0	0	0	0	0
Average Wage Worker, 20 Years or Half Average Wage Worker, 40 Years						
Private Pension	$235	$320	$405	$235	$320	$405
Pension Supplement (post-2008)	$57	$32	$7	$202	$177	$152
Minimum Pension Guarantee Subsidy (pre-2008)	0	0	0	$112	$27	0
Half Average Wage Worker, 20 Years						
Private Pension	$117	$160	$202	$117	$160	$202
Pension Supplement (post-2008)	$90	$78	$65	$237	$225	$212
Minimum Pension Guarantee Subsidy (pre-2008)	$43	0	0	$230	$187	$145
No Contributory Work						
Private Pension	0	0	0	0	0	0
Basic Benefit (post-2008)	$125	$125	$125	$272	$272	$272
Minimum Pension Subsidy (pre-2008)	0	0	0	0	0	0
Social Benefit (pre-2008)	$80 on means-tested basis			$174 on means-tested basis		

Source: Authors' calculations.

Assumptions:

- Average wage in current year = U.S. $655.
- Annual wage growth equals 2 percent.
- Rate of return during annuity stage equals 3 percent in all cases.
- Retirement at age 65.
- Expected age of death is based on Chilean mortality data for men.
- All values deflated to current year dollars (or zero inflation).
- New basic benefit = $125 in current year, $272 in 40 years if wage-indexed.
- New pension supplement = basic benefit-0.294*private pension.
- Phaseout ends at $425 in current year, $922 in 40 years if wage-indexed.
- Minimum pension guarantee = $160 in current year, $347 in 40 years if wage-indexed.
- Retiree is assumed to annuitize. Minimum pension guarantee subsidy is amount added to private annuity to bring total pension to minimum guaranteed level for eligible workers.
- Twenty-year-worker is assumed to work 20 years randomly distributed out of potential 40.

Appendix Table XA

Marginal Work Disincentives from Pre-2008 Social Benefit + Minimum Pension Guarantee vs. Post-2008 Basic Benefit + Pension Supplement

Contributory Years	Pre-Reform — All Quintiles		Post-Reform — Bottom Three Quintiles Only	
	Social Benefit	Minimum Pension Guarantee	Basic Benefit	Pension Supplement
Private Pension = 0				
0 Years	Negative	0	Negative	0
Private Pension Greater than 0, Less than Minimum Pension Guarantee Level				
Few Years	0	0	0	Strong Negative[1]
Close to 20 Years	0	Positive	0	Strong Negative[1]
20+ Years	0	Strong Negative[1]	0	Strong Negative[1]
Private Pension Greater than Minimum Pension Guarantee, Less than $425				
All Years	0	0	0	Strong Negative[1]
Private Pension Greater than $425				
All Years	0	0	0	0

Source: Authors' analysis in text.

[1] Strong negative means that both income and substitution effects discourage work. The income effect stems from a higher retirement income. The substitution effect stems from the implicit tax on contributions. The substitution effect is greatest with minimum pension guarantee for low earners in the vicinity of 20 years.

Appendix Table XB

Percentage of Population Age 65 and Older Affected by Negative Incentives

	Pre-2008			Post-2008		
	Social Benefit	Minimum Pension Guarantee[1]	Total	Basic Benefit	Pension Supplement	Total
All Quintiles	18%	23%	41%	30%	35%	65%
Bottom Three Quintiles	24%	25%	49%	45%	53%	98%
Top Two Quintiles	4%	20%	24%	0	0	0

Source: Authors' calculations based on Appendix Tables III, IVA and XA.

[1] The breakdown of minimum pension guarantee payouts between the bottom three and top two quintiles is an imputation, as described in Appendix Tables III and IVA.

Appendix Table XIA

Ministry's Projected Fiscal Cost of the New Regime as a Percentage of GDP

	New Basic Benefit + Pension Supplement	Other[1]	Total
2010	0.65%	0.12%	0.77%
2015	0.99%	0.21%	1.2%
2020	1.11%	0.21%	1.32%
2025	1.2%	0.21%	1.41%

Source: Alberto Arenas de Mesa et al., "La Reforma Previsional Chilena: Proyecciones Fiscales 2009-2025," December 2008. Available at http://www.dipres.cl/572/articles-42920_doc_pdf.pdf.

[1] "Other" refers to the baby bonus, subsidy to young workers, new administrative agency and other expenses. Wage-indexation of the new basic benefit and pension supplement is assumed after the transition period (personal communications with Mr. Fidel Miranda, Budget Directorate Office, Ministry of Finance, April 28, 2009).

Appendix Table XIB

Estimated Fiscal Costs of New Basic Benefit + Pension Supplement Under Different Scenarios

(As a percentage of GDP)

Initial period: [1]

New Basic Benefit — New Beneficiaries	0.22%
New Basic Benefit — Old Beneficiaries Including Increment	0.25% (increment is 0.07%)
Pension Supplement	0.42%
Total — Annual Payouts and Cost of Tax-Financed Benefits	0.89%

Sensitivity Analysis: 20 Years Later (2028)[2]	**New Basic Benefit**	**New Pension Supplement**	**Total**
Start (based on initial period)	0.47%	0.42%	0.89%
Plus Imputed Cost of Basic Benefit + Pension Supplement for Disabled Younger than 65	0.52%	0.46%	0.98%
GDP Grows 100 Percent	0.26%	0.23%	0.49%
Adjusted for Higher Contributory Pensions Due to Wage Growth	0.26%	0.20%	0.46%
Age 65+ Group Grows 115 Percent	0.56%	0.42%	0.98%
Public Benefit is Wage-Indexed	0.83%	0.64%	1.47%
Expansion to Top Four Deciles	1.12%	0.91%	2.03%
Total Including Other New Public Benefits	1.12%	0.91%	2.35%
Projection to 40 Years Later (2048)	1.80%	1.26%	3.40%

Source: Authors' calculations based on 2006 CASEN data updated to 2008 dollars.

[1] Initial period is based on authors' estimates of new basic benefit and pension supplement recipients in bottom six deciles of households, using 2006 CASEN data updated to 2008 dollars and applying final system parameters scheduled for 2012.

[2] Sensitivity analysis to following changes, 20 years later:

continued on next page

- Estimated cost of basic benefit + pension supplement for disabled less than 65 years old based on 10 percent ratio of disabled to old age pensioners.
- GDP grows 3.5 percent annually, 100 percent in 20 years.
- Real wages grow 2 percent annually, 50 percent by year 20. (This accounts for part of GDP growth, above.) As younger cohorts with higher wages retire and older cohorts die, average private pensions rise so the pension supplement falls. (This does not affect the basic benefit for noncontributors.)
- Sixty-five and older age group grows at 3.9 percent per year (CELADE), rising by 115 percent in 20 years.
- Wage-indexation is defined as: basic benefit in year t = w*basic benefit in t-1, base pension for pension supplement in year t = basic benefit in year t, and maximum pension for pension supplement in year t = w*maximum pension in year t-1, where w = real wage index for economy. If wages rise 2% per year, the wage index will be up 50% by year 20. This maintains the noncontributory benefit at 19 percent of average wage.
- Expansion to upper four deciles is based on the number of people whose private pensions would qualify them for the new basic benefit or pension supplement.
- Other new public benefits are based on Appendix Table XIA, extended to all quintiles.
- Projections for 40 years later is based on same assumed growth in GDP, wages and older age group under wage-indexation for another 20 years.

Appendix Table XII

Flat Residence-Based Old Age Benefits in High-Income OECD Countries[1]

	Benefits as a Percentage of Average Wage	Phaseout Rate	Relevant Income	Phaseout Beginning-Ending (percentage of average wage)[2]	Indexation Method
Australia	25% (40%)	40%	All Income, Assets	6%−68%	Wage
Canada-basic [3]	14%	15%	All Income	150%−360%	Price
-suppl.	17% (23%)	50%	All Income	14%−48%	Price
Denmark-basic	17%	30%	Wage	75%−132%	Wage
-suppl.	17%	30%	All Income	33%−90%	Wage
Finland[3]	20% (35%)	50%	Pensions	2%−50%	Price
Iceland-basic	9%	30%	Non-Pensions	50%−80%	Wage
-suppl.	16%	45%	All Income	16%−50%	Wage
Netherlands	31% (43%)	0	N/A	N/A	Wage
New Zealand	38% (58%)	0	N/A	N/A	Wage
Norway-basic	18% (31%)	0	N/A	N/A	Discretionary
-suppl.	17%	50%	Pensions	18%−35%	Discretionary
Chile	19%	29.4%	Pensions	0−65%	Price

Source: Numbers for countries other than Chile are authors' calculations, based on Edward Whitehouse, *Pensions Panorama* (Washington, D.C.: World Bank, 2007).

[1] The basic benefit is the flat benefit. Many of these countries also set a minimum that is higher than the basic; if this minimum income is not met, a supplement is paid. Rows labeled "suppl." indicate the maximum supplement. In effect, this implies a two-tier basic benefit, with the first tier (the supplement) paid only to very low earners, phased out first and at a higher rate. Often the couples' rate for the basic benefit and/or supplement is less than double the individual's rate. In that case, the couples' rate is indicated in parentheses. If a couples' rate applies, phaseouts depend on the couple's combined income. If a number is not given in parentheses, this indicates that individuals are treated the same, whether single or part of a couple. This is the case for Denmark and Iceland.

[2] Threshold income for starting phaseout for the supplementary benefit is generally above the basic benefit, so the basic benefit is not phased out for recipients of supplementary benefits.

[3] Benefit and threshold as a percentage of average wages are based on data for 2002. Because benefits are price-indexed, while real wages have risen, these percentages would have fallen by 2009 unless compensatory ad hoc adjustments were made in the interim. In Finland the exempt amount is fixed at €567.

Endnotes

1. Thanks to Solange Berstein for her detailed comments.

2. See Estelle James, "Social Security Reform Around the World: Lessons from Other Countries," National Center for Policy Analysis, Policy Report No. 253, August 2002. Available at http://www.ncpa.org/pub/st253.

3. One of the authors of this study, Augusto Iglesias, was a member of the Council.

4. General Pinochet overthrew the elected leftist government of Salvador Allende in 1973 and served as president until 1990.

5. In 2008, pension fund fees were 2.59-2.64 percent of wages, with one outlier at 3.6 percent. This included the administrative fee plus the fee for disability and survivors' insurance. The administrative fee amounted to about 1.6 percent of wages, or 0.6 percent of assets, which is equivalent to a 0.6 percentage point reduction in rate of return. If this amount were regularly put into the account rather than paid as a fee, by full-career workers, it would increase the final pension by 16 percent [compare pensions for different net rates of return in Appendix Table I].

6. Equity investments were introduced in 1985 and foreign investments were authorized in 1992. In 2000, pension fund managers were permitted to offer two portfolios from which workers could choose. This was expanded to five in 2002.

7. See Estelle James, Guillermo Martinez and Augusto Iglesias, "The Payout Stage in Chile: Who Annuitizes and Why?" *Journal of Pension Economics and Finance*, Vol. 5, No. 2, 2006, pages 121-154.

8. For numbers of beneficiaries and spending on the minimum pension and noncontributory social assistance benefit (minimum pension guarantee and PASIS), see Salvador Valdes-Prieto, "The 2008 Chilean Reform to First-Pillar Pensions," 2009. Available at http://ideas.repec.org/p/ces/ceswps/_2520.html. In December 2007 the average monthly wage received by AFP contributors was U.S.$655; this was very close to the authors' calculations of the 2008 national mean labor income based on the National Characterization Socio-Economic Survey 2006 (CASEN), a nationally representative cross-sectional survey of over 100,000 individuals, conducted by the Ministry of Planning. The national median wage in 2008 (based on CASEN 2006) was U.S.$373. The minimum pension guarantee for a 65-year-old was U.S.$160, the PASIS benefit was U.S.$80 and the minimum wage was U.S.$240. The new basic benefit, when it is fully phased in by 2012, is scheduled to be U.S.$125, which is 19 percent of the 2008 average wage and 34 percent of the median wage. By 2012 the median wage will probably rise faster than inflation, while the basic benefit is scheduled to be price-indexed and will therefore fall relative to the median wage.

9. See Alejandra Cox Edwards and Estelle James, "Pension Reform and Postponed Retirement: Evidence from Chile," University of Michigan, Michigan Retirement Research Center, Working Paper 2005-098, December 2006. Available at http://deepblue.lib.umich.edu/bitstream/2027.42/49333/3/wp147.pdf.txt.

10. See Estelle James and Augusto Iglesias, "Integrated Disability and Retirement Systems in Chile," National Center for Policy Analysis, Policy Report No. 302, September 2007. Available at http://www.ncpa.org/pub/st302.

11. Based on data from CASEN. "National survey" refers to CASEN 2006, unless otherwise identified. Participants in the pre-1981 system were given the option after the 1981 reforms to either switch to an individual private account or stay in the original PAYGO defined benefit system.

12. The national survey asks how individuals plan to finance their old age — giving work, pensions and family as possible answers. Respondents may also answer "another way." Over 80 percent of women nonpensioners who check "another way" are not working, are married and have a husband who is working or pensioned [see Appendix Tables V, VI and VII]. This is interpreted as evidence that they are counting on support from their husband or from the joint pension. Very few men check this answer. Until 2008, men did not receive widower benefits from the joint pension.

13. Estelle James, Alejandra Cox Edwards and Rebeca Wong, "The Gender Impact of Pension Reform," *Journal of Pension Economics and Finance*, Volume 2, No. 2, 2003, pages 181-219 and Estelle James, Alejandra Cox Edwards and Rebeca Wong, *The Gender Impact of Social Security Reform* (Chicago, Ill.: University of Chicago Press, August 2008).

14. See Alberto Arenas de Mesa, Jere Behrman and David Bravo, "Characteristics of and Determinants of the Density of Contributions in a Private Social Security System," University of Michigan, Michigan Retirement Research Center, Working Paper 2004-077, 2004; Solange Berstein, Guillermo Larrain and Francisco Pino, "Coverage, Density and Pensions in Chile: Projections for the Next 30 Years," *Economia*, Vol. 6, No. 2, Spring 2006, pages 227-279; Alejandra Edwards, "Another Look at Contribution Densities in the Chilean

System," manuscript, Los Angeles, Calif., April 2006; Alberto Arenas de Mesa et al., "The Chilean Pension Reform Turns 25: Lessons from the Social Protection Survey," in Stephen Kay and Tapen Sinha, eds., *Lessons from Pension Reform in the Americas* (Oxford, England: Oxford University Press, 2008).

15. See International Labour Organization estimates and projections of the economically active population.

16. Estelle James, Alejandra Cox Edwards and Rebeca Wong, "The Gender Impact of Pension Reform," *Journal of Pension Economics and Finance*, Vol. 2, No. 2, 2003, pages 181-219; or Estelle James, Alejandra Cox Edwards and Rebeca Wong, *The Gender Impact of Social Security Reform* (Chicago, Ill.: University of Chicago Press, August 2008).

17. In 2006, the urban poverty line was U.S.$78 per person, monthly. The extreme poverty line was half of this. The rural poverty line was U.S.$53. Between 2006 and 2008, the budget for the noncontributory benefit increased substantially, waiting lists disappeared and enrollment in PASIS grew 20 percent.

18. Estelle James, Alejandra Cox Edwards and Augusto Iglesias, "The Impact of Private Participation and Countervailing Information on Disability Costs: Evidence from Chile," *Journal of Pension Economics and Finance*, Vol. 8, No. 3, July 2009, pages 291-320.

19. In the 2006 national survey, almost 75 percent of all workers reported labor incomes below the average wage, the median worker earned 57 percent of the mean, and one-third earned less than the minimum wage. In contrast, inequality is less pronounced in the United States, where the median worker earns 67 percent of the mean. This ratio is still higher than in most European countries, which have greater wage equality. It was also higher in the United States in the past — for example, 72 percent in 1990, when wages were less equal than they are today. See Social Security Online, "Average wages, median wages, and wage dispersion," Office of the Chief Actuary, October 2009. Available at http://www.ssa.gov/OACT/COLA/central.html.

20. Authors' calculations based on the 2006 national survey and the PBS and APS rules after the full phase-in in 2012.

21. This appears to be at the low-end of the range (20-38 percent of the average wage) in other countries that pay noncontributory flat benefits to the elderly [see Appendix Table XII].

22. The high proportion below P_{max}, the pension ceiling of $425 for the pension supplement, in all quintiles, is not surprising when it is recalled that workers are permitted to start their pension once their retirement accumulation yields an annuity that equals 70 percent of their average wage. After that, they can continue working if they wish, without contributing. For most of the pre-2008 period, the required percentage of the worker's average wage was 50 percent. Thus, workers with a wage less than $850 were likely to retire at varying ages as soon as they achieved a pension of $425, or even less. According to CASEN 2006, 85 percent of all workers earned less than $850 per month, so their expected pension is less than $425. The proportion receiving less than $425 is likely to fall due to the 70 percent replacement rate that will be required in the future for early retirement. Also, future wage growth will increase private pensions. Thus, more pensions will exceed P_{max} in the future, if P_{max} remains price-indexed, as specified in the current legislation. But P_{max} will also grow in the future, should it be linked to wages, due to political pressures.

23. Current retirees are a mixture of pre- and post-1981 system members. Contributory benefits for the former group were financed out of payroll contributions on a PAYGO basis, while benefits for the latter group were financed out of their own funded accounts. Additionally, most of the tax-financed minimum pension subsidies went to pre-1981 members, who were generally older. Thus, on the eve of the 2008 reforms, the prefunded portion of the country's aggregate pensions was far less than the contributory share but was likely to grow (to 77 percent) in the future. The new tax-financed benefits will counteract this growth stemming from maturation of the post-1981 system.

24. The public subsidy is reduced by 29.4 percent of the incremental 50 percent of private pension that is imputed.

25. This applies to those who pay income taxes under specific provisions of the tax code. Initially the self-employed will be given some discretion about being included and only part of their income will be subject to contributions.

26. Approximately 1.6 million Chileans are self-employed. Official estimates of the number of self-employed who will be added are not available. Based on tax figures and on estimates of the number of self-employed who are already members of the pension system, the authors estimate that new members could total about 200,000. Under the new mandate, the minimum contribution will be based on the minimum wage (about $240 monthly) and the ceiling will be the maximum covered monthly wage (about $2,000 monthly).

27. Until 2011 only employers with more than 99 workers are subject to the 2008 mandate.

28. That is, the age which they have only a 5 percent probability of outliving, given their age of pensioning. The initial pension amount is called the "RP de referencia."

29. In most cases these individuals should not have received the social benefit. If they did, it was likely due to flaws in the administration of the pre-2008 system, which may also exist in the post-2008 system.

30. Many of these pension supplements will be small. The old-age guaranteed minimum pension was capped at $160 at age 65 and $175 after age 70. In contrast, the new pension subsidy is capped at $125 overall and at $75 for those whose private pension exceeds the previous guaranteed minimum floor. As a result, the average annual payment was greater for the guaranteed minimum than for the pension supplement. But the pension supplement has many more recipients. Therefore, the average expected benefit per contributor to a personal account is higher.

Note also that the estimated size of the minimum pension subsidy and the pension supplement is based on an imputation. The pension supplement amount depends on the person's private pension. But the pension reported by CASEN includes private pensions plus the guaranteed minimum subsidy — these two components are not separated out. To estimate the pension supplement, the part that is due to the guaranteed minimum subsidy must be separated out. Appendix Table IVA describes the authors' method for making this imputation. Additionally, in the future, pension supplements may be smaller because they will be based on an imputed age-60 pension for women and age-65 pension for men. The authors could not make this adjustment because CASEN does not give the person's retirement age.

31. During the transition period (until 2012), the phaseout rate and cutoff point for the pension subsidy are lower than the steady-state amounts. Additionally, current recipients of the guaranteed minimum can choose between the new and old schemes, as can current pensioners over age 50 and individuals who become disabled within the next 15 years. Current beneficiaries of the old social benefit immediately receive the higher basic benefit.

32. These incentives apply only to individuals who are well informed about the details of the plans and the rewards and penalties embodied in them. On the effect of system knowledge on workers' choices, see Alejandra Edwards and Estelle James, "Crowd-out, Adverse Selection and Information in Annuity Markets: Evidence from a New Retrospective Data Set in Chile," University of Michigan, Michigan Retirement Research Center, Working Paper 2006-147, 2006; and Olivia Mitchell, Petra Todd and David Bravo, "Learning from the Chilean Experience: The Determinants of Pension Switching" in Annamaria Lusardi, ed., *Overcoming the Saving Slump* (Chicago, Ill.: University of Chicago Press, 2009).

33. Regulations give contributors the option of investing in funds with various risk-return profiles, with more limited choices for older workers. Between January 2008 and April 2009, a period when world equity markets collapsed, workers who chose the low equity fund got a real return of –4 percent and those who chose the fixed income fund got a real return of +5 percent. These are the only options available to workers nearing retirement.

34. Estelle James, Alejandra Cox Edwards and Augusto Iglesias, "The Impact of Private Participation and Countervailing Information on Disability Costs: Evidence from Chile," *Journal of Pension Economics and Finance*, Vol. 8, No. 3, July 2009, pages 291-320.

35. In the pre-2008 system insurance fees were not very transparent, because they were combined with the pension companies' general administration fee rather than reported separately. However, workers knew that they paid for the insurance. Now the fees will be reported separately, but the insurance will appear as a "free good" to workers.

36. Also see Estelle James, Alejandra Cox Edwards and Rebeca Wong, *The Gender Impact of Social Security Reform* (Chicago, Ill.: University of Chicago Press, August 2008), which reaches similar conclusions after adjusting these raw per capita numbers by the Organisation for Economic Co-operation Development (OECD) equivalence scales. Salvador Valdes-Prieto, "The 2008 Chilean Reform to First-Pillar Pensions," 2009, takes a similar position. It is sometimes argued that, because of extended family living arrangements, some of the benefits that older individuals receive are shared with other family members and so filter down the age range. See Esther Duflo, "Grandmothers and Granddaughters: Old Age Pension and Intra-household Allocation in South Africa," National Bureau of Economic Research, Working Paper No. 8091, 2000; Anne Case, "Does Money Protect Health Status: Evidence from South African Pensions," National Bureau of Economic Research, Working Paper No. 8495, October 2001; and Robert Palacios and Oleksiy Sluchynsky, "Social Pensions," in World Bank, *Pension Reform Primer* (Washington, D.C.: World Bank, May 2006). However, this is an indirect and uncertain way to alleviate poverty among the young. Direct transfer payment to low-income working families or higher expenditures on education might be a more effective way to achieve that goal.

37. The relative expenditure needed to maintain a given standard of living for families of different sizes is estimated using OECD equivalence scales. See *The OECD List of Social Indicators* (Paris: Organization for Economic Co-operation and Development, January 1982), and Aldi Hagenaars, Klaus de Vos and M. Asghar Zaidi, *Poverty Statistics in the Late 1980s: Research Based on Micro-data* (Luxembourg: Office for Official Publications of the European Communities, 1994).

According to these equivalence scales, it will cost a couple only 40-50 percent more than an individual to match her increase in living standards from the pension subsidy. If the couple gets 200 percent of the individual's pension subsidy this enables them to reach a

higher living standard than the single individual. For this reason, most countries with a noncontributory basic old-age benefit pay a smaller amount per capita to members of a couple than to single individuals. But Chile chose to pay the same amount per capita.

38. See World Bank, "World Development Indicators," 2009. Available at http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20398986~pagePK:64133150~piPK:64133175~theSitePK:239419~isCURL:Y,00.html.

39. Based on Alberto Arenas de Mesa et al., "La Reforma Previsional Chilena: Proyecciones Fiscales 2009-2025," December 2008. Available at http://www.dipres.cl/572/articles-42920_doc_pdf.pdf.

40. On this point, see Salvador Valdes-Prieto, "The 2008 Chilean Reform to First-Pillar Pensions," 2009. Also, the analysis was extended only for 17 years, even though changing conditions could lead costs to rise substantially in the longer run.

41. In fact, most other countries with flat public benefits use wage indexation [see Appendix Table XII]. Their rationale is the value judgment that the basic standard of living for retirees should keep pace with that of workers. Initially, the basic benefit in Chile is 19 percent of the average wage, but if wages grow 2 percent per year and benefits are price-indexed, it will be only 13 percent of average wages after 20 years; the standard of living of the elderly will inevitably fall behind that of workers. In contrast, a wage-indexed basic benefit remains at 19 percent of the average wage — a constant relationship between workers and pensioners. This increases the redistribution and insurance provided by the public benefit, but also increases the moral hazard problem. The baby bonus and subsidy to low-earning young workers will in effect be wage-linked if the minimum wage rises with the average wage.

42. Ministry of Finance estimates of fiscal costs for 2025 under wage-indexation are somewhat lower: 1.2 percent of GDP. Most of this difference is due to the Ministry's assumption of a 4 percent growth rate in GDP (the simulation assumes a 3.5 percent growth rate) as well as the shorter period they have modeled. The Ministry's report does not state whether wage- or price-indexation was used in their calculations. The Ministry apparently assumed that the basic benefit and pension supplement will be wage-indexed even though the law specifies price-indexation. Personal communications with Fidel Miranda, Budget Directorate Office, Ministry of Finance, April 28, 2009.

43. In the bottom three quintiles most individuals who do not get a private pension in this range are women who have no contributory pension of their own. In the top two quintiles individuals who are not in this range are divided closely between those (mainly men) who have a private pension above the ceiling and those (mainly women) who have no private pension at all [see Appendix Table IVB].

44. La Asociacion Internacional de Organismos de Supervisión de Fondos de Pensiones (AIOS), Boletin Estadistico No. 19, June 2008.

45. La Asociación Internacional de Organismos de Supervisión de Fondos de Pensiones (AIOS), 2008.

46. See Estelle James et al., "Mutual Funds and Institutional Investments: What is the Most Efficient Way to Set Up Individual Accounts in a Social Security System?" in John Shoven, ed., *Administrative Costs and Social Security Privatization* (Chicago, Ill.: University of Chicago Press, 2000); Estelle James, James Smalhout and Dimitri Vittas, "Administrative Costs and the Organization of Individual Retirement Account Systems: A Comparative Perspective," in R. Holzmann and J. Stiglitz, eds., *New Ideas About Old Age Security* (Washington D.C.: World Bank, February 2001).

47. CASEN allows the calculation of the probability that older individuals (identified by age and gender) received a contributory pension in 2006 and, if so, how much. It also tells the probability that individuals got the social benefit (PASIS) in 2006. From these data the number of people who will get the basic benefit (PBS) (because they had no contributory pension), the number receiving the supplemental pension (APS) (because their contributory pension was less than $425 monthly), and the total expenditure on the both public benefits post-2008 (0.47 + 0.42 = 0.89 percent of GDP) can be calculated. The APS expenditure estimate required an imputation. First, APS spending based on reported contributory pensions is estimated. However, reported pensions in CASEN include the contributory pension plus the guaranteed minimum subsidy. It was necessary to subtract the guaranteed minimum subsidy to get the contributory pension alone for individuals over 65 in the bottom three quintiles, on which the APS is based. From other sources it is known that total expenditures on the guaranteed minimum were 0.68 percent of GDP. Of this, about 30 percent, or 0.2 percentage points, went to individuals younger than 65. Of the 0.48 percent of GDP imputed to go to the 65+ group, 0.14 percentage points were imputed to the top two quintiles. This calculation concludes that minimum pension subsidies to individuals age 65 and over in the bottom three quintiles totaled 0.34% of GDP and reported pensions to this group overstate contributed pensions by the same amount. Projected APS costs based on reported pensions were therefore increased by 0.294*0.34 = 0.1 percent of GDP, bringing the APS estimate to 0.42 percent of GDP. For more details see footnotes to Appendix Table IVA.

48. Ideally the distribution of private pension amounts and the number of pension recipients would have been allowed to change, depending on fertility rates, projected labor force participation rates and retirement ages of men and women, but these factors are beyond the scope of this study. Also, the authors did not attempt to model how the cost of minimum pension guarantee plus the old social benefit would have changed.

49. According to the Latin American and Caribbean Demographic Centre/Population Division (CELADE) of the Economic Commission for Latin America and the Caribbean.

About the NCPA

NCPA
NATIONAL CENTER FOR POLICY ANALYSIS

The NCPA is a nonprofit, nonpartisan organization established in 1983. Its aim is to examine public policies in areas that have a significant impact on the lives of all Americans — retirement, health care, education, taxes, the economy, the environment — and to propose innovative, market-driven solutions. The NCPA seeks to unleash the power of ideas for positive change by identifying, encouraging and aggressively marketing the best scholarly research.

Health Care Policy.

The NCPA is probably best known for developing the concept of Health Savings Accounts (HSAs), previously known as Medical Savings Accounts (MSAs). NCPA President John C. Goodman is widely acknowledged (*Wall Street Journal*, WebMD and the *National Journal*) as the "Father of HSAs." NCPA research, public education and briefings for members of Congress and the White House staff helped lead Congress to approve a pilot MSA program for small businesses and the self-employed in 1996 and to vote in 1997 to allow Medicare beneficiaries to have MSAs. In 2003, as part of Medicare reform, Congress and the President made HSAs available to all nonseniors, potentially revolutionizing the entire health care industry. HSAs now are potentially available to 250 million nonelderly Americans.

The NCPA outlined the concept of using federal tax credits to encourage private health insurance and helped formulate bipartisan proposals in both the Senate and the House. The NCPA and BlueCross BlueShield of Texas developed a plan to use money that federal, state and local governments now spend on indigent health care to help the poor purchase health insurance. The SPN Medicaid Exchange, an initiative of the NCPA for the State Policy Network, is identifying and sharing the best ideas for health care reform with researchers and policymakers in every state.

NCPA President John C. Goodman is called the "Father of HSAs" by *The Wall Street Journal*, WebMD and the *National Journal*.

Taxes & Economic Growth.

The NCPA helped shape the pro-growth approach to tax policy during the 1990s. A package of tax cuts designed by the NCPA and the U.S. Chamber of Commerce in 1991 became the core of the Contract with America in 1994. Three of the five proposals (capital gains tax cut, Roth IRA and eliminating the Social Security earnings penalty) became law. A fourth proposal — rolling back the tax on Social Security benefits — passed the House of Representatives in summer 2002. The NCPA's proposal for an across-the-board tax cut became the centerpiece of President Bush's tax cut proposals.

NCPA research demonstrates the benefits of shifting the tax burden on work and productive investment to consumption. An NCPA study by Boston University economist Laurence Kotlikoff analyzed three versions of a consumption tax: a flat tax, a value-added tax and a national sales tax. Based on this work, Dr. Goodman wrote a full-page editorial for *Forbes* ("A Kinder, Gentler Flat Tax") advocating a version of the flat tax that is both progressive and fair.

A major NCPA study, "Wealth, Inheritance and the Estate Tax," completely undermines the claim by proponents of the estate tax that it prevents the concentration of wealth in the hands of financial dynasties. Actually, the contribution of inheritances to the distribution of wealth in the United States is surprisingly small. Senate Majority Leader Bill Frist (R-TN) and Senator Jon Kyl (R-AZ) distributed a letter to their colleagues about the study. In his letter, Sen. Frist said, "I hope this report will offer you a fresh perspective on the merits of this issue. Now is the time for us to do something about the death tax."

Retirement Reform.

With a grant from the NCPA, economists at Texas A&M University developed a model to evaluate the future of Social Security and Medicare, working under the direction of Thomas R. Saving, who for years was one of two private-sector trustees of Social Security and Medicare.

The NCPA study, "Ten Steps to Baby Boomer Retirement," shows that as 77 million baby boomers begin to retire, the nation's institutions are totally unprepared. Promises made under Social Security, Medicare and Medicaid are completely unfunded. Private sector institutions are not doing better — millions of workers are discovering that their defined benefit pensions are unfunded and that employers are retrenching on post-retirement health care promises.

Pension Reform.

Pension reforms signed into law include ideas to improve 401(k)s developed and proposed by the NCPA and the Brookings Institution. Among the NCPA/Brookings 401(k) reforms are automatic enrollment of employees into companies' 401(k) plans, automatic contribution rate increases so that workers' contributions grow with their wages, and better default investment options for workers who do not make an investment choice.

The NCPA's online Social Security calculator allows visitors to discover their expected taxes and benefits and how much they would have accumulated had their taxes been invested privately.

Environment & Energy.

The NCPA's E-Team is one of the largest collections of energy and environmental policy experts and scientists who believe that sound science, economic prosperity and protecting the environment are compatible. The team seeks to correct misinformation and promote sensible solutions to energy and environment problems. A pathbreaking 2001 NCPA study showed that the costs of the Kyoto agreement to reduce carbon emissions in developed countries would far exceed any benefits.

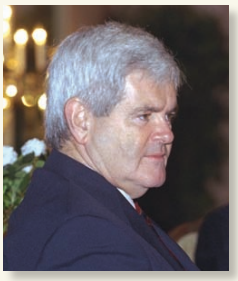
Educating the next generation.

The NCPA's Debate Central is the most comprehensive online site for free information for 400,000 U.S. high school debaters. In 2006, the site drew more than one million hits per month. Debate Central received the prestigious Templeton Freedom Prize for Student Outreach.

Promoting Ideas.

NCPA studies, ideas and experts are quoted frequently in news stories nationwide. Columns written by NCPA scholars appear regularly in national publications such as the *Wall Street Journal*, the *Washington Times*, *USA Today* and many other major-market daily newspapers, as well as on radio talk shows, on television public affairs programs, and in public policy newsletters. According to media figures from Burrelles*Luce*, more than 900,000 people daily read or hear about NCPA ideas and activities somewhere in the United States.

What Others Say About the NCPA



"The NCPA generates more analysis per dollar than any think tank in the country. It does an amazingly good job of going out and finding the right things and talking about them in intelligent ways."

Newt Gingrich, former Speaker of the U.S. House of Representatives

"We know what works. It's what the NCPA talks about: limited government, economic freedom; things like Health Savings Accounts. These things work, allowing people choices. We've seen how this created America."

John Stossel,
former co-anchor ABC-TV's *20/20*

"I don't know of any organization in America that produces better ideas with less money than the NCPA."

Phil Gramm,
former U.S. Senator

"Thank you . . . for advocating such radical causes as balanced budgets, limited government and tax reform, and to be able to try and bring power back to the people."

Tommy Thompson,
former Secretary of Health and Human Services

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