



Rethinking Survivor Benefits

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Abstract: This paper provides a framework for analyzing the efficiency and equity of survivor benefit programs. These programs were originally designed to support families when the main wage-earner died, in an era where women rarely worked, fertility rates were high, and widows were unable to support themselves and their children. Yet, voluntary saving and insurance were often insufficient due to myopia. Mandatory survivor benefits helped to achieve lifetime consumption smoothing for the family and to prevent poverty among elderly widows—the group where old age poverty is concentrated. The question is—are these programs still needed in an era when most women work and fertility rates have fallen and, if so, how should they be designed?

We argue that, even in a world of perfect gender equality, mandatory family co-insurance may still be justified because couples are unlikely to plan adequately for household economies of scale. This leads the cost of living of a widow(er) to be much more than half that of a couple. In addition, some disparity in work and wage patterns of men and women remains in every country. While such programs may benefit both spouses, women are the greatest recipients because they outlive their husbands.

However, as currently designed, many survivor benefit programs entail work disincentives and perverse redistributions—from women who work in the market to those who do not, from singles and dual career couples to single-earner couples and sometimes from low- to high-earning families. These cross-subsidies penalize women who work in the market and therefore may discourage such work, decrease their income and increase their old-age poverty rates. The insurance goal can be achieved without these negative incentives and redistributions by internalizing the cost within the family rather than passing it on to the common pool and by allowing widow(ers) to keep their own pensions in addition to the survivor benefits.

We present empirical evidence of how survivor benefits are structured, including the rules that embody cross-subsidies and incentives, in a sample of 39 high, middle and low income countries. Four patterns emerge:

- 1) Countries with high rates of spending on survivor benefits—which are probably higher than needed for optimal consumption-smoothing and which discourage women’s work;
- 2) Countries that have closed down most of their survivor programs on grounds that women can now be expected to support themselves—ignoring household economies of scale as well as the remaining disparity between male and female incomes;
- 3) Those that provide modest protection for all old people, whether or not they are survivors, through a universal basic benefit—thereby avoiding the cross-subsidies based on marital status but also failing to require family consumption-smoothing; and,
- 4) Those that mandate survivor benefits but internalize costs within the family through joint pensions that do not penalize working women.

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Introduction

Just as old-age programs are designed to provide financial support in the years when individuals are too old to work productively, survivor benefit programs are designed to support the families when a wage-earner has died and the widows and children are unable to work productively. Myopia may lead workers to under-insure and under-save for their families. Mandatory programs for survivors supplement or supplant insufficient voluntary savings and insurance, helping to achieve an optimal lifetime consumption pattern for the family. In addition to this efficiency rationale, redistribution is sometimes needed to prevent poverty among the survivors of low earners. These are similar to the rationales for mandatory old-age pensions but with an added complication – intra-family trade-offs are involved. Over time, workers as a group must pay more or receive smaller old-age benefits in order to finance benefits for their survivors.

The programs developed by different countries reflect their social norms about household and labor market roles of men and women—with these behaviors taken as a given. Less well-recognized is the fact that the programs also shape these behaviors, by an elaborate system of opaque rewards and penalties. While survivor benefit programs can improve both equity and efficiency, if not well designed they may also be costly and lead to work disincentives and perverse redistributions.

Many countries have been reforming their old-age programs to make them fiscally sustainable and to eliminate their distortionary economic impacts. At the same time, they have been critically reexamining their survivor benefit programs, with the same goals. Policymakers have begun to ask: Is this program a good use of funds? Do net benefits go to the right people? Are the right behaviors encouraged? The purpose of this paper is to help answer these questions. Part I develops the efficiency rationale for mandatory survivor benefits, in view of the changing demographic conditions and labor market roles of men and women. Part II lays out a framework for analyzing the key design features that policymakers must choose, and surveys the range of answers found in a sample of 39 low, middle and high income countries. Part III analyzes how system design, individual choice and underlying demography determine program costs, lifetime benefits and cross-subsidies. Part IV focuses on the impact of alternative designs on consumption-smoothing, distribution and incentives. The Conclusion highlights crucial elements of programs that meet the twin tests of efficiency and equity, as defined below.

Survivor benefit programs basically have two goals: preventing poverty and smoothing consumption levels over life and death states of key family earners. This paper takes the position that redistributions from the public treasury or the system's common pool should be directed toward poverty prevention, setting an income floor for all rather than maintaining the previous living standards of marital survivors. Therefore, redistributions should be targeted according to income rather than marital status. Policies such as universal flat benefits in old age, minimum pension guarantees or means-tested income supplementation accomplish this goal.

Mandatory programs to maintain living standards for marital survivors are also important – given myopia, household economies of scale, the uneven locus of earning capacity, financial decision-making power and longevity within the family, and the presence of children who have the greatest future longevity and the least earning and decision-making power. This goal can be achieved without inter-family redistributions. Indeed, family members could be required to co-insure each other against the death of key partners, through arrangements such as actuarially fair life annuities or joint defined benefits that internalize costs within the household. Internalizing family costs forces individuals to consider the full burden when making decisions about marriage, children and life-cycle consumption, rather than expecting others to pay after one's death. This prevents non-transparent and sometimes perverse transfers of tax revenues across families and also is less likely to lead to system rules that discourage work by survivors or by young individuals who expect to be survivors some day. Practically all systems that do not internalize costs within the family impose such rules.

Most advanced industrial states now allow both widows and widowers to qualify for survivor benefits on similar terms, although widows predominate because women live longer, earn less and are more likely to pass the phase-out test that many systems apply. Divorcees and unmarried partners often qualify too.¹

¹ For simplicity, we generally use the terms “she” or “widow” to refer to survivors and the term “survivors’ benefits” is used interchangeably with “widows’ benefits” and “benefits for partners” in this paper.

I. The Economic Theory of Mandatory Survivor Benefits

Why do countries have mandatory survivor benefit programs? We argue that these programs correct failures in voluntary competitive markets but, unless carefully designed, introduce new non-market failures—distortionary incentives and potential inequities. We examine how changing labor market and demographic behaviors affect these failures of voluntary and mandatory survivor insurance.

1.1 Demand-Side Failures in Voluntary Markets

If a male worker dies when young, he may leave small children and a wife who stayed home to care for the children instead of working in the market, all of whom have suddenly lost their means of financial support. Due to the presence of children and the limited earning capacity of the widow, total family expenditures fall by only a small percentage—and may even rise because more paid child care is needed—while family income falls substantially.

If the male worker dies when older, his children may be grown but his wife is typically younger than he and has a longer expected lifetime, therefore may outlive him by many years. Yet, in a common family and labor market pattern, the wife has depended on her husband for financial support, has worked only part of the time and at lower wage rates and therefore has little or no pension of her own. In traditional societies, grown children sometimes support their widowed mothers, by extended family living arrangements or cash transfers. These arrangements break down, however, if there are no children or if the children are poor. For this reason, older widows often constitute pockets of poverty, unless some non-family means of support is available.

If husbands purchased sufficient life insurance to support their wives and other dependent family members, these problems would be solved on a voluntary basis. However, the same myopia that leads workers to under-save for their own old age may lead them to underestimate their probability of death and under-purchase life insurance, compared to what is optimal based on family life-cycle consumption-smoothing (see Bernheim et al. 2003; Friedberg and Webb 2006). Workers may neither expect to die when young nor plan for their death in the distant future.

Furthermore, insuring requires workers to give up some of their own present-day consumption in order to increase the future consumption of their spouse and children—and some individuals may

not be willing to make this inter-temporal, inter-personal trade-off. Furthermore, the decision-making power within the family may be concentrated in those earning the most (usually the husband) while family members with the longest future lifetimes (usually the wife and children) have less control. Mandatory survivor insurance protects them.

1.2 Family Co-Insurance as a Response to Household Economies of Scale

In contemporary households in high income OECD countries, where both spouses may earn similar wages and have few if any children, we find yet another rationale for survivor insurance, based on household economies of scale. When one spouse dies, household income falls by 50 percent while the total household expenditure needed to maintain the previous standard of living falls by only 20-30 percent due to household economies of scale. The relative expenditure needed to maintain a given standard of living for families of different sizes is estimated using equivalence scales.² Household economies of scale are due primarily to family consumption of goods that have public, non-rival characteristics. For example, a couple can jointly consume a given housing space without a decrease in the utility it provides to either member. The housing space needed to maintain the same level of utility does not fall by 50 percent when one spouse dies—but income may. Survivor benefits help to compensate for the loss of household economies of scale and to maintain the *ex ante* standard of living for the remaining spouse.

The argument for social protection through mandates is weaker here than in the presence of children or widows in traditional families who have little earning or decision-making power of their own. Yet, even in this more equal case, myopia and the lack of appreciation of scale economies may lead to an under-purchase of family co-insurance on a voluntary basis. Both spouses may be better off if it becomes mandatory, although the fact that one partner—the wife—is likely to live longer means that the expected benefit is asymmetric.

² These scales give us an adjusted number of equivalent full cost family members by attributing different marginal costs to incremental members depending on their age and the family size. Exactly how this adjustment should be made is far from clear, so several alternative scales exist. One common equivalence scale is the old OECD scale, which weights the first adult as 1, additional adults as .5 each and children as .3 each. The new OECD scale takes the square root of the number of family members as the divisor (OECD 1982; Hagenars, De Vos and Zaidi 1994). Based on the old OECD scale, the cost of maintaining a given living standard is $100/150 = 67\%$ as much for a uniperson household as for a couple, while the new scale implies it is $1/1.4 = 71\%$ as much. For a single person plus two children, compared with a couple plus two children, the old scale would yield a relative cost of $1.6/2.1 = 76\%$, while the new scale would yield a relative cost of 87%.

1.3 Supply-Side Failures in Competitive Markets

Even if workers were willing to insure voluntarily, they would face other problems from the supply side. Survivor insurance is basically life insurance, with the payout taking the form of a long-term annuity instead of a lump sum. In some countries, the private insurance industry is not well enough developed to sell this product reliably. If insurance companies do exist, they will try to distinguish between high and low risk workers (that is, workers who are more or less likely to die), using observable information gleaned from medical examinations and family history, and charging prices differentiated by risk classification. If not permitted to differentiate price, they will try to cherry-pick lower risk individuals, while denying coverage to those they judge as higher risk.

Because some characteristics that determine risk are not observable, insurance companies know they face the likelihood of adverse selection in voluntary markets—individuals who have asymmetric information that they are in ill health and may die soon are most likely to try to purchase life insurance. This will lead companies to charge a high price, based on the probability that their clientele will consist, disproportionately, of high risk individuals whom they cannot identify through observable characteristics. This makes insurance costly (relative to expected value) for the average individual, who therefore may not purchase it. If individuals cannot buy insurance or underestimate its value or if adverse selection leads to high prices exceeding expected value to the average person, many widows will end up with meager resources, possibly close to the poverty line, and the social burden of supporting them will be passed on to the broader society.

All of the above constitute the basic rationale for mandatory survivor benefit programs—that is, for mandatory life insurance with periodic payouts. Poverty-avoidance is the most basic rationale seconded by strong efficiency reasons for smoothing consumption across risk states. Such programs extend social security coverage to many women who did not work in formal labor markets.³ They also provide family co-insurance for both spouses and avoid problems of myopia, underestimate of risk, uneven decision-making power, adverse selection and cherry-picking in voluntary insurance markets.

³ Low coverage is a big problem in low and middle income countries with large informal sectors and low labor force participation rates for women.

1.4 Potential Inequities and Distortions in Mandatory Systems

Depending on how they are designed, mandatory survivor insurance systems can also create new inefficiencies and inequities. The potential inequities stem from non-transparent cross-subsidies built into many mandatory systems and the inefficiencies stem from incentives that these cross-subsidies and other systemic rules create. To develop this point, we distinguish between *ex post* versus *ex ante* winners and between insurance versus redistribution programs.

In their purest form, survivor benefit programs are a type of life insurance where the payout is periodic payouts rather than a lump sum. Insurance systems always have financial winners and losers *ex post*. The “winners” are those who experience the event being insured against and therefore collect insurance benefits, while the “losers” pay the insurance premiums but do not suffer the loss or collect the compensating benefit. In an actuarially fair system, where the premium equals the expected value of the payout for each participant, people do not know *ex ante* who will end up a winner or loser—this is a case of pure insurance with no redistribution.

Redistribution occurs when there are winners and losers *ex ante*, that is, when the expected present value of lifetime benefits exceeds the premium paid for some groups and vice versa for others. Such cross-subsidization is unlikely in voluntary markets, where competition forces insurance companies to differentiate groups by risk category (if this is permitted), thereby avoiding cross-subsidies and related disincentives. It is very common in public systems, where community pricing is often used, rather than actuarially fair pricing differentiated by risk category, and where rules withdraw benefits from some classes of individuals who nevertheless are forced to continue paying fees. As discussed in a later section, single individuals cross-subsidize married couples (which may not be equitable), women who work in the market cross-subsidize wives who stay at home (which may discourage market work), and widows who remarry lose their survivor benefits (which may discourage formal remarriage). The arguments in the preceding section justify insurance for efficiency reasons, but redistributions must be evaluated cautiously to ensure that they are considered equitable by most members of the society and do not distort behavior inefficiently. This careful evaluation does not seem to have taken place in many systems.

The strongest reason for redistribution is to avoid poverty (although societies differ in their definition of what constitutes poverty). Beyond that, cross-subsidies might be desired in cases where individuals have no control over their risk class, as in the case of an individual who, because

of a genetic disorder, learns he will die young and leave survivors. His risk class is known after birth, but it is not known in the pre-birth state; so cross-subsidies due to community pricing could be interpreted as insurance in the Rawlsian (pre-birth) sense. The moral hazard effect of such cross-subsidies is small if he and his survivors have no control over the insured event or the amount of insurance.

The line between insurance and redistribution is hard to draw if the population is homogeneous and behavior is determined by strong social norms rather than individual choice, as in stylized traditional societies where almost everyone marries, has several children and married women rarely work in the market thereafter. In that case, community pricing reflects a common risk class. However, in recent decades marital and labor force behaviors have become more dependent on personal discretionary choice. Community pricing in mandatory survivor insurance programs, and rules that withdraw benefits if the widow works, then generate non-transparent cross-subsidies that might be considered inequitable if carefully scrutinized and may lead to inefficient behavior, unless carefully designed to avoid these effects.

1.5 Changing Demographic and Labor Market Behaviors that Affect Survivor Insurance

To set the stage for this analysis, we briefly summarize the underlying demographic conditions and labor market roles of men and women—how they vary across regions, have been changing and how this affects survivors and the rationale for mandatory survivor insurance. Tables 1-3 show these patterns for the 39 countries in our study. This small non-random sample of high, middle and low income countries represents all of the countries for which we received information on survivor benefit programs. Although high income OECD countries are over-represented, we also have examples from MENA, Latin America and Eastern Europe.

In all our sample countries marriage and children are the norm, but a growing number of young people have begun not to marry or, if married, are more likely to divorce than previously. Fertility rates and number of children per couple have declined precipitously (compare marriage, divorce and fertility rates for 2006 and 1990, in Table 1). Women remain less likely to work or more likely to work part time than men. However, their participation rates have risen dramatically, in part due to these demographic changes and higher education levels (compare female participation rates and

female/male rates for 2006 versus 1990, in Table 2).⁴ Women's wages are also rising relative to men's, although equality has not yet been achieved. At the same time, women are generally younger than their husbands and their life expectancy is longer, so most wives will outlive their husbands by many years (Table 3). These basic observations illustrate the fact that women are likely to be the survivors in a marriage; they may also be caring for children as survivors; and their own financial resources will usually drop precipitously when the husband dies—the rationale for survivor insurance. But the family and labor market roles of women are now in the process of change.

Not surprisingly, the MENA countries remain more traditional than the others—having higher marriage and fertility rates and lower divorce rates. Labor force participation rates of prime-age women are only 30 percent or about one-third that of men. Yet, fertility rates have fallen and female labor force participation rates have risen dramatically over the last two decades. For example, births per woman have fallen from 5.4 in 1990 to 3.2 in 2006 in Jordan, and from 3.5 to 2.0 in Tunisia, while the labor force participation of prime-age women has risen from 19 percent to 30 percent and from 22 percent to 32 percent in these two countries, respectively, over this same period. If this trend toward greater financial self-sufficiency of women continues and spreads in the region, it may spur a rethinking of their generous arrangements for survivor benefits.

Latin America is also relatively traditional in terms of marriage, fertility and divorce, although further along in its transition than MENA. Divorce is still rare and just became legal in Chile. Argentina's fertility rate fell from 3.0 to 2.3 between 1990 and 2006, Mexico's from 3.4 to 2.2. Female labor force participation, barely half that of males in 1990, is now well over 60 percent on average and in some cases 75-80 percent that of men.⁵ As in MENA, we would expect to find a re-evaluation of survivor benefit programs and indeed, as we will see below, Latin America has produced the most striking changes in financing arrangements in the world.

In contrast to these traditional societies, almost half of all marriages end in divorce in most European countries and fertility is below replacement rates. Without children or marriage for life, most women work, albeit sometimes only part time—in Western Europe women's labor force

⁴ For a discussion of the relationship between women's education and labor force participation rates, see James, Edwards and Wong 2008.

⁵ These numbers measure average participation rates between the ages of 15 and 65. Care must be taken in interpreting the differences across countries in male and female rates. In some cases the average female rate is disproportionately low because women are more likely to remain in school from age 15 to 19 and because their normal legal retirement age in the social security system is lower than that of men (e.g., 60 instead of 65). Relative positions among countries might be quite different if the rates were measured for ages 20-60.

participation rates are 80-90 percent those of men and rising. Correspondingly, some of these countries have taken the position that widows no longer require special support, that this is not a desirable cross-subsidy and that a more general targeting of redistribution based on explicit measures of means, independent of marital status, is preferable.

Ironically, even though divorce rates are somewhat higher and fertility rates lower in Eastern Europe, women work less in the formal labor market now than they did in the Soviet days.⁶ At the same time, the life expectancy gap between men and women has been increasing and is now one of the largest in the world—8-11 years at birth and 4-5 years at age 65. The increasing gender disparity in life expectancy combined with falling participation rates of women would seem to make survivor benefits more important. Yet, social security systems in these countries have been changing dramatically, to make benefits more fiscally sustainable and to incorporate pro-work incentives by linking benefits more tightly to contributions. The result has been large cuts in survivor benefits.

These numbers, which are averages across older and younger cohorts at a point in time, understate the changes that have taken place for the most recent cohorts of labor force entrants in all regions. Moreover, although we do not have numbers on variance, the changes suggest increased space for heterogeneity and discretionary choice within a given cohort. Some women may choose to remain at the previous norm, marrying and working in the home, while others choose to remain single and/or to work part time or pursue a full career in the market. The fact that marriage and labor market patterns are increasingly voluntary and variable rather than preordained and uniform raises questions about whether survivor insurance should be mandatory and, if so, which cross-subsidies and incentives should be built into the design. It becomes important to reexamine existing policies to see whether the distribution of net benefits is equitable, whether the behavior that is encouraged is good or bad for the broader economy, or whether a better way can be found to achieve the same goals.

⁶ Women in Eastern Europe had much higher labor force participation rates than in Western Europe in 1990, but that is no longer the case. By 2006 these positions were reversed, as Eastern and Central Europe were practically the only regions to experience falling female participation rates in the last 15 years. This paper does not aim to explain the reasons for this downward shift. It may be due to the non-availability of child care facilities as firms operating in a market economy tried to economize on costs, to an increase in income and wealth which allowed more women to withdraw from the labor force, or to a shift toward informal work which is not reported.

II. Key Design Choices in Survivor Programs

Tables 4 through 9 survey the key choices that must be made by policymakers in designing their survivor benefits programs. We define the analysis that should drive the decision in each case and briefly describe what policymakers have done. The most basic choices concern the degree to which benefits are linked to the contributions of the deceased, the method of financing, and whether management is public or private. After that are a variety of detailed design choices that determine the generosity, costs, distributional and incentive effects of the system. Parts III and IV analyze each of these impacts in greater depth.

2.1 Poverty-Avoidance versus Consumption-Smoothing: Pillars 0, 1 and 2

In their old-age programs, countries must decide how much to rely on each of the three pillars. The benefits of Pillar 0 are residence- rather than contribution-based, usually financed by general government revenues. Pillar 1 benefits are for contributors only, generally financed by payroll taxes on a PAYG basis, under public management. And, Pillar 2 benefits depend on contributions and investment earnings, finance is pre-funded and management of the funds is private. Pillar 0 usually has a redistributive or poverty-avoidance role; Pillar 2 is strictly for consumption-smoothing through savings and insurance; and Pillar 1 is a mixture of the two.⁷ Since survivor benefits generally supplement old-age security programs, they tend to be structured along parallel lines. Table 4 shows how countries have apportioned responsibilities.

Pillar 0 provides old-age benefits to all residents who pass a specified pension age, regardless of whether or not they have contributed. It is a major form of old-age security in many high income OECD countries, extending coverage to the entire older population. In the strongest case (e.g., the

⁷ The World Bank publication *Pensions Panorama* (Whitehouse 2007) has different categories—Tier 1 (for redistribution) and Tier 2 (for savings/insurance). Tier 1 includes all programs that are not financed by contributions (our Pillar 0) plus the more redistributive contributory plans (part of our Pillar 1). In contrast, Tier 2 benefits are closely linked to earnings or contributions. This includes the less redistributive plans in our Pillar 1 plus all of Pillar 2. In practice, it is difficult to divide contributory plans into those that are redistributive versus those for savings/insurance since mixtures are almost always involved; therefore the division into Tiers 1 and 2 is ambiguous (e.g., the progressive DB systems in the United States and Switzerland combine both functions). The division into Pillar 0, 1 and 2, based on whether benefits are contingent on contributions (Pillar 0 versus Pillars 1 + 2) and whether the plans are publicly or privately managed (Pillars 0 + 1 versus Pillar 2) is less ambiguous and more relevant for our analysis. In studying survivors, many of whom are women who have contributed little or nothing, it is especially useful to separate out Pillar 0, the non-contributory pillar.

Netherlands and New Zealand), a flat (uniform) benefit is paid to all beneficiaries. More commonly (e.g., Australia and Canada), the benefit is phased out or clawed back for high earners. And sometimes the benefit takes the form of a minimum income guarantee (e.g., Sweden and Switzerland).⁸ Access to this benefit is independent of marital status, gender or labor market experience so that married couples are not subsidized by virtue of their marital status. The redistributive impact favors women and other low earners, since the benefit is often phased out while the implicit tax used to finance it rises for high earners. Moreover, the benefit per person tends to be higher for singles and widows than for couples, in recognition of household economies of scale.

Pillar 0 satisfies the most basic rationale for mandatory old-age or survivor insurance, poverty-avoidance. Countries that rely on Pillar 0 for old-age security do not need a separate survivor benefit for poverty-prevention after retirement age, since everyone—single or married, whether or not they have worked in the formal labor market—is covered. A separate survivor benefit in Pillar 0 may be needed for younger widows if they have children, especially preschool children, and most Pillar 0 countries offer this on a means-tested temporary basis. Thus, the incremental cost of covering survivors (and the incremental benefits for survivors) will be very small in Pillar 0.

Some countries stop at this point—taking the arguable position that poverty-avoidance and protection of children are the only reasons for mandating a survivor benefit program. This is the case, for example, in Denmark, New Zealand and Australia. But, as discussed above, most countries add a consumption-smoothing component intended to maintain the widow's previous standard of living and allow her to rise above the poverty level. This is the function of Pillar 1 or 2, which often coexists with Pillar 0.

⁸ The distinctions between a flat benefit that is phased out and a minimum pension guarantee are one of degree and emphasis. In all three cases, $B = A - bP$, where B is the non-contributory benefit paid (constrained to be ≥ 0), A is the guaranteed amount, b is the phase-out rate and P is the earnings-related pension and other relevant income. For a pure flat benefit that is not phased out, $b = 0$, $B = A$ and the person's total retirement income = $A + P$. For a pure minimum pension guarantee, $b = 1$, $B = A - P$ and the person's retirement income = A or P , whichever is greater. For a flat benefit that is phased out, $b > 0$ but < 1 and the person's total retirement income = $B + P$, that is, $\geq B$ and $\geq P$. The pure flat benefit is received by all resident retirees. For the phased-out flat, A and b are usually set so that $B > 0$ is received by a majority of retirees, but the minority at the top end are excluded. In contrast, the minimum pension top-up is received by only a minority of retirees at the bottom end. The minimum pension, in turn, is similar to social assistance but generally connotes greater "entitlement," less stigma.

Pillar 1 is the most common arrangement. It is also publicly managed, but financed by earmarked payroll contributions, largely on a PAYG basis. It usually pays an earnings-related defined benefit (DB) to retirees, based on their years of work and wages—creating a weak link between benefits and contributions. Survivor programs generally piggyback as an explicit add-on to these old-age programs, paying a specified percentage of the actual or potential primary benefit to dependents when the affiliate dies. The objective is consumption-smoothing (maintaining the survivor's previous standard of living), which is more ambitious and costly than simple poverty prevention.

Although Pillar 1 could be set up on an actuarially fair basis (in which retirees pay a premium equal to the expected discounted value of the insurance that will cover their survivors), usually it is not. Typically in Pillar 1 the variation in the number and expected lifetimes of potential beneficiaries does not influence contribution rates or the size of the primary benefit. Premiums that diverge from the expected value produce non-transparent cross-subsidies based on marital status and fertility rate—which might not be considered equitable and politically acceptable if they were more openly acknowledged. At the same time, only contributors and their survivors receive benefits, precluding many individuals, especially in low and middle income countries with limited coverage and capacity to collect contributions. Poverty may not be avoided, unless Pillar 1 is underpinned by some version of Pillar 0.

Countries that rely on Pillar 1 must make a difficult choice between generous survivor benefits with high payroll taxes that maintain living standards at previous levels versus more modest benefits that dampen these public costs. Different countries have made very different trade-offs. Some Western European countries (e.g., Belgium, Italy and Luxembourg) have chosen high benefits, eligibility and costs—perhaps too high to be welfare-maximizing. In contrast, Eastern European countries, faced with huge non-sustainable pension obligations when they shifted to a market economy, sharply downsized their survivor benefits. Their rationale: Women as well as men should engage in market work and receive their own-pension, hence a survivor benefit is not needed beyond the minimal amount. This, of course, ignores the fact that women earn less, take time off to have children, live longer and lose household economies of scale when their spouse dies. To control costs, most Pillar 1 countries have phased out access to survivors who have wage and other pension income. By reducing the net reward to labor, this may discourage work by wives and widows.

In newer multi-pillar systems, the old-age income maintenance function is shared with Pillar 2, which is also mandatory but privately managed, funded and usually a defined contribution rather

than a defined benefit. It may be based on individual accounts (e.g., in Latin America and Eastern Europe) or occupational plans (e.g., some high income OECD countries). Arrangements for survivors vary greatly in these multi-pillar countries.

In Latin America, Pillar 2 provides mandatory survivor benefits, usually financed on an actuarially fair basis. The expected present value of future benefits equals the cost of the insurance to the family or group, eliminating cross-subsidies to or from others. During the working stage, each Pillar 2 pension fund must purchase group survivor insurance for its members. At the retirement stage, each affiliate must use his savings to purchase a joint pension to cover survivors. In brief, the primary benefit of the retiree is diminished in order to set aside adequate reserves for his survivors. Perhaps because the survivor benefits are privately financed, widows are not required to give up their own-benefit in order to receive the survivor benefit, so work by married women is not discouraged. This arrangement has the advantage that it avoids undesired redistributions and incentives. But, like any plan that is based on contributions, it does not avoid poverty and near-poverty for survivors. For this purpose, it must be accompanied by a minimum or flat pension in Pillar 0.

Most European countries do not mandate survivor benefits in Pillar 2, even if they provide old age benefits through Pillar 2. Instead, these countries simply rely on Pillar 0, an income floor, for all elderly (as in Denmark) or provide special survivor benefits through Pillar 1 (as in Hungary and Poland). The worker or employer retains control over the decision about whether to protect survivors in Pillar 2. The public treasury could save money and provide better protection if survivor benefits were mandated in Pillar 2 (as in the Netherlands, Switzerland and Latin America).⁹

2.2 Who Should Be Covered?

Pillar 0 provides an income floor to all old people, whether or not they are survivors. However, Pillars 1 or 2 pay benefits only to contributors and their survivors. Therefore, policy-makers must decide which relations qualify as survivors who are entitled to receive benefits. The answers that societies give to this question depends strongly on social mores regarding who is

⁹ In Eastern Europe this allocation of responsibility for survivor benefits to Pillar 1 may have been due to their undeveloped insurance markets, a desire to avoid transition financing problems and/or a compromise in the political struggle between advocates of public versus private control of pensions. In Western Europe, where the second pillar is occupational, arrangements vary by employer.

expected to work, who depends on a primary family breadwinner for financial support, and how uniform these patterns are across families. Each additional covered person adds to verification issues, moral hazard and costs. Also, each covered person poses the issue, who should finance the benefits—the insured worker or the system as a whole? In the latter case, especially where behavior varies across families, choices by the insured individual impose costs on others.

Widows and school-age children are the most obvious targets for coverage. However, as women's labor force participation has increased in Europe, benefits for widows have been downsized and restricted. How should divorced women be treated? Women who were young when divorced should be able to find a job and support themselves. For older women, especially those from earlier cohorts, it is another issue: the not-uncommon expectation of lifelong support from their husband suddenly went unfulfilled at a point when reentering the labor market is difficult. As the social stigma associated with divorce has dissipated, divorcees who receive alimony have been given the same benefits as wives, including in countries (Chile and Ireland) where divorce only recently became legal.

Some husbands have only one wife while others have had several—either sequentially or simultaneously. Should they share a fixed benefit or should the total amount expand? In the latter case, should the expansion be covered by the common pool, thereby adding to the social burden, or should the husband pay? What about unmarried partners, including same-sex partners, who may have functioned much as married partners with specialized roles in the market and the home? What criteria will be used to verify that they were truly partners? How can systems reduce the probability that informal arrangements will be constructed *ex post* when they did not truly exist *ex ante*? The coverage of dependent parents raises further questions about verifying who is dependent, why they did not accumulate their own-savings for old age, and whether the elderly who are parents of contributors should be treated differently from those whose children are non-contributors. Obviously complex value judgments are involved, regarding who should receive benefits and who should cover the costs.

These questions have been answered differently across countries and regions. The MENA countries do not cover divorcees or unmarried partners but do cover multiple widows. Men with more than one wife impose a cost on the system, especially large when the new wives are relatively young. Unmarried partners are covered in Latin America and Western Europe, but must be defined by cohabitation, civil union or common children. Parents are generally expected to fend for themselves

in Europe but are eligible for survivor benefits in MENA and Latin America, which have strong extended families. In more traditional societies, only widowers who were financially dependent on their deceased wives receive benefits; within the OECD, widowers are increasingly treated on par with widows, consistent with the concepts of gender equality and family co-insurance. Yet, since many benefits are income-tested and retirees with their own-pension are excluded, equal treatment still means fewer payments to widowers.

As more detailed cases in point: In Jordan, widows keep the survivor benefit (50 percent of the potential primary pension) until death or remarriage, daughters receive benefits until they marry and even a fetus is eligible for benefits. On the other hand, divorced women and unmarried partners are not eligible. Widowers do not receive benefits upon the death of their spouse unless they are disabled. Survivors of non-contributors (the vast majority of the population) receive no protection. In contrast, in Norway, all the elderly receive a Pillar 0 benefit, whether or not they have contributed. In Pillar 1 widows and widowers are treated equally, divorced spouses receive benefits (if they received alimony or have children) as do unmarried partners (if they cohabited five years or have a civil union), but children and parents are not eligible. At the opposite extreme from both Jordan and Norway, in Latvia widows and most other family members do not receive benefits but children do receive benefits temporarily to help widows with children cover their marginal costs. None of these systems are actuarially fair, so cross-subsidies are inevitably involved, especially when many different classes of survivors are covered.

Chile is an example of a country whose social mores are in transition. The new pension law passed in 2008 established that widowers be treated on par with widows. Divorce just became legal in 2004, so divorcees who received alimony are covered. Parents living in extended families and dependent on the deceased for financial support are also covered. All these benefits are financed on an actuarially fair basis during the retirement stage—so individuals with more survivors receive smaller own-pensions.

Exactly who should be covered depends on a country's values and labor market roles. The essential point is that policymakers should recognize the costs, trade-offs and cross-subsidies. The costs seem ripe for pruning in many cases. Including more relatives inevitably means giving less to the primary beneficiaries or requiring higher fees from everyone. The more widely the net is cast, the greater the opportunities for gaming the system and the greater the variance in number of beneficiaries across families. This underscores the need to reexamine whether such coverage

should be mandatory and whether the cost should be borne within the family or by inter-family transfers.

2.3 Is The Benefit Tied to the Pension of the Deceased? How Large Should It Be?

Pillar 0 often provides a universal flat benefit or minimum pension to the elderly, with the goal of poverty prevention rather than income replacement. It is typically 20-30 percent of average earnings. The survivor benefit in Pillar 1 or 2 is usually based on the deceased's earnings or pension, implying a more ambitious income-replacement or consumption-smoothing objective. Widows generally receive 50-60 percent of the primary beneficiary's potential pension, which is on average larger and more variable than the Pillar 0 benefit. In some cases the rate is higher yet—75 percent plus a flat amount in Japan and Luxembourg, 80 percent in Belgium and 100 percent in the United States.

Equivalence scales suggest that about 70 percent of previous household income is needed to maintain the widow's living standard without children or 80 percent with children¹⁰. To achieve this goal requires that survivors receive 40-80 percent of the primary pension, depending on whether the widow is expected to have her own-pension and other voluntary savings. For example, if her own-pension equals that of the deceased, a 40 percent survivor benefit will suffice ($100\%+40\%=.7*200\%$); if her own-pension is half as much, 55 percent is needed ($50\%+55\%=.7*150\%$). Perhaps this is the rationale for phasing the survivor benefit out against the widow's own-pension. However, such an offset may discourage women from working and acquiring their own-pensions. A better alternative is to set a poverty floor in Pillar 0 and a benefit rate in Pillar 1 or 2 that smooths the standard of living, under the assumption that some other income will be forthcoming, but without offsets when that income appears. A rate that is above 50-60 percent of the primary benefit requires high fees to cover costs and may push too much income into the survivorship years.

¹⁰ See footnote 2.

2.4 Is there a Limit on Total Benefits Paid per Year?

Usually countries limit total the survivor benefit to 100 percent of the primary pension. If the combined amount exceeds 100 percent, beneficiaries must reduce their amounts to stay within the limit. This controls the cost impact of high benefit rates and enlarged coverage—by overriding these rules if the total gets too high. This does not control the cost impact of more years of payments due to early age eligibility since it is an annual limit. And, these controls can be weak or absent – the limit in the United States is 180 percent of the primary benefit whereas Canada, Hungary, Norway, Austria, Belgium and the United Kingdom have no limit. These countries may end up with costly systems.

2.5 Should Benefits Be Indexed to Prices, Wages or Not at All?

Since survivor benefits may be paid for many years, the indexation rule has an important effect on the quality of the benefit and its total cost. If benefits are held constant in nominal terms, they will go down dramatically in real value (purchasing power) over the lifetime of the widow. Inflation of 3 percent annually doubles the monetary price of maintaining a given standard of living, hence cuts the living standard in half in 24 years, without indexation. Price indexation holds purchasing power constant by doubling the nominal value of the pension. Yet, a policy of non-indexation is followed in many low and middle income countries (e.g., MENA and some Latin American countries) as a very crude non-transparent cost control mechanism, at the expense of older widows.

Does price indexation suffice? If wages are growing faster than prices (i.e., if real wages are growing), the survivor benefit will fall in value relative to the income of workers, unless it is wage-indexed. Real wage growth of 2 percent annually (above inflation) means that the average standard of living in society will double in 36 years, so benefits of widows that were set many years ago will fall far behind the wages of workers, even if price indexation is used. To some extent, a declining relative position of survivors may be justified on grounds that their consumption habits were established many years ago when the average standard of living was lower. However, this means that very old widows will be a relatively poor group in countries where the survivor benefit is price-indexed and even more so if not indexed at all.

Among middle and high income countries, price-indexation is the most common treatment in Pillars 1 and 2. Most Western European countries price-index these benefits, once they have started. After many years of chaos caused by non-indexation in an inflationary environment, several Latin American countries also price-index. But for Pillar 0, wage-indexation is more common (e.g., the flat benefit in Australia, Iceland, New Zealand and Norway is wage-indexed). Wage-indexation may be especially important for Pillar 0 if one defines poverty in relative rather than absolute terms, yet it is much more expensive. “Swiss indexation” (50 percent to prices, 50 percent wages) predominates in Eastern and Central Europe and may be the best default option. This is a compromise between the conflicting goals of controlling costs, preventing large automatic spending increases and allowing surviving beneficiaries to share in economic growth. *Ad hoc* enhancements can then be granted over time, if they are considered affordable.

2.6 Are there Any Age Restrictions? Is the Benefit Temporary or Permanent?

In many OECD countries the survivor benefit in Pillar 1 has been downsized to apply to only a short adjustment period, unless widows are caring for dependent children or are close to retirement age. The presumption is that young women without children are able to work, and the survivor benefit does not kick in until retirement. In contrast, in countries with a universal flat old-age benefit in Pillar 0, a young widow with children may receive the explicit survivor benefit until the children grow up or until her retirement age—at which point she receives the old-age benefit instead. In most MENA and Latin American countries, there are no age restrictions at all and the survivor benefit continues indefinitely until remarriage.

As specific examples: in the United States and Estonia, the widow’s benefit is deferred to age 60 and 63 respectively, unless she has dependent children or is disabled. In contrast, in the Netherlands, the means-tested survivor benefit paid to young widows with children stops and the flat old-age benefit starts once she reaches normal retirement age. In Iceland, a woman who is widowed prior to retirement age receives the public survivor benefit only for six months, or 12 if she has children. And at the opposite extreme, in Japan, an indefinite benefit can start at age 30 whereas in Jordan, Italy and Mexico there are no age or duration restrictions.

These restrictions have a major influence on system costs, since they determine how many years of benefits will be paid and with what expected present value (see Section III). To contain costs

countries face a trade-off between a low benefit rate versus a high age of eligibility or a brief payout period. In a culture where women can work, it seems questionable to pay a young widow without children more than a temporary adjustment benefit. Countries with a high benefit rate and no age or duration restrictions (e.g., Costa Rica and Luxembourg) pay a high price.

2.7 Does the Widow's Benefit Stop If She Remarries? Has a Wage or Pension?

Almost all public systems stop survivor benefits when the widow remarries (in the United States, the United Kingdom and Hungary remarriage is permitted without penalty after age 60 or 62). This is anomalous since it rewards the first marriage but penalizes the second, inducing widows to live in informal partnerships.

In most cases, survivor benefits stop or are substantially reduced when the widow's own-pension starts, and a smaller number of countries (Belgium, France and Germany) phase out the benefit against wages as well. For example, in Poland, widows receive a survivor benefit from Pillar 1 that equals 85 percent of their husband's pension at age 50, but this is partially offset against wages if they work and entirely forgone at 60 if their own-pension is larger. In Estonia, widows must choose between their own-pension and the survivor pension, which is also phased out against wages. In Hungary, the widow's benefit is cut in half when she has her own-pension. The U.S. system pays an additional 50 percent of the husband's pension to wives while the husband is still alive and 100 percent to widows after his death—the highest rates in our sample. But these benefits are fully offset against own-pension and also reduced by wages (prior to the normal retirement age). In all these cases, survivors can receive investment income or inherit money without losing their benefit—only labor income is penalized.

While designed to save money for the public treasury by weeding out “double-dippers” who presumably do not “need” the second pension (or even the first if they have a wage), ironically this has the incentive effect of discouraging market work among women by reducing the net reward. In effect, young widows receive a smaller incremental net income from work and young wives know that their mandatory social security contributions contain a large tax component due to the wage and pension offset of the survivor benefit they may receive one day. Instead of cutting expenditures, such measures may reduce women's labor force participation rates, national employment and output. They may create redistributions of dubious equity—from women who

have worked in the market to those who have not and from dual-career to single wage-earner families, which often means from low to high income households. Furthermore, without their own-pension in addition to the survivor pension, widows cannot maintain their previous standard of living. These distributional and incentive effects disappear in the private pillars of most Latin American countries, where remarriage, a widow's own-pension or wages do not cancel out the survivor's benefit.

2.8 Should the Family or the Common Pool Pay for Survivor Benefits? Should Community Ratings Be Used, or Should Insurance Fees Reflect Relative Risk?

Public contributory systems have invariably paid for survivor benefits out of the common pool and community rating has been used. In effect, this means that some of the costs of survivor benefits are passed on to others, outside the family. This is desired in Pillar 0, which is meant to be redistributive, but in Pillar 1 it leads to the equity issues and inefficiencies just discussed.

In contrast, the private systems in Latin America's Pillar 2 require retirees to pay for joint pensions for their own-survivors on an actuarially fair basis, based on risk classification. The gender and age of the individual and other family members enter into this assessment. The retiree's own-pension is adjusted downward, usually about 15-25 percent, depending on the number and age of secondary beneficiaries who will be protected.

The rationale is that married couples have entered into an implicit contract for mutual support, and the survivor benefit requirement enforces this contract after one spouse has died. Since costs are internalized within the family for post-retirement deaths, cross-subsidies from single to married couples, especially those with young wives and many children, are reduced. To the degree that decisions about marriage and the number of children are volitional, men and women will make them taking the full expected cost into account, rather than planning to pass some of it on to others. And, since the husband has paid for the survivor benefit, his widow is more likely to keep it in addition to her own-pension, if she has earned one. That is, the joint pension does not reduce her wage, her own-pension, or her proclivity to work. Thus, using intra- versus inter-family transfers to finance survivor benefits has implications for retirement income distribution, for work incentives prior to retirement and even, potentially, for family formation.

2.9 How Can Moral Hazard Be Avoided?

One might think that moral hazard—the possibility that insurance will increase the probable occurrence of the event that is insured against because insured individuals will not take the appropriate preventative actions—will be relatively small because workers are unlikely to increase their death rate in order to enable their survivors to receive benefits. However, moral hazard may occur in less drastic ways. Women who receive these benefits in order to prevent a large income loss may experience a loss precisely because they do not work or remarry, in order to retain eligibility. Men may marry much younger women if they are not responsible for purchasing insurance to provide lifelong support or may adopt children or marry shortly before an expected death, to pass on valuable benefits that will be financed by others. The desire to avoid these dangers accounts for some of the detailed, seemingly arbitrary, rules found in various countries. In Luxembourg, if a marriage occurs after the deceased becomes a pensioner, his widow is not eligible for benefits unless the death was due to an accident, the marriage had already lasted ten years or the age difference between husband and wife was less than 15 years. Hungary requires five years of cohabitation or children if the marriage occurred after the deceased became a pensioner. In Uruguay, for adopted children to receive benefits, the adoption must have taken place at least five years prior to the death of the insured. The need for such cumbersome rules, which may be difficult to monitor and enforce, becomes smaller if inter-family transfers are not involved.

III. Simulations of Costs and Cost Determinants

In this section we evaluate costs and cost determinants of survivor benefit programs, and in the next section we evaluate their impact on consumption-smoothing, incentives and equity.

3.1 Spending on Survivor Benefits versus Old-Age Benefits across Countries

In principle we would like to know, taking the old-age system as given: How much do survivor benefits add to the total cost? And, which design features will lead to lower costs? In seeking the answer to these questions, it should be noted that cost comparisons must be approached with caution since they depend on many factors besides the design of the system and the data are problematic.

3.1.1 *Impact of System Coverage and Demography*

Total costs of old-age and survivor benefits depend heavily on the stage of development—which determines the degree of system coverage and the age structure of the population. Low levels of formality and coverage in low and middle income countries would lead us to expect small expenditures on old-age benefits as a percentage of GDP. Survivor benefits are generally defined as a percentage of the potential old-age pension, so the two types of expenditures move together. But demography also plays a role—young populations in these countries raise the ratio of survivor-to-elderly beneficiaries and therefore imply greater spending on survivors, less on the elderly. For these reasons, we would expect the MENA and Latin American countries to have relatively low spending on social security benefits as a percentage of GDP, but a high ratio of survivor benefits relative to old-age spending, while the opposite would be true in high income OECD countries. Indeed, Table 10, col. 1 and 4, shows this to be the case. Among the former group, survivor spending is $\leq .3$ percent of GDP and ≥ 30 percent of old-age spending in most countries, while for the latter group it is $\geq .6$ percent of GDP and ≤ 15 percent of old-age spending in most cases. This difference across regions is due to exogenous reasons, not because of system design choices. But it does suggest that when low and middle income countries are trying to control social security expenditures they must closely scrutinize their survivor systems, which constitute a large share of total costs.

3.1.2 *Country Differences Due to Basic Design Choices*

As a rough way to control for system coverage and demography, we compare costs across high and middle income OECD countries, most of which have high coverage rates and older populations. And to control for the linkage between survivor and old-age benefit rates, we examine spending on survivors relative to old-age spending. We expect this to be strongly influenced by the design choices listed in the previous section:

- Relative survivor spending should be lower in countries that have a strong Pillar 0 benefit with a flat old-age benefit, thus not paying explicit survivor benefits after retirement age.
- Among countries that rely on Pillar 1, relative survivor expenditures should be lower in cases where benefits are deferred to retirement age or eliminated for many classes of survivors.
- In contrast, we expect the highest spending levels in Pillar 1 countries that have a high benefit rate for survivors and allow widows to start their benefits immediately upon the death of their husbands, even at a young age, and continue them indefinitely.

These factors lead us to expect low ratios of survivor to old-age spending in Denmark and New Zealand, which rely on Pillar 0. We expect high ratios in Belgium and the United States, which have survivor benefit rates of 80 and 100 percent, respectively, in Pillar 1, and in Ireland, Italy, Japan, Luxembourg and Portugal, which allow widows to start their benefits at age 30 or younger. Indeed, these turn out to be the highest spending OECD countries.

3.1.3 *Caveats*

Serious caveats in defining and interpreting these data are discussed at length in the Appendix. These include the facts that:

- Countries differ in the way they label survivor or old-age pensions, especially those that are paid after retirement age. Benefits with the same function may be called survivor benefits in one country, old-age benefits in another.
- Eurostat, whose data we use, has tried to impose uniform definitions but some countries do not comply. Moreover, Eurostat recently changed its definitions; some countries follow the old categories and some the new.

- Countries outside of Europe are not bound by the Eurostat conventions and use their own definitions.
- Private expenditures in Pillar 2 are not fully reported.
- In PAYG systems, current expenditures on survivors stem from rules that applied ten or twenty years ago when the affiliate died, and in many cases these have changed drastically. Therefore, current costs are not due solely to current eligibility rules.
- Along similar lines, new systems have a disproportionate number of survivor beneficiaries relative to old-age beneficiaries, simply because eligible workers have not yet reached retirement age. The maturation process of new systems may take several decades, during which time we will observe the outcome of a mix of new and old system rules.

3.2 Simulations of the Expected Present Value (EPV) of the Widow's Benefit

To avoid these definitional problems and other exogenous differences across countries, we use simulations to calculate how costs vary in response to key system design features. We simulate the expected present value (EPV) of the future stream of benefits from old-age and survivor insurance, as measured toward the beginning of the individual working career. The EPV is the expected lifetime value to the individual but it is also the cost; it tells us how much money must be set aside at a given point in time to finance future benefits. It informs us of how much cross-subsidization is involved in different cases, if the insured does not pay for the benefits himself. Because it incorporates the number of expected years as well as the projected payments per year, it is a much more meaningful cost estimate than simply looking at annual benefit rates or ceilings. We measure the sensitivity of EPV to design variables such as the widow's benefit rate, age at which benefit payments can begin, other dependents who are covered, and choice of indexation method, to individual choice variables such as the age differential between husband and wife, multiple wives and number of children, as well as to exogenous variables such as the discount rate, relevant mortality rates and age when EPV is measured.

To start with, we model the case of a couple, at a point when the husband is 35 and the wife, assumed to be five years younger, is 30 (see Panel A, Table 11). The husband has a potential future pension, starting at 65, on which the survivor benefit is based. The EPV of the husband's own-

pension equals the stream of expected benefits he would receive from age 65 to death (husband's potential pension*probability of being alive at each age, summed over all ages after 65), all discounted back to the current date, when he is 35. In contrast, the EPV of the widow's pension equals the stream of benefits she would receive from the present, when she is 30, to her death (husband's potential pension*survivor benefit rate*probability that her husband will be dead and she will be alive at each age, summed over all ages from 30 onward), discounted back to the present.

$$EPV(\text{affiliate}) = \sum_{65} PR_{hi} / (1+r)^{a-35} \text{ and}$$

$$EPV(\text{widow}) = SBR * \sum_{30} PR_{hd} * PR_{wi} / (1+r)^{a-30}$$

where:

EPV is expected present value per \$100 of husband's pension

PR_{hi} = probability that husband will be alive at each age, from 65 to death

$PR_{hd} * PR_{wi}$ = probability that husband will be dead and widow alive at each age,
from widow's age 30 to her death

SBR = survivor benefit rate = widow's percentage of the primary benefit.

We calculate real EPV; that is, we assume that inflation = 0 or, if greater than 0, the real discount rate is used. Using a real discount rate of 3 percent and U.S. mortality tables for 1998, the husband's EPV at age 35 per \$100 of projected annual pension is \$418 (col. 1). It would cost the husband this amount to purchase a deferred annuity that pays \$100 annually starting at age 65. Initially we assume that the survivor benefit rate is 100 percent (i.e., if she receives 100 percent of his potential pension) and payments start immediately upon his death. Then, the EPV of the widow's benefit is \$376 or, 90 percent of the husband's EPV (col. 2). The widow's EPV is almost as large as the husband's because some of her expected payments occur before his own-pension date and they continue for many years into the future (given that she is younger and has lower age-specific mortality rates), while the husband may never collect his own-pension (about 20 percent die before age 65).¹¹ If the wife is still younger, the survivor's EPV could exceed the EPV of the primary old-age pension. This also informs us of the large cost that is passed on to others, hence the value of the cross-subsidy that the family receives, if the system rather than the husband pays for the widow's benefit.

¹¹ Counting expected lifetimes up to ages 100/95 means a potential 65 years of future payments, when husband and wife are 35 and 30, respectively. For the first 30 and the last 15 out of these 65 years, her probabilities of receiving a pension are higher than his.

3.3 Impact of Covering Widowers, Multiple Wives and Children

The EPV of the survivor benefit that a working wife provides to her husband is much smaller—only \$113 per \$100 of her potential pension (col. 6)—since wives are expected to outlive their husbands. The EPV per child is miniscule at only \$0.10 per child, because the relevant benefit rate is low (assumed to be 25 percent of the primary benefit) and it lasts for only a limited period (until the child finishes school), during which the probability of the father’s death is low. Nevertheless, the EPV of children as a group can be large in countries with high fertility rates. In a family with five children where only the husband works, the total EPV of survivor benefits exceeds that of the own-pension, under these assumptions. Coverage of multiple wives (as in MENA) or divorced wives (as in OECD countries) further increases the combined EPV. The total annual payout is usually subject to a limit, which reduces each person’s share as beneficiaries are added, but this understates true liabilities. Even if the annual limit is 100 percent of the primary pension, the combined EPV of survivor benefits can be much greater than 100 percent of primary EPV, because wives are expected to live longer and collect for more years.

3.4 Impact of Age and Period of Eligibility

Age and period of eligibility are key determinants of cost. Assuming that the wife can start to collect benefits as soon as the husband dies, a quarter of the total survivor EPV is paid to widows who are under age 60 (col. 4 versus 2). Countries can reduce the potential cost of survivor benefits by 25 percent if payment age is deferred to 60, as in the United Kingdom and the United States, or by 75 percent if a widow collects only until she is eligible for a universal old-age benefit, as in the Netherlands (col. 3 and 4 versus 2).

It is tempting to measure the EPV of survivor benefits paid after husband’s pension age, just as is done for old-age benefits. That, however, would understate the true cost in countries where widows are insured during the husband’s working stage as well. Similarly, if we had only counted survivor benefits that are paid before pension age (as in old Eurostat and OECD data), this also would have understated their total costs for countries that continue to pay them afterwards. Under the assumed mortality rates and age differentials, lifetime costs will be divided approximately 25-75, between payments made before and after the widow is age 60.

3.5 Benefit Rates and Trade-Offs with Age of Eligibility

In the absence of a binding limit, the EPV will be cut in half if the survivor benefit rate is reduced from 100 percent to 50 percent (col. 5). Thus, countries must make trade-offs between spending a lot versus saving money, and if the latter, they may reduce the benefit rate or limit the age and period of eligibility. Deferring widows' benefits to age 60 cuts the EPV by 25 percent and therefore allows a benefit rate increase of 33 percent while holding lifetime costs constant. If payments were initially deferred to 60, cutting the benefit rate by 25 percent allows immediate coverage upon the husband's death. Cutting the benefit rate to 50 percent and deferring benefits to 60 reduces the EPV and cost of survivor benefits to 34 percent of the primary old-age benefit, rather than the 90 percent that we started with (142/418 versus 376/418). It is therefore not surprising that Italy and Luxembourg, which pay high survivor benefit rates immediately and indefinitely, have much higher costs than Estonia and the United Kingdom, which pay lower survivor benefits, deferred to retirement age. (In Estonia and the United Kingdom, annual payouts to survivors are 2-4 percent of old-age payouts, compared with Italy and Luxembourg, where these numbers are 20-42 percent.)

3.6 Impact of Discount Rate and Indexation Method

Simulations using a 4 percent discount rate reduce all EPVs by about 30 percent, but the ratios and trade-offs between them are largely unchanged (row 2, Panel A). The sensitivity to the discount rate can also be used to measure the increase in cost when wage indexation is used. Suppose that the discount rate is 4 percent, expected real wage growth is 1 percent and the system shifts from price to wage indexation of benefits (row 3, Panel A). Then, costs of survivor benefits go up by 45 percent $((376-260)/260)$ because real benefits rise over the survivor's lifetime. For the countries where real wage growth is 2 percent annually or more, wage indexation could double total costs.

3.7 Age at Valuation and Cost of Joint Annuity

The EPV is very sensitive to the age at which it is measured, because this determines who is still alive to be counted and how much discounting is called for. If we had measured the EPV per \$100 of the husband's own-pension, as valued at 65, for men who were alive at that point, it would be \$1,258, while the EPV of the survivor benefit for his wife would be \$534 (col. 1 and 2, Panel B). These numbers are much higher than those at 35/30 because we are discounting for 30 fewer years, but the increase is greater for men than for their wives because we are omitting the husbands who died in the interim without collecting a pension and also omitting the survivor benefits received by their widows. The age of valuation should be the age at which the insurance begins.

From these numbers we can calculate how much the husband would have to pay out of his retirement saving to finance a joint annuity that covers 100 percent of his own-pension + 60 percent of the primary benefit to his widow, as required in some Latin American countries. At 65 this costs \$1,258 per \$100 for his own-pension + \$320 for the widow's pension = \$1,578 (where \$320 is 60 percent of \$534). At 35 these numbers for a deferred primary pension plus a 60 percent immediate widow's pension would have been \$418 + \$226 = \$644. At 35 he would have had to forgo 35 percent of the EPV of his deferred pension to cover his wife, but at 65, if he is still alive, he only has to forgo 20 percent of his immediate pension. (In the latter case, widows whose husbands die before 65 receive no protection.)

3.8 Impact of Demography: Mortality Rates and Age Disparity

Until now we have been looking mainly at design features, such as eligibility conditions, benefit rate, covered beneficiaries and indexation method. But exogenous demographic conditions such as mortality rates and individual choices such as age disparity between husband and wife, also influence the value and cost of survivor benefits. To measure these effects, we simulate the case of a low income country with higher mortality rates, for a man who is on the verge of retirement at 65, married to a 45 year old wife.¹² For comparability, the survivor benefit is again assumed to be 100 percent of the primary benefit. Then, at ages 65/45, the EPV per \$100 of annual payouts is \$1,066 for the husband's own-pension and almost as much (\$1,002) for the widow's benefit. The relative

¹² We use a five-year setback on U.S. mortality rates—that is, assuming that a 60 year old person in this low income country has a mortality rate like that of a 65 year old in the United States in 1998. This reduces average life expectancy by three to four years.

EPV of the widow's benefit is much higher than it was under our previous demographic conditions, since the husband is more likely to die and his widow to live longer afterward because she is much younger than he. If this is a MENA country where multiple wives are allowed, he might be contemplating, additionally, marrying a 30 year old woman. The EPV of the second widow's benefit would be \$1,430, assuming that an overall limit did not apply (col. 3-5, Panel B). The husband would have to pay more than the value of his entire pension if he were to finance these benefits for two wives who are much younger than he. Of course, in most regions (except Latin America), this higher cost is borne by the financial pool of the system as a whole, not by the husband, although the husband is making the marital decision. If placed in the same insurance pool and paying the same insurance fee (the usual case), the husband who chooses a wife who is 20 or 35 years younger than he (or who chooses both) receives a redistribution from the husband whose wife is only five years younger.

IV. Consumption-Smoothing, Redistribution and Incentives

How can survivor benefit programs be structured to achieve consumption-smoothing and poverty-avoidance over states of life and death in the household, without generating perverse redistributions or distortionary incentives? This section evaluates what has been done and what could be done.

4.1 Smoothing the Pre- and Post-Death Standard of Living during Retirement

One of the main objectives of survivor insurance is to shift consumption from the present, when both spouses are alive, to the future, when one is dead. Has the right amount been shifted? Has the pre- and post-death standard of living been smoothed, for the surviving spouse? Given economies of scale, for smoothing the standard of living when a two-person household becomes a one-person household, the ratio of household income after/before death should be approximately 70 percent, some of which might come from the survivor's own-pension.¹³ How close do countries come to this benchmark? Table 12 shows the after/before ratios in countries with different rules for widows who have and have not worked in the market. Given the complexity of many survivor arrangements, these calculations require a number of assumptions that are noted in the table, but the general conclusions are not sensitive to these assumptions.

First consider women who have not worked in the market: The numerator of this ratio equals the wife's own-benefit from Pillar 0 plus her survivor's benefit, while the denominator equals the husband's benefit from Pillar 0 and his contributory pension plus the wife's Pillar 0 pension. In most countries, this ratio is well below 70 percent, closer to 50-60 percent for non-working wives (col. 1). These widows will either have to start working or "tighten their belts." In some cases (such as Latvia, Lithuania, Australia, Denmark and Iceland), where there is virtually no mandatory survivor pension, the after/before ratio is less than 40 percent, since the only income for non-working widows comes from Pillar 0. This implies that many widows will experience a sharp drop in their living standards unless they work or have substantial voluntary savings (but recall that mandatory programs exist precisely because voluntary savings and insurance is often insufficient). Moreover, as they age, widows' standard of living will drop even further relative to the average worker of the

¹³ See footnote 2.

time, in the common case where pensions are not linked to wage growth. It is not surprising, therefore, that very old widows are one of the poorest groups in many societies.

At the opposite extreme, a few countries offer much more than 70 percent, suggesting that they may be shifting too much family consumption to the post-death stage. For example, in Mexico the after/before ratio for non-working widows is 90 percent, in Belgium 80 percent and in Luxembourg 87 percent. In these countries, families with non-working wives might be better off paying less for survivor benefits and spending more earlier.

One might expect the picture to look better as more women work in the market—which is one rationale for low survivor benefits. We depict the case where both husband and wife worked and had the same own-pensions prior to the former's death (col. 2). If everything else remained the same, the before/after ratio for the working widow would be higher than that for the non-working widow, since she has 100 percent of her own-pension before and after the death, in addition to the survivor benefit afterwards. However, as just discussed, in most countries, widows must give up all or part of the survivor benefit to receive their own-pension (or vice versa). The extra benefit that a widow receives, post-death, from having worked, is usually less than 100 percent and often less than 50 percent of her own-earnings-related pension (col. 3). As a result, the "after/before ratio" is not higher for working widows in these households; in fact, it may be higher for non-working widows, whose families never received two pensions.

For example, after the death of the spouse, non-working widows in Poland receive 85 percent of the pre-death retirement income and in Belgium 80 percent, yet in these same countries working widows receive only 50 percent (because the incremental widow's income due to work, post-death, is only 15-20 percent of her own-pension).¹⁴ Some countries (France, Germany, Italy, Luxembourg, Spain and the United Kingdom) set a threshold before phasing out the survivor benefit. In these countries, the "after/before ratio" for widows who have worked is 70-77 percent pre-threshold compared to 50 percent post-threshold when the survivor benefit is phased out (compare smaller versus larger numbers for these countries in col. 2 and 3). Wives cannot improve their retirement

¹⁴ In the United States, unlike most other countries, non-working wives receive a spousal benefit of 50 percent of the husband's benefit even while he is alive. This raises the "before" income of married couples and decreases the "after/before" ratio of non-working widows. Non-working widows receive the highest percentage of the primary benefit in our sample—100 percent, so the "after/before ratio" is $100/150 = 67\%$. Working widows receive either the survivor's benefit or their own, so if husband and wife had the same pensions initially, her after/before ratio is only 50 percent. Note that the spousal pension has much the same phase-out rules, equity and incentive effects as the widow's benefit.

position or smooth their standard of living over the pre- and post-death states if they cannot keep their own-benefit plus the survivor benefit.

In recent years some countries have moved toward allowing widows to keep 100 percent of their own-pension while eliminating survivor benefits completely, as illustrated by Latvia, Australia, Denmark and Sweden. This acknowledges the rising labor force participation rates of women, reinstates full work incentives and eliminates cross-subsidies based on marital status. However, it fails to smooth the family's standard of living over risk states, because it ignores the important role of household economies of scale, which are addressed by life insurance or survivor benefits. The "after/before ratio" falls to 50 percent in these cases. (Also, unless this change is phased in gradually it poses a problem for older cohorts with the traditional life style of low participation rates for women).

The main places that avoid these problems are the Latin American countries where widows can keep their own-pensions as well as the survivor benefits. The "after/before ratio" is 50-70 percent for non-working widows and 75-85 percent for widows who have engaged in market work.¹⁵ In these cases, they are able to maintain their previous standard of living and improve upon it by working.

4.2 Redistribution and Incentive Effects of Survivor Programs

4.2.1 *Cross-Subsidies*

Our discussion of expected present value (EPV) showed that risk and expected cost vary systematically and substantially by marital status, age of spouse and number of children. Single (never married) individuals may have no survivors who will qualify for benefits. A married man whose wife is 20 years younger than he generates a survivor's EPV that is almost double that of a man whose wife is only five years younger. A man who has had two wives doubles the EPV again, if this is not limited. Yet, these characteristics typically do not determine the implicit insurance fee that these individuals pay, in Pillar 1. Some of these characteristics are beyond the control of the individual, but many are a matter of discretion and choice. This gives individuals a chance

¹⁵ In some MENA countries, working women also receive a higher ratio (69-88 percent) for the same reason—they can keep their own-pension plus the survivor's benefit. However, this applies to only the small percentage of women who work in the formal market in MENA. Given their low labor force participation rates, most widows have not worked and receive much smaller after/before ratios of retirement income.

deliberately to enhance their family's total pension wealth and lifetime consumption at the expense of others.

- Married individuals receive benefits for their survivors but pay the same implicit insurance fee (usually included in the payroll tax) as single individuals, increasing the family's pension wealth through a cross-subsidy.
- Married women who choose to work in the market usually must give up all or part of their own-pension to keep the survivor benefit—they cannot take both, even though they have paid the full payroll tax. In contrast, married women who choose to stay at home receive survivor benefits, which may be higher than the pension of working women, even though they have not paid any payroll tax. This cross-subsidy increases the pension wealth of wives who specialize in home work.
- Husbands who have chosen young wives increase their family's pension wealth because their spouses have a higher EPV of benefits without a correspondingly higher insurance fee (payroll tax) than husbands who have chosen older wives.
- Husbands who marry multiple wives, either concurrently (in MENA) or sequentially through divorce (in OECD), also have higher cross-subsidies and pension wealth, because they receive benefits for multiple survivors without paying more.
- The same is true for families with many young children.
- Widows who choose to remarry lose their survivor benefits, thereby cross-subsidizing others who have not remarried.
- High-earning couples tend to have lower mortality rates, hence greater lifetime benefits and pension wealth, at the expense of low earners who are likely to die younger.
- In countries with low social security coverage, if the social security system runs a deficit that is financed out of general government revenues, outsiders who are not eligible for benefits cross-subsidize survivor pension wealth for those who are inside the system.

As discussed at the start of this paper, some forms of subsidies are undoubtedly desirable in social security systems. Redistributions from high to low earners, with the object of poverty prevention, would probably receive the greatest support. This is achieved, for example, with Pillar 0

arrangements that protect singles, married couples, those cohabiting, survivors, contributors and non-contributors alike, from the risk of poverty, once they pass retirement age. But the transfers of pension wealth listed above are based on marital status or labor force status, mainly benefiting married couples in single-earner households within the formal system. Ironically, this often implies: (i) a redistribution away from those with low incomes since single women tend to be low earners; (ii) high-earning men are most likely to afford non-working wives; (iii) those at the top will tend to live the longest, hence receive the largest lifetime benefits; and, (iv) where coverage is incomplete, those inside the formal system tend to be a more privileged group. The fact that these wealth transfers are not transparent may enable them to survive longer politically than they would otherwise.

4.2.2 *Work Decisions*

Subsidies create wealth and incentives that affect behavior, often in a way that is not optimal for the economy as a whole. For example, if widows expect survivor benefits, this becomes a part of their implicit pension wealth when young, which enables them to work less if they prefer to do so. This wealth effect is reinforced by incentives commonly embedded in plan rules that are designed to save money for the common pool but may instead lead survivors to distort their behavior to enable qualification. These include rules already described that offset the survivor benefit against wages that the widow might receive when young or her own-pension when old. In both cases, if her spouse was a relatively high earner, the survivor benefit may be greater than her own-pension. The wife receives little or no expected gain from her own-contributions, which become a pure tax (see Table 12, col. 3). Instead of cutting system expenditures, these rules may cut women's work.

Pension offsets may not deter work as much as wage offsets, since the deterrent effect requires the spouse, when young, to make complex calculations about future benefits under different scenarios. Nevertheless, as young women notice that their older counterparts receive similar total pensions whether or not they have worked in the formal market, they will have less incentive to enter the formal market.¹⁶ Work when young will not enable them to improve their economic positions when

¹⁶ The elasticity of labor supply may be higher for women than for men because the social pressure to work is lower; they generally have another source of financial support (their husband); their net reward for work is lower because it means forgoing the services they would produce in the household; and, the tax system often penalizes the second wage-earner in the family.

old. These restrictions are meant to reduce system costs by cutting off the access of individuals who do not “need” the benefits, on the assumption that behavior is immutable (i.e., that work decisions will not change). On the contrary, if women respond to these incentives, their behavior and welfare will change while system costs remain immutable and national output is decreased.

4.2.3 *Marital Decisions*

Besides the impact on work decisions, current systems may influence marital decisions in an inefficient way. In deciding who (and how many and what age) to marry, or how many children to have, husbands may not take account of the full lifetime cost of their dependents, because they are not required to finance post-mortem accruals. In some cases older men may marry younger women as a way to give her this lifetime income, paid for by others. Eligibility rules in many countries that set minimum marriage durations, especially for older workers, indicate that policymakers are aware of these incentives and the abuses that might occur.

As we have seen, the cross-subsidies are strongly pro-marriage. Yet, ironically, once a woman becomes a widow remarriage is discouraged, because it is a reason to stop the survivor’s benefit in practically every country, outside of Latin America. This may induce co-habitation without formal remarriage, even if the couple prefers marriage. (In some countries, cohabiting is also a reason to stop the survivor benefit, but this is difficult to monitor.) Current rules, it seems, curtail personal well-being as well as economic productivity.

4.2.4 *Changing Patterns*

Individual choice versus social norms. In traditional societies, where the majority of women marry, married women do not work in the market and strong social norms govern the remarriage of widows— these cross-subsidies and the behavioral changes they generate may be small. In recent years, discretion has shifted to men and women (to differing degrees across countries) regarding marriage, remarriage, number of children, and home versus market work for wives. As a result, behaviors vary more and are more subject to incentives than they were previously. The once-small cross-subsidies may now be larger and may be generating adverse effects. Moreover, individuals in non-traditional arrangements, such as those who cohabit or are divorced, may not be covered by systems that were based on the traditional family. This implies potential inequity and poverty problems, as well as moral hazard.

4.3 Actuarially Fair Consumption-Smoothing: Impact on Equity and Incentives

The Latin American experience with funded privately managed insurance programs illustrates that it is possible to smooth consumption over risk states while avoiding hidden cross-subsidies and distortionary incentives, by charging for survivor's insurance on an actuarially fair basis. "Actuarial fairness" does not mean ethical fairness. However, it provides a benchmark against which transparent, conscious decisions about redistribution can be made. In an actuarially fair system, the premium equals the expected value of the payout for each participant, so there are no expected winners or losers *ex ante*. By paying insurance premiums that reflect risk, husbands cover the cost of the benefits that their widows will receive, thereby eliminating cross-subsidies based on marital status and reducing work disincentives. Policymakers can then make explicit decisions about who should be subsidized and who should pay for the subsidies.

We use Chile as a case in point, although similar systems exist in several Latin American countries. In Chile, workers are required to contribute to Pillar 2, the privately managed DC plan, for their old-age benefits. Contributions are invested in their own-retirement accounts, which are converted into pensions upon retirement. Pillar 2 also has mandatory arrangements for survivors, which involve pre-funding and actuarial fairness.

4.3.1 *Working Stage*

Survivors are guaranteed a defined benefit—usually 50-70 percent of the worker's potential pension—which is financed by the balance in his account, topped up by an additional payment from an insurance company sufficient to enable the survivor to purchase a life annuity at the defined benefit rate. Each pension fund is required to arrange for this insurance, on a group basis, and each worker pays a community-rated fee that, on average, covers the cost of the insurance top-up. These fees are actuarially fair for the entire group each year—so costs are not passed on to future generations. In contrast, they are not actuarially fair at the individual level: Each worker in the group pays the same insurance fee (as a percentage of wage) regardless of marital status, age of spouse and number of children. However, the cross-subsidies and moral hazard problems here are relatively small since, as we have seen, the majority of deaths and expenditures on survivor benefits occur after retirement age.¹⁷

¹⁷ Before 2008 this insurance was provided by each AFP to its members. Benefits paid to survivors of affiliates

4.3.2 Retirement Stage

Survivors are again promised a defined benefit that is usually 50-70 percent of the primary pension. Each retiree is required to convert his retirement saving into a joint pension that covers his widow as well as himself. The retiree finances the widow's benefit by getting a smaller own-pension himself. The adjustment is determined on an actuarially fair basis for each individual—that is, it depends on the age of his spouse and number of children. This risk-classification is the way insurance companies generally price in competitive markets, if regulations permit. Usually the own-pension for a married person is 15-25 percent smaller than a single retiree would receive. Thus, at the retirement stage the cost of survivor benefits is not shifted to contributors at large, it remains a family responsibility. In effect, this joint pension requirement formalizes and continues after death the lifetime mutual support contract to which family members have agreed. (For low earners this actuarially fair, consumption-smoothing benefit is underpinned by a targeted redistribution from the public treasury, through the minimum pension guarantee or the basic benefit in Chile's new Pillar 0.)

Since single individuals do not subsidize married couples in the joint annuity market, marital decisions take full cost into account. Likewise, the family wealth of married couples is not increased through cross-subsidies, so the wealth effect does not discourage family work and saving. Importantly, perhaps because the husband has fully paid for the benefit, his widow has property

who died during the working stage totaled about .6 percent of the covered wage bill, which is the fee that would have had to be charged on a PAYG basis. Insurance fees to cover the top-up that financed the annuity to survivors were only half of that on average, .3 percent of wages. The rest of the annuity premium was financed by the balance in the retirement account. In effect, the funded account jointly provides both old-age and survivor insurance, saving about half the annual cash costs of the latter.

As a result of the 2008 legislation, all workers were put into a common pool and auctioned to the four lowest bidding insurance companies. In addition, mandatory coverage was added for widowers and a rebate was required to be paid into the accounts of women workers, to compensate for their greater longevity (lower risk). These changes, as well as others related to disability insurance, raised costs. The combined fee for disability and survivor insurance in the 2009 public auction process was 1.88 percent of payroll for men and 1.68 percent for women. The breakdown between disability and survivor insurance is unknown, although it is presumed that about one-quarter is allocated to survivors.

Simulations show that the need to pre-fund the annuity implies high insurance fees in the early years of a new system when account balances are small, compared with a PAYG system that only charges for current benefits. However, this system implies relatively low insurance fees in the long run, when account balances are large and cover most of the annuity premium. Chile is now in the middle of this transition period. Population aging causes fees in a funded system to grow less rapidly than they would in a PAYG system, because older workers have larger accounts. Fees are relatively low when interest rates and investment returns are high and vice versa. For simulations that compare costs in pre-funded versus PAYG systems for disability and survivor benefits in Chile, see James, Iglesias and Edwards 2007.

rights to it, keeping it even if she works, has her own-pensions or remarries.¹⁸ Latin America is the main region where rules penalizing widow's work and remarriage are generally not found. Consumption-smoothing before and after the husband's death is achieved, precisely because the widow keeps her own-pension in addition to the joint annuity. Women's work decisions are then based on their personal and family preferences concerning time allocation, rather than on how to retain benefits subsidized by others. Interestingly, female participation rates in Latin America have risen faster than in most other regions, during the past two decades (see Table 2).¹⁹

While Latin America uses joint pensions in its privately funded social insurance plans, a variation on this theme could also be applied to public PAYG programs. Upon retirement, each worker's pension credits could be transformed into a joint benefit that covers his dependents as well as himself, with his own-pension adjusted downward on an actuarially fair basis according to the EPV of the benefits his dependents will receive. Subsidies could then be reallocated to the poverty-prevention goal in a transparent manner. Not only would the widow have greater property rights but she would also be more likely to keep the benefit even when she has her own-pension. Work disincentives would fall and consumption-smoothing over risk states would improve.

4.4 Joint Annuities versus Contribution-Splitting

In recent years, two alternative ways of using family co-insurance to maintain the survivor's standard of living without placing a burden on the system's pool or cross-subsidizing married couples have developed. One approach is to require the purchase of joint pensions upon retirement, as just described. The other approach is to require contribution-sharing between spouses, upon divorce or retirement (or each year, for purposes of investment decisions, in the case of funded DC plans). Contribution-splitting means that each partner receives half of the family's total contribution credits. It has become increasingly common in high income OECD countries, primarily as a response to divorce but secondarily as a substitute for survivor benefits (see Table 9).

¹⁸ Survivor benefits in Pillar 2 are not inevitably actuarially fair. In the Swiss Pillar 2 occupational plans, community rating is required for survivor insurance, during both the working and retirement stage. In the Netherlands, many of the Pillar 2 plans are DB, and employers implicitly use community rating when they provide survivor benefits to their workers. In both cases there is no offset against the widow's own-wage or pension, perhaps because financing from the public pool is not involved. Pillar 2 benefits are more likely to be actuarially fair if based on individual accounts rather than occupational plans.

¹⁹ Of course, many factors are at work here, including the increasing education of women and decreasing fertility rates, in addition to incentives from the social security system. See James, Edwards and Wong 2008 for further exploration of this point.

For example, contribution-splitting has been required in Switzerland since 1997. In Germany pension credits may be split voluntarily between spouses at time of retirement. In Austria couples have the right to split pension credits acquired by the working partner during child-raising periods, up to four years per child. In Japan, since 2008, contribution credits have been automatically split upon divorce if one spouse has not worked, and this can be implemented on a voluntary basis if both spouses have worked. Additionally, starting in 2008, upon divorce a non-working wife receives half of her husband's contribution credits, which automatically grants her an old-age benefit whether or not he is alive. Similarly, in the United Kingdom, the sharing of rights to the earnings-related pension or retirement savings in Pillars 1 or 2 is permitted in a divorce. In Sweden's DC plan in Pillar 2, couples may make an annual transfer of pension contributions to their spouse. This is also permitted in Australia's DC plan.

When contributions are split, the wife generally receives a bigger pension, whether or not her husband is alive, financed by the smaller pension of the husband. Thus, both joint pensions and contribution-sharing protect the wife without involving public transfers. They do nonetheless have quite different impacts on the time allocation of pension payments and consumption-smoothing in the pre- and post-death states.

Consider a couple with unequal own-pensions (\$100 and \$50, respectively) that does not split contributions or have survivor benefits (row 1, Table 13). While both spouses are alive, their own-pensions are unequal. This does not matter if a joint household consumption decision is made but it does matter if each individual has decision-making power over and/or consumes primarily from his or her own-resources. If the spouse with the higher pension dies first, the other is left with a very low income (\$50), much lower than the joint household income before the death (\$150). In the usual case, the wife is the low earner and will live longer. On the other hand, if the low-earning wife dies sooner, the husband is left with his own-higher-pension (\$100). Due to household economies of scale, and assuming a joint consumption function while both spouses are alive, it will probably cost the survivor approximately $150 \cdot 0.7 = \$105$ to maintain the same living standard. Thus, the female survivor suffers a severe fall in her standard of living, while the male's standard of living falls only slightly.

Now, if a joint pension is required, the uneven purchasing power of the two spouses in the initial pre-death state remains, but the total amount is lower (\$120), as some purchasing power is shifted toward the future post-death state (row 2, under the assumption that the survivor receives 60

percent of the primary pension and the primary pension is reduced by 20 percent to finance this). Future family income is higher, regardless of who dies first, but it is significantly higher if the wife survives. She receives a total of \$88 while her husband as survivor would receive \$104. Both are better off in the post-death state than they would have been without the joint pension and neither suffers a fall in living standards (which can now be maintained with \$84). Thus, real consumption levels are smoothed across time and states of life and death, without public spending.

Contribution-splitting has a somewhat different impact. It equalizes the own-resources of each spouse while both are alive, which helps the low-earning wife if this implies she has greater control over the household's financial decisions (row 3). But it does not shift any income toward the future. Each spouse receives \$75 while both are alive, and \$75 in the future when one is dead. Thus, living standards must fall substantially for the survivor, regardless of which spouse dies first. Household economies of scale have been lost without a compensating increase in purchasing power. The widow fares better than she would have without any co-insurance (and the husband worse) but not well enough to maintain her previous standard of living.

To avoid this eventuality, practically all countries that have contribution-sharing retain public survivor benefit programs. Usually the survivor benefit is phased out as own-pension and own-wages grow. Consequently, contribution-splitting may ultimately reduce public expenditures on survivors, but it does not completely eliminate these expenditures or the cross-subsidies and work disincentives created by survivor benefit rules.

In sum, these two mechanisms have two different aims. The primary purpose of contribution-sharing is to give the low-earning spouse (usually the wife) greater financial equality while both spouses are alive and to marginally improve her status after the husband's death. It also assists in dividing family assets during a divorce. The primary purpose of the joint pension is to shift resources toward the future when one spouse (usually the husband) is deceased, so the survivor can retain a standard of living. These points are reiterated in the bottom panel of Table 13, which shows the same options for a husband and wife who start out with equal pensions. Contribution-sharing accomplishes nothing in this case, since contributions and pensions are already equal. The standard of living falls when either spouse dies, unless there is a joint pension.

Of course, it is possible to implement both schemes simultaneously, in which case both aims (financial equality in the pre-death state and maintaining the standard of living post-death) are

satisfied, without any inter-family subsidies (row 4 in top and bottom panels). At the same time, neither of these mechanisms achieves the poverty-prevention goal, in cases where combined family income is low. For this, a public transfer is necessary.

V. Conclusion: Toward a Policy Framework

An optimal consumption plan would lead families to save and insure enough to smooth the standard of living for surviving family members, if a major breadwinner dies. This often does not happen because of myopia, misestimates of risk, reluctance of individuals who control the resources to cut their own-consumption today to enhance the welfare of others after they die, and imperfect insurance markets. As a result, survivors could face a severe drop in their standard of living and some might end up in poverty. Both of these would pose a social burden. Mandatory survivor benefit programs are intended to avoid these outcomes. Ideally, such programs would choose the “right” mix of benefits and costs, which smooth the family’s standard of living and keep survivors above the poverty line. It also would avoid “undesirable” cross-subsidies and distortionary incentives that discourage “good” behaviors. As we have seen, few systems meet these criteria.

Some countries have tried to eliminate the undesired cross-subsidies and incentives by eliminating mandatory benefits for survivors. Given the increasing labor force participation rates of women, they have concluded that each partner can provide for himself or herself. But this ignores the presence of children and the fact that women still work less, earn less and live longer than men (partially because of their past or present responsibility for bearing and rearing children). It also ignores the existence of household economies of scale—costs do not fall proportionately when one family member (often, the major breadwinner) dies. Instead, one person requires about 70 percent as much as two, in order to maintain the previous standard of living. This is the basic reason why survivor insurance is needed as mutual protection for both spouses or partners, rather than simply protection for the wife when the husband dies. Augmenting the own-wage or own-pension with survivor benefits enables the remaining spouse or partner to retain the pre-death standard of living.

Contribution-splitting, a recent innovation in the pension field, has also been offered as an alternative to survivor benefits. This solves the part of the problem stemming from differential earnings between husband and wife but it does not compensate for household economies of scale. Nor does it shift consumption capacity toward the post-death stage, when household income falls more than household costs; that is, it is not a savings-insurance instrument. Although it gives the low earner greater purchasing power in old age and helps divide assets in case of divorce, it is not a substitute for survivor benefits, which shift consumption across time and states of life and death.

This line of reasoning leaves us with a continued rationale for mandatory survivor benefits and a need to design them well. Should the main goal of the program be to maintain the previous standard of living, even for middle and high earners, or to prevent poverty—setting a floor under income for low earners? Should it be publicly or privately managed, based in Pillars 0, 1 or 2? Which family members (or unmarried or divorced dependents) should be covered by mandatory arrangements? How generous should the benefits be? Should they be for young or old survivors? Temporary or permanent? Should benefits be indexed to prices or wages (or not at all)? Should subsidies be based on marital status or on income? Should widows who have their own-wage or own-pension be excluded from survivor benefits? Should married couples be required to provide family co-insurance, as through actuarially fair joint annuities, instead of relying on a system of inter-family transfers? How should these programs respond to the changing labor market roles of women? The answers to these questions determine how much survivors will benefit, what the resulting cost will be to others in their own family or to outsiders, who will gain and lose on balance and what behaviors will be encouraged.

While different countries have answered these questions in different ways, a “model” survivors program could include the following:

- A poverty-prevention component, such as a flat benefit or a minimum pension guarantee in Pillar 0, which requires inter-family transfers through the use of public funds. Particular attention should be paid to young widows with preschool children who experience temporarily high child care expenses and very old widows whose benefits, if not partially indexed to wages, will fall far behind that of the average current worker.
- A consumption-smoothing component, designed to enable the survivor to maintain his/her previous standard of living, taking account of household economies of scale. This does not require inter-family transfers. To avoid perverse redistributions and moral hazard, it might be financed within the family, through mandatory joint annuities in Pillar 2 or actuarially fair defined benefit adjustments in Pillar 1.
- Recognizing the changing role and increasing labor force participation rates of women and adjusting benefits accordingly. In countries where both spouses are likely to have their own pensions, survivor benefit rates that exceed 50-60 percent of the primary pension have postponed too much of the family’s consumption into the distant future. Women who

become widowed under the age of 40 or 50, without small children, can be expected to work in many societies, so it is no longer necessary to give them a high benefit rate for life. Costs should be measured in terms of expected present value of lifetime benefits, which take into account the number of years of benefits rather than simply setting policies in terms of annual amounts.

- Creating rules that dispel unintended opaque cross-subsidies and work disincentives. Societies should reevaluate whether they wish to continue the common practice of redistributing to married couples at the expense of singles, subsidizing single-earner couples at the expense of dual career couples, and discouraging women's market work by phasing out survivor benefits for those who have their own-pensions. This is particularly important as marriage and work become increasingly a matter of individual choice rather than presuppositions of strong social norms. These cross-subsidies and disincentives raise equity issues and limit women's ability to improve their own welfare through work.
- Reconsidering intra- versus inter-family transfers. It is possible to finance survivor benefits for consumption-smoothing within the family through joint annuities in Pillar 2 or actuarially fair defined benefit adjustments in Pillar 1. Both spouses would be entitled to this insurance. If the marriage ends by divorce, settlements that include alimony or child support might also include life insurance designed to cover these obligations after death. This intra-family approach would eliminate many of the idiosyncratic inter-family cross-subsidies that now exist. Public transfers could then be redirected toward low earners, very old widows, older cohorts of women who were not expected to generate their own-income, and others with low incomes, to help meet the poverty-prevention goal.

A1. Appendix: Methodological Problems in Comparing Costs across Countries

Table 10 presents data on expenditures on survivor benefits relative to old-age benefits and on both relative to GDP, for the countries in our sample. In principle we would like to know—taking the old-age system as given, how much do survivor benefits add to the total cost? Since distinguishing between old-age and survivor benefits is difficult in practice, these numbers should be interpreted with caution.

In some countries (e.g., the Netherlands and Germany) survivor pensions are converted into old-age pensions at the legal retirement age. In other countries (e.g., Ireland) survivor benefits are separated out for life, although similar in size to old-age benefits. In Poland, the widow's benefit starts when she reaches 50 but stops when the retirement benefit starts at age 60. In the United States, when the husband dies widows choose either the survivor benefit or their own-old-age pension, whichever is larger, and each benefit-type retains its identity regardless of the widow's age. Many European countries that rely on Pillar 1 phase out part of the combined benefit in cases where the survivor qualifies for both, but whether the retained portion is attributed to own-pension or to the survivor pension varies arbitrarily. Given this variety of arrangements, one country may call something a survivor benefit while another calls the same thing an own-pension. Survivor benefits may increase total costs by far less than their nominal amount, as would be the case in the United States where widows must give up their own-pension in order to receive the widow's benefit. The opposite is also possible.

Our main data source for OECD pensions is the OECD database, which in turn is based upon Eurostat data. Eurostat has grappled with this definitional issue. For purposes of comparability, until recently Eurostat treated all public benefits paid over the legal retirement age as old-age benefits. Perhaps the rationale was that, regardless of what they are called by the given country, comparable benefits would somehow have been paid to the elderly. This is a realistic assumption in countries like the Netherlands, which has a universal old-age benefit. The only incremental cost in the Netherlands is, indeed, spending prior to retirement age. But this methodology may understate survivor benefits for countries like Germany or Spain, which rely on Pillar 1, where old-age benefits are closely linked to contributions. In these countries, survivors who did not work in the market may have received only modest social assistance benefits if they did not qualify as widows of contributors. Thus, the old Eurostat/OECD data understate marginal costs for OECD countries that

rely on Pillar 1, relative to those that rely mainly on Pillar 0. Eurostat has recently changed its definition so that survivor benefits are now attributed after retirement age. It is likely that both the old and new definitions have not been consistently applied across countries, and apparent differences in their costs may instead be due to differing definitions.

In addition, countries outside of Europe are not bound by Eurostat conventions. Thus, Latin American countries, Canada and the United States will tend to have higher reported costs for survivors—in part because survivor benefits retain their separate identity both before and after retirement age. The apparent differences that we observe across regions, especially those between European Pillar 1 countries and others, may overstate real differences, due to different definitions.

Problems also arise with respect to private expenditures in Pillar 2. Private expenditures are not fully reported to Eurostat, and outside Europe, they are largely missing. Those that are reported are divided into mandatory and voluntary categories, although the divisions are somewhat different from ours. Their mandatory category only includes countries where legislation requires private benefits (as in Switzerland), whereas ours includes, additionally, countries where quasi-mandatory social agreements cover practically all workers and substitute for legislation (as in the Netherlands and Denmark). These occupational plans may not fully report all survivor benefits and, if reported, may group together the benefits paid before and after the legal retirement age. Thus, costs of public and private benefits become non-comparable, even in the same country. Countries that have shifted part of their benefit burden to employer-sponsored plans (e.g., Iceland and Switzerland) may appear to have lower expenditures (if not fully reported) or higher expenditures (if fully reported) than countries with pure public systems, but both of these may be illusory.

Finally, it should be remembered that current expenditures on survivors still alive today stem from rules that applied ten or twenty years ago when the affiliate died, and in many cases these rules have changed drastically. For example, Australia and the United Kingdom have discontinued their pensions to young widows without children, but some of the original recipients are still alive and receiving benefits under the previous rules. Sweden has switched from a flat benefit to a minimum pension guarantee and Germany has reduced its benefit rate, yet some beneficiaries are still grandfathered (or grandmothered) into the previous rates.

In cases where a major systemic reform has taken place, data for the new system suffers from another problem—it is not yet mature. In the early years of a new system, few affiliates will be

eligible for old-age benefits but many more will be eligible for survivor benefits, due to affiliates who die at a young age. Therefore, initially the ratio of survivor to old-age benefits will be high; over time, as the system matures, this ratio will fall. This effect is accentuated if the reform involves a shift from a PAYG to a funded system, which requires heavy up-front outlays. For example, in Chile the ratio of survivors to old-age pensions in the new private pre-funded pillar was 60 percent in 1990 but has since fallen to 19 percent, while it is at 40 percent in the old system. The still-high expenditures on survivors are mainly attributable to the old system. The numbers presented in Table 10 overstate likely future numbers because of system transition and maturation.

It is interesting to observe that international differences in disability spending (relative to old-age expenditures) is almost the mirror image of survivor spending. It is highest in the Pillar 0 OECD countries, lowest in MENA and Latin America, and in between (but much higher than survivor spending) in the other regions. This suggests that definitional differences alone are not driving these patterns. Perhaps higher income countries have a greater willingness and ability to spend on the disabled, while low income countries cannot afford that luxury but are forced by social mores to spend on survivors. As economic growth takes place, the ratio of disability to survivor benefits spending therefore rises.

Because of all these difficulties in interpreting the available data on survivor benefit expenditures, we place greater emphasis on our simulations, which show us exactly how spending will change in response to different system rules.

**Table 1: Marriage, Divorce and Fertility Rates
(1990 and 2006)**

Country	Marriage Rate		Divorce Rate		Fertility Rate	
	1990	2006	1990	2006	1990	2006
Middle East and North Africa						
Bahrain	5.8		1.2		3.7	2.3
Jordan	8.1	10.7	1.2	2.1	5.4	3.2
Morocco					4.0	2.4
Tunisia	6.9		1.6		3.5	2.0
Latin America						
Argentina	5.8	3.5			3.0	2.3
Chile	7.5	3.3*	0.4	0.2	2.6	2.0
Colombia					3.0	2.3
Costa Rica	7.6	6.1	1.1	3.0	3.1	2.1
Mexico	7.4		0.5	0.7	3.4	2.2
Peru					3.9	2.5
Uruguay	6.5		2.2	4.3*	2.5	2.0
Eastern and Central Europe						
Czech Republic	8.4	5.1	2.6	3.1	1.9	1.3
Estonia	7.5	5.2	3.7	2.8	2.0	1.5
Hungary	6.4	4.4	2.4	2.5	1.8	1.3
Latvia	8.8	6.4	4.0	3.2	2.0	1.3
Lithuania	9.8	6.3	3.4	3.3	2.0	1.3
Poland	6.7	5.9	1.1	1.9	2.0	1.3
High Income OECD Countries						
Australia	6.8	5.4*	2.5	2.6*	1.9	1.8
Austria	5.9	4.5	2.1	2.5	1.5	1.4
Belgium	6.6	4.3	2.0	2.8	1.6	1.7
Canada	7.1	4.7*	2.9	2.2*	1.8	1.5
Denmark	6.1	6.7	2.7	2.6	1.7	1.8
Finland	4.8	5.4	2.6	2.5	1.8	1.8
France	5.1	4.4	1.8	2.3	1.8	2.0
Germany	6.5	4.5	1.9	2.3	1.5	1.3
Iceland	4.5	5.5	1.9	1.6	2.3	2.1
Ireland	5.2	5.2			2.1	1.9
Italy	5.4	4.1	0.5	0.8*	1.3	1.3
Japan	5.8	5.8	1.3	2.0	1.5	1.3
Luxembourg	6.2	4.1	2.0	2.5	1.6	1.7
Netherlands	6.4	4.4	1.9	1.9	1.6	1.7
New Zealand	7.0	5.1	2.7	2.4	2.2	2.0
Norway	5.2	4.7	2.4	2.3	1.9	1.9
Portugal	7.3	4.5	0.9	2.3	1.4	1.4
Spain	5.5	4.8	0.6	1.7*	1.3	1.3
Sweden	4.7	5.0	2.2	2.2	2.1	1.8
Switzerland	6.9	5.3	1.9	2.8	1.6	1.4
United Kingdom	6.3	5.1*	2.9	2.8*	1.8	1.8
United States	9.8	7.2	4.7		2.1	2.0

Source: OECD, UN Economic Commission for Europe and UN Demographic Yearbook, various years. Fertility rate (births per woman): WDI, based on census reports, UN Population Division World Population Prospects, National Statistical Offices and household surveys. This gives the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.

Note: Marriage and divorce rates are number per thousand population. *Various years, 2003-2005.

**Table 2: Labor Force Participation Rates of Females and Males Ages 15-64
(1990 and 2006)**

Country	Female (%)		Male (%)		Female/Male (%)	
	1990	2006	1990	2006	1990	2006
Middle East and North Africa						
Bahrain	29	31	90	89	32	35
Jordan	19	30	71	79	27	38
Morocco	26	29	84	84	31	35
Tunisia	22	32	79	78	28	41
Latin America						
Argentina	44	62	85	82	52	76
Chile	35	41	81	75	43	55
Colombia	49	67	85	85	58	79
Costa Rica	35	50	88	85	40	59
Mexico	36	43	86	83	42	52
Peru	49	62	82	83	60	75
Uruguay	54	67	86	86	63	78
Eastern and Central Europe						
Czech Republic	74	64	82	77	90	83
Estonia	76	65	83	74	92	88
Hungary	57	54	74	67	77	81
Latvia	75	63	84	72	89	88
Lithuania	70	66	82	73	85	90
Poland	65	57	79	68	82	84
High Income OECD Countries						
Australia	62	68	84	80	74	85
Austria	55	64	80	77	69	83
Belgium	46	58	71	72	65	81
Canada	68	73	85	82	80	89
Denmark	78	74	87	82	90	90
Finland	72	73	79	77	91	95
France	57	62	75	73	76	85
Germany	57	68	81	79	70	86
Iceland	77	83	87	91	89	91
Ireland	42	63	78	80	54	79
Italy	45	51	77	74	58	69
Japan	57	61	83	85	69	72
Luxembourg	44	56	78	74	56	76
Netherlands	53	70	80	84	66	83
New Zealand	63	72	83	83	76	87
Norway	70	77	82	83	85	93
Portugal	59	68	83	80	71	85
Spain	42	58	80	81	53	72
Sweden	82	75	86	79	95	95
Switzerland	63	76	90	87	70	87
United Kingdom	67	70	88	82	76	85
United States	68	70	85	81	80	86

Source: WDI from International Labor Organization, Estimates and Projections of the Economically Active Population database.

**Table 3: Life Expectancy for Males And Females at Birth and at Age 65
(1990 and 2006)**

Country	Life Expectancy at Birth		Life Expectancy at 65			
	Female	Male	Female		Male	
	2006	2006	1990	2006	1990	2006
Middle East and North Africa						
Bahrain	77.3	74.1		15.9*		14.1*
Jordan	73.8	70.7				
Morocco	72.9	68.6				
Tunisia	75.6	71.7				
Latin America						
Argentina	78.9	71.4	16.1	18.4*	12.5	14.1*
Chile	81.4	75.4	16.9	20.4*	13.9	17.0*
Colombia	76.4	69.0	15.8	17.9	14.4	15.3
Costa Rica	81.1	76.3	17.9		15.1	
Mexico	77.2	71.8		18.4*		16.4*
Peru	73.7	68.6		16.5*		14.7*
Uruguay	79.5	72.1		19.4		14.7
Eastern and Central Europe						
Czech Republic	79.7	73.5	15.3	18.3	11.7	14.8
Estonia	78.1	67.3	15.8	18.3	12.0	13.2
Hungary	77.4	69.0	15.4	17.7	12.0	13.6
Latvia	76.5	65.5	15.8	17.8	12.2	12.1
Lithuania	77.1	65.3	17.0	17.7	13.3	13.1
Poland	79.6	70.9	16.3	18.8	12.5	14.5
High Income OECD Countries						
Australia	83.4	78.7	19.0	21.4*	15.2	18.1*
Austria	82.7	77.1	18.1	20.6	14.4	17.2
Belgium	82.4	76.7	18.8	20.7*	1.3	16.6*
Canada	82.8	78.0	19.9	21.0*	15.7	17.7*
Denmark	80.4	75.9	17.9	19.2	14.0	16.2
Finland	82.8	75.8	17.8	21.2	13.8	16.9
France	84.1	77.2	20.2	22.0*	15.7	17.7*
Germany	82.0	76.4	17.7	20.5	14.0	17.2
Iceland	83.0	79.4	19.8	20.7	16.4	18.4
Ireland	81.8	77.1	17.1	20.3	13.2	16.8*
Italy	84.0	78.3	18.9	21.4*	15.1	17.4*
Japan	85.8	79.0	16.2	27.9	16.2	22.4
Luxembourg	82.3	76.2	18.5	20.3	14.3	17.0
Netherlands	81.9	77.6	19.2	20.5	14.5	16.9
New Zealand	82.0	77.9	18.3	20.5	14.7	17.8
Norway	82.7	78.1	18.7	20.9	14.6	17.7
Portugal	81.8	75.2	17.1	20.2	14.0	16.6
Spain	84.1	77.7	19.3	21.1*	15.5	17.2*
Sweden	82.9	78.7	19.2	20.8	15.3	17.6
Switzerland	84.0	79.1	19.7	22.1	15.3	18.5
United Kingdom	81.3	77.0	18.1	20.2*	14.2	17.5*
United States	80.8	75.0	18.9	20.0*	15.1	17.1*

Sources: Life expectancy at birth from WDI, compiled by World Bank staff from national and international official sources. Indicates number of years a newborn infant would live if current age-specific mortality rates were to stay the same throughout its life. Life expectancy at 65 from OECD, UNECE Statistical Division Database, and UN Demographic Yearbook. Indicates average number of years of life remaining at age 65, based on current age-specific mortality rates.

Note: *Indicates various years from 2001-05.

Table 4: How Are Survivors Covered? Pillars 0, 1 and 2

Country	Pillar 0 Old Age Ben. & Some Young Survivors ¹		Survivors					
			Pillar 1-Public ²			Pillar 2-Private ³		
	Flat (1)	Min Pen or SA (2)	Flat (3)	ER (4)	Min Pen (5)	Pen (6)	DC Bal (7)	Min Pen (8)
Middle East and North Africa—Pillar 1 Only								
Bahrain	No Pillar 0			x	x		No Pillar 2	
Jordan	No Pillar 0			x	x		No Pillar 2	
Morocco	No Pillar 0			x	x		No Pillar 2	
Tunisia	No Pillar 0			x	x		No Pillar 2	
Latin America—Pillar 1 or 2 ⁴								
Argentina	No Pillar 0		x	x	x	x	x	x
Chile	x	x	No Pillar 1			x	x	x
Colombia				x	x	x		x
Costa Rica		x		x	x	x	Default	
Mexico	No Pillar 0			x	x	x	x	x
Peru	No Pillar 0			x	x	x	x	x
Uruguay		x if >70		x	x	x		x
Eastern and Central Europe—Most Survivor Benefits in Pillar 1 ⁵								
Czech Rep.		x	x	x	x		No Pillar 2	
Estonia		x	x	x			Default	
Hungary		x		x	x ch.		Discr.	
Latvia		x		x ch.	x ch.	LS	Discr.	
Lithuania		x	x	x ch.			Discr.	
Poland ⁶		x		x	x		x	
High Income OECD Countries—Flat Benefit in Pillar 0 ⁷								
Australia	x		No Pillar 1				Discr.	
Canada ⁸	x	x		x			No Pillar 2	
Denmark ⁹	x	x	LS	LS			Discr.	
Finland ⁸	x			x			No Pillar 2	
Iceland ¹⁰	x	x	No Pillar 1			x		x
Netherlands ¹⁶	x		No Pillar 1			x		
New Zealand	x		No Pillar 1				Discr.	
Norway	x	x		x			Discr.	
High Income OECD Countries—Most Survivor Benefits in Pillar 1 ¹¹								
Austria		x		x	x		No Pillar 2	
Belgium		x		x	x		No Pillar 2	
France		x		x	x	x		
Germany		x		x			No Pillar 2	
Ireland ^{8,12}	(x)		x				No Pillar 2	
Italy		x		x	x		No Pillar 2	
Japan ¹³	(x)		x	x			No Pillar 2	
Luxembourg		x	x	x	x		No Pillar 2	
Portugal		x		x	x		No Pillar 2	
Spain		x		x	x		No Pillar 2	
Sweden ¹⁴		x		x		Discr.		
Switzerland ¹⁵		x		x	x	x		
United Kingdom ⁸		x	x	x		x	x	
United States ⁸		x		x			No Pillar 2	

Source: Data provided by sources in the country and web sites cited in the references.

Notes for Table 4

- 1 Pillar 0 is publicly managed and financed and pays old-age benefits based on residence, not contributions. Sometimes young widows with children qualify for these benefits before retirement age, on a means-tested basis.

Column 1: X indicates countries where Pillar 0 pays a flat benefit to most residents after retirement age. For those with high incomes, often the flat benefits is phased out or clawed back through the tax system. Surviving widows, like others, receive this benefit once they pass the pension age.

Column 2: X indicates countries where the Pillar 0 benefit is a minimum pension or social assistance (SA). If other income is less than the minimum, it is topped up.
- 2 Pillar 1 is publicly managed, usually PAYG, and pays old-age benefits to contributors and their survivors. "Xch." indicates that survivor benefits are for children only, not for widows.

Columns 3, 4 and 5: X indicates whether survivor benefits in Pillar 1 are flat or earnings-related and whether a minimum pension guarantee applies. "LS" indicates that the payment is a flat lump sum, rather than periodic.
- 3 Pillar 2 is privately managed, usually funded, and pays old-age benefits to contributors and their survivors. Only mandatory or quasi-mandatory Pillar 2's are included here. In most Western European countries, these are employer-sponsored plans, either DB or DC; while in Latin America and Eastern and Central Europe, they are individual DC plans. As indicated, many countries have no Pillar 2.

Column 6: X indicates that a survivor or joint pension is required in Pillar 2. "Discr." means that a joint pension is discretionary (permitted but not required).

Column 7: indicates whether the account balance is paid to the survivor. X indicates that this is required. "Discr." indicates that the assignment of the balance is discretionary. "Default" indicates that, if no beneficiary is designated, the surviving widow and children inherit the balance.

Column 8: X indicates that a minimum pension applies to survivor benefits in Pillar 2.
- 4 These countries protect survivors and the elderly by a mix of Pillars 1 and/or 2. In Chile, all contributions go to Pillar 2, but most residents also have been covered by a phased-out basic benefit in Pillar 0 since 2008 and by means-tested social assistance before 2008. In Colombia and Peru, affiliates assign their contributions to either the public or private earnings-related old-age schemes (Pillar 1 v. 2). In Argentina, all contributors are covered by the flat public benefit (Pillar 1a) and, until recently, chose between the public and private earnings-related schemes (Pillar 1b v. 2). In Mexico, upon retirement, grandfathered affiliates can choose between benefits in the new or old systems (Pillar 2 v. 1), while all new workers are in Pillar 2. In Costa Rica and Uruguay, workers can split their contributions between Pillars 1 and 2. These choices also determine which pillars cover survivors.
- 5 Although most of these countries have both Pillars 1 and 2 for old age, survivor benefits are mainly paid in Pillar 1. This may change as rules for payouts develop in the new Pillar 2's. Pillar 0 also provides a minimum income after retirement age in most cases. In 2007 Latvia mandated a lump sum (LS) payment to widows from Pillar 2 but only children get survivor benefits from Pillar 1.
- 6 In Poland, survivor benefits are financed and managed separately from the old-age part of Pillar 1. In Pillar 2, if the worker dies before retirement, the widow receives 50 percent of account balance; the rest can be left to any designated beneficiary. Rules for payouts after retirement are not yet set.
- 7 These countries rely heavily on a flat benefit in Pillar 0, paid to all residents over retirement age and usually to survivors under retirement age who meet specified conditions (caring for dependent child, means-tested). The flat survivor benefit is replaced by the flat old-age benefit at normal pension age. Sometimes this is supplemented by a higher minimum pension in Pillar 0 and by earnings-related benefits in Pillar 1 or 2.
- 8 Canada, Finland, Ireland, the United Kingdom and the United States do not have a mandatory Pillar 2 but do have voluntary occupational plans with large participation and some compulsory components that sometimes provide survivor benefits. In Finland, collective agreements that cover all workers require group life insurance policies that pay lump sums to survivors. In the United Kingdom, workers choose between the state earnings-related old-age pension, their contracted-out employer's pension plan, or their own-personal retirement savings account. The state plan (Pillar 1) includes provisions for survivors. Contracted out and personal plans must include joint pensions for survivors (in DB plans) or joint annuities with 50 percent to survivors (in DC plans). The latter two are included as Pillar 2 in this table. For employer-sponsored plans in the United States to qualify for tax advantages, they must offer the surviving spouse a 50 percent joint annuity (in DB plans) or 100 percent of the account balance (in DC plans), unless the spouse signs a waiver.

- 9 In Denmark, in Pillar 0, the basic old-age benefit is paid to all residents older than 65 and a means-tested supplement is paid to low earners. Survivors younger than 65 receive an income-tested lump sum. In Pillar 1, a flat lump sum is paid to survivors from public ATP scheme and the balance from the public SP scheme (DC) is transferred to deceased's estate. Distribution of the balance from the Pillar 2 account varies.
- 10 In Iceland, the Pillar 0 benefit is paid for only six months (12 with children) before retirement age and the Pillar 2 benefit is mandatory for only two years, but continues if there are children.
- 11 These countries rely mainly on Pillar 1 in their old-age and survivor programs. This is supplemented by a minimum pension or social assistance in Pillar 0 that covers all residents after retirement age. Sometimes Pillar 0 also pays a benefit to survivors under retirement age who meet specified conditions (caring for dependent child, means-tested).
- 12 Ireland pays a flat old-age benefit to contributors and their survivors. A flat old-age benefit is also paid to residents over 66 and survivors under 66 who do not qualify for the contributory pension. It is almost as large as the flat contributory pension but is means-tested.
- 13 In Japan, the basic old-age benefit (flat, depending on years of contributions) is in Pillar 1 because it is only for contributors and their survivors. However, it is almost universal—given contribution requirement for spouses, contribution-splitting arrangements for couples, credit for child care years and an assumed minimum 25-year credit for the deceased.
- 14 In Sweden, the guaranteed minimum income in Pillar 0 applies to all residents over 65 and to survivors under 65 for 12 months, or for longer if they have children under 12. A public earnings-related survivor pension (Pillar 1) is paid to widows under 65 on same terms. Joint annuities on actuarial terms are permitted but not required in Pillar 2a (individual accounts) at retirement. Quasi-mandatory occupational plans in Pillar 2b may provide survivor pensions, both before and after 65. Voluntary contribution-splitting is permitted in Pillar 2.
- 15 In Switzerland, since 1997, contribution-splitting has been required between husband and wife; the credits of each are automatically split between the two members of a couple. Furthermore, pension credits are granted for child care, and married persons who do not work are requested to contribute to the public scheme. So, the minimum pension in Pillar 1 applies to almost all retirees and widows. In addition, supplements based on minimum needs are paid to pensioners and some residents who do not qualify for a contributory pension (Pillar 0). Private employer-sponsored plans are required to provide survivor benefits, but details vary.
- 16 In the Netherlands Pillar 2 arrangements vary by employer. If the pension plan is not fully funded, survivor benefits may only be paid if the deceased died during his active stage, when he was a member of the plan.

Table 5: Who Is Covered and What Percentage of Primary Pension?¹

Country	Widow (ER) ²	Divorced Spouse ³	Unmarried Partner ⁴	Child	Dependent Parents ⁵	Total Limit
Middle East and North Africa—Pillar 1						
Bahrain	37.5 ²	0	0	50 ⁶	12.5	100
Jordan	50 ²	0	0	33	17	100
Morocco	50 ²	0	0	25-50 ⁶	0	75-100
Tunisia	75	Alimony	0	10-30	0	100
Latin America—Pillars 1 and 2						
Argentina (P1, P2)	70	0	5 yr or ch+2yr	20	0	100
Chile (P2)	60	Alimony, ch	Ch.	15	50	100
Colombia (P1, P2)	50	0	Instd of wife	50 ⁶	If no other	100
Costa Rica (P1)	50-70	0	Yes	30	20	100
Mexico (P1, P2)	90 ²	0	5 yr or ch.	20	20	100
Peru (P1, P2)	50 ²	0	0	50 ⁶	If no other	100
Uruguay ⁷ (P1, P2)	66 ²	Alimony	5 yr or civil	0-66	If no other	75
Eastern and Central Europe—Most Survivor Benefits in Pillar 1						
Czech Rep.	Flat+50	0	0	Flat+40	0	No limit
Estonia	33-50 ⁷	If >60yrs	0	33-50 ⁸	If unable to work	100
Hungary	60	Alimony	10 yr or ch.	30	If no other	No limit
Latvia	LS	0	0	50	0	90
Lithuania	Flat (€20)	0	0	50	0	100
Poland	32-85 ⁷	Aimony, split-P2	0	32-85 ⁸	85	95
High Income OECD Countries—Flat Benefit in Pillar 0						
Australia (P0)	No required survivor benefits, but most residents receive flat old-age P0 benefit					
Canada (P0, P1)	Flat+60	Split	Common law	Flat	0	No limit
Denmark (P0, P1)	Flat+LS	Alimony	2 yrs cohab.	LS	0	No limit
Finland (P0, P1)	Flat+17-50	Alimony	Civil union	33	0	100
Iceland (P0, P2)	Flat+50	0	Registered	Flat	0	No limit
Netherlands (P0,P2) ⁹	Flat+?	Alimony	Cohab, ch, dis	Flat	0	No limit
New Zealand (P0)	Flat ²	Children	Civil union	0	0	No limit
Norway (P0, P1)	Flat+55	Alimony, ch	5yr, ch or civil	0	0	No limit
High Income OECD Countries—Most Survivor Benefits in Pillar 1						
Austria	40-60	Alim., split	0	40	0	No limit
Belgium	80	Partial	0	0	0	No limit
France	54	Share	0	0	0	54
Germany	55	Spit,share	Civil union	10	0	100
Ireland	Flat	Split	0	€22	0	No limit
Italy	60	Alimony	0	20	If no other	100
Japan	Flat+75 ²	Split	0	75 if no other recipients		10
Luxembourg	Flat+75	Share	Registered	25	x	100
Portugal	60	Aimony	2 yrs cohab.	20	If no other	110
Spain	52	Alimony	5 yrs cohab.	20	20	100
Sweden	55	Split-P2	Co+ch or civil	30	0	100
Switzerland (P1)	80 ²	Split	Registration	40	0	P1:wid+ch <100 av. earnings
Switzerland (P2)	60 ²	Alimony	Registered	20	0	
United Kingdom ¹⁰	Flat+50	Split	Registered	0	0	No limit
United States	100	100	0	75	82.5	180

Source: Data provided by sources in the country and web sites cited in the references.

Notes for Table 5

- 1 Earnings-related (ER) survivor benefit is from Pillar 1, unless otherwise noted. The reference base is usually the deceased's pension or potential pension. Some high income OECD countries offer a flat old-age residence-based benefit in Pillar 0, in addition to or instead of the earnings-related benefit. The flat benefit is received by widows after retirement age, and on a means-tested basis before retirement age. LS means lump sum.
- 2 Same rules hold for widow and widower, except for countries designated by 2: In Jordan, Bahrain, the CMR system in Morocco, Mexico, Peru and Uruguay widowers receive survivor benefits only if they were dependent on their wives (i.e., disabled). In New Zealand and Switzerland, widowers are only eligible if they are the sole parent of a dependent child. In Japan, widowers are not eligible for the survivor basic benefit and receive the earnings-related benefit only after age 55. Different rules used to apply in other countries, such as the United Kingdom but that is now changing. However, even when rules are the same, the widower is likely to end up ineligible or with a smaller survivor benefit because he has a larger own-income and survivor benefits may be phased out against wages and own-pension or subject to income ceilings.
- 3 "Alimony" means divorcees receive survivor benefits only paid if alimony was required as part of the divorce agreement. "Split" means pension credits, contributions or years are split by voluntary negotiation or by court order upon divorce. Contribution-splitting is permitted on a voluntary basis in Australia, Sweden (only in the individual accounts in Pillar 2), Canada, Austria, Germany, Iceland and the United Kingdom. It is required in Switzerland and in Japan if only one spouse works. In Poland, the account balance from Pillar 2 is split upon divorce, if considered community property. In Germany, pension credits may also be split between spouses at the time of retirement, instead of survivor benefits. "Share" means current and divorced wives share the widow's benefit. "Ch" means the divorced wife or unmarried partner receives the widow's benefit if there were children in the marriage. "Partial" means divorcee receives a partial benefit.
- 4 Countries have tried to devise rules for assessing if the survivor is truly an unmarried partner. In some cases unmarried partners receive the survivor benefit only if disabled (dis), they cohabitated (cohab) a specified period, were registered as partners, were in a civil union or had children (ch).
- 5 Dependent parent is usually defined as old or disabled and therefore unable to work. Sometimes previous co-residence with deceased is required.
- 6 Amount given is divided between the entire group of children (otherwise amount per child is provided).
- 7 Widow receives an extra 9 percent if there are children. Children receive 66% if no surviving spouse; otherwise they receive nothing. For adopted children, adoption must have taken place at least five years prior to the death of the affiliate. Unmarried partners received rights in October 2008.
- 8 In Estonia and Poland, a larger number per child if one survivor; smaller number if more than one child.
- 9 In the Netherlands survivor benefit size in Pillar 2 varies by employer; can be up to 70 percent of primary benefit.
- 10 In the United Kingdom, a widow receives a share of the affiliate's basic benefit plus 50-100 percent of his earnings-related pension, up to a ceiling. Amounts vary depending on age, year and other income; the figure becomes 50 percent in 2010. Benefits to a civil partner and widower are being equalized with widows. Pension-splitting is possible in the case of divorce. No survivor's benefit is provided to children, parents, non-registered partners, divorcees if not shared voluntarily or by court order.

Table 6: Indexation of Survivors Benefits

Country	None, Ad Hoc	Price	Wage	Mixed P&W (%)	Min W	Comment
Middle East and North Africa—Pillar 1						
Bahrain	x					
Jordan	x					
Morocco	x		x			W ind for public sector
Tunisia					x	
Latin America—Pillar 1 and 2						
Argentina	x					
Chile		x				
Colombia		x				
Costa Rica	x					Usually price index
Mexico		x				
Peru	x					
Uruguay		x	x			Varies with fund
Eastern and Central Europe—Most Survivor Benefits in Pillar 1						
Czech Rep.				67P, 33W		
Estonia				50P, 50 contrib.		
Hungary				50P, 50W		
Latvia				75P, 25W		
Lithuania		x (2009)				
Poland				80P, 20W		
High Income OECD Countries—With Flat Pillar 0						
Australia			x			
Canada		x				
Denmark			Pillar 0			
Finland		Pillar 0		P1-20P, 80W		
Iceland		Pillar 2	Pillar 0			
Netherlands			Pillar 2		Pillar 0	
New Zealand			x			
Norway			x			Discretionary
High Income OECD Countries—Most Survivor Benefits in Pillar 1						
Austria	x					Price index for low pen.
Belgium		x				
France		x				Wage index for min pen. + Sustainability factor
Germany			x			
Ireland			x			
Italy		Part				Full P index for low pen.
Japan		x				
Luxembourg				x		Discretionary proportions
Portugal		x				
Spain		x				
Sweden		x				If econ. growth permits
Switzerland				50P, 50W		
United Kingdom		x				Shift to W ind of basic benefit
United States		x				

Source: Author's calculations; Data provided by sources in the country and web sites cited in the references.

Table 7: Conditions for Starting and Extending Widow's Benefit—Age and Children¹

Country	Pillars 1 (And Pillar 2 If Noted)			Pillar 0	
	Years of Survivor Benefit If Young, No Disabilities, No Children	Benefits Are Extended If:			Widow Receives Benefit When <RA if:
>Age at Death		Or Disabled	Or Has Children		
Middle East And North Africa—Pillar 1					
Bahrain	Indefinitely				
Jordan	Indefinitely				
Morocco	Indefinitely				
Tunisia	Indefinitely				
Latin America—Pillars 1 and 2²					
Argentina	Indefinitely				
Chile	Indefinitely				
Colombia	20	30		x	
Costa Rica	Indefinitely				
Mexico	Indefinitely				
Peru	Indefinitely				
Uruguay ³	2	35			
Eastern And Central Europe—Most Survivor Benefits in Pillar 1					
Czech Rep.	1	55	x	x	
Estonia ⁴	Defer to 63		x	x	Ch, disabled, MT
Hungary	1	62	x	x	
Latvia	2 months	No extensions			
Lithuania	Defer to RA		x		
Poland	1	50	x	x	
High Income OECD Countries—With Flat Pillar 0 (Conditions Given for Pillar 1)					
Australia	No Pillar 1; No survivor benefit required in Pillars 0 or 2				
Canada	Defer to 65	35	x	x	>60,MT
Denmark	LS	No ongoing benefit in Pillar 1			LS, MT
Finland	0	50	x	x	6 m, > if ch, MT
Iceland (for P2; no P1) ⁵	2		x	x	6 m, 12 m if ch, MT
Netherlands	No Pillar 1; Pillar 2 varies by employer				Ch, disabled, MT
New Zealand	No Pillar 1 or 2				>50 or ch, MT
Norway	Indefinitely				Ch or marr> 5yr, part MT
High Income OECD Countries— Most Survivor Benefits in Pillar 1					
Austria	2.5	35	x	x	
Belgium	1	45	x	x	
France ⁶	2	51	x		
Germany	2	45	x	x	
Ireland ⁷	Indefinitely				MT
Italy	Indefinitely				
Japan ⁸	5	30		x	
Luxembourg ⁹	Indefinitely				
Portugal ¹⁰	5	30	x	x	
Spain ⁹	2			x	
Sweden ¹¹	1			x	12 m, > if ch, MT
Switzerland (P1,2)	0	45		x	MT
United Kingdom (P1) ¹²	Defer to 60	60		x	
United States	Defer to 60	60	x	x	

Source: Data provided by sources in the country and web sites cited in the references.

Notes for Table 7

- 1 Columns 1-4 pertain to Pillar 1, unless Pillar 2 is indicated.

Column 1 indicates the number of years a widow receives the benefit after the death of a spouse, unless at least one of the conditions in columns 2-4 is satisfied. 'Defer to RA' means the benefit is postponed to retirement age (unless one of the conditions is satisfied), at which point it is paid indefinitely. 'Indef.' means that the benefit continues without satisfying any conditions in columns 2-4.

Column 2-4 indicate conditions that must be met for a widow to receive the survivor benefit for a longer period: She must be over a specified age when her spouse dies, be disabled or has children (usually these must be dependent children). The benefit ends when the condition is no longer met.

Column 5 pertains to Pillar 0, based on age and residence rather than earnings or contributions. It indicates conditions for a widow to receive the Pillar 0 benefit before retirement age (RA). Usually this is means-tested (MT) and requires dependent children (ch) or disability. LS means lump sum payment rather than periodic payment. After retirement age, a widow receives the old-age benefit rather than the survivor benefit from Pillar 0, and this does not require special conditions.

Absence of entry means not relevant.
- 2 Same conditions apply to Pillars 1 and 2, with the exceptions of Costa Rica where survivor benefits are all in Pillar 1 and Chile where they are all in Pillar 2. No Pillar 0 for survivors in these countries, except for the old-age benefit in Chile and Uruguay after retirement age.
- 3 Two years if widow is less than 30, five years if less than 40. If the widow turns 40 during the temporary period, the survivor benefit continues unless she works or has her own-pension. Therefore, if she is older than 35 when her husband dies, the pension eventually becomes indefinite.
- 4 In Estonia, a dependent child must be less than three years old. If widow is not disabled or caring for a dependent child, the survivor benefit from Pillar 1 is postponed to retirement age (63). If the deceased did not meet the conditions for Pillar 1 survivor's insurance, the widow receives the Pillar 0 minimum guaranteed income on an income-tested basis.
- 5 In Iceland, flat survivor benefits are paid from Pillar 0 before retirement age (67) for 6 months, or 12 months if there is a dependent child. Beyond that, the widow receives the old-age benefit from Pillar 0 after retirement age. Survivor benefits are paid from Pillar 2 for only two years unless there is a dependent child or the widow is disabled. Iceland does not have a Pillar 1.
- 6 In France, the age condition will be abolished in 2011. Until then, a small widower's allowance is paid for 24 months if widow is under 51 and a larger pension is paid if over 51 or disabled. Survivor benefit is paid in occupational plans only if widow is over 55 or 60,, unless there are dependent children. There are different rules for disabled widows. The minimum income-tested old-age pension in Pillar 0 applies after age 65.
- 7 Ireland does not require dependent children for access to survivor benefits. However, it pays a larger flat benefit in Pillar 1 if there are dependent children or if over age 80. The amount from the means-tested flat pension in Pillar 0 is phased out against other income.
- 8 In Japan, a widow must be caring for a child under 18 to receive the basic (flat) benefit before retirement age. She receives the earnings-related survivor benefit even if there is no dependent child, if she over 30. Prior to the 2007 reform, widows under age 30 with no children received the permanent earnings-related survivor pension; after the reform, they received it for only five years.
- 9 Luxemburg does not have an age requirement but does have duration of marriage and contribution requirements, which are reduced if there is a common child. The marriage must have started before the deceased became a pensioner and lasted more than one year, unless there are children. Spain also has a duration of marriage rather than an age requirement in Pillar 1—the marriage must have lasted at least one year or there are children—otherwise the widow's benefit lasts only two years.
- 10 In Portugal, the benefit lasts five years if the widow is younger than 35 or has children. If the widow turns 35 during the temporary period, the survivor benefit continues unless she remarries. Therefore, if she is over 30 when her husband dies, the pension eventually becomes indefinite.
- 11 In Sweden, the same conditions apply to the minimum income guarantee for survivors in Pillar 0 and the earnings-related benefit in Pillar 1; they are paid to widows for 12 months, but if there are dependent children under age 12, they continue until age 65 when the old-age benefit takes over. Conditions for Pillar 2

are not shown here. A joint annuity after retirement is one option for Pillar 2a (individual accounts) but is not required. The survivor benefit from Pillar 2b (occupational plans) may be paid before and after retirement age, but terms vary by employer.

- 12 In the United Kingdom, a widow receives the basic benefit and the state earnings-related (ER) survivor pension in Pillar 1 for an indefinite period if she is over the pension age when her spouse dies, and before the pension age while she has dependent children. She receives the basic benefit for 12 months if she was over 45 when her spouse died and had no dependent children (bereavement allowance). She also receives the ER benefit upon reaching pension age if she was over 45 when her spouse died or when her youngest child ceased to be dependent. (Prior to the 2001 reform, widows over 45 received the basic benefit and the ER pension, lasting until remarriage, even if they had no dependent children.) Pillar 0 is minimum guaranteed income after pension age. In Pillar 2 (contracted-out employer-sponsored schemes or personal retirement saving accounts), the DB pension must be joint and the DC accumulation must be used to purchase a joint annuity, both with 50% to the survivor. These pensions begin upon death of affiliate, regardless of age of spouse or existence of children.

Table 8: Penalties for Remarriage and Work¹

Country	Flat Benefit In Pillar 0—Stops If Income> Threshold ²	Survivor Benefit In Pillar 1 or 2—Stops If			
		Remarries	Has Wage	Has Own-ER Pension	No Work Penalty
Middle East and North Africa—Most Survivor Benefits in Pillar 1					
Bahrain		x			NA
Jordan		x			NA
Morocco		x			NA
Tunisia		x			NA
Latin America—Pillars 1 and 2³					
Argentina					x
Chile					x
Colombia			NA	NA	NA
Costa Rica		x	NA	NA	NA
Mexico		x			x
Peru		x	Part		
Uruguay			Part	Part	
Eastern and Central Europe—Most Survivor Benefits in Pillar 1					
Czech Rep.		x		Part	
Estonia		x	Part	x	
Hungary		x if <62		Part ⁴	
Latvia		No widow's pension beyond 2 months & LS			x
Lithuania		x			x
Poland			Part	x	
High Income OECD Countries—With Flat Pillar 0⁵					
Australia	x	No Pillar 1, no survivor benefits in P2			x
Canada	x			Part	
Denmark	x (wage)	LS only; mostly no restrictions			x
Finland	x (pen)	x if <50		Part	
Iceland (P2)	x	x			x
Netherlands	x (wage) if <RA	No Pillar 1; Pillar 2 varies			NA
New Zealand	x if <RA	No Pillar 1, no survivor benefits in P2			x
Norway ⁶	x	x	Part	Part	
High Income OECD Countries— Most Survivor Benefits in Pillar 1					
Austria		x	Part ⁷	Part ⁷	
Belgium		x	Part	Part	
France		x if <55	Part	Part	
Germany		x	Part	Part	
Ireland		x		x	
Italy		x	Part	Part	
Japan		x		Part	
Luxembourg		x	Part	Part	
Portugal		x			x
Spain		x if <61		Part	
Sweden		x		Stops at RA	x
Switzerland (P1,2)		x		x ⁸	
United Kingdom		x if <60		Part	
United States		x if <60	if <66	x	

Source: Data provided by sources in the country and web sites cited in the references.

Notes for Table 8

- 1 Column 1 applies to the flat old-age benefit in Pillar 0 after retirement age (RA) and the flat survivor benefit before RA. Many other countries have a minimum pension or social assistance in Pillar 0; by definition this stops if the income > threshold, at low end (see Table 4). In this table we do not include this as a work penalty; we show survivors who are above the minimum.
Columns 2-5 apply to the survivor benefit in Pillars 1 or 2. X indicates that the benefit is totally discontinued if widow remarries, works or has her own-pension. In Column 4, X indicates that person must choose between a survivor pension and own-earnings-related pension, as in Estonia, Poland, Ireland, Switzerland and the United States. In Columns 3 and 4, 'part' indicates that the survivor benefit is reduced by wage or pension income. This may be achieved by setting a threshold to an allowable wage or own-pension, setting a ceiling on total pensions or income from all sources, granting only a fraction of the survivor benefit if other income is received, or phasing out the survivor benefit against other income. Column 5 indicates no penalty (in terms of reduced survivor benefit) for widows who work presently or have worked in the past. NA means information not available. Absence of entry in columns 2-4 means penalty does not apply.
- 2 This includes all countries (mainly high income OECD countries) with a residence-based flat benefit after retirement age (RA) in Pillar 0. Some of these pay Pillar 0 benefits to survivors before RA. The latter is almost always means-tested and stops upon remarriage. The former is also usually phased out against other wage and pension income (except for the Netherlands and New Zealand), but often at a slower rate or higher threshold and does not stop upon remarriage. In Denmark and the Netherlands, the offset is against wage income only. In Finland, the offset is against other pension income only.
Most other European countries have a minimum pension, which is offset against own-pension.
- 3 For Latin America, it applies both to Pillars 1 and 2, except for Chile, which does not have Pillar 1, and Costa Rica where survivor benefits are not required in Pillar 2.
- 4 In Hungary, if a widow inherits money from her deceased husband's retirement savings account and puts it into her own-private savings account (Pillar 2), there is no offset. If she credits it to her public account to increase her public benefit (Pillar 1), there is a 50% offset.
- 5 See note 2 on the flat old-age benefit in Pillar 0 in col. 1. Columns 2-4 apply to Pillars 1 or 2 for countries that have them. Column 5 indicates countries that have no work penalty from Pillars 1 or 2, mainly because they do not mandate survivor benefits in Pillars 1 or 2.
- 6 In Norway, persons under 55 are expected to have their own-income, against which the survivor's pension is reduced. If the survivor has no earned income, the pension is reduced anyway based on a notional wage, unless reasonable cause can be shown. Persons over 67 can choose between their own-Pillar 1 pension versus 55% of their own-Pillar 1 pension plus the full survivor Pillar 1 pension. Unless their own-pension far exceeds their spouse's pension, it usually makes sense for them to take the latter.
- 7 In Austria, the size of the survivor benefit depends on the relationship between the widow's and husband's wages during their active lives. It does not depend on current wages. If she has a high pension, this probably means that she also had higher past wages, which reduces the survivor benefit.
- 8 In Switzerland, for Pillar 1, the survivor must choose between own-pension and the survivor pension. Pillar 0 benefits are means-tested against all income, including wages and pensions. Pillar 2 benefits are not offset against wages or own-pension.

Table 9: List of Recent Changes in Treatment of Survivor Benefits

Reductions

In the 1990s, Australia closed the special widow's pension to new claimants.

It was also closed in Latvia.

It was converted to a lump sum in Denmark.

In Lithuania, the earnings-related survivor pension now applies only to children; widows receive a small flat benefit

In Hungary the minimum pension now applies only to children.

In the United Kingdom, prior to the 2001 reform, all widows received a flat survivor benefit that lasted until retirement age, regardless of age or children. Since 2001, widows get this benefit only if they have children or are over 45, and the duration of the benefit is limited to 12 months for widows without children. For widows with children, the benefits can start earlier, last longer and be larger (widowed mother's allowance).

In Sweden, the flat benefit was replaced by the minimum income guarantee, and the survivor benefit is paid for a shorter period for widows below the retirement age.

In Germany, the widow's benefit rate was reduced from 60% to 55% and indexation was adjusted downward by a sustainability factor (dependency ratio, including longevity).

In Japan, prior to 2007 reform, widows younger than 30 with no children received a permanent survivor pension; as of 2007, their benefits were limited to five years.

Contribution Splitting

Contribution-splitting between spouses has been mandatory in Switzerland since 1997.

In Germany, pension credits acquired during marriage are split, at the time of divorce, and voluntary splitting is permitted at retirement (instead of survivor benefits).

Austria allows pension splitting for years of child-care, up to four years per child.

In Canada and the United Kingdom, pension rights can be shared in divorce, by voluntary negotiation.

Iceland permits pension entitlement-sharing if both parties agree.

In Japan, since 2008, all contribution credits will be split upon divorce if one spouse is employed and the other is not. If both partners have worked, the split is voluntary.

In Sweden and Australia, contributions to the funded DC plan can be shared between spouses.

Equal Treatment for Widowers, Civil Partners and Divorcees

In the United Kingdom, basic plus earnings-related survivor benefits for widowers and civil partners are being equalized with those for widows (by 2010).

In 2008, Spain covered non-married partners if they cohabited more than five years.

In Uruguay in 2008, unmarried partners were granted the right to survivor benefits.

In Japan, prior to 1996 widowers did not qualify for the DB earnings-related survivor pension. Now they qualify if they are over age 55 when their wife dies.

In Chile and Ireland, divorcees given equal rights after divorce became legal.

Preparation for Work

In Norway working-age widows are expected to work and must justify not working or their survivor benefit is cut.

In New Zealand young widows with children may be given a widow's benefit but must meet with a case manager to develop an employment plan.

Source: Data provided by sources in the country and web sites cited in the references.

Table 10: Public Plus Mandatory Private Expenditures on Survivor Benefits As Percentage of GDP and Old-Age Expenditures (2003)

Country	Expenditures as Percentage of GDP			Survivor Expenditures / Old-Age Expenditures (as %)
	Survivors	Disability	Old-Age	
MENA—Pillar 1 Only				
Bahrain				16 (2005)
Jordan	.1	.03	.2	38 (1995)
Morocco	.1	.1	.4	27 (2005)
Tunisia				
Latin America—Pillars 1 and 2				
Argentina	1.3	--	2.9	45
Chile	1.9	.6	3.2	30
Colombia	.2	.1	.7	31 (1995)
Costa Rica	.3	.5	.7	46
Mexico	.3	.1	1.0	30
Peru				21 (2007)
Uruguay				31
Eastern and Central Europe—Most Survivor Benefits in Pillar 1				
Czech Rep.	.2	2.8	7.6*	2
Estonia	.1	1.2	5.5	2
Hungary	1.1	2.7	6.9	16
Latvia	.3	1.2	6.5	5
Lithuania	.3	1.3	6.0	5
Poland	1.0	3.4	11.4	9
High Income OECD Countries—Large Role for Pillar 0				
Australia	.2	2.8	3.7	6
Canada	.4	1.0	4.0	11
Denmark	.01	3.2	6.3	.2
Finland ¹	.9	3.0	7.6	13
Iceland ¹	.7	3.9	4.8	14
Netherlands	.4	4.8	7.2	6
New Zealand	.1	2.9	4.4	2
Norway	.3	6.1	5.0	6
High Income OECD Countries—Most Survivor Benefits in Pillar 1				
Austria	.4	3.2	12.4	3
Belgium	2.1	1.9	7.0	30
France	1.9	1.9	10.3	19
Germany	.4	2.5	11.1	4
Ireland	.8	1.4	2.5	32
Italy	2.5	2.2	12.5	20
Japan	1.2	.7	7.6	16
Luxembourg	2.6	3.2	6.1	42
Portugal	1.6	2.9	8.6	19
Spain	.6	2.2	7.6	7
Sweden	.7	5.1	8.2	8
Switzerland ¹	1.5	3.9	11.0	14
United Kingdom	.2	2.1	5.8	4
United States	.8	1.5	5.4	15

Sources: Data for North Africa and Latin America (except Mexico and Costa Rica) are from ILO social security database. Other data are from OECD database on social expenditures-cash benefits, and the web sites noted below. See Appendix on data problems.

Notes for Table 10

- 1 Indicates countries where the OECD database shows large mandatory private expenditures on survivor benefits (Pillar 2). For Finland, Iceland and Switzerland, public expenditures alone on survivor benefits would be .6%, .04% and .4% of GDP. Public survivor expenditures/old-age expenditures would be 13%, 2% and 6%, respectively.

Web Sites for Table 10

OECD social expenditure database, SOCX (www.oecd.org/els/social/expenditure) (http://stats.oecd.org/brandedviewpilot/default.aspx?datasetcode=socx_det).

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Chile: Author's calculations from (http://www.spensiones.cl/safpstats/stats/.sc.php?_cid=45 and http://www.inp.cl/portal/Documentos/Anuario_2007/pdfs/c098.pdf).

Colombia: 1995 data from ILO social security database and (www.superfinanciera.gov.co).

Costa Rica: Social Security agency report, Cuadro 8 and 9 (<http://www.ccss.sa.cr/html/transparencia/estadisticas/actuarial/estadist/html/Anua0200.htm>).

Peru: Peruvian social security agency, (<http://www.onp.gob.pe/inicio.do>).

Uruguay: Statistics from the Government of Uruguay.

Morocco: Data provided by country contact.

Estonia, Latvia and Lithuania: ESSPROS (Eurostat) database. Also websites of statistics of social insurance agencies in each country.

Numbers given by other sources are not completely compatible with OECD numbers.

**Table 11: Sensitivity of EPV to Benefit Rate, Eligibility Age,
Age of Valuation and Husband/Wife Age Differential:
Simulated EPV per \$100 of Primary Pension¹**

A. Valued at Age 35 for Husband, 30 for Wife						
Discount Rate	EPV– Affiliate's Own- Pension	EPV–Widow's Pension				EPV of Survivor Benefit to Widowers (100% Rate)
		Immediate Payment, Benefit Rate=100%	EPV if Payment is Deferred to Age 60	EPV of Payments Before 60 for Immediate Benefit	Benefit Rate Is Cut to 50%	
3%	418	376	284	92	188	113
4%	289	260	185	75	130	80
Wage-Indexed	418	376	284	92	188	113
B. Valued When Husband Is 65, if Alive						
Mortality Rate and Age Differential Same as Panel A			Mortality Rate and Age Disparity Greater than Panel A			
	Affiliate's Own- Pension	Widow's Benefit: Age 60	Affiliate's Own- Pension	Widow 1: Age 45	Widow 2: Age 30	
3%	1258	534	1066	1002	1430	

Source: Simulations by author.

Notes for Table 11

1 **In Panel A:** Affiliate (husband) is assumed to be five years older than wife. The EPV is measured as of date when husband is 35, wife is 30. U.S. period mortality tables for 1998 were used. These give higher mortality rates than most other OECD countries, but lower than most middle and high income countries (see Panel B for higher mortality case.)

Row 3 for wage indexation assumes 4% discount rate, 1% wage growth, so benefit grows at 1% per year and is discounted at 4% to get EPV.

Col. 1: EPV per \$100 of male affiliate's own-pension (primary pension), which starts at age 65, as valued at age 35, for husbands alive at 35.

Col. 2-4: EPV to widow (per \$100 of primary pension), valued when she is 30.

Col. 2: EPV if survivor benefit starts immediately when husband dies and it is 100% of primary pension.

Col. 3: EPV if survivor benefit starts after widow is 60, even if husband has died earlier.

Col. 4: EPV of payments before widow is 60, in case of immediate benefit.

Col. 5: EPV if widow receives only 50% of primary benefit.

Col. 6: EPV per \$100 of primary pension when husband is 35 and wife is 30, for survivor benefit to widower, if wife is affiliate.

In Panel B:

Col. 1: EPV per \$100 of primary pension, as valued at age 65, for husbands alive at 65.

Col. 2: EPV per \$100 of primary pension for widows, valued when they are 60 and alive.

Col. 3-5: EPV per \$100 of affiliate's pension and EPV to widow, for cases where husband is 20 years older than wife 1 and 35 years older than wife 2. EPV is valued when he is 65, at the start of his pension, for husbands who are alive at that time. Wives are 45 and 30, respectively, and alive at that time. Widow's benefit is 100% of primary pension. Mortality rates are higher than in top panel. To reflect this, a five-year setback is applied to 1998 U.S. mortality tables (that is, a 65 year old has the same mortality rate as a 70 year old in Panel A). This produces a three to four year reduction in average life expectancy.

For case where EPV is measured when husband is 35 and wife is 30:

$$EPV(\text{affiliate}) = \sum_{65} PRh / (1+r)^{a-35}$$

$$EPV(\text{widow}) = \sum_{30} PRhd * PRwl / (1+r)^{a-30} \quad \text{where:}$$

PRhl = probability that husband will be alive at each age 65-100

PRhd = probability that husband will be dead at each age for widow, 30-95

PRwl = probability that widow will be alive at each age, 30-95.

Table 12: Household Pensions After/Before Death for Widows With and Without Market Work from Pillars 0+1+2¹ (in percentage points)

Country	Widow-No Market Work (%)	Widows with Market Work (%) (Based on Survivor+Own-Pensions)	
	HH Pen. After/Before ²	HH Pen. After/Before ³	Extra Benefit from Work as % of Own-Pension in P1 or P2 ⁴
Middle East and North Africa			
Bahrain	38	69	NA
Jordan	50	75	NA
Morocco	50	75	NA
Tunisia	75	88	NA
Latin America			
Argentina	70	85	100
Chile ⁹	60	80	100
Colombia	50	NA	NA
Costa Rica	50-70	NA	NA
Mexico	90	95	100
Peru	50	NA	NA
Uruguay	66	50	34
Eastern and Central Europe			
Czech Rep.	75	63	50
Estonia	50	50	50
Hungary	60	65	70
Latvia	0	50	100
Lithuania	€20/husband's pen.	€20+50	100
Poland	85	50	15
High Income OECD Countries—With Flat Benefit in Pillar 0⁵			
Australia	40	55	100
Canada	53	50-65	40-100
Denmark	33	50	100
Finland	55	54	50
Iceland	33	50	100
Netherlands	49	62	100
New Zealand	66	66	100
Norway	57	57	55
High Income OECD Countries—Most Survivor Benefits in Pillar 1			
Austria	60	70	80
Belgium	80	50	20
France ⁶	54	50-77	46-100
Germany ⁶	55	50-77	45-100
Ireland	52	52	0
Italy ⁶	60	65-80	70-100
Japan	58	50	25
Luxembourg ⁶	87	50-69	13-100
Portugal	60	80	100
Spain ⁶	52	50-76	48-100
Sweden	0	50	100
Switzerland (P1, 2) ⁷	70	65	60
United Kingdom ⁶	75	50-75	25-50
United States ⁸	67	50	0

Source: Data provided by country and web sites cited in references.

Notes for Table 12

- 1 P0, P1 and P2 mean Pillars 0, 1 and 2, respectively. In some countries flat benefit for individuals is more than half couple's flat to take into account household economies of scale. This increases the after/before ratio. Where the pension has both a flat and an earnings-related component, we assume that the individual's earnings-related pension is half of a couple's flat pension. For cases where the widow has worked, her own-pension from Pillar 1 or 2 is assumed to be same as the deceased's own-pension. We assume that benefits from Pillars 1 or 2 exceed the minimum pension so the minimum top-up and phase-out do not apply. Lump sums are not shown.
- 2 Household pensions after/before death for non-working widow = (widow's benefit from P0 + survivor benefits from P1+P2) / (couple's benefits from P0 + husband's pensions from P1+P2).
- 3 Household pensions after/before death for widow who has worked = (widow's benefit from P0 + survivor benefits + own-pension from P1+P2) / (couple's benefit from P0 + own-pensions of H+W from Pillars 1+2). For MENA, in column 2 we assume that survivor benefit is not decreased when widow works, although we do not have full information on rules.
- 4 Incremental benefit due to work = [(own-pension from P1+P2 + widow's benefit from P0 + survivor benefit to widow who worked)-(widow's benefit from P0+survivor benefit to widow who did not work)]. This is shown as a percent of own-pension from P1+P2. Also see Table 8, column 5.
- 5 All residents, including widows, receive the flat old-age benefit in Pillar 0. In most cases (except for the Netherlands and New Zealand), the flat benefit is phased out or clawed back as a function of other household income, after a threshold. These numbers assume that household income is below the threshold before and after the affiliate's death so there is no phase-out of the flat benefit. If household income is above the threshold, the flat benefit becomes smaller and eventually disappears. Often, household income is above the threshold before the death of the major earner, and below the threshold afterwards; then the ratio of benefits after/before death will be higher because the flat benefit will increase after death. "Own-pension" refers to mandatory old-age benefits from Pillars 1 (Canada, Finland, Denmark, Norway) or 2 (Australia, Denmark, Iceland, Netherlands, Norway since 2006). In the Netherlands, survivor benefits are quasi-mandatory in P2 but amount and terms vary by employer. Sometimes they are paid only if the affiliate dies during the working stage. In these calculations we assume no offset with individual's own pension. In Australia, they are discretionary. In Norway, Pillar 2 is new, small and is not required to provide survivor benefits. In Denmark, periodic payments for survivors are not required in Pillars 1 or 2. In New Zealand, a small quasi-mandatory Pillar 2 (the Kiwi-saver) was recently added for old age but there are no arrangements for survivors. In Iceland, the survivor benefit from Pillar 2 stops after two years. In this table we do not include Pillar 1 or 2 survivor benefits unless they are mandatory, the amount is specified, and they continue for an extended period.
- 6 These countries phase out the survivor benefit if the widow's own-pension + other income > threshold. The threshold varies across countries but it is usually between €1,000-2,000 per month (less than half the average wage). Combined pensions will exceed this threshold if the widow had high wages and/or worked a full career. The smaller number gives the ratio if the survivor benefit is fully phased out, and the larger number gives ratio if the widow is below the threshold and there is no phase-out.
- 7 In Switzerland, Pillar 2 benefit is reduced if the total survivor pension is >90% of affiliate's pension.
- 8 In the United States, the non-working widow receives a spousal benefit of 50% of the primary benefit while spouse is still alive, replaced by 100% as survivor benefit after his death, so household after/before ratio = $100/(100+50) = 67\%$. If the widow worked and her own-pension is the same as her husband's, she must choose between the two so she gets the same benefit after he dies as she would if she did not work.
- 9 In Chile, these numbers apply to the pre-2008 system. After 2008 the extra benefit from work would be less than 100% for women who were eligible for part of the basic benefit and the after/before ratios would depend on the size of the basic benefit received by husband and wife.

Table 13: Family Co-Insurance by Contribution-Sharing versus Joint Pensions

	Both Alive			Spouse 1 Dies	Spouse 2 Dies	Needed To Maintain Standard of Living
	Spouse 1	Spouse 2	HH	Spouse 2 & HH	Spouse 1 & HH	
	Unequal Own-Pensions					
No Co-Insurance	100	50	150	50	100	105
Joint Pension	80	40	120	40+48=88	80+24=104	84
Contribution Sharing	75	75	150	75	75	105
Joint Pension + Contribution Sharing	60	60	120	60+36=96	60+36=96	84
	Equal Own-Pensions					
No Co-Insurance	75	75	150	75	75	105
Joint Pension	60	60	120	60+36=96	60+36=96	84
Contribution Sharing	75	75	150	75	75	105
Joint Pension + Contribution Sharing	60	60	120	60+36=96	60+36=96	84

Source: Calculations by author.

Notes: Assumptions: For joint pension, surviving spouse receives 60% of primary pension. Primary pension is 20% lower than it would be otherwise, to finance benefit for survivor. For simplicity, we assume the 20% cost is the same for husband and wife, although in reality it will be higher for the husband because of his shorter life expectancy, unless unisex tables are used and wages are equal. Based on equivalence scales, we assume that a single person living alone requires 70% of the income required by a couple, to maintain the same living standard.

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Summary Findings

This paper provides a framework for analyzing the efficiency and equity of survivor benefit programs. These programs were originally designed to support families when the main wage-earner died, in an era where women rarely worked, fertility rates were high, and widows were unable to support themselves and their children. Yet, voluntary saving and insurance were often insufficient due to myopia. Mandatory survivor benefits helped to achieve lifetime consumption smoothing for the family and to prevent poverty among elderly widows—the group where old age poverty is concentrated. The question is—are these programs still needed in an era when most women work and fertility rates have fallen and, if so, how should they be designed?

We argue that, even in a world of perfect gender equality, mandatory family co-insurance may still be justified because couples are unlikely to plan adequately for household economies of scale. This leads the cost of living of a widow(er) to be much more than half that of a couple. In addition, some disparity in work and wage patterns of men and women remains in every country. While such programs may benefit both spouses, women are the greatest recipients because they outlive their husbands.

However, as currently designed, many survivor benefit programs entail work disincentives and perverse redistributions—from women who work in the market to those who do not, from singles and dual career couples to single-earner couples and sometimes from low- to high-earning families. These cross-subsidies penalize women who work in the market and therefore may discourage such work, decrease their income and increase their old-age poverty rates. The insurance goal can be achieved without these negative incentives and redistributions by internalizing the cost within the family rather than passing it on to the common pool and by allowing widow(ers) to keep their own pensions in addition to the survivor benefits.

HUMAN DEVELOPMENT NETWORK

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