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Reforming the US Long-Term Care Insurance Market

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Abstract: One in three 50-year-old Americans will spend over 90 days in a nursing home, with roughly one in ten facing out-of-pocket expenses exceeding $200,000. Yet, only about 10 percent of individuals aged 65 or older possess private long-term care insurance (LTCI). While Medicaid provides benefits for those with minimal assets (about $2,000 or less) and low income, its stringent means-test and private market frictions result in many retirees paying for long-term care (LTC) expenses out-of-pocket. As the American population ages, policymakers anticipate a rise in state and federal Medicaid expenditures. This chapter examines reforms to both public and private LTCI provision using a structural model of the US LTCI market. Three policies are considered: universal public LTCI, no public LTCI coverage, and a policy that exempts asset holdings from the Medicaid asset test on a dollar-for-dollar basis with private LTCI coverage. We find that this third reform enhances social welfare and creates a vibrant private LTCI market while preserving the safety-net provided by Medicaid to low-income individuals.

Introduction

One of the biggest financial risks faced by individuals over their life cycle is the risk of needing formal long-term care (LTC) assistance. One in three 50-year-old Americans will experience a health event that results in a nursing home stay in excess of 90 days, and about one in ten will incur out-of-pocket LTC expenses of $200,000 or more.

The baby boomers are now moving into retirement. As they age the aggregate number of LTC events and aggregate losses associated with these events will increase. These increases will put new stress on government coffers and the personal finances of aging baby boomers. The Penn Wharton Budget Model predicts that expenditures on LTC by Medicaid, the main public insurer, will increase from 0.62 percent of GDP in 2022 to 1.25 percent of GDP by 2050. Medicaid expenditures account for about half of total aggregate expenditures on LTC services (see He (2022) and Chidambaram and Burns (2022) for details). So, total expenditures on LTC could rise from about 1.2 percent of GDP to as high as 2.5 percent.

Given the high probability of a costly LTC event, one might expect that the private market for long-term care insurance (LTCI) would be healthy and growing. Yet, surprisingly, only 10 percent of Americans aged 65 and over own a private LTCI policy and the number of individuals with such a policy has been falling steadily since 2021. The objectives of this chapter are to describe how Americans currently cope with LTC risk, provide a quantitative assessment of the reasons why the private LTCI market is so small, and consider alternative strategies for reforming the market.

Demand and provision of long-term care services

What is long-term care? An individual's demand for health care services can be categorized into three main types: acute care, hospice care, and LTC. Acute care consists of medical and/or nursing interventions aimed at treating specific acute conditions, such as an infection, heart attack, or injury, with the goal of promoting recovery. Hospice care provides support to individuals who are disabled and nearing death. LTC services offer ongoing assistance with daily activities for individuals who are not in the terminal stage of life. The primary objectives of LTC are to enhance the individual's quality of life and promote functional independence.

The extent of an individual's need for LTC services is usually determined by counting the number of *activities of daily living* (ADLs) the person is unable to perform without assistance. The six ADLs consist of eating, bathing, dressing, transferring in and out of a chair or bed, toiletting, and continence. A second determinant of LTC service needs is cognitive decline. The extent of cognitive decline is often measured by counting the number of *instrumental activities of daily living* (IADLs) a person is unable to perform without assistance. Examples of IADLs include an individual's ability to manage their own medication, shop for groceries, prepare meals, use a telephone, drive or use transportation, handle personal finances, do laundry, and housekeep. The Health Insurance Portability and Accountability Act of 1996 is used by the IRS to determine whether a private LTCI policy qualifies for federal income tax benefits. This act defines an LTC event as requiring assistance with two or more ADLs for an expected duration of 90 days or more or needing substantial supervision due to severe cognitive impairment.

In the analysis that follows we will summarize an individual's demand for LTC services using a frailty index that combines difficulties with ADLs and IADLs, and other indicators of

health status into a single number.[1] A higher value of the index corresponds to a higher level of frailty.

Who needs long-term care? The likelihood of needing LTC services varies systematically based on gender, marital status, education, and wealth. This variation is partly due to the fact that LTC needs are positively correlated with age. Women typically outlive men, and individuals with higher levels of education and wealth tend to have higher life expectancies than those less educated and less affluent. The intensity of LTC needs also varies by demographic characteristics. Females in a given age group tend to have higher rates of difficulties with ADLs and IADLs than males in the same age group, and individuals who are single or unmarried tend to have poorer health as compared to married individuals.

At age 65, the likelihood of experiencing a LTC event before death is 47 percent for men and 58 percent for women, 51 percent for married individuals and 54 percent for unmarried individuals.[2] The average duration of care is 3.2 years for men and 4.4 years for women. Married individuals experience an average of 3.6 years of care, whereas unmarried individuals require 4.3 years.

Who provides long-term care services? About 73 percent of LTC services are provided informally by a relative. Of the remaining 28 percent, 13 percent is provided by formal care providers at home and 15 percent is provided in skilled nursing home facilities. The typical caregiver is a 50-year-old-women who provides care for her mother. Informal care provided by the spouse is also common accounting for 38 percent of informal LTC services.

Informal care is frequently provided either for free or at rates well below market prices. However, family members and spouses are often not adequately equipped to provide LTC services

to individuals who have difficulties with several ADLs and/or IADLs. Consequently, approximately 47 percent of those aged 65 are projected to experience a LTC event that necessitates the use of formal LTC services before their death. Of these, about half will require less than one year of formal care. However, around 33 percent will need 2 years of formal care, and 12.5 percent will require more than 5 years of formal LTC services.

Formal care is expensive. According to the 2021 Genworth Cost of Care Survey, the median cost of one year of assisted living services in 2021 was $54,000, the median cost of formal home-provided health care was $61,776, and the median cost of a private room in a skilled nursing home facility was $108,405 (Genworth 2024). Given the magnitude of these expenses combined with the fact that they tend to be concentrated near the end of life, one would expect that there would be a large and active private insurance market for LTC risks. However, as we explain next, this is not the case.

The insurance market for long-term care risk

Public insurance. One of the main reasons we draw a distinction between acute health care and hospice care on the one hand and LTC on the other, is the structure of insurance markets for these risks. Medicare offers near-universal coverage for individuals aged 65 and above, serving as the primary payer of acute health care expenses, including formal care services during short-term hospital and/or nursing home stays lasting 20 to 90 days.[3] Medicare also covers hospice care for individuals certified as disabled and nearing the end of life. However, Medicare does not provide insurance coverage for LTC events such as nursing home stays exceeding 90 days.

Medicaid does provide coverage of long-term nursing home stays, but it's a secondary payer, and eligibility hinges on satisfying strict income and asset tests. For instance, in most states,

the asset threshold is set at less than $3,000. As a secondary payer, Medicaid only steps in once an individual has exhausted their private LTCI benefits, spent-down their assets, and depleted social security and other retirement income. Moreover, Medicaid imposes strict guidelines regarding the nursing home amenities it covers.

The Private LTCI market. Despite the limited coverage of LTC risks provided by public insurance, the private market for LTCI is small and the size of the market has been declining steadily since 2012. Only about 10 percent of current retirees hold such a policy. For perspective, according to the Congressional Research Service, approximately 7.5 million individuals in the US owned an LTCI policy in 2020. In contrast, in 2021, over 55 million individuals (comprising 95 percent of those enrolled in both Medicare Part A and Part B) had Medicare Advantage or supplemental Medicare benefits managed by a private insurer.[4]

The US LTCI market has other noteworthy characteristics that have been emphasized in the previous literature (e.g., Brown and Finkelstein (2007) and Braun et al. (2019)). Premiums for LTCI policies are higher than other life insurance products, representative LTCI policies offer incomplete coverage against the expected size of the loss, and denial rates of applicants by private insurers is high. Hendren (2013) attributes this final observation to adverse selection and Chade and Schlee (2016) provide a theory of adverse selection and denials.

Why don't Americans purchase LTCI? There is an urgent need to reform the LTCI market. However, to properly target policy reforms and build a consensus behind them, we need to get a better understanding of the demand elasticities for private LTCI. In particular, we need to understand how these elasticities vary across individuals due to differences in their exposures to LTC risk and their external insurance opportunities. Additionally, we need to understand how

supply-side frictions faced by issuers of LTCI policies influence the pricing and coverage of the insurance contracts they offer. To this end, we now analyze how Medicaid, administrative costs, and adverse selection influence LTCI takeup, coverage levels, and pricing using a generalized version of the model of Braun et al. (2019).

The contributions of Medicaid, administrative costs and adverse selection to low LTCI takeup rates. In Braun et al. (2019) we specify a quantitative structural model of the US private LTCI market. Individuals in the model differ by permanent earnings (PE) and frailty. They work when young and save for their retirement. Upon retiring, they receive a private signal about their likelihood of needing formal LTC in the future. The retirement period then proceeds in two stages. During the first stage, individuals experience a shock to their wealth and a mortality shock. Individuals who survive move to the second stage where they face an LTC shock.

Individuals in the model have three ways to insure against the risk of being old, impoverished, and in need of LTC. First, they can self-insure by saving while working. Second, they can purchase private LTCI at the beginning of retirement. Third, they can receive assistance from public insurance provided by the government. The public insurance program for LTC risk in the model captures the main features of Medicaid. Public LTC benefits are means-tested and public LTCI is a secondary payer, that is, government benefits are only available to individuals after they exhaust all private LTCI benefits. Finally, the government guarantees a minimum consumption level for destitute individuals. Our model formulation is designed to isolate LTC risk from other risks such as mortality eliminating the need for additional insurance options.

Private LTCI contracts are offered to individuals by an insurer with monopoly power who faces fixed and variable costs of insurance provision. The private insurer also contends with information constraints. It only observes individuals' PE and frailty which are noisy indicators of

their true health status. Using this imperfect information, it sorts individuals into risk groups. Individuals in each risk group have private information about whether they are healthy and their risk of needing formal LTC is low, or unhealthy and have relatively high risk of needing such care. Even though we do not explicitly model informal care, it is worth keeping in mind that private information can encompass additional unobserved factors, such as the willingness and availability of family members to provide informal care services. Within a given risk group, unhealthy individuals have less elastic demand for private LTCI as compared to healthy ones. However, healthy individuals are less costly to insure. The insurer designs a menu of contracts for each risk group that recognizes these distinctions between the two types of individuals. Offering any amount of insurance to some risk groups may be unprofitable for the insurer. In these situations, the insurer will deny coverage to the entire risk group. Coverage denials are more likely in risk groups where adverse selection problems are severe.

<Insert Figure 1 here>

The specific timing of the model is shown in Figure 1. In period one, young individuals learn their PE and frailty status. At the same time, LTC insurers observe the population distributions of PE and frailty and design insurance contracts. Individuals then receive an initial endowment of earnings and make consumption and savings decisions. In period two individuals receive a second endowment which is a stand-in for private and public pension income. They discover their true private health type and decide whether to purchase a private LTCI contract if offered by the insurer. After this decision they experience a consumption demand (wealth) shock and draw a realization from the survival distribution. We view the consumption demand shock as a parsimonious way to capture shocks that might draw down wealth prior to the arrival of the NH shock. For instance, some individuals may experience large out-of-pocket medical expenses before

NH entry or enter a NH later in life than others and have less residual wealth to provision for their NH care. Individuals who survive to period three make no new decisions but face the risk of requiring costly long-term nursing home (NH) care. NH entrants who hold a private LTCI policy receive an indemnity from the insurer. After private insurance has paid, those whose remaining wealth is sufficiently low receive public LTC benefits.[5]

In the model, demand for private LTCI varies with the PE and frailty status of individuals. For instance, those with low PE (and low wealth) are more likely to prefer not to purchase private insurance due to the secondary payer provision of the public LTCI program. At the same time, high PE (and high wealth) individuals are more likely to decide to self-insure if the cost of private LTCI is too high.

Given that our ultimate objective is to assess the potential value of reforms to the LTCI market, we make the following modifications to the model. First, we introduce a government budget constraint and assume that the public LTCI program is funded by a linear income tax on individuals' labor and asset income. Second, we close the economy by assuming that the private LTC insurer is owned by individuals in the top one percent of the PE distribution and its profits are equally distributed among them. Third, we assume that, like the private insurer, the public LTCI program faces costs of insurance provision.[6]

The model is parameterized to be consist with many features of the US LTCI market. This is done by setting parameters either directly based on data or choosing them such that the model reproduces targeted data moments.[7] Table 1 highlights several of the empirical moments used in the calibration procedure together with their model counterparts.

<Insert Table 1 here>

Individuals in the model differ by PE and frailty and these differences are correlated with their retirement income, wealth, survival and nursing home entry risk. The average individual in the model has a PE of $1,049,461 and a replacement rate of retirement income of 57 percent. They face a 30 percent chance of surviving to the final period of life, entering a nursing home and incurring NH expenses of $97,743. Upon NH entry their wealth will have declined by 32 percent since the start of retirement. These statistics are taken from US data. PE is computed as the average annual earnings in year 2000 multiplied by 40 years. To derive the replacement rate of retirement income we take the ratio of social security and private pension income to labor earnings for Health and Retirement Study (HRS) respondents. Wealth at the age of NH entry relative to retirement and the probability of ultimately entering a nursing home for a long-term stay are also estimated using data on HRS respondents. Finally, NH expenses are given by the average costs of 3 years of care in a residential LTC facility in 2000. They consist of the medical and nursing costs of residential LTC only because the room and board costs of LTC are captured by the consumption of NH residents in the model.

To discipline the scale of the public LTCI (Medicaid) program, the consumption floor guaranteed to individuals in the final stage of life is set to $6,540 per year. In addition, the fraction of NH residents on Medicaid in the data, which is informative about the importance individuals attach to consumption during their nursing home stay, is targeted. The consumption floor value comprises a consumption allowance of $30 per month, and housing and food expenses of $515 per month. The $30 allowance aligns with Medicaid administrative rules, while $515 is the amount SSI provided for a single elderly individual in 2000. The fraction of NH residents on Medicaid in the model is 50 percent which is in line with the targeted data counterpart.

The fixed and variable costs of LTCI provision are set such that the private insurer in the model incurs administrative costs of insurance provision that align with those in the industry. According to the Society of Actuaries fixed administrative costs, which include underwriting costs and costs of paying claims, were 20 percent of present-value premium on average in 2000. Variable costs, including commissions and fees paid to agents and brokers, amounted to 12.6 percent of present-value premium. One potential benefit of public insurance provision is lower costs. The public insurer does not conduct underwriting nor pay commissions to agents and brokers. To capture this difference between public and private insurance provision in a simple way, we assume that both insurers face the same variable administrative costs but that the fixed costs are only incurred by the private insurer.

<Insert Figure 2 here>

Recall that the private insurer sorts individuals into risk groups based on their observed PE and frailty. Figure 2 illustrates that the model reproduces the variation in average NH entry across these groups. Higher PE in the model is associated with a slightly lower risk of NH entry as in the data. Likewise, the model reproduces the slight decline in NH entry with frailty. The fact that NH entry declines with frailty in the data may be surprising. However, the NH entry rates in Figure 2 are not conditional on survival and highly frail individuals have a much lower probability of surviving to the final period of life when NH entry occurs.

Within each risk group, individuals differ in their true NH entry risk which is their own private information. All else being equal, the larger the dispersion in private information within a risk group, the more severe the adverse selection problem within that group becomes, and consequently, the higher the probability that the group will be denied coverage by the private insurer. Thus, we use the variation in LTCI takeup rates across PE and frailty quintiles to determine

the unobserved differences in NH entry risk between healthy and unhealthy types. As Figure 2 shows, the model fits the patterns of LTCI takeup with PE and frailty well. To further assess the model fit, we compare the variation in private NH risk in the model to the variation in self-predicted NH entry probabilities of respondents in the HRS. These two probabilities are not exactly the same. HRS respondents are asked to report their self-assessed probability of NH entry in the next 5 years whereas the model values are lifetime NH entry probabilities. Still, the dispersion in these probabilities varies with PE and frailty similarly in the model and the data.

<Insert Table 2 here>

Table 2 reports summary statistics about LTCI takeup rates, LTCI coverage levels and pricing for our baseline specification and four counterfactuals. Consider our baseline results first and observe that the baseline specification reproduces the empirical observation that LTCI takeup rates are low. Only 9 percent of individuals choose to purchase private LTCI. Our discussion above pointed out that LTCI takeup rates are higher at higher PE quintiles in the data. An attractive feature of our model is that we can inspect LTCI takeup rates not just at PE quintiles but also among the highest PE groups. Table 2 indicates that the relationship between LTCI and PE is more subtle than our data suggest. LTCI takeup rates in the model are hump shaped in PE. Demand for private LTCI insurance is zero for the lowest PE individuals because they qualify for free Medicaid LTC benefits. LTCI takeup rates are higher for middle-class individuals but are lower in the right tail of the PE distribution and are zero for the highest one percentile PE individuals. The most affluent individuals in our model prefer to self-insure against LTC risk.

The baseline specification also reproduces the empirical observations that LTCI policy coverage is incomplete and the price of LTCI insurance is high. On average, LTCI only covers 60 percent of expected LTC expenses in the model. To measure pricing distortions, we express

premiums as loads, that is, as a markup over the premium for actuarily-fair insurance. The average load in our model is 41 percent. Table 2 also shows how coverage and loads vary with PE. Coverage is increasing in PE for most of the distribution. As the likelihood of qualifying for Medicaid LTC benefits declines, individuals demand more coverage from the private insurer. However, the highest PE individuals have the resources to self-insure most or even all of the costs of a LTC event and the insurer responds by offering them less coverage and slightly lower loads.

The impact of Medicaid, administrative costs, and adverse selection on takeup rates and policies in the private LTCI market are documented in Columns 2–4 of Table 2. As we explained above, LTCI products are more costly for insurers to administer than other life insurance products. Screening of applicants is more thorough, and regulators require that insurers hold more reserves to provision for aggregate variation in interest rates and lapse rates. Finally, insurers often must pay benefits for multiple years and need to monitor recipients to ascertain whether or not the LTC event is ongoing. These frictions are captured in the model with fixed and variable costs of writing LCTI policies. The 'No Administrative Costs' scenario sets these costs to zero. Removing administrative costs has a big impact on private LTCI rates which increase from 9 to 60 percent. The poorest individuals still opt out, but all other PE groups purchase private LTCI. The increase in LTCI takeup is particularly pronounced among the highest PE individuals. LTCI coverage rates also increase but are still incomplete. Private LTCI covers 62 percent of expected LTC expenses on average as compared to 60 in the baseline. Loads fall both on average and across the PE distribution. Overall, removing administrative costs has the biggest impact on high PE individuals, who, absent administrative costs, the insurer can now accommodate with higher coverage and lower load contracts.

Consider next the 'No Medicaid' economy. This scenario lowers the consumption floor provided by the public LTCI program to near zero.[8] As with administrative costs, removing Medicaid has a large impact on LTCI takeup rates which rise from 9 to 90 percent. The coverage rates of LTCI policies also increase, rising from 60 to 66 percent, but coverage is still incomplete. Removing Medicaid increases the demand for private insurance significantly and the insurer responds by charging higher premiums. The average load increases to 0.56 from 0.41 in the baseline. Removing Medicaid has the most pronounced impact on individuals with relatively low financial resources. They are the biggest beneficiaries of Medicaid and when this program is absent, they have relatively inelastic demand for private LTCI. Individuals in PE quintile one receive nearly complete coverage in the event of a loss but also face the highest load. Both coverage ratios and loads fall monotonically with PE. Removing Medicaid has the smallest impact on the situation of the most affluent individuals. They have adequate resources to self-insure against LTC risk and only a small fraction qualify for Medicaid coverage in the baseline economy.

The fourth column of Table 2 documents how LTCI takeup rates and policies change when private information frictions are absent. In this scenario the insurer directly observes each individual's risk exposure and price discriminates accordingly. A healthy (good) risk individual now faces lower premiums than an unhealthy (bad) risk individual in the same risk group. LTCI takeup rates increase to 37 percent but this increase reflects higher takeup of the good risk types who are less costly to insure. Takeup rates of the bad risk types, in contrast, decline. They are more expensive to insure, and the costs of their policies are no longer subsidized by the healthier individuals in their risk group. Consequently, their premiums are now higher than in the baseline. The full information scenario indicates that asymmetric information plays a central role in producing incomplete coverage. LTCI covers 83 percent of the loss in this scenario as compared

to 60 percent in the baseline specification. When the insurer directly observes each individual's private health type it no longer has to distort the coverage levels for good risk types down and the premiums up to prevent bad risk types from preferring the good-type contract.

In summary, our structural model reveals significant and distinct effects of Medicaid, administrative costs, and adverse selection on the private LTCI market. All three factors reduce LTCI takeup and coverage rates. However, administrative costs raise premium loads, whereas Medicaid and adverse selection lower them. Additionally, their effects on takeup and coverage vary with PE. All three factors are important for middle-income individuals. However, Medicaid matters most for the low takeup and coverage rates among poorer individuals, while administrative costs and adverse selection are most important for the low takeup and coverage of those with high PE.

Reforming the US LTCI market

Our previous discussion has documented that the risk of needing LTC is high for older individuals, and the market price of LTC services is substantial relative to their resources during the life stage where this risk is most pronounced. Even though retirees have a high likelihood of incurring a costly LTC event, the US private LTCI market suffers from low takeup rates, policies that only provide incomplete coverage of LTC costs, and premiums that are far from actuarily fair. Americans are aging and a higher fraction of the US population will be exposed to LTC risk moving forward. Aging will create fiscal stress because higher government outlays will be required to maintain current levels of public LTCI. Aging could also have negative macroeconomic consequences as an increasing share of households choose to consume less and save more to provision for LTC.

Results from our quantitative model indicate that Medicaid has a particularly large and negative impact on private LTCI takeup especially for middle- and lower-income individuals. However, private LTCI takeup rates are also low among those with high income who choose to self-insure LTC risk. These findings motivate our analysis in this section. Does it make more sense to reduce the scale of Medicaid to foster a larger private market or to increase the scale of Medicaid instead and offer universal coverage for LTC risk? Are there specific ways to tailor reforms that preserve the safety net provided by public LTCI and at the same time create a more vibrant private LTCI market?

We now assess the impact of reducing or increasing the scale of public LTCI using three criteria. The first criterion is the fiscal cost of providing public LTC insurance as measured by the tax burden on individuals. The second criterion is how each reform influences the functioning of the private LTCI market. And, finally, the third criterion is how each measure affects aggregate and individual welfare.

In the ensuing discussion it is helpful to keep in mind that there are two general equilibrium effects operating in the model. First, Medicaid is financed by a linear income tax and any changes in the scale of Medicaid will be accompanied by corresponding changes in the income tax rate. Second, the private insurer's profits are distributed to individuals in the top 1 percent of PE. Thus, any change in the profitability of offering private LTCI will affect the income of the most affluent individuals in the economy.

We start by analyzing the 'No Medicaid' economy we introduced in Section 4 where the consumption floor guaranteed by the public LTCI program is close to zero.[9] The upper panel of Table 3 reports the aggregate effects of this policy reform. Substantially scaling back Medicaid produces large fiscal savings. The low guaranteed consumption floor means only the neediest NH

entrants qualify for public LTCI benefits and the fraction of individuals receiving Medicaid transfers falls from 50 to 6 percent. Consequently, Medicaid outlays fall by 88.4 percent which induces a decline in the tax rate and government tax revenue.

<Insert Table 3 here>

As we discussed in Section 4, reducing the scale of Medicaid has a large impact on demand for private LTCI especially among lower- and middle-income individuals. Aggregate LTCI takeup rates increase by a factor of 10 rising from 9 to 90 percent driven by a dramatic increase in demand among those in PE quintiles one–four (Table 2). Absent public insurance, the relatively inelastic private LTCI demand among individuals in lower income groups is good for the insurer. It responds by charging high loads and profits increase from 0.1 to 31.4 percent of premium revenue, with a large share of this increase generated by low and middle-class individuals (Table 3).

Given these outcomes it is perhaps not surprising that measures of aggregate welfare decline when Medicaid is essentially removed. As shown in Table 3, welfare of a newborn individual who does not yet know her initial PE and frailty is much lower in the 'No Medicaid' scenario than in the baseline. Indeed, a newborn in the 'No Medicaid' scenario, would need a 22.2 percent increase in consumption to be indifferent between this scenario and the baseline economy. The variation in welfare with PE shows that welfare losses are particularly high among individuals with low income. The compensating variation for individuals in PE quintile one is 44.2 percent. High PE groups in contrast prefer the 'No Medicaid' economy. They are less likely to qualify for Medicaid benefits in the baseline, and with Medicaid severely scaled back, their taxes decline. Thus, compensating variations in both PE quintiles four and five are negative. Individuals in the top 1 percent of PE especially prefer the 'No Medicaid' economy since, as the owners of the private insurer, they also benefit from the increase in its profits.

Tension also arises among individuals with varying levels of PE when we propose universal public insurance for LTC risk. In the 'Universal Medicaid' scenario, government outlays for LTC rise by nearly 174 percent, reaching approximately 1.1 percent of GDP equivalent to about 20 percent of US social security outlays in 2023. *Ex ante* welfare increases moderately, and a newborn would have to give up 0.07 percent of consumption to make him indifferent between this scenario and the baseline. The welfare gains are driven by middle-class individuals who are the biggest beneficiaries of universal public LTCI. Compensating variations are negative in PE quintiles two–five and are particularly large in magnitude in PE quintile three (-4.2 percent). Interestingly, PE quintile one and all three of the highest PE groups prefer the baseline. Public insurance of LTC risk is similar in both economies for those in PE quintile one but their income taxes are lower absent universal coverage. Most individuals in the highest PE groups have the resources to self-insure LTC risk and, like those in PE quintile one, are unhappy about paying higher income taxes to finance public benefits for middle-class individuals. The top PE group experiences the biggest welfare losses because they also lose profit income when the private LTCI market becomes dormant.

We now turn to analyze the most important element of the Long-Term Care Partnership Program (PP), one of the larger and more recent efforts to reform the US LTCI market. This program offers $1 of asset exemption from the Medicaid asset test for each $1 of benefits paid out by a qualifying private LTCI policy. Exempted assets are also protected from estate recovery upon the policyholder's death. The program dates to 1992 when California, Connecticut, Indiana and New York were allowed to participate on an experimental basis. Expansion of the program was frozen in 1992 and then reopened to all states in 2005. As of 2023 the only nonparticipating states

are Hawaii, Alaska, Utah and Mississippi, as well as, Washington, DC (MedicaidLongTermCare.org 2023).

The specific requirements for an LTCI policy to qualify for PP vary by state but the main provisions are as follows. First, under Medicaid a recipient's primary residence (up to a cap on the equity value) is exempt from the asset test (MedicaidLongTermCare.org 2023).[10] The cap varies across states ranging from about $680,000 to over $1,000,000. Asset exemptions for partnership policies are subject to this same cap. Second, Medicaid benefits are also subject to an income test and income spend down provisions. These eligibility restrictions also apply to holders of partnership policies. Third, a PP policy must be a qualified LTCI policy for Federal tax purposes. Fourth, partnership policies must include an inflation protection rider.[11] Fifth, states that participate in PP must also offer reciprocity. That is, partnership LTCI policies purchased in one state must maintain the same Medicaid asset test exemption if the individual moves to another participating state. Finally, qualifying partnership policies must meet specific minimum coverage thresholds. In particular, a qualifying PP policy has to provide at least

$32,850 in benefits (6 months of benefits at $180/day.)

The main objective of the federal government in offering states the option to participate in PP is to reduce Medicaid outlays for LTC. The expectation is that the asset exemption will increase private LTCI takeup, and since Medicaid is a secondary payer, public outlays will decline. However, this direct effect of offering PP policies is somewhat mitigated by PP's relaxation of the Medicaid asset test which broadens the pool of individuals eligible for public LTC benefits.

Most prior research on PP has used empirical methods to assess its impact and has concluded that the impact thus far has been small. Lin and Prince (2013) find, using HRS data, that the program has induced a less than 1 percentage point increase in LTCI takeup rates with the increase

concentrated among affluent individuals. In particular, they estimate that takeup increased by about 3 percentage points for individuals with assets of $465,000 or more, but find no discernible response in takeup among less wealthy individuals. Bergquist et al. (2018) reach a similar conclusion using data from the National Association of Insurance Commissioners (NAIC) on LTCI policy applications and sales. They find evidence that the introduction of partnership policies had a positive impact on LTCI applications, but, despite this, they did not increase takeup. Goda (2011) analyzes PP policies and other state tax subsidies offered to purchasers of LTCI. She finds that overall, these subsidies have induced a 2.7 percentage point increase in private insurance takeup rates. Like other studies, she finds that the increase has been concentrated among wealthier individuals who are less likely to qualify for Medicaid benefits. In a simulation analysis, she estimates that each dollar of lost tax revenue due to the subsidies results in a $0.84 reduction in Medicaid outlays.

Using a structural model to evaluate the impact of partnership policies enables us to isolate the effects of the PP asset test exemption from other factors influencing the US LTCI market. By modeling both private and public LTC insurance provision, we can assess how this program impacts public LTC expenditures, private LTCI uptake, as well as insurer pricing and profits. Additionally, we can examine the nuanced trade-offs in the distribution of the net benefits of this reform across individuals. Finally, we can shed light on why previous research has found a small impact of PP and explore potential strategies for refining the program.

We model the PP asset exemption by allowing individuals to exempt $1 of assets from the Medicaid means-test for each $1 of private LTCI coverage.[12] Column five in Table 2 and four in Table 3 report the results from this scenario. According to our model, PP increases public expenditures on LTC by 8.8 percent. Medicaid outlays per recipient decrease by 3.0 percent due

to Medicaid's secondary payer status. However, the dominant effect on Medicaid outlays is the rise in the fraction of NH entrants who qualify for Medicaid benefits which, with the relaxation of the Medicaid asset test, goes from 49.9 to 56.0 percent.

Previous research has found that the overall impact of PP on the private market is small and concentrated among more affluent households. In contrast, results in Table 2 and Table 3 indicate that this program has a large and widespread effect. Private LTCI takeup rates increase by 52.8 percentage points, and insurers push through large increases in premiums as indicated by the average load which increases from 0.406 to 0.662. Observe that the average load in the PP scenario is even higher than the average load in the 'No Medicaid' scenario. Profits as a share of premium revenue at 31.7 percent are also higher. Observe though that the distribution of profits is very different in the PP scenario compared to the 'No Medicaid' one. When Medicaid is virtually non-existent, loads and profits are very regressive. With PP, in contrast, loads and profits are hump-shaped across the PE distribution. Profit ratios are highest in PE quintile three but are also large in PE quintiles four and five and are sizable even within the top ten and top 5 percentiles of the distribution.

The welfare of a newborn before they know their type is higher under PP than in any of the other policy scenarios. In particular, newborns prefer PP over both the baseline and the 'Universal Medicaid' economies. Compared to universal Medicaid, the welfare impacts of the program are also much more equally spread across the PE distribution. Individuals in PE quintiles one and two continue to favor the baseline scenario because the PP program does not influence their Medicaid eligibility, and, consequently, the primary effect of PP on their circumstances is an increase in income taxes. However, given that the rise in Medicaid expenditures is significantly less pronounced under PP compared to universal Medicaid, the welfare costs of this tax hike are

relatively minimal for these groups. The compensating variations for individuals in all of the other PE groups are negative indicating that they prefer the PP economy to the baseline. The largest welfare benefits are concentrated in the top PE percentile which benefits from the large increase in the private insurer's profits.

On net PP looks like a good arrangement, but how does one reconcile the empirical findings of low impact with our results? Our model of PP abstracts from some of the important provisions of the program discussed above. First, we do not model the cap on the equity held in one's primary residence that is exempt from the asset test. Such a cap would eliminate the benefits of purchasing a partnership policy for more affluent individuals in our model. Second, recall that in practice to qualify for Medicaid benefits under PP individuals still have to satisfy the Medicaid income test. In our model, eligibility for Medicaid benefits relies on a single means-test that does not differentiate between assets and income, each with its own set of criteria. Third, recall that PP imposes minimum coverage ratios. These ratios are not imposed in our PP scenario.

To understand the potential impact of adding the first two provisions on aggregate LTCI takeup in the model, assume that in the presence of these provisions, individuals in PE quintile five no longer increase their takeup rate relative to the baseline. Under this assumption, the aggregate increase in private LTCI takeup under PP falls from 52.8 to 40.1 percentage points. If we assume that takeup rates do not change in either the fourth or the fifth PE quintile then the overall increase in LTCI takeup with PP is only 23.8 percentage points.

Adding a minimum coverage ratio in line with the third provision would depress LTCI takeup further. In the model, the average private LTCI policy under PP covers only 28.4 percent of the loss. This figure is notably lower than the 60.3 percent coverage ratio in the baseline specification and falls short of the minimum coverage ratio implied by the magnitude of nursing home costs in

our model and current PP requirements. According to our model's nursing home costs and the coverage ratio thresholds of the PP program, coverage should be at least 34 percent of the loss. However, model coverage ratios are only 25.3 and 22.5 percent in PE quintiles two and three, respectively. Implementing a required minimum coverage ratio would reduce takeup in these two groups.

Overall, our results raise the possibility that PP could have a much larger impact on the US private LTCI market if Medicaid provisions such as the cap on the exemption of equity in the primary residence, income restrictions, and minimum coverage ratios on qualifying PP policies were relaxed. The former measures would increase private LTCI takeup of more affluent individuals and the latter measure would increase takeup of middle-class individuals.

Conclusion

The US private LTCI market currently suffers from a variety of ailments: the market is small, coverage provided by policies is incomplete, and premiums are relatively high compared to other life insurance products. Results from our structural model indicate that Medicaid, administrative costs, and adverse selection all contribute to low takeup rates and incomplete coverage. Additionally, administrative costs drive up premium loads.

We have found that exposure to LTC risk and ability to pay varies significantly across the income distribution, and that this is a source of disagreement. Affluent individuals prefer a small public LTCI program combined with a large private LTCI market. In contrast, low- and middle-income individuals prefer universal public LTCI provision. Another policy reform we explore involves exempting asset holdings from the Medicaid asset test on a dollar-for-dollar basis with private LTCI coverage. Surprisingly, this emerges as the most favorable policy reform, as it boosts

social welfare by encouraging private LTCI uptake while maintaining Medicaid as a safety net for low-income individuals.

Our results illustrate that a quantitative model is a useful tool for analyzing reforms of the US LTCI. In Braun and Kopecky (2024), we analyze a broader range of policy reforms and consider alternative setups where households have incentives to purchase hybrid products that bundle life expectancy and LTC risk coverage. Informal LTC provision is significant, at the same time, there is considerable diversity in LTC care needs based on gender and marital status. The implications of these factors for the LTCI market should be explored in future research.

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Endnotes

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[1]Details on the construction of the frailty index can be found in Braun et al. (2019).

[2]These statistics define use the HIPAA definition of a long-term care event.

[3]In the ensuing discussion we are assuming that an individual is covered by Medicare if they are enrolled in Medicare part A and B.

[4]The Kaiser Family Foundation estimates that 27.6 million individuals had Medicare plans and that another 22.2 million had Medigap or employer-provided supplemental insurance (Ochieng et al. 2023).

[5]A formal presentation of the individual's and insurer's problems can be found in Braun et al. (2019).

[6] The modified version of the model and policy analysis is based on the model and analysis in Braun and Kopecky (2024).

[7] Note that we did not recalibrate the modified version of the model, despite this, it still matches targeted data moments well.

[8]The new consumption floor is set to the same level as in Braun et al. (2019) and is positive to ensure that consumption remains positive in the final stage of life for all individuals in the economy.

[9] The results presented in this section are based on results reported in Braun and Kopecky (2024).

[10]In contrast to assets protected by PP, the home is not exempt from Medicaid estate recovery.

[11]Individuals over 80 years of age at the time they purchase the policy are exempt from this requirement.

[12]See Braun and Kopecky (2024) for details.

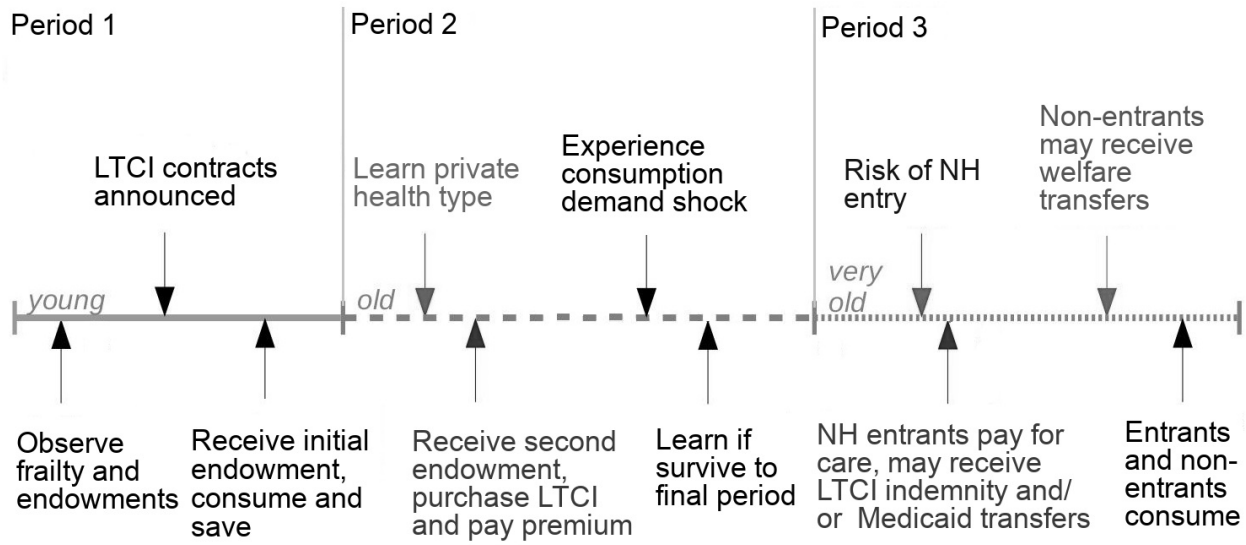

Figure 1. Timeline of events in the model

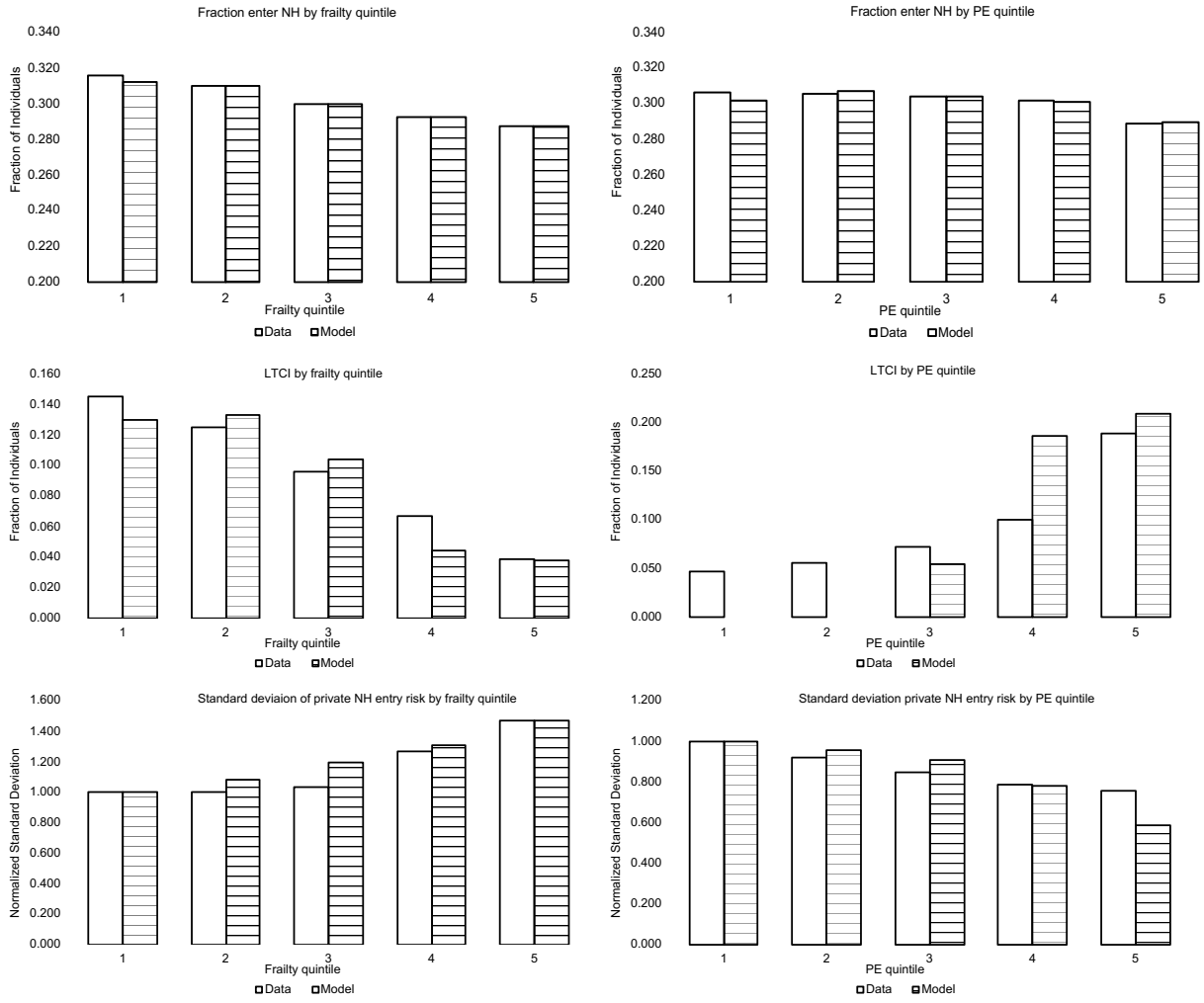

Figure 2. The fraction of 65-year old individuals who will ever enter a NH by frailty (top left) and PE (top right) quintiles, LTCI takeup rates by frailty (middle left) and PE (middle right) quintiles, and the standard deviation of self-reported (private) NH entry probabilities by frailty (bottom left) and PE (bottom right) quintiles in the model and the data

Note: NH entry is for stays of at least 90 days. The standard deviations are normalized such that the standard deviation in frailty (PE) quintile one is 1.

Data sources: HRS and authors' calculations.

Table 1: Data facts the model reproduces

Data values set directly	
Statistic	**Data and Model**
permanent earnings (average)	$1,049,461
replacement rate of retirement income (average) (%)	57
probability NH entry (average)	0.30
medical and nursing cost of LTC event	$97,743
public insurance consumption floor	$6,540

Data values targeted in calibration procedure		
Statistic	**Data**	**Model**
wealth at NH entry/wealth ages 62–72 (average)	0.62	0.65
fraction of nursing home residents on Medicaid	0.46	0.50
private insurer's administrative costs (share of present value premium)		
fixed cost (%)	20	20
variable cost (%)	12.6	12.9

Table 2: LTCI takeup, coverage and loads in the Baseline, the 'No Administrative Costs', the 'No Medicaid', the 'Full Information' and 'Public Partnership (PP)' economies

Scenario	Baseline	No Admin. Costs	No Medicaid	Full Information	Public Partnership (PP)
Average					
LTCI takeup rate	0.090	0.597	0.904	0.370	0.618
Fraction of NH costs covered	0.603	0.621	0.661	0.832	0.284
Load	0.406	0.330	0.557	0.480	0.662
Takeup rates by PE Quintile					
1	0.000	0.000	0.719	0.000	0.000
2	0.000	0.004	1.000	0.005	0.243
3	0.055	1.000	1.000	0.437	0.000
4	0.186	1.000	1.000	0.709	1.000
5	0.209	0.979	0.802	0.700	0.845
High PE					
top 10	0.167	0.959	0.605	0.690	0.690
top 5	0.333	0.917	0.238	0.671	0.380
top 1	0.000	0.291	0.000	0.000	0.000
Coverage rates by PE Quintile					
1	0.000	0.000	0.934	0.000	0.000
2	0.000	0.426	0.731	0.692	0.153
3	0.577	0.500	0.598	0.767	0.226
4	0.572	0.609	0.561	0.824	0.313
5	0.638	0.756	0.533	0.880	0.356
High PE					
top 10	0.601	0.714	0.496	0.838	0.340
top 5	0.601	0.622	0.487	0.799	0.344
top 1	0.000	1.000	0.000	0.000	0.000
Loads by PE Quintile					
1	NA	NA	0.646	NA	0.000
2	NA	0.271	0.592	0.402	0.693
3	0.418	0.307	0.550	0.492	0.722
4	0.141	0.353	0.526	0.497	0.646
5	0.396	0.331	0.482	0.456	0.601
High PE					
top 10	0.404	0.333	0.467	0.449	0.600
top 5	0.404	0.361	0.465	0.421	0.593
top 1	NA	0.118	NA	NA	NA

Table 3: Welfare and indicators of private and public LTCI in the Baseline, 'No Medicaid', 'Universal Medicaid', and 'Public Partnership (PP)' economies

Scenario	Baseline	No Medicaid	Universal Medicaid	Public Partnership (PP)
Welfare (newborn)	-2.778	-3.396	-2.776	-2.774
Compensating variations (%)		22.23	-0.07	-0.13
Average:				
Medicaid outlays (% change from baseline)		-88.4	173.9	8.8
Govt tax revenue	0.018	0.002	0.041	0.020
NH entrants on Medicaid (%)	49.9	5.6	100.0	56.0
Profits/Premia revenue (%)	0.1	31.4	0.0	31.7
LTCI takeup rate	0.090	0.904	0.000	0.618
Fraction of NH costs covered	0.603	0.661	NA	0.284
Load	0.406	0.557	NA	0.662
Profits/Premia revenue (%) by PE Quintile				
1	NA	35.51	0.000	NA
2	NA	37.40	0.000	9.34
3	0.002	22.67	0.000	39.56
4	0.033	16.84	0.000	29.56
5	0.011	7.99	0.000	19.83
High PE				
top 10	0.033	2.550	0.000	14.360
top 5	0.045	0.720	0.000	7.030
top 1	NA	NA	0.000	NA
Compensating variations (%) by PE Quintile				
1		44.180	3.290	0.080
2		11.760	-2.300	0.090
3		2.040	-4.160	-0.680
4		-0.430	-2.550	-0.560
5		-1.910	-0.270	-0.240
High PE				
top 10		-2.78	0.42	-0.43
top 5		-4.27	1.02	-0.96
top 1		-15.85	2.03	-5.93

Note: We use permanent earnings (PE) (as opposed to wealth) because it is exogenous and thus does not vary across the four scenarios.