Long-Term Care in Latin America and the Caribbean? Theory and Policy Considerations

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ABSTRACT

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This paper discusses theoretical and practical issues related to long-term care (LTC) services in Latin America. Demand for these services will rise as the region undergoes a swift demographic transition from its currently young population to a rapidly aging one, especially since the region's aging cohorts are more prone to experience a decline in their functional and physical abilities than elderly people elsewhere in the world. We argue that private insurance markets are ill-equipped to provide coverage to meet the need for LTC, while the amount of personal savings required to afford self-insurance is prohibitively high. We study how developed economies have dealt with the issue of LTC and pay special attention to the most salient features of their LTC programs. We then direct the discussion to Latin America, where LTC may not be an immediate priority, but governments are likely to encourage the development of LTC programs as demand for them steadily grows. In particular, policymakers are probably going to focus initially on LTC programs for the poor and the vulnerable, for whom LTC affordability is a greater problem. We therefore study how basic elements of policy design affect cost-effectiveness of LTC programs by means of a formal model. Our study shows that pro-poor programs are more cost effective when people have the option to receive cash subsidies, and the availability of in-kind and in-cash choices reduces program costs overall. We argue that our findings are natural starting points to start thinking about LTC program development in the region.

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1. Introduction

Worldwide, the process of population aging has increased the need for long-term care (LTC) services to assist the elderly. According to the US Department of Health and Human Services, "*long-term care is a range of services and supports you may need to meet your personal care needs. Most long-term care is not medical care, but rather assistance with the basic personal tasks of everyday life, sometimes called Activities of Daily Living (ADLs).*"

Demographic changes in developed countries within the last century have put LTC at the center of crucial debates, such as those on fiscal sustainability, public health, and the architecture of social safety nets. LTC may represent a sizeable burden to an economy, as it is on average 1.7 percent of GDP in terms of public expenditures in 11 Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2015).

There are two fundamental reasons why LTC will become a more pressing issue in Latin America within the following decades. First, although its population is younger today than the world average, Latin America is aging at a very fast rate. Second, there is a body of evidence that shows that its future elderly populations will be prone to dependency situations that require LTC. Life expectancy in Latin America has increased without its population experiencing the same improvements in living standards and nutrition as people in advanced economies (Palloni et al., 2006). As a result, the region's population is more prone to obesity, hypertension, arthritis, and high cholesterol, which increases the probability of early aging and the need for care (Al Snih et al., 2010; Medici, 2011; Matus-López, 2015). Therefore, the natural question is how Latin America can ready itself for the advent of these changes, and a natural starting point is to ask how far private long-term care insurance (LTCI) can go in covering the need for LTC. Unfortunately, a review of the literature shows that the prospects for LTCI are grim, since several sources of market failure constrain the market.[1]

Advanced economies have responded to their own aging societies by designing social insurance schemes, which we study to see what elements are relevant for the design of LTC programs in Latin America. Overall, the programs have a wide degree of heterogeneity, and while the experience of high income countries provides valuable

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[1] In particular, as will be discussed below, uncertainty about future costs and duration of LTC needs have precluded the development of large-scale private insurance markets.

insights on possible alternatives, adaption of such programs in Latin America is still not straightforward. In particular, fiscal constraints, the limited supply of LTC services by public health service providers, and the lack of regulated private LTC markets are of particular concern. But absent any insurance scheme, families in Latin America would have to bear the costs of LTC by themselves. This is something poor, vulnerable, and most middle-income families cannot afford, so some type of policy response will likely develop as the region's population ages.

These affordability concerns motivated us to develop a formal model to study the cost-effectiveness of LTC programs, and, albeit simple, our model gives valuable insights. First, we find that poor families have a preference for cash subsidies, so pro-poor programs are more effective when they allow for cash transfers. Second, we show that when people differ in their valuation of LTC services, allowing people the choice between in-kind or in-cash subsidies reduces the total cost of the program. We argue that these results are robust to several settings and are therefore a valuable starting point in thinking about the design of LTC programs.

The remainder of this paper is structured as follows. The next section is devoted to a brief explanation of what we understand by LTC and the technological aspects of its provision. In section 3, the discussion centers on why we believe the need for LTC in Latin America will increase sharply in the coming decades. Section 4 discusses why a solely private LTCI market generally leaves most of the population without assistance, and section 5 examines how government programs in advanced economies have filled the gap left by private markets. We then direct the discussion to the suitability of existing LTC program structures for the Latin American context in section 6. Section 7 features our model on the effect of in-cash and in-kind subsidies and our corresponding assessment on cost-effectiveness of the programs. We close the paper with several concluding remarks in section 8.

2. What Constitutes LTC?

The working definition of LTC given in the introduction points to the fact that a primary component of LTC is assistance with basic daily activities. Most LTC-related activities do not require care providers to have acquired highly specialized skills, which implies that the pool of potential care providers is rather large.

Family members or friends are the first and main source for LTC provision. According to the Family Caregiver Alliance (2015), the number of family or informal caregivers

providing care to someone who is ill, disabled, or aged reaches 65.7 million in the US alone. Additionally, of the people who receive care at home, two-thirds get their care exclusively from family members.

Formal care is the alternative to informal care from family and friends, although the distinction between formal and informal care is not clear cut. Possible criteria to distinguish the two types of care are whether: a) the caregiver receives a payment in exchange for the service; b) the caregiver has formal training; c) the care is provided through an LTC program; and d) the caregiver and the dependent person have a preexisting personal bond. These criteria often clash with each other. For example, a family member under a cash-for-care program is formal per the first and third definitions, but not according to the second and fourth. On the other hand, definitions of formality are more likely to coincide in cases requiring medical or nursing-home care.

The traditional arrangement of having family members—typically women—provide care for people with disabilities[2] has become more difficult because of decreasing fertility rates, smaller households, higher dependency ratios, and the massive insertion of women into the labor force. From a historical perspective, formal LTC arrangements developed as a substitute for family care, although families are still the main providers of care even in countries with well-established LTC systems. But it is also possible that LTC requirements have just become more complex, breaking the substitutability of the family care pattern observed until recently. The tasks typically associated with LTC may require different skill levels, either because some tasks are more complex or because of the condition of the dependent. This means that the relation between types of care may depend on the type of support needed by each beneficiary. For those tasks that require little skill, we may expect informal care to be a substitute for formal care, while we may assume that informal caregivers are ill-equipped to perform some of the more complex caregiving tasks.

The technological relationship between different sources of care (e.g., formal/informal, family/market, etc.) directly affects the alternatives for policymakers when designing LTC systems. Greater substitutability implies public programs can have a more flexible structure, and including the possibility of family care may allow for lower costs of care.

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[2] Throughout this paper, "disability" refers to a situation where a person experiences a long-term decline in their functional and physical abilities that prevents them from performing ADLs autonomously.

Cost saving may be especially large if family members have a low opportunity cost in terms of market opportunities.

Several studies look at the relationship between formal and informal care and conclude that in most cases there is substitutability between them. The first series of these studies treats the family structure as a possible measure of available informal care and examines the relationship between informal and formal care, with the latter usually measured in terms of nursing home care. Among these studies, La Sasso and Johnson (2002) find that frequent help from dependents' children reduces the probability of needing nursing home care within two years by 60 percent. Van Houtven and Norton (2004) use the dependent's number of children and whether the eldest child is female as instruments to estimate the substitutability between formal and informal care. Overall, their results, based on a nationally representative sample of noninstitutionalized people over 70 years old in the US, confirm substitutability between formal and informal care, except for post–outpatient surgery care. Bonsang's (2009) similar study for Europe indicates that formal and informal care are generally interchangeable, although substitutability decreases as the level of disability increases. Similarly, Litwin and Attias-Donfut (2009) find that people with greater need for care are more likely to receive care from both formal and informal sources.

Analyses based on exploiting regional variation in availability of public programs show that their existence affects the use of formal care. McKnight (2006) finds that, in the US, the reduction in Medicare reimbursements following the Balanced Budget Act of 1997 led to a significant decrease in home care, which was not offset by other measures of formal care. Golberstein et al. (2009) find that these reductions implied an increase in informal care, although this effect is concentrated among low-income people. Kim and Lim (2015) study the impact of government reimbursements of formal LTC expenses on informal care in South Korea. Their results indicate that eligibility for public subsidies does not affect the probability of having family caregivers or living independently, although it does affect the use of short-term stays in facilities. The authors conclude from the former that formal and informal care are not strong substitutes in the extensive margin, while they argue that the latter indicates that they are substitutes in the intensive margin.

Another area of study concludes that the use of assistive technologies (any product, device, or equipment, modified or customized, that is used to maintain, increase, or

improve the functional capabilities of individuals[3]) can relieve the burden of care for informal caregivers, while it could complement or substitute formal care depending on the specific technology. Agree et al. (2005) study the effect of assistive technology on the demand for both formal and informal care. Their results show that assistive technology substitutes for informal care but complements formal care. Anderson and Wiener (2013) found that the effect depends on the type of assistive technology. In their study, assistive technology for indoor/outdoor mobility, bed transfer, and bathing was found to substitute for total hours of personal assistance services, whereas assistive technology for bed transfer and toileting was found to complement formal hours of care. Overall, their results indicate that assistive technologies relieve the need for informal care but do not significantly reduce the amount of formal and paid care. Also, Mortenson et al. (2012) carry out a systematic review of the literature on the topic that suggests that assistive technologies is associated with relief to caregivers in terms physical and emotional effort.

Recent research has focused on the role of choice in LTC programs, which may increase the overall effectiveness of LTC policies. Canta, Cremer, and Gahvari (2016) build a model in which they analyze the effects of two LTC policy alternatives and the option to choose between them. They are interested in the crowding out effect of family care in the context of uncertain child altruism. The first LTC program considered is "topping-up," in which dependents receive a cash transfer or services at home that can be supplemented by other forms of care. The second is "opting-out," in which exclusive care is provided, such as free or subsidized residential care. Their results show that the topping-up option crowds out family care both at the intensive and extensive margin (level of care and share of children who provide it). Meanwhile, the opting-out option generates crowding out only at the extensive margin. Additionally, they consider a mixed program, where people can choose between the alternatives, and find that this option tends to diminish the distortions generated by the programs individually.

Overall, the results reviewed in this section indicate that formal and informal care can generally be considered as substitutes, although many factors affect their suitability for a given situation. This can be explained by the scope and difference in complexity of activities related to LTC, the different possibilities dependents may have in terms of financial and family resources, as well as overall variety in types and levels of

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[3] Definition of the United States Assistive Technology Act of 1988. The World Health Organization has a similar definition (see http://www.who.int/disabilities/technology/en/).

dependency. Nevertheless, bearing all these factors in mind is important for understanding the possibility of meeting future need for LTC.

3. Future Need for LTC in Latin America

The last century or so has issued forth steady demographic changes worldwide that have resulted in improvements in technology and medicine as well as increased living standards that have increased life expectancy. This shift has been accompanied by complex socio-cultural changes, such as increased female labor participation and falling fertility rates, leading to a persistent aging of the population. Figure 1 shows the process of population aging for different regions of the world since 1950 (the earliest year with homogenous data worldwide), indicating steady and generalized aging worldwide.

Figure 1. Share of Elderly Population Worldwide
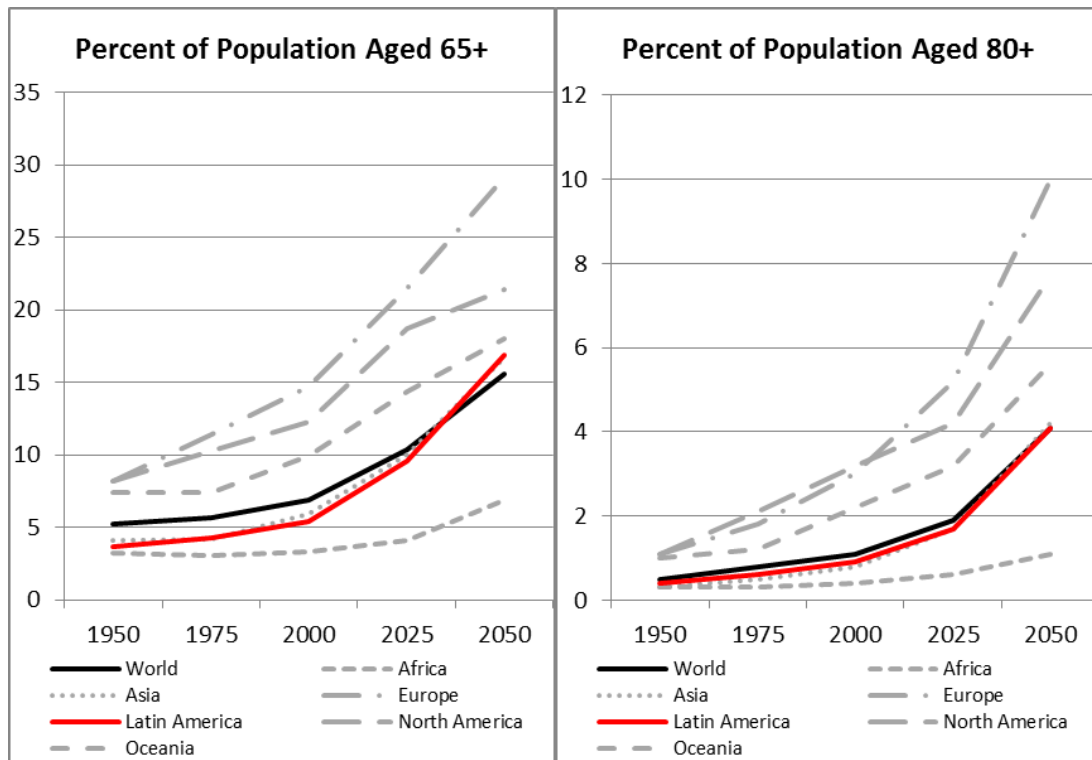
Source: Authors' elaboration based on United Nations (2015).

We can see that Latin America is still young compared to developed countries and even slightly younger than the world average; however, its rate of aging is among the highest. According to Kinsella and Phillips (2005), it took France 115 years and Sweden 85 years to change the share of the population over the age of 60 from 7 percent to 14 percent, while Brazil and Colombia will need only 21 and 20 years, respectively.

Figure 2 shows that population aging is occurring in all countries in the region. Nevertheless, there is considerable variation between countries in terms of the overall elderly population rate and the rate of aging.

Figure 2. Share of Elderly Population in Latin America and the Caribbean

Country	2015	2030
Argentina	10.9	13.1
Bahamas	12.5	20.1
Barbados	19.8	27.7
Belize	5.9	8.9
Bolivia	9.2	11.4
Brazil	11.7	18.8
Chile	15.7	23.7
Colombia	10.8	18.3
Costa Rica	12.8	20.5
Cuba	14.0	23.0
Ecuador	9.9	14.5
El Salvador	11.5	15.8
Guatemala	7.0	8.6
Guyana	8.3	14.9
Haiti	7.1	9.3
Honduras	7.2	10.7
Jamaica	12.8	18.7
Mexico	9.6	14.9
Nicaragua	7.8	12.5
Panama	10.9	16.2
Paraguay	9.0	12.0
Peru	10.0	14.7
Dominican Rep	9.7	14.2
Suriname	10.2	15.7
Trinidad and Tobago	14.2	20.2
Uruguay	19.1	22.1
Venezuela	9.4	14.8
LAC	7.6	12.0

■ 2015   ■ 2030

Source: Authors' elaboration based on United Nations (2015).

Although Latin America's population is aging quickly, Figure 1 also reveals that it will be close to 2050 before the region reaches similar levels of aging to those of the advanced economies in 2000. Figure 2 shows that by 2030, most countries in the region will have an elderly rate of around 15 percent or more. Overall, in terms of the fertility rate, life expectancy, and share of population over 65, some countries in Latin America are reaching the stage that OECD countries had when they embarked in major reforms to their LTC systems (Matus-López, 2015).

That said, population aging is only one aspect of the projected need for LTC. Need also depends on the health status with which people reach advanced age. The literature has developed an interesting hypothesis regarding the health profile of the upcoming generations of elderly in Latin America. Palloni et al. (2006) note that the new elderly will have been a result of large improvements in control and mitigation of the effects of infectious and water-borne diseases, though these improvements were not accompanied by substantial increases in standards of living, since poverty and malnutrition were still

widespread. As a result, Palloni and Souza (2013) believe that the new elderly will be more fragile, with greater prevalence of adult chronic conditions and excess mortality risk. This contrasts with the situation in which developed countries reached a similar stage in the demographic transition, where their populations aged under better socioeconomic conditions. For example, education levels and average income were higher in OECD countries 20 or 30 years ago than the values today in Latin American and Caribbean countries that are reaching similar demographic transition thresholds.

There is a considerable body of evidence that documents the link between early-life conditions and adult health. Palloni et al. (2006) find a link between childhood nutritional status and diabetes, and rheumatic fever and heart disease, albeit the former relation is not strong. Similarly, Monteverde, Noronha, and Palloni (2009) find that poor early conditions, defined both in terms of child health and socioeconomic status, induce higher rates of disability. McEniry (2013) reviews 20 studies regarding the link between early life conditions and adult health. Her findings indicate that several measures of adverse early life conditions, such as malnutrition, incidence of certain illnesses, and poor socioeconomic status have a strong effect on measures of health at a later age, such as decreased cognition, incidence of heart disease, disability, and mortality rates. Given that demand for LTC is higher in the presence of multiple chronic conditions, there is a link between early-life conditions and LTC in old age.

The consequence of this process can be seen in Figure 3, which shows total life expectancy and healthy life expectancy at birth in the years 2000 and 2015 for 27 Latin American and Caribbean countries. Both measures have increased in all countries in the period under study. Additionally, total life expectancy has generally increased more than healthy life expectancy in all countries, resulting in an increase in the years for which people require assistance.

Figure 3. Years of Total Life Expectancy and Healthy Life Expectancy
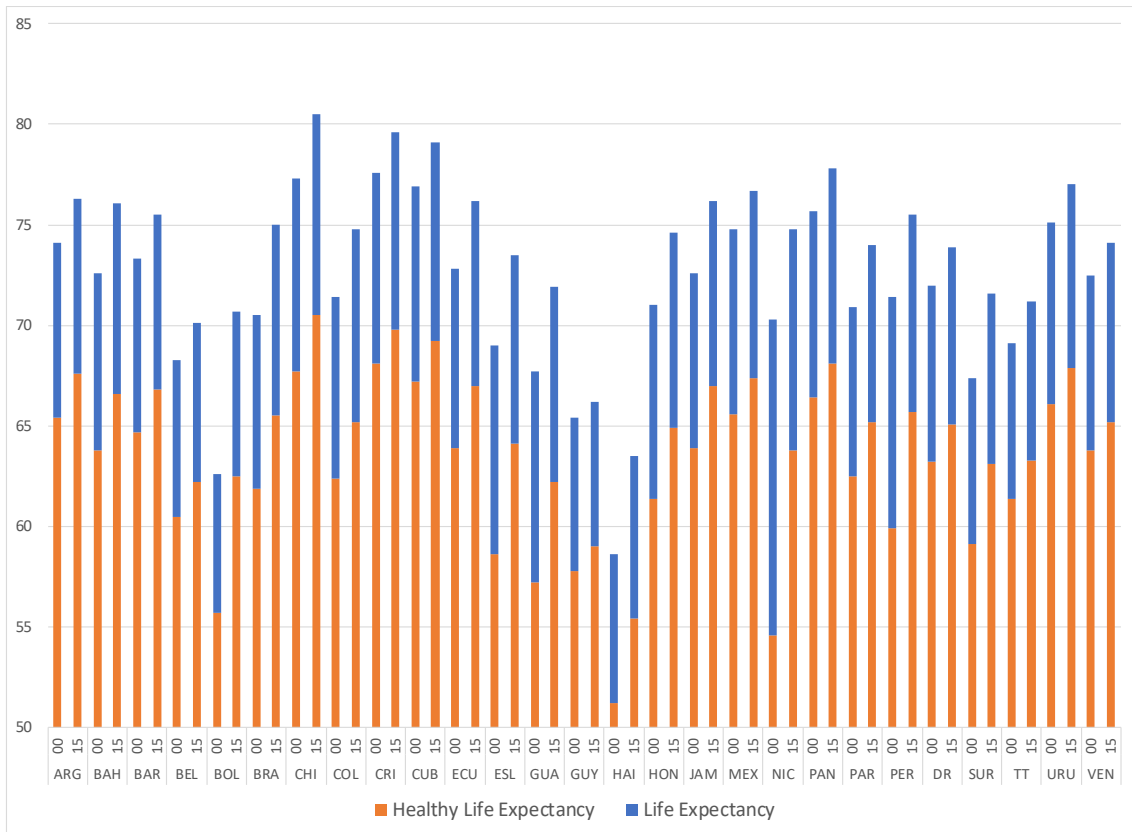
Source: World Health Organization (2016).

Note: The equivalent lost healthy year fractions required for the healthy life expectancy calculation are estimated as the all-cause rate of years lost because of disability per capita, adjusted for independent comorbidity by age, sex, and country. See World Health Organization (2016) for details.

4. Financing LTC: Private or Social Insurance?

For any individual, the need for LTC is, to a significant degree, uncertain. In order to protect against the risk of dependency in old age, one would have to assess the probability of needing care and the distribution of the duration of care as well as perhaps differentiate their needs by type of care, severity of their condition, and cost of care. This implies that a person not covered by an insurance policy must save enough money to account for LTC costs in the event of needing it, which is otherwise called self-insurance. The cost of self-insurance depends not only on probabilistic elements, but also on the preference for risk of the individual. The assumption that individuals are risk averse implies that, absent time inconsistencies or myopic behavior, savings would be greater than expected costs, because people are particularly affected by the probability of a very

unfavorable outcome. This gap between savings for self-insurance and expected costs is a potential source of welfare gain: If the risk could be pooled within a population of individuals, then the extra savings would not be necessary. This is the traditional explanation for the development of an insurance market.[4]

However, LTCI markets have not properly developed so far, even in developed countries where the percentage of the adult insured population is low. In the US and France, considered the leading markets in terms of coverage (Colombo et al., 2011), insurance covers about 5 percent and 15 percent of the population aged 40 or more, respectively. In Germany, only about 300,000 insurance policies had been sold before the introduction of mandatory insurance in 1995 (Hauschild, 1994). More recently, Arntz et al. (2007) estimate that 9 percent of the German population is covered by private LTCI, while 90 percent is covered by social insurance. Figure 4 shows that the share of private LTCI in total LTC spending is very small, even in the countries with the most widespread coverage.

Figure 4. Share of Private Insurance Spending in Total LTC Spending
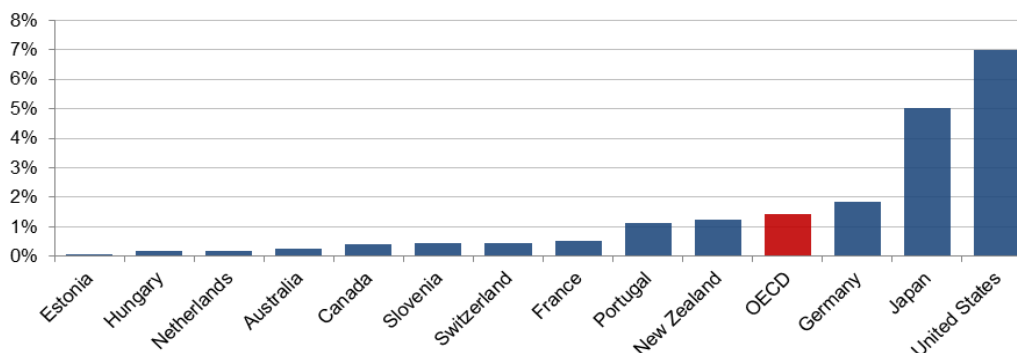
Source: Colombo et al (2011).
Note: Article link is: http://dx.doi.org/10.1787/888932401653.

There are several reasons that account for the small size of the market, and following Barr (2010), we discuss supply and demand side factors. Regarding the former, perhaps the most common market failures in insurance markets are those associated with asymmetric information: adverse selection and moral hazard. Adverse selection occurs when the potentially insured can conceal the fact that they are inherently more risky

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[4] A related issue not discussed here is that many people are not insured and do not save to cover expected expenses, which may be due to myopic behavior, time inconsistencies, or some type of market failure. The argument here relates to potential welfare gains from insurance.

clients than others. Acknowledging this possibility, insurers raise their premium, deterring low-risk clients. As a result, the pool of insured clients is riskier than the population of potential clients. The second consequence of asymmetric information is moral hazard, which occurs when an insured person can reduce either the probability or the loss associated with an adverse effect, but chooses not to do so because they will not be liable for said expenses. In the case of LTC, insurance may deter preventive behavior, thus increasing expected costs associated with it.

Additionally, there are problems specific to the market for LTC and at least two reasons why future costs of LTC are difficult to predict. First, there is uncertainty about life expectancy in the future, in particular about whether increased life expectancy will lead to relatively more or less years with disability. The second is uncertainty about future costs of LTC. Given that LTC is labor intensive, researchers have questioned whether the sector may be subject to the Baumol cost disease. According to this idea, the relative cost of LTC will rise with time if productivity increases in this sector slower than overall productivity growth (Baumol, 1967, 1993). De la Maisonneuve and Oliveira Martins (2013) estimate future costs of LTC in OECD countries and forecast that costs could vary by as much as 5 percent of GDP depending on the scenario. Barr (2010) explains that insurance markets can deal with risk, but are ill-equipped to deal with situations where there is uncertainty about the basic parameters such as the share of the population that will need LTC, how long those people will need it, and what the costs of LTC will be. In insurance jargon, these issues are common shocks that may deter the adequate functioning of markets. Although insurance contracts can protect financial viability by allowing insurers to raise premiums when costs rise, uncertainty regarding premium volatility may dampen confidence in such contracts (Colombo et al., 2011).

Insurance providers can also shield themselves from cost uncertainty by putting a cap on the LTC expenses that they will be liable for. Although this does not solve the problem of cost uncertainty altogether, the change in the distribution of risk may help develop the market. However, answering the problem of who is the residual risk bearer (that is, who will cover expenses beyond the insured amount) is also no trivial task. For example, in the US, people may apply for Medicaid LTC services only if their financial resources have been consumed to a certain level.

On the demand side, existing evidence shows that there is a positive association between LTCI and income. Perhaps the most likely explanation for this is that the cost of LTCI may simply be too high for low- and middle-income families. Additionally, we can

speculate that families would rather allocate additional income to retirement funds, general savings, or other sources, which, unlike LTCI, are noncontingent.

Colombo et al. (2011) also noted that the complexity of insurance contracts makes it difficult for the insured to assess value for money. Barr (2010) goes one step further, stating his skepticism about whether people can actually make informed choices regarding insurance for LTC. Barr and Diamond (2008) point to evidence from behavioral economics that shows that when dealing with complex problems, people may either choose poorly or not choose at all.

As several researchers have pointed out that the elderly prefer aging in their family homes (Perez et al., 2001; Olsberg, 2005; Wiles et al., 2011; Chomik and MacLennan, 2014), a possible though not necessary implication is that low demand for formal care translates into lower demand for insurance as an intermediate good. Barr (2010) mentions that people may disregard insurance to avoid being sent to nursing homes by family members. Although this explanation is somewhat speculative, it may contribute to explaining low insurance take-up.

As for responsiveness of insurance take-up to economic incentives, Courtemanche and He (2009) studied the effect of tax incentives on purchases of LTCI in the US. They found that 25 percent of those eligible for the tax incentives responded by taking up insurance, but the incentives are not enough to create a substantial increase in the LTCI market. Moreover, savings in Medicaid LTC expenses do not offset the states' forgone tax revenue. In a similar study, Goda (2011) exploits variation in the generosity of state tax subsidies for LTCI. His results indicate that the average tax subsidy raises insurance increases by 2.7 percentage points over a baseline of 10 percent–12 percent, largely among high-income individuals. His results also show that this subsidy is not cost effective, as one dollar of subsidies reduces public expenditures by about 84 cents. Finally, Bergquist, Costa-Font, and Swartz (2015) study whether Partnership programs, a scheme designed to encourage take-up of LTCI in four states in the US, influenced trends in Medicaid expenditure and LTCI take-up. They find that the effects were not significant on Medicaid expenditure and claims, but did create limited increases in insurance purchases.

An additional question is whether public LTC programs crowd out private LTCI markets. Brown, Coe, and Finkelstein (2007) find that a US$10,000 decrease in the asset requirement for Medicaid would increase take-up of private LTCI by 1.1 percentage points. Although this evidence shows that crowding out exists, the authors find that

making Medicaid requirements more stringent would still leave most of the population uninsured.

Barr (2010) argues that while LTCI may be superior to self-insurance, the hindrances mentioned earlier prevent the development of a large-scale private LTCI market. The alternative is thus a program of social insurance. Barr builds the case in favor of social insurance on the grounds of efficiency gains (discussed earlier) and moral concerns. The moral case is based on solidarity between individuals and can be thought of people pooling risk behind the "veil of ignorance" (Rawls, 1972).

Most advanced countries, which were the first to encounter the problem of population aging, have in effect responded to the issue of LTC by means of public insurance programs. The main features of these programs are reviewed in the next section.

5. LTCI Schemes in Developed Economies

The low rates of participation in private LTCI can be interpreted in two ways. The first is that there is little demand for insuring against old-age dependency. The second conclusion is that low rates of participation are a result of the inadequacy of private markets to provide these services. The latter interpretation serves as a rationale for social insurance programs (Barr, 2010).

Colombo et al. (2011) have identified several dimensions in which LTC programs differ. The programs can therefore be classified according to the following criteria: the overall level of spending and its composition (public/private), coverage of the system, sources of public funding, out-of-pocket expenses, and in-kind services versus cash subsidies and choice. Although these components of LTC programs are interrelated, for the sake of simplicity we will review them separately.

5.1 LTC Spending and Its Composition (Public/Private)

In this section, we review countries' direct spending on LTC. Overall spending for LTC is a good indicator of the issue's relevance across countries. Figure 4 shows that there are considerable differences in the importance of LTC in OECD countries. Spending is rather small in the six countries on the left of the table, but LTC is a sizable expense for most countries. The OECD average of 1.5 percent of GDP is, overall, a good approximation of the reality in most of these countries. The Netherlands and Sweden stand out because of the relatively large amount of resources they dedicate to LTC.

Figure 5 also shows how LTC expenses are shared between the public and the private sectors. We can see that public spending is dominant across the board, and in several countries practically all spending is financed by the state. What is more, there is little relation between the public sector's share of LTC expenditure and overall LTC expenditure, as public spending is dominant in countries with low, intermediate, and high spending on LTC. Only in Switzerland does private LTC spending account for more than half of all LTC spending, though private LTC expenditure is also high in the US and would possibly be higher under alternative definitions of what constitutes LTC spending. Nevertheless, Figure 5 does indicate that, in practice, LTC spending is a public responsibility for the most part.

Figure 5. Public and Total Spending on LTC in OECD Countries, % GDP, 2008
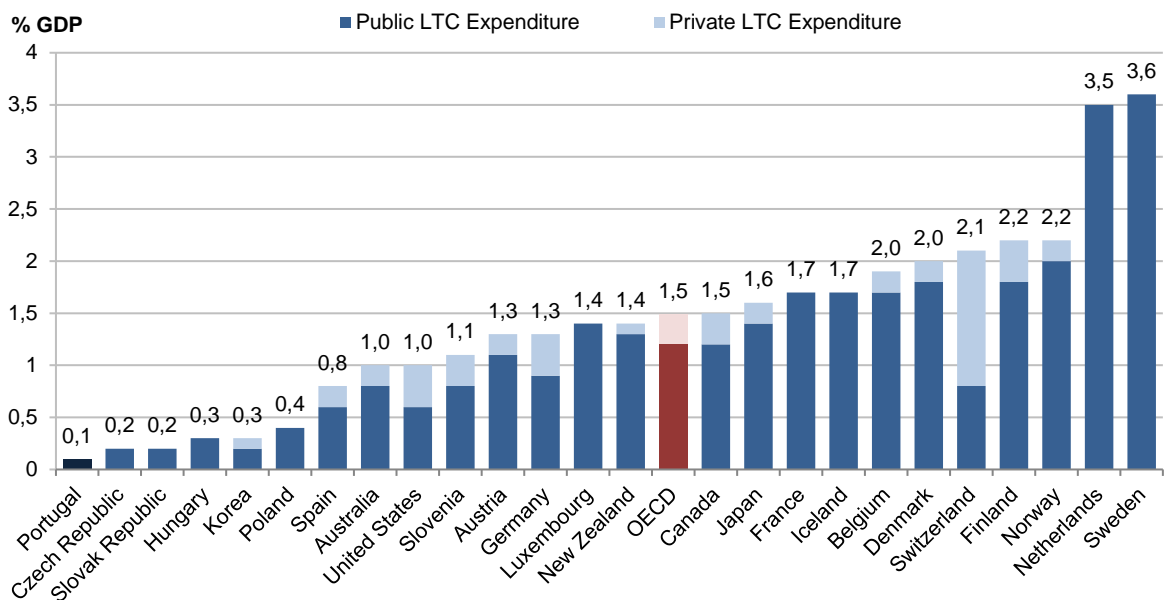
Source: Colombo et al. (2011).

5.2 Coverage

There are several dimensions to consider when assessing coverage in LTC systems. One is whether to dedicate a single program or multiple programs to LTC. It may seem that granting LTC through several programs will contribute to excessive administrative costs and create havoc. However, Chomik and MacLennan (2014) point out a rationale for such division, stating that assistance with ADLs is usually separated from healthcare because each implies different functions, and the separation reduces the use of expensive medical facilities for care services that could be provided at a lesser cost elsewhere.

Another is that countries differ in how they aggregate the level of dependency or need for assistance with ADLs to determine eligibility for different types of services within the LTC system. In the Netherlands, eligibility is based on whether a dependent requires assistance with any of six functional categories of care (Schut and van den Berg, 2010). In Germany, eligibility depends on the number and type of ADLs for which the dependent requires assistance, the frequency with which an activity is required, and the amount of time for which help is required (Rothgang, 2010). In France, the autonomy of a potential beneficiary is aggregated into a single scale, and having a lower autonomy than a predetermined threshold makes the person eligible for the public LTC subsidy (Le Bihan and Martin, 2010).

Another feature of LTC systems is whether access is universal or means-tested for those who qualify based on their need for assistance with ADLs. In the former, eligibility is determined based only on an assessment of needs. In the latter, eligible people may be granted only a partial subsidy or expected to pay for part of the services themselves if their income or assets exceed certain levels. A somewhat more extreme version of means testing is when LTC programs are limited to the poor, in which case eligibility requires that a person's assets be significantly depleted.

Additionally, the type of services covered varies substantially (Colombo et al., 2011). Some countries have more comprehensive and generous programs than others. For example, Sweden's generous LTC program may cover beneficiaries' expenses for necessary home adaptations, whereas in Greece, beneficiaries can request institution-based care, but formal care in the home is not covered. Across the board, LTC coverage typically includes paying for a caregiver, and many programs include cash benefits to support informal caregivers. Another common feature is that the public sector is usually responsible for catastrophic risks associated with LTC.

5.3 Public Funding

The fact that LTC implies a considerable expense for the public raises the question of how to finance the programs. The first alternative is through general taxation, which is done in a wide variety of countries where there is no specific contribution made in exchange for public LTCI and their classification of LTC varies. Some classify it as part of the welfare state, which provides universal access to education, health, and other social services; some consider it a public health issue; and others classify it as a means of poverty alleviation, namely in countries using safety-net models to provide social services to those in financial need. The second financing alternative is to fund LTC within

a social-insurance framework. In this case, a broad segment of the population makes mandatory contributions, usually employment-based, to the fund.

Universality is an important feature of both schemes, and there are several advantages to it: a) it allows for a progressive taxation, b) it solves the problem of adverse selection (risk-pooling through mandated contributions), and c) it breaks the association between individual risk and pricing. The last point implies that is possible for low-risk individuals to implicitly subsidize high-risk individuals. Thus, public LTC programs achieve risk sharing across the population.

The benefits of such public programs notwithstanding, Mirrlees and Adam (2010) argue that earmarking public revenues is undesirable because it restrains the flexibility of government budgets. In spite of this, some countries collect dedicated funds for pension systems or LTC (such as Germany and Japan), which will likely contribute to the programs' stability by averting attempts to cut LTC spending.

5.4 Out-of-Pocket Expenses

Except in programs designed for the poor, LTC beneficiaries are generally expected to cover part of the expenses themselves. According to Colombo et al. (2011), cost-sharing usually follows one of four main approaches. In the first, users must exhaust their own resources before becoming eligible. For example, in the US, people who require LTC can only qualify for Medicaid benefits once they have consumed their own assets to a rather low level. In the second model, used in Australia and France, the amount of public assistance granted to the beneficiary is capped or the beneficiary is required to make copayments above a certain cost threshold. The third approach is one of flat rates of cost-sharing. For example, in Korea, users are required to pay 20 percent of total costs of institutional care and 15 percent of home-based care. The fourth approach establishes the level of copayment based on the income or assets of the beneficiary, as in Finland where for institutional care personal contributions are set to 85 percent of income (pension).

In all of these systems, the larger share of LTC expenses is publicly funded. In addition, the public sector is the residual financier of care because the responsibility of governments generally increases as the person becomes poorer.

5.5 In-Kind versus Cash Services and Choice

LTC programs also differ in whether benefits are in-kind (that is, the direct provision of care services) or in cash (which may be either tied to contracting care as in voucher

schemes or provided to the family without constraints). Greece, Japan, Hungary, and Portugal are examples of countries that rely heavily on in-kind benefits. However, in most countries, both types of benefits exist.

The rationale for cash benefits is rather straightforward. The preference for in-cash transfers in general is long established within economics, grounded on the assumption that families have an informational advantage regarding their needs and therefore make a better allocation of their funds. In-cash transfers also require less involvement of the public sector in service delivery and, if well managed, allow for savings in administrative costs. Some cash programs also compensate family members for family-based care, with the objective of supporting family and informal care, as well as containing LTC program costs (Da Roit and Le Bihan, 2010). This is an important aspect, given that most LTC care is provided by family members.

In-kind benefits may be preferable for two reasons. First, these benefits allow public administrators to define and control service quality standards. Second, as explained by Campbell, Ikegami, and Gibson (2010) for Japan, in-kind programs could avoid reinforcing the traditional role of women as the family-based caregivers, which may occur under cash-based programs. On the other hand, in-kind benefits restrict the choices available to beneficiaries. As a result, the allocation of caregivers may be inefficient because the assignment is done with incomplete knowledge of beneficiary preferences.

In some countries, people eligible for LTC choose between in-kind and in-cash subsidies. In part, the option implicitly recognizes that both in-kind and in-cash programs have advantages and disadvantages. But most importantly, the fact that the choice is made *by dependents or their families* assumes that these parties are, again, better informed about the value of care alternatives. It is worth noting that the value of cash subsidies is often lower than the cost of in-kind benefits, acknowledging the fact that if the user opts for the former, they probably have a less expensive or a more valued source of care. This issue is a key component of our results in section 7.

Colombo et al. (2011) argue that there is a trend toward more flexible LTC programs. The possibility of in-cash benefits is a key component of this trend because it allows beneficiaries more autonomous choices and a better tailoring of the services to their individual needs, and costs may be easier to contain.

6. LTC in Latin America and the Caribbean and Possibilities for LTC Policies

Most of the countries in the region have institutions and policies for seniors, and some have made advancements on certain regulations that include aspects related to dependency care. However, comprehensive LTC policies are virtually nonexistent, and regulation or direct provision by the public sector is scarce (Gascón and Redondo 2014). Some countries have made progress on specific interventions, such as defining quality criteria that led to accreditation of institutions providing care services, and the definition of monitoring and evaluation schemes. One country (Uruguay) has defined a National Integrated Care System that includes LTC, but its interventions prioritize infant care.

Also, the region lacks a private LTCI market. In addition to the hindrances discussed in section 4, the region faces several additional obstacles. First, countries in Latin America and the Caribbean have a long history of macroeconomic instability. Although many countries have made notable progress in this area, the likelihood of large macroeconomic shocks in the region should not be discarded. Considering this possibility, people are likely to be wary of investing in insurance when they doubt whether an insurer can survive long enough to pay for services years or decades away. A possible way to mitigate this risk is to facilitate insurance take-up at a later age. However, this would probably have a sizable effect on insurance premiums, putting more pressure on household budgets and reducing the attractiveness of LTCI.

A report by the International Labour Organization (2009) states that only 1 percent of the region's population over 60 lives in nursing homes, and the share that receives formal care at home is also low, so remunerated care is rare and concentrated in families with high incomes. Hence, care is largely provided by family members, which demands substantial time and expense depending on the care requirements of the person in question. Care may also strain the household budget if caregivers need to forgo paid work opportunities to provide care.

In Latin America, the burden of care falls disproportionately—almost exclusively—on women. Time-use surveys show that the bulk of unpaid housework falls on women (Aguirre, 2011), and that women dedicate between two and three times as much time to caring for others than men (International Labour Organization, 2009). Figure 6 confirms that although men spend more time working for wages, women work more overall since women's work in the home more than compensates for their fewer hours of work for wages. Similarly, González, Raga, and Sibils (2012) establish that survey responses

from 544 regional opinion leaders indicate a consensus that the responsibility of care falls mainly on women, as shown in Figure 7.

Figure 6. Hours per Week Spent in Paid and Unpaid Work
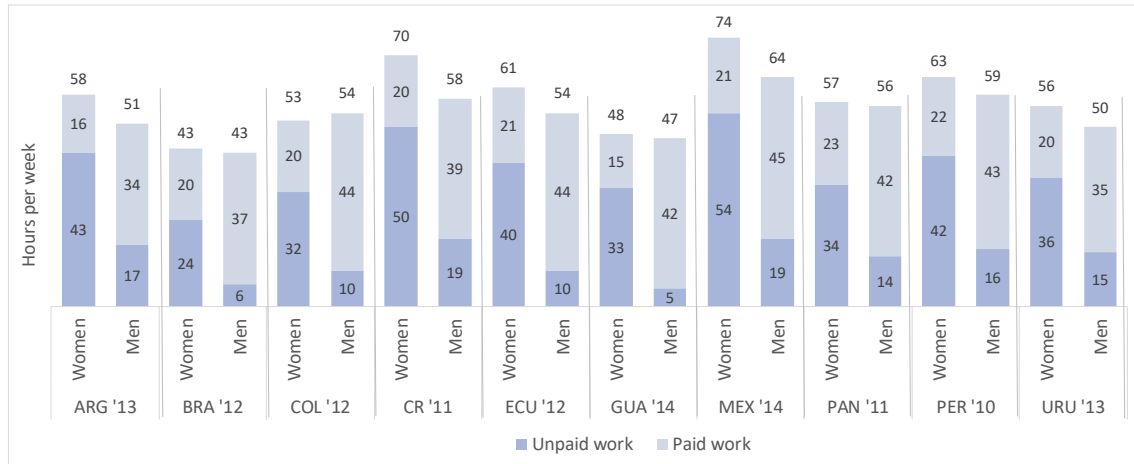
Source: Rico and Robles (2016)

Figure 7. Men's and Women's Opinions on Who Takes Care of Dependents
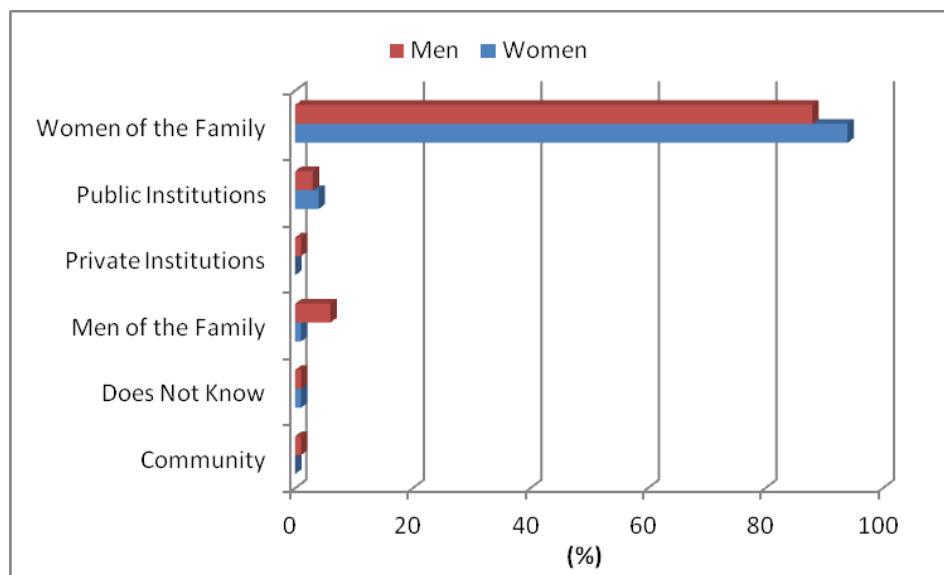
Source: González et al. (2012).

Note: Represents responses by gender to the question, "In your opinion, in your country of residence, who is mainly responsible for the care of dependent people, men or women?" on a survey answered by 544 opinion leaders in Latin America.

While increased demand for LTC in the region has been documented, the question is whether and how should governments get involved. Any discussion of public LTC needs to address it financing. As discussed, Barr (2010) makes the case that insurance policies are superior to self-insurance and that social insurance programs are superior to private ones, so there are benefits to instituting social insurance. However, from a public policy perspective, comprehensive LTC programs would probably not be at the top of the agenda in Latin America for now. Basic pensions—to ensure that the elderly avoid poverty—are still on the region's to-do list and so are improvements to the health systems to achieve universal coverage and enact health policies to deal with the increase in chronic noncommunicable diseases. Hence, LTC spending may be seen as a luxury compared with alternative uses of government spending. In addition, the design of LTC programs for workers in the formal sector who contribute to social security, as is done in traditional pension systems, would leave out the region's most socioeconomically disadvantaged groups that work in the informal sector, without access to social security.

On the other hand, as the senior population grows and the need for LTC becomes more prevalent in the region, the demand for and the social return on these programs will rise. How will policymakers react to this increased demand? Figure 8 shows that opinion leaders in the region think that the public sector should be involved in the care of dependent people, and we expect policymakers to respond with greater government involvement.

Figure 8. Opinions about Institutions Associated with Care for Dependents
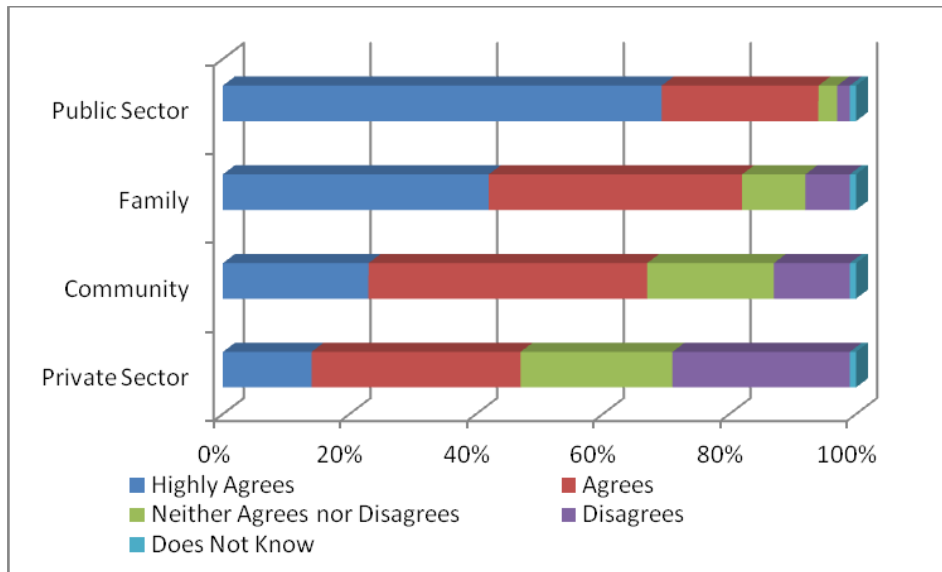
In addition to the issue of whether the government *should* launch LTC programs based on an analysis of social costs and benefits, which is a normative statement, a related question is whether and when a government *will* do so, which demands a positive reasoning. As we said before, we expect an active stance on behalf of the government as demand for LTC grows. However, several factors in the policymaking process may speed the development of LTC programs. The fact that the region is early in its demographic transition implies that most of the costs of LTC programs would be deferred, and short-term political capitalization of programs is likely. Even if other policies might have higher social returns, the decision-making process will possibly lead to some sort of public intervention regarding elderly care in general and LTC in particular. These arguments lead us to believe that LTC programs will be deployed sooner rather than later.

That said, it seems reasonable that programs will start on a rather small scale, because of fiscal constraints and because larger programs may require previously acquired know-how. In particular, we expect LTC programs in the region to target mainly poor and vulnerable families, where the problem of affordability is greater, at least in the initial stages. For these groups, the need for LTC can be understood as an aggravating

circumstance of poverty or of the risk of falling into poverty, and LTC programs therefore fit within the poverty reduction and social protection agenda in the region.

Overall, the development of universal programs in the short run is unfeasible given budget constraints.[5] However, countries in the region have had considerable success in deploying poverty alleviation programs. Our goal is now to discuss how LTC programs for the poor and vulnerable (or any other subgroup of the population) may be structured and what limitations they would have. We do not adopt any specific threshold for poverty or vulnerability, so the main points of the discussion that follows apply to broader or narrower populations, based on the poverty line set for a particular country.

6.1 Designing Feasible, Targeted LTC Programs

The design of any targeted program requires three core elements. The first of these is the targeting mechanism to identify who should receive benefits and who should not, for example based on LTC service affordability. Given that the inherent wealth of a person is a largely unobservable factor, policymakers must rely on observable and verifiable characteristics, such as income, age, assets, and labor market status, as well as assess inclusion and exclusion errors—the eligibility of people who should not have received the benefit and the ineligibility of people who should have received it.

In Latin America and the Caribbean, high informality prevents means testing, which is done in developed countries. However, most countries in the region implement conditional cash transfers to poor households, with eligibility based on proxy means-test mechanisms. These are improvements over alternative targeting mechanisms, but targeting challenges remain.[6] Overall, the fitness of specific characteristics to evaluate affordability varies widely in different countries, and assessment should be done on a

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[5] Matus and Cid (2015) work out some basic estimations for Chile and shows that a very simple program of home-care providers would cost about 0.5% of GDP, and further estimations in Uruguay suggest that the cost of a LTC system may be close to 0.7% of GDP. While countries in the region spend comparable amounts for antipoverty programs (such as conditional cash transfers), other social programs such as basic pensions are likely to compete with LTC in the short run, hindering the perspectives of universal LTC programs.

[6] An issue recently on the literature on targeting and CCTs is the potential disincentive effects towards getting a formal sector job (Ibarraran et al., 2017). Targeting LTC with these targeting tools could potentially exacerbate the disincentive effect if non-contributory LTC systems were comparable to contributory LTC services. However, the lack of LTC services (contributory or non-contributory) suggests that this would not be an issue at the onset of LTC systems. This, however, is an important aspect to consider in the design of a LTC system (who gets the benefits and avoiding fragmentation on service provision).

case-by-case basis. Alternatively, one could consider implementing LTC programs as a complement to existing or developing non-contributory pension programs that are already targeting the poorest among the elderly in several countries in the region. This alternative would require a careful analysis on the potential beneficiaries of LTC programs, as most non-contributory programs are targeted to the poorest and there are likely groups that do not qualify for those programs but that would probably not be able to afford LTC care.[7]

A second element of any LTC program is an assessment of the level of a potential beneficiary's dependency, which varies according to the standards defined in each country and sets LTC programs apart from generic income-support programs. Well-designed programs therefore require an objective and transparent beneficiary evaluation and the involvement of several actors, such as healthcare systems.

The structure of the public intervention itself is third core element. The first option is for programs to subsidize the funding of an insurance fund (ex-ante) or cover expenses as they take place (ex post). With ex-ante funds, governments subsidize take-up of private LTCI. However, as discussed above, actuarial insurance markets have not worked to shelter from the risks associated with LTC (Barr, 2010), and ex-ante insurance would take care of the next generation of the elderly, but not the current one. Additionally, depending on the targeting mechanism, it is not clear what happens if eligibility is lost, though this is not necessarily a drawback since a long-term assessment of living standards may limit free-riding behavior. Ex-ante insurance may be an attractive tool for reducing future public expenditure in LTC if combined with a partial subsidy. However, this is likely to be a better fit for upper-income households, since copayments are prone to deter low-income people. For these reasons, granting ex-post subsidies in the event of need of LTC is presumably a more adequate element if LTC programs are designed for the poor.

The second feature of public intervention to be decided is the combination of in-kind and cash subsidies that is suitable for poverty-oriented LTC programs in Latin American and Caribbean countries. If we recall the discussion in section 5, programs granting cash subsidies seem appropriate for meeting the dual goal of providing care and easing the financial burden on poor families. On the other hand, there may be cases in which cash

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[7] These are some aspects of issues that warrant further discussion. However, a complete consideration of implementation alternatives and challenges goes beyond the scope of this paper.

transfers may be insufficient to provide adequate care, for example if care is too complex to be provided by family members and unaffordable for them. If this were the case, giving families the choice to opt for in-kind subsidies is recommendable: if families differ in their valuation for in-kind subsidies, only those with the highest valuation will opt for these, while those with lower valuation will prefer cash subsidies. This implies that some families would even be willing to accept cash transfers of a lower value than the cost of the equivalent in-kind service. For the government, incorporating this option into the program design is likely to imply a smaller fiscal expense since the costs can be set lower than in-kind services and are certainly below the costs of a residential-care based model. We dedicate the next section to the welfare effects implied by these alternative design features.

7. LTC Provision: A Simple Model

In this section, we develop a simple model to set the discussion for this paper on some features of an LTC system. Our model considers only some of the dimensions discussed in section 5, namely the distinction of cash and in-kind services in the context of a targeted LTC program. For example, we do not specifically discuss the financing of the program (which would presumably be based on general revenues given that it is targeted to a specific population). Our model aims to deliver results on two main aspects. First, we set out to answer what type of subsidy is better suited for the poor and the vulnerable, cash transfers or in-kind services. Second, since budget restrictions are an important constraining factor, the model is intended to identify how to boost the cost-effectiveness of this type of program. For the remainder of this section, we will assume that the population of beneficiaries has already been selected, and we will return to the issue of who should be covered by publicly funded LTC systems in the next subsection.

To begin, we assume each family has the following composition: There is one individual who needs an amount x of care. We can think of x as the hours of care needed in a given time interval; the greater x is, the more attention the dependent family member requires. In a more complicated model, we could assign a probability distribution to x, $F(x)$ with support $[0,\omega]$, where ω is the age of the oldest members of society. Additionally, we can assume $F(0)>0$, that is to say that there is a mass of individuals who will not require care at all.

The family can provide care either by purchasing x_m units of care from the market at a price w_m or it can provide x_f units of care itself. We assume x_m and x_f are perfect substitutes. This would be the case if care consisted mainly of daily activities such as

bathing or moving around the house. Hence, here we do not address more complex tasks like kinesiology or medical assistance that would require professional workers.

Utility is defined at the family level and depends on disposable income and utility delivered by leisure. Family income is the product between the supply of work l and the market wage w_i; to obtain disposable income, we must subtract the cost of care from total income. We assume the market wage is different for each family so that we can study how behavior changes in different income groups. To keep matters simple, we assume the utility function has the following Cobb-Douglas form

$$u = \alpha \ln Y + (1 - \alpha) \ln L(l + x_f)$$

which is subject to the following budget constraint:

$$Y = l\, w_l - x_m\, w_m$$

Where Y is disposable income and L(.) expresses the utility premium delivered by leisure. Notice that the argument of L(.) is the amount of time spent either providing family care or working, for which we expect L(.) to be a decreasing function. Assuming L(.) is twice differentiable, we impose the following conditions L(.)'<0 and L(.)''<0. These conditions imply that cost of working increases more than proportionally. Note that since L(.) is decreasing and concave, we risk utility being undefined if its argument is too large. We therefore assume there is a value $\bar{l}$ such that L($\bar{l}$)=0 and impose $l + x_f$ $\leq \bar{l}$. This value could be interpreted as the maximum amount of time available in the day that can be used to work or supply care (e.g., 24 hours in the day). Since $\lim_{l+x_f \to \bar{l}} u = -\infty$, we can rest assured that this last restriction will not be binding. Finally, we assume that all possible values of x satisfy $x < \bar{l}$, which ensures that a solution exists. Now we can define the family's utility maximization problem (UMP) as

$$\max_{l, x_f, x_m, Y} \alpha \ln Y + (1 - \alpha) \ln L(l + x_f)$$

$$s.t. \quad Y = l\, w_l - x_m\, w_m$$
$$x \leq x_m + x_f$$
$$l + x_f \leq \bar{l}$$

We can rewrite this problem as the following Lagrangian

$$\max_{l, x_f, x_m, \lambda_x, \lambda_l} \alpha \ln(l\, w_l - x_m\, w_m) + (1 - \alpha) \ln L(l + x_f) + \lambda_x(x_m + x_f - x) + \lambda_l(\bar{l} - l - x_f)$$

The first-order conditions (FOCs) to this problem are

$$\frac{\partial \mathbb{L}}{\partial l} = \frac{\alpha}{Y}w_l + \frac{1-\alpha}{L}L'(.) \leq 0; \quad l \geq 0; \quad l\left(\frac{\alpha}{Y}w_l + \frac{1-\alpha}{L}L'(.)\right) = 0 \quad (1)$$

$$\frac{\partial \mathbb{L}}{\partial x_f} = \frac{1-\alpha}{L}L'(.) + \lambda_x \leq 0; \quad x_f \geq 0; \quad x_f\left(\frac{1-\alpha}{L}L'(.) + \lambda_x\right) = 0 \quad (2)$$

$$\frac{\partial \mathbb{L}}{\partial x_m} = -\frac{\alpha}{Y}w_m + \lambda_x \leq 0; \quad x_m \geq 0;$$
$$x_f\left(-\frac{\alpha}{Y}w_m + \lambda_x\right) = 0 \quad (3)$$

$$\frac{\partial \mathbb{L}}{\partial \lambda_x} = x_m + x_f - x \geq 0; \quad \lambda_x \geq 0; \quad \lambda_x(x_m + x_f - x) = 0 \quad (4)$$

$$\frac{\partial \mathbb{L}}{\partial \lambda_l} = \bar{l} - l - x_f \geq 0; \quad \lambda_l \geq 0; \quad \lambda_l(\bar{l} - l - x_f) = 0 \quad (5)$$

As we said before, our assumptions ensure that $\bar{l} > l + x_f$ and so we will disregard FOC (5).

The solution to this problem depends on the relevant parameters for the family in question. The following result shows that the decision to hire care or provide it by the family depends crucially on the relation between w_m and w_l.

Results:

   (i) Assume that the market wage for a family is higher than the cost of buying care at the market: $w_l > w_m$; then $x_f = 0$, the family does not provide any care directly and purchases all the necessary care in the market $x_m = x$.

   (ii) Assume that the market wage for a family is lower than the cost of buying care at the market: $w_l < w_m$; then $x_m = 0$, the family does not buy care services and delivers all the necessary care itself $x_f = x$.

   (iii) Assume that the market wage for a family is equal to the cost of buying care at the market: $w_l = w_m$; then $x_m \geq 0$ and $x_f \geq 0$, the family may buy care at the market, provide it directly, or both, with $x_m + x_f = x$.

Proof. First, note that the Cobb-Douglas form implies that disposable income must be positive and therefore, so must be l. This implies that the first column of (1) is a strict equality.

To prove (i), assume the contrary and express the first column (1) and (2) as strict equalities. Replacing this in the first column of (3) contradicts the assumption $w_l > w_m$. To prove (ii), repeat the process by expressing the first column of (1) and (3) as strict equalities and replace in (2). Again, this will deliver a contradiction.

To prove (iii), assume $w_l = w_m$. Because $x > 0$, at least one of x_f, x_m must be positive. Assuming $x_f > 0$ and expressing the first columns of (1) and (2) as strict equalities implies

the first column of (3) is also an equality. Therefore, x_m may be positive. The analogous logic holds when assuming $x_m > 0$.

Our results indicate that the choice between family-based care and market care depends on the relation between the wage for the family and the cost of buying care at the market. Families whose least productive member may get a wage higher than the cost of hiring care will hire the services from the market while poorer families will provide care services themselves. This is because families with low wage rates have lower opportunity cost of providing care, and so they would rather provide care themselves. In doing so, it is as if the family could receive a wage rate w_m for the first x units of work.

On the contrary, high-income families would rather hire paid caregivers and work for wages. In the remainder of this section, we will refer to those with $w_l > w_m$ as "the rich" and $w_l < w_m$ as "the poor." This is an oversimplification; in fact, "the rich" need not necessarily need to be rich at all—they are just better off when compared to population in question, and they can command a wage higher than the cost of care at the market. If we assume we restrict the universe of families under consideration to those who are eligible under means-tested criteria, we would hardly expect any family to be truly wealthy. Hence, the terms "rich" and "poor" shall be used to assess *relative* wealth.

That most families choose only one type of care stems from family care being a perfect substitute of market care and the disutility of family caregiving being the same as working for wages. We could add imperfect substitutability between family care and market care. Additionally, we could assume that productivity of family care is decreasing, for example, because the care needed by the patient becomes more complex or some units of care are specialized and require being bought at the market (rehabilitation or services that need to be provided by registered nurses, for example). In these cases, the possibility that the families opt for a mix of market and family care would become more likely. However, the principle that richer families would rely more on market care and poorer families on family care still holds, so there is little to learn in our model from relaxing these assumptions. We will discuss the issue further in the next subsection.

Next we include the public subsidies, first studying the effect of in-kind subsidies. We assume the family receives s units of care, $s \leq x$. We also implicitly assume that the institution granting the subsidy can observe the value x. This assumption is plausible, since the value x can possibly be inferred by examining the dependency level of the beneficiary. We do not, however, assume any particular structure for s, although it could

be a fixed value for all families or it could depend on x (but not on x_m or x_f). We will disregard the restriction $\bar{l} \geq l + x_f$ since we know it is nonbinding. Now the UMP is

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l - x_m\, w_m) + (1 - \alpha) \ln L\left(l + x_f\right) + \lambda_x\left(x_m + x_f - (x - s)\right)$$

Note that the structure of the problem is essentially unaltered. All we have done is reduce the amount of care the dependent requires. However, the choice of how to provide care has not changed. We state this formally in the following result.

Result. In the presence of an in-kind subsidy $s \leq x$, such that $x - s \geq 0$ must still be provided, results (i), (ii), and (iii) hold.

Proof. Let $x'=x-s$. We can state the UMP as

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l - x_m\, w_m) + (1 - \alpha) \ln L\left(l + x_f\right) + \lambda_x\left(x_m + x_f - x'\right)$$

,

which is analogous to the previous problem, so results (i), (ii), and (iii) hold.

What, then, is the effect of the subsidy? Poor families must now provide less care themselves, and so the marginal cost of working is lower. This implies that they spend more time working for wages, and so they accommodate the extra time available in a mix between increased leisure and disposable income. Rich families must now pay for less care themselves, freeing up part of their income. Since the marginal utility of income is decreasing, their behavior adjusts by decreasing work and enjoying more leisure.

Next we assume the subsidy is in cash. To keep both types of subsidies comparable, we assume that the subsidy is $S = s * w_m$, that is, the subsidy equals the cost of the in-kind subsidy provided earlier and is thus the same for all families. The UMP is now

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l + S - x_m\, w_m) + (1 - \alpha) \ln L\left(l + x_f\right) + \lambda_x\left(x_m + x_f - x\right)$$

Again, the structure of the problem has not changed very much and results (i), (ii), and (iii) will also hold.

Result. In the presence of an in-cash subsidy S such that $S \leq s * w_m$, results (i), (ii), and (iii) hold.

Proof. Note that in the first proof, the results depend only on the relation between w_l and w_m. Although the subsidy plays a role in the FOCs, this effect is compensated for in the adjustment of marginal utilities. Therefore, results (i), (ii) and (iii) hold.

If the rules according to which families make decisions have not changed, how does the cash subsidy differ from the in-kind subsidy? One aspect in which the two regimes differ is in their effect on labor supply. We saw that poor families responded to the in-kind subsidy by working more because care reduced the marginal disutility of labor. In the case of cash subsidies, however, poor families reduce their labor supply. This is because income increases because of the subsidy and marginal utility from working thus falls. Therefore, poor families respond to the in-cash subsidy by working less when compared to the situation without any subsidies. The same happens for rich families: Increased income reduces marginal utility of labor and so the labor supply is reduced.

Another interesting dimension is the welfare change induced by both types of subsidy policies. For rich families, the policies differ in the amount of care they hire themselves. In the in-kind subsidy, they would hire $x - s$ units of care, while they hire x units with the cash subsidies. We can prove that this difference of behavior implies no welfare change.

Result. For families with $w_l > w_m$ an in-kind subsidy s and an in-cash subsidy $S = s\, w_m$ are equivalent in terms of welfare.

Proof. We start with the UMP when there is an in-cash subsidy. Replacing $S = s\, w_m$ we have

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l + S - (x_m - s)\, w_m) + (1 - \alpha) \ln L(l + x_f) + \lambda_x (x_m + x_f - x)$$

Let $x'_m = x_m - s$ be the amount of care hired above the s units that are subsidized. We can rewrite the problem as

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l + S - x'_m\, w_m) + (1 - \alpha) \ln L(l + x_f) + \lambda_x \left(x'_m + x_f - (x - s)\right)$$

If we impose the restriction $x'_m \geq 0$, this problem equals the UMP with an in-kind subsidy. Let U^*_{ik} be the solution to the UMP with an in-kind subsidy and U^*_{ic} be the solution to the UMP with an in-cash subsidy. Since adding a restriction to the UMP with an in-cash subsidy delivers the UMP with an in-kind subsidy, it must be true that $U^*_{ic} \geq U^*_{ik}$.

Now, we start with the UMP with an in-kind subsidy, and we define $x''_m w_m = x_m w_m + S$ as the total cost of care for a family. Since $S = s w_m$, $x'' = x_m + s$. Replacing these into the UMP with an in-kind subsidy we get

$$\max_{l, x_f, x_m, \lambda_x} \alpha \ln(l\, w_l + S - x''_m\, w_m) + (1 - \alpha) \ln L(l + x_f) + \lambda_x \left(x''_m - s + x_f - (x - s)\right)$$

Simplifying the restriction, we have

$$\max_{l,x_f,x_m,\lambda_x} \alpha \ln(l\, w_l + S - x''_m\, w_m) + (1-\alpha) \ln L(l + x'_f) + \lambda_x(x''_m + x_f - x)$$

If we add the restriction that $x''m \geq 0$, we have the UMP with an in-cash subsidy. Since we have written the UMP with an in-cash subsidy as the UMP with an in-kind subsidy and a restriction, it must be that $U^*_{ic} \leq U^*_{ik}$.

Given that $U^*_{ic} \geq U^*_{ik}$ and $U^*_{ic} \leq U^*_{ik}$, it must be that $U^*_{ic} = U^*_{ik}$.

We have shown that rich families are indifferent between both types of subsidies. The reason is that care is provided at the market price regardless of the form of the subsidy.

For poor families, however, the type of subsidy does affect the type of care delivered. Under the in-cash subsidy, all the care is provided only by the family. Under the in-kind subsidy, on the other hand, only a fraction of the care is provided by the family. We can prove that imposing this restriction makes poor families worse-off with the in-kind subsidy when compared to the in-cash subsidy, as they forego the surplus created by the $w_m - w_l > 0$ differential.

Result. For families with $w_l < w_m$ an in-cash subsidy S is preferable to an in-kind subsidy $s = S / w_m$.

Proof. Let l', x'_f, x'_m be the solution to the UMP with an in-kind subsidy. Because results (i), (ii), and (iii) hold, $x'_m = 0$ and $x'_f = x - s$. We define U^*_{ik} as the utility level attained by this combination.

Now, we look at the UMP with an in-cash subsidy. If we add the restriction $x_m \geq s$, the solution to the problem will be $l'' = l'$, $x''_m = s$, $x''_f = x'_f$, delivering the same utility level $U''_{ic} = U^*_{ik}$. This proves that a basket that delivers the same utility as before is attainable. However, when we disregard the restriction $x_m \geq s$, we know the choice changes because of result (ii), so the maximum level of utility must be higher. Hence, when $w_l < w_m$, it must be that $U^*_{ic} > U^*_{ik}$.

The previous result shows that in-cash subsidies are preferable to in-kind subsidies for poor families. The reason is that, unlike what happens with rich families, in-kind subsidies do affect the price at which poor families provide care. For poor families, the cost of providing care themselves is lower than market price, hence their utility gain. This should not come as a surprise since, as the previous proof shows, it only comes as an application of the revealed preference theorem.

Our results show that in-cash subsidies are as good as in-kind subsidies for rich families and better for poor families. The question is then if there is a rationale for in-kind subsidies at all. We now show that when families have different valuations for the in-kind subsidy, a set of menu contracts in which one provides in-kind subsidies and another provides in-cash subsidies can attain the same welfare effect as an in-kind-only program but at a lower cost. Now, we will refer to those with $w_l < w_m$ as "low-valuation families" and $w_l > w_m$ as "high-valuation families."

Note that in our model the different valuation for the in-kind subsidy is given by differences in income level, as families with lower income have are more likely to have a market wage smaller than the cash transfer. Nevertheless, when interpreting the results, we will focus on the differences in valuation not the income level of families since these results apply to *any* source of heterogeneity in valuation. For example, valuation of in-kind services could be related to the complexity of care required, with families preferring in-kind services for more complex care. We will return to this issue in the discussion in the next subsection.

Result. Let $U_{ic}(S)$ be the indirect utility function with an in-cash subsidy S and $U_{ik}(s)$ be the indirect utility function with an in-kind subsidy $s = S / w_m$. For families with $w_l < w_m$, there exists a unique $S^* < S$ such that $U_{ic}(S^*) = U_{ik}(s)$.

Proof. We start by showing that $U_{ic}(S)$ is an increasing function of S. Note that

$$U_{ic}(S) = \alpha \ln(l' \, w_l + S) + (1 - \alpha) \ln L\left(l' + x_f'\right)$$

Where l', x_f' are the solutions to the UMP. Our previous discussion implied that for $w_l < w_m$, $x_f' = x$ and l' satisfied the first column of FOC (1) with equality. Now, we differentiate $U_{ic}(S)$ with respect to S

$$\frac{dU_{ic}(S)}{dS} = \frac{\alpha w_l}{l' \, w_l + S} \frac{\partial l'}{\partial S} dS + \frac{\alpha}{l' \, w_l + S} dS + \frac{(1 - \alpha)}{L\left(l' + x_f'\right)} L'(.) \left(\frac{\partial l'}{\partial S} + \frac{\partial x_f'}{\partial S}\right) dS$$

since x_f' is independent of S, $\partial x_f' / \partial S = 0$. Additionally, because of FOC (1), the first and third terms add up to zero. Hence

$$\frac{dU_{ic}(S)}{dS} = \frac{\alpha}{l' \, w_l + S} dS > 0$$

Now, note that $U_{ic}(S) > U_{ik}(s) > U_{ic}(0)$ and the indirect utility function is continuous. Hence, there must exist some value $S^* \ni (0,S)$ such that $U_{ic}(S^*) > U_{ik}(s)$. Additionally, since $U_{ic}(.)$ is strictly increasing, S^* is unique.

This result implies that the low-valuation families are willing to accept a discount in exchange for the subsidy being in cash. High-valuation families, however, would not because they are indifferent between the two types of subsidies if their value in terms of market units of care is the same. The core of this result does not stem from the fact that different families have different income levels; instead, it arises because families have a different *valuation* of the in-kind subsidy. Because low-valuation families can provide care at a lower cost, their valuation of the in-kind subsidy is low. Naturally, the opposite is true for families with $w_l > w_m$.

This result can be directly incorporated into the design of menu contracts. One contract, designed for those with the higher valuation of care, would include an in-kind subsidy, while the other would offer a cash transfer with a lower value. Since the high-valuation families would use the cash subsidy to purchase care, they would rather choose the more valuable in-kind subsidy. The low-valuation families, however, would choose the cash subsidy because its value is greater than the cost of providing care themselves. Again, this kind of result has been well studied within economics: it is an application of a discriminating monopoly where valuation for the good is unobservable.

7.1 Discussion

We have built a simple, tractable model to assess the effect of several variables on the decision of how to provide care. Our model indicates that the type of care provided depends crucially on the income level of the family. This is because relatively poor families have a low opportunity cost of providing care and choose to provide it themselves. For those who are better off, however, it makes more sense to work for wages and spend this money on hiring care.

From a practical point of view, the positive association between poverty and the preference for in-cash subsidies has a clear policy implication, since the welfare effect on the poor is maximized when they can choose this alternative. LTC programs for the poor would therefore do well to rely heavily on cash transfers. Additionally, when families differ in their valuation of care, offering a menu of subsidy options leads to savings in the overall cost of care programs. This is because the strict preference for in-cash subsidies implies a willingness to accept a discount for the cash option. Given that we expect fiscal

concerns to be among the most important restrictions for public LTC programs in the region, this type of result will prove valuable to policymakers. The experiences from developed countries show that most LTC systems offering discounted cash benefits are consistent with this simple model.

Our results indicate a few main points to explore further, the first being the preference for in-cash subsidies. This preference comes as no surprise, since an inclination toward lump-sum transfers is well established in economics. In the context of our model, the motivation behind the simultaneous existence of in-cash and in-kind subsidies is nontrivial, since these allow for a screening design that would be impossible with either type of subsidy alone and contribute to the reduction of the overall cost of the program. We have argued that poor families have a strict preference for cash, and this preference implies a willingness to accept it a discount, which naturally translates into cost savings.

In practice, however, policymakers are more likely to opt for in-kind subsidies based on other reasons. For example, the general public may be more receptive toward in-kind than in-cash policies because of paternalistic preferences, the distrust in the use of money by the cash subsidy recipients, or an understanding that in-kind care is subject to higher standards and is of better quality than care bought in the market. To address the quality of care issue, many countries offer training and support programs to family caregivers. Additionally, the government, or any other institution in charge of hiring care, could receive sizable discounts by purchasing large amounts of care. In any case, considering the mechanisms described in the previous section in the policy design will be a vital element to ensure cost-effectiveness.

In our model, the differences in valuation are the result of differences in income levels. Therefore, readers may wonder why we would design a menu option for those who can actually afford to purchase the service themselves. We assumed earlier that the target population had already been selected, so high income is relative to the eligible population. For example, eligible families could buy care in the market but at a high cost that would be catastrophic for their overall budget. Besides, the model provides useful insights if we add people with different income levels, as it introduces a dimension that is rich from an analytical standpoint.

The effect of families' different income levels implies that these families have different *valuations* for in-kind services. Those with higher incomes do not prefer in-kind subsidies because they are rich, per se, but because they have a higher valuation for this service. However, those with low income prefer in-cash subsidies because they have a lower

valuation of in-kind subsidies. Our finding that menu contracts permit lower program costs is robust to any source of differential valuation. For example, if families valued in-kind services differently because of clinical (e.g., different degrees of disability or complexity of treatment), social (e.g., reluctance to accept care from family members), or economic reasons, the cost-saving result would prevail. This result is analogous to a discriminating monopoly that cannot observe the individual valuation for the good it provides; instead, having a set of menu contracts lets families self-select themselves into categories based on their differences in valuation.

Another of our results was that richer and poorer families responded differently to in-kind subsidies because of household budget limitations. While in-kind subsidies loosened budget constraints for better-off families, poor families benefited from a relaxation of their time constraints. Therefore, the former decided to work *less* as a result of an income effect, while the latter decided to work *more* as a response to the fall in the disutility of working. However, in the case of in-cash subsidies, both types of families received the same income effect and responded by working less.

It should be kept in mind that the results regarding labor supply must be put in the context of our simplified model. The effects on labor supply are actually a secondary feature of the model, and it is not clear if they would prevail in a more realistic characterization of household structure, the labor market, and technology for producing household services. For example, if LTC has significant economies of scope with other household activities, in-kind subsidies are unlikely to free up much time to allow for large increases in labor supply. Moreover, changes in labor supply seem less likely under rigid labor market contracts. If there are costs to exiting and entering the labor market, low-income individuals may stay in the labor force even if it is not economical in the short run. Additionally, people with the possibility to select who provides care are most likely those for whom access to the labor market is more limited. These considerations deserve additional empirical research.

Moreover, our model has assumed that family care is a perfect substitute for market care. Although this may be true for a large number of tasks related to LTC, like housework or meal preparation, it may be a more dubious claim for other tasks that may require particular skills and knowledge. Under imperfect substitution, the choice of in-kind subsidies would be more frequent for low-income people. Additionally, we have paid little attention to family structure. We could assume that an elderly spouse is ill-equipped for certain tasks like assisting the dependent person with movement or bathing. Relaxing

the assumption of substitutability will likely bias the family-and-market mix in favor of the latter. We have also taken as given is the supply of LTC services, either for in-kind provision or to be bought at the market. Large LTC programs would certainly affect the demand for these services and would affect equilibrium prices, however the skill level required and the experience in OECD countries suggests that supply is fairly elastic. In any case, this aspect should be analyzed further jointly with the need for policies to ensure quality in the provision of LTC services.

Finally, building a subsidy program, be it cash or in-kind, would not be an easy task. Eligibility criteria set by income and level of dependency would need to be defined and a reliable method to implement these criteria would need to be developed. There is a need to provide standards and training for LTC services and a quality assurance system. Some developed countries that provide in-cash subsidies require that cash be spent on formal LTC services, while others allow for it to be used to pay family caregivers (and the LTC program pays for the contributions of these family caregivers as well as some respite services).

8. Concluding Remarks

Despite the well-known fact that Latin America is aging quickly, policy discussions about the many consequences of this process are limited. Moreover, recent cohorts are aging in a context of much lower living standards than those of the elderly in advanced countries, so they could be much more prone to disabilities as they age. These factors imply that demand for LTC is likely to grow quickly in Latin America and the Caribbean. Ours is among the first studies to present evidence on aging as well as theoretical and policy discussions from LTC policies in developed countries and apply them to the region, and to present a formal model to help guide the debate on the type of LTC policies that are feasible for the region.

Our review of the theory and empirical evidence on the matter shows that private markets are ill-equipped to grant insurance beyond specific population groups. As a result, most advanced countries have come forth with public social insurance programs. We have shown that these programs vary widely along several dimensions, with their overall size and comprehensiveness being among the most relevant. In contrast, while most countries have advanced regulations and laws protecting elderly and encouraging healthy and active aging, and some apply programs to support the elderly, comprehensive LTC policies are nonexistent in Latin America and the Caribbean (with the recent exception of Uruguay, which has designed but is yet to implement its LTC

system). This means that families must rely on other arrangements to provide care, and the existing evidence shows that families in the region rely very little on remunerated care. The duty therefore falls on family members, with women being the primary source of care.

As the demand for care rises and the issue of LTC becomes more visible, we expect policymakers to come forth with programs designed to guarantee care. One reason is because of political economy concerns. As in any long-term public expenditure program, the bulk of costs associated with LTC will happen in the future, allowing for short-run political capitalization. Another reason is that LTC programs can follow poverty alleviation program schemes. Typically, poverty alleviation programs acknowledge that the living standards of certain population groups are bellow acceptable standards, and public programs aim to fill this gap. In this context, need for LTC would be understood as an aggravating circumstance, which requires additional assistance from governments.

In view of this possibility, we study the effect of several subsidy schemes by means of a formal model. Our model yields several interesting insights. The first is the positive association between poverty and a preference for in-cash subsidies. Disadvantaged households have lower opportunity cost, and therefore find it more affordable to provide care themselves than hire a caregiver at market rates. This result indicates that in-cash subsidies are likely to be a better match for poverty-alleviation LTC programs. Additionally, in programs where eligible families have varying affordability thresholds, granting the option between in-kind and in-cash programs is likely to reduce the overall cost of the program, as people with lower valuation of in-kind programs are willing to accept in-cash programs at a discount. We argue that this result is robust to several settings in which families differ in their valuation of in-kind care, as would happen in the existence of different types of care or severity of disability.

In the end, the issue of LTC will move further into the policy agenda in the medium run. We hope to have contributed by broadening the discussion and presenting our model with clear and useful policy implications for LTC programs.

References

Agree, E.M., V.A. Freedman, J.C. Cornman, et al. 2005. "Reconsidering Substitution in Long-Term Care: When Does Assistive Technology Take the Place of Personal Care?" *Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 60(5): S272–S280.

Aguirre, R. 2011. "El Reparto del Cuidado en América Latina." In M. Duran, editor. *El Trabajo del Cuidado en América Latina y España*. Madrid, Spain: Fundacion Carolina.

Al Snih, S., J.E. Graham, Y.F. Kuo, et al. 2010. "Obesity and Disability: Relation among Older Adults Living in Latin America and the Caribbean. American." *Journal of Epidemiology* 171(12): 1282–1288.

Anderson, W.L., and J.M. Wiener. 2013. "The Impact of Assistive Technologies on Formal and Informal Home Care." *Gerontologist* 55(3): 422–433.

Arntz, M., R. Sacchetto, A. Spermann, et al. 2007. "The German Social Long-Term Care Insurance-Structure and Reform Options." IZA Discussion Paper Series No. 2625. Bonn, Germany: Institute of Labor Economics.

Barr, N. 2010. "Long-Term Care: A Suitable Case for Social Insurance." *Social Policy and Administration* 44(4): 359–374.

Barr, N., and P. Diamond. 2008. *Reforming Pensions: Principles and Policy Choices.* New York, New York, United States and Oxford, United Kingdom: Oxford University Press.

Baumol, W.J. 1967. "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis." *American Economic Review* 57(3): 415–426.

———. 1993. "Health Care, Education and the Cost Disease: A Looming Crisis for Public Choice." In Rowley, C., F. Schneider and R.D. Tollison, editors. *The Next Twenty-Five Years of Public Choice,* pp. 17–28. Dordrecht, Netherlands: Springer Netherlands.

Bergquist, S., J. Costa-Font and K. Swartz. 2015. "Long Term Care Partnerships: Are They 'Fit for Purpose'?" CESifo Working Paper Series 5155. Munich, Germany: CESifo Group.

Bonsang, E. 2009. "Does Informal Care from Children to Their Elderly Parents Substitute for Formal Care in Europe?" *Journal of Health Economics* 28(1): 143–154.

Brown, J.R., N.B. Coe and A. Finkelstein. 2007. "Medicaid Crowd-Out of Private Long-Term Care Insurance Demand: Evidence from the Health and Retirement Survey." *Tax Policy and the Economy* 21:1–34.

Campbell, J.C., N. Ikegami and M.J. Gibson. 2010. "Lessons from Public Long-Term Care Insurance in Germany and Japan." *Health Affairs 29*(1): 87–95.

Canta, C., H. Cremer and F. Gahvari. 2016. "Maybe 'Honor Thy Father and Thy Mother': Uncertain Family Aid and the Design of Social Long Term Care Insurance." *Urbana* 51(61801).

Chomik, R., and M. MacLennan. 2014. "Aged Care in Australia: Part I-Policy, Demand and Funding." CEPAR Research Brief 2014/01. Sydney, Australia: ARC Centre of Excellence in Population Ageing Research.

Colombo, C., L.N. Ana, M. Jerome and T. Frits. 2011. "OECD Health Policy Studies Help Wanted?" Providing and Paying for Long-Term Care. Paris, France: Organisation for Economic Co-operation and Development Publishing.

Courtemanche, C., and D. He. 2009. "Tax Incentives and the Decision to Purchase Long-Term Care Insurance." *Journal of Public Economics* 93(1): 296–310.

Da Roit, B., and B. Le Bihan. 2010. "Similar and Yet So Different: Cash-for-Care in Six European Countries' Long-Term Care Policies." *Milbank Quarterly* 88(3): 286–309.

De La Maisonneuve, C., and J. Oliveira Martins. 2013. "A Projection Method for Public Health and Long-Term Care Expenditures." Economics Department Working Papers No. 1048. Paris, France: Organisation for Economic Co-operation and Development.

Family Caregiver Alliance. 2015. *Selected Long-Term Care Statistics.* San Francisco, California, United States: Family Caregiver Alliance, National Center on Caregiving.

Gascón, Silvia y Nélida Redondo. 2014. "Calidad de Los Servicios de Largo Plazo Para Personas Adultas Mayores Con Dependencia." Políticas Sociales, no. 207. Santiago, Chile.
http://repositorio.cepal.org/bitstream/handle/11362/36948/S1420237_es.pdf.

Goda, G.S. 2011. "The Impact of State Tax Subsidies for Private Long-Term Care Insurance on Coverage and Medicaid Expenditures." *Journal of Public Economics* 95(7): 744–757.

Golberstein, E., D.C. Grabowski, K.M. Langa and M.E. Chernew. 2009. "Effect of Medicare Home Health Care Payment on Informal Care." *INQUIRY: The Journal of Health Care Organization, Provision, and Financing* 46(1): 58–71.

González, L.E., A. Raga and M. Sibils. 2012. "Consulta de Opinión sobre Políticas de Cuidado en América Latina. Niñas y Niños, Personas Ancianas, Personas con Discapacidad y Personas con Enfermedades Crónicas." *Observatorio de Igualdad de Género de América Latina y el Caribe*. Santiago, Chile: Economic Commission for Latin America and the Caribbean.

Hauschild, R. 1994. "Vorschläge und Konzeptionen." In: *Bundesarbeitsblatt,* 45. Jg., Heft 8/9, 12–21. Schwerpunktheft: Die neue Pflegeversicherung.

Ibarrarán, P., Medellín, N., Regalia, F. y Stampini, M. (2017). *Howe Conditional Cash Transfers Work*. *Good Practices after 20 Years of Implementation.* Washington DC: IDB.

International Labour Organization. 2009. *Envejecimiento de la Población ¿Quién Se Hace Cargo del Cuidado?* Notas OIT: Trabajo y Familia, No. 8. Geneva, Switzerland: International Labour Organization.

Kim, H.B., and W. Lim. 2015. "Long-Term Care Insurance, Informal Care, and Medical Expenditures." *Journal of Public Economics* 125:128–142.

Kinsella, K.G., and D.R. Phillips. 2005. "Global Aging: The Challenge of Success." *Population Bulletin* 60(1): 3.

La Sasso, A., and R. Johnson. 2002. "Does Informal Care from Adult Children Reduce Nursing Home Admissions for the Elderly?" *INQUIRY: The Journal of Health Care Organization, Provision, and Financing* 39(3): 279–297.

Le Bihan, B., and C. Martin. 2010. "Reforming Long-Term Care Policy in France: Private–Public Complementarities." *Social Policy and Administration* 44(4): 392–410.

Litwin, H., and C. Attias-Donfut. 2009. "The Inter-Relationship between Formal and Informal Care: A Study in France and Israel." *Ageing and Society* 29(01): 71–91.

Matus-López, M. 2015. "Thinking about Long-Term Care Policies for Latin America." *Salud Colectiva* 11(4): 485–496.

Matus-López M, Cid Pedraza C. 2014. Costo de un sistema de atención de adultos mayores dependientes en Chile, 2012–2020. Rev Panam Salud Publica; 36(1):31–6.

McEniry, M. 2013. "Early-Life Conditions and Older Adult Health in Low- and Middle-Income Countries: A Review." *Journal of Developmental Origins of Health and Disease* 4(1): 10–29.

McKnight, R. 2006. "Home Care Reimbursement, Long-Term Care Utilization, and Health Outcomes." *Journal of Public Economics* 90(1): 293–323.

Medici, A.C. 2011. "How Age Influences the Demand for Health Care in Latin America" In D. Cotlear, editor. *Population Aging: Is Latin America Ready?* Washington, DC, United States: World Bank.

Mirrlees, J.A., and S. Adam. 2010. *Dimensions of Tax Design: The Mirrlees Review.* Oxford, United Kingdom: Oxford University Press.

Monteverde, M., K. Noronha and A. Palloni. 2009. "Effect of Early Conditions on Disability among Elderly in Latin America and the Caribbean." *Population Studies* 63(1): 21–35.

Mortenson, W.B., L. Demers, M.J. Fuhrer et al. 2012. "How Assistive Technology Use by Individuals with Disabilities Impacts Their Caregivers: A Systematic Review of the Research Evidence." *American Journal of Physical Medicine and Rehabilitation* 91(11): 984–998.

OECD (Organisation for Economic Co-operation and Development). 2015. "Health at a Glance 2015: OECD Indicators." Paris, France: OECD Publishing.

Olsberg, D. 2005. "Ageing-in-Place? Intergenerational and Intra-Familial Housing Transfers and Shifts in Later Life." AHURI Final Report No. 88, Australian Housing and Urban Research Institute Limited.

Palloni, A., and L. Souza. 2013. "The Fragility of the Future and the Tug of the Past: Longevity in Latin America and the Caribbean." *Demographic Research* 29:543.

Palloni, A., M.R. McEniry, R. Wong and M. Pelaez. 2006. "The Tide to Come Elderly Health in Latin America and the Caribbean." *Journal of Aging and Health* 18(2): 180–206.

Perez, F.R., G.F.M. Fernandez, E.P. Rivera and J.M.R. Abuin. 2001. "Ageing in Place: Predictors of the Residential Satisfaction of Elderly." *Social Indicators Research* 54(2): 173–208.

Rawls, J. 1972. *A Theory of Justice.* Oxford, United Kingdom: Oxford University Press.

Rico, M.N., and C. Robles. 2016. "Políticas de Cuidado en América Latina: Forjando la Igualdad." Serie Asuntos de Género No. 140. Santiago, Chile: Economic Commission for Latin America and the Caribbean.

Rothgang, H. 2010. "Social Insurance for Long-Term Care: An Evaluation of the German Model." *Social Policy and Administration* 44(4): 436–460.

Schut, F.T., and B. van den Berg. 2010. "Sustainability of Comprehensive Universal Long-Term Care Insurance in the Netherlands." *Social Policy and Administration* 44(4): 411–435.

United Nations. 2015. *World Population Prospects: The 2015 Revision.* New York, New York, United States: United Nations.

Van Houtven, C.H., and E.C. Norton. 2004. "Informal Care and Health Care Use of Older Adults." *Journal of Health Economics* 23(6): 1159–1180.

Wiles, J.L., A. Leibing, N. Guberman et al. 2011. "The Meaning of 'Ageing in Place' to Older People." *The Gerontologist* 52(3): 357–366

World Health Organization. 2016. "Global Health Observatory." Geneva, Switzerland: World Health Organization.