Network for Studies on Pensions, Aging and Retirement

NETSPAR ACADEMIC SERIES

Medicaid and Crowd-Out of Long-Term Care Insurance

Leora Friedberg, Wei Sun and Anthony Webb

DP 10/2014-100

Medicaid and Crowd-out of Long-Term Care Insurance

Leora Friedberg, Wei Sun, and Anthony Webb

October 2014

Abstract

Although long-term care costs represent a substantial financial risk for retired households, few purchase insurance. Previous research shows that it would not be optimal for most single individuals to purchase coverage, due to crowd-out by the means-tested partial insurance provided by Medicaid. Married couples pool risk (and so should value insurance less) but also face a greater cost in case the care of an infirm spouse impoverishes a healthy spouse (and so should value insurance more); recognizing this, Medicaid offers greater income and asset protection for married couples than for singles, increasing the implicit tax on private insurance. We construct a model in which retired households decide whether to insure themselves via a private policy or implicitly via saving or anticipated future Medicaid use, given their expectation of needing care. We also make use of new estimates of the likelihood of needing care, which differ in important dimensions from earlier estimates. Using numerical optimization techniques, we calculate that only married couples in the two top wealth deciles will be willing to purchase an actuarially fair insurance policy, implying even more crowd-out than for singles. Nevertheless, the absence of comprehensive insurance results in substantial welfare losses, amounting to an average of 10 percent of age-65 financial assets, because Medicaid provides only partial insurance while crowding out private purchases fully. We calculate that eliminating Medicaid spousal protection rules might increase coverage by XX percentage points. In contrast, plausible premium subsidies would have little effect on long-term care insurance coverage, given the current protection offered by Medicaid.

Leora Friedberg is an associate professor at the University of Virginia. Wei Sun is an assistant professor at Renmin University, People's Republic of China. Anthony Webb is a senior research economist at the Center for Retirement Research at Boston College. The findings and conclusions expressed are solely those of the authors and do not represent the views of the University of Virginia, Renmin University, or Boston College.

1. Introduction

The cost of nursing home care represents a substantial financial risk for elderly Americans. Friedberg, Hou, Sun, Webb, and Li (2014) estimate that 44 percent of men and 58 percent of women will enter a nursing home at some point after age 65. Among those who do, mean durations of stay are 0.85 and 1.37 years, respectively. MetLife Mature Market Institute (2012) reports that the average cost of a semi-private nursing home room was $222 per day, or $81,030 annually, in 2012.

Notwithstanding the above risks, only about 16 percent of households over age 65 hold long-term care insurance.[1] Instead, many households turn to Medicaid, the health insurance program for the indigent – either because they are indigent or because nursing home costs make them so.[2] Medicaid paid for 62.3 percent of total long-term care costs of $210.9 billion in 2011 (The National Health Policy Forum 2013). Because Medicaid is the secondary payer for long-term care costs, it places a substantial implicit tax on both personal assets and long-term care insurance policies held by low to moderate wealth individuals who may ultimately rely on Medicaid. At the other end of the wealth distribution, many households maintain large stocks of assets well into old age in anticipation of high future medical and long-term care costs (DeNardi, French and Jones 2012).

We evaluate the importance of Medicaid and private saving as substitutes for long-term care insurance for married couples. Earlier papers examined Medicaid crowd-out largely for single individuals. Of course, many of the single elderly used to be married, so decisions made before the death of one spouse are important to consider for both cases, yet the optimization problem for married couples is substantially more complicated. We also incorporate up-to-date information on care needs and consider the impact of cross-state variation in Medicaid rules. Previous research includes the important analysis of Brown and Finkelstein (2008), whose numerical optimization model shows that Medicaid crowds out actuarially fair long-term care insurance holdings of single individuals in all but the top three to four wealth deciles. DeNardi, French, and Jones focus on single households as well, showing saving decisions for combined medical and long-term care costs in late life and for bequests. They estimate that Medicaid crowds out saving at lower incomes while offering implicit insurance at higher incomes, but they

[1] Authors' analyses of Health and Retirement Study data.
[2] Medicare, the health insurance program for the elderly, pays for the cost of long-term care only in restricted circumstances.

do not consider long-term care insurance. Nakajima and Telyukova (2013) estimate a structural model of asset decumulation in old age using U.S. data, and argue for a substantial impact from out-of-pocket medical expenditure risk, presumably resulting from long-term care costs. They treat couples as an entity with a single death date and so do not consider surviving spouses.

Married retirees face quite different considerations than singles, making it difficult to gauge the crowd-out effect of Medicaid. In the absence of Medicaid, married couples pool risk and so should value insurance less, but they also face a greater cost in case the care of an infirm spouse impoverishes the healthy spouse and so should value insurance more. Recognizing this, the income and assets of the community spouse are partially shielded by Medicaid spousal protection rules, which increase the implicit tax on private insurance when compared to singles.

In our analysis, we use new, updated estimates of the need for both in-home and nursing home care from Friedberg, Hou, Sun, Webb, and Li (2014). These estimates of the need for care differ in important dimensions from earlier estimates based on Robinson (1996) and used in Brown and Finkelstein (2007) and others. The new transition matrices show that many stays in nursing homes are relatively shorter duration events than was previously recognized, and fewer are the extremely high-cost long-duration events that would require substantial insurance. Using the new estimates, predicted long-term care insurance holdings for single men and women drop by up to one half, compared to Brown and Finkelstein, though they remain roughly twice as high as actual holdings.

For couples, we construct an intertemporal optimization model in which retired households decide whether to insure themselves via a private policy or implicitly via saving or anticipated future Medicaid use, incorporating Medicaid spousal protection rules, uncertain mortality and uncertain need for care. We solve the model using numerical optimization techniques. We find that married couples are even less willing than singles to pay an actuarially fair premium for long-term care insurance. Only XX percent of married couples will be willing to purchase an actuarially fair insurance policy, compared to XX of single men and YY of single women. [say more here about some of the results, ex. about asset draw-down]. Our policy analysis shows that eliminating the spousal protection rules, or even setting them everywhere at the levels adopted by less generous states, would substantially increase insurance coverage.

Our paper makes the following additional contributions to the literature. First, we calculate willingness to pay for not only the typical insurance policy but also the optimal amount

of insurance coverage that households would pay for. Second, we consider how state-level differences in spousal protection rules alter willingness-to-pay for long-term care insurance. Third, we consider the impact on the private long-term care insurance market of the limited long-term care coverage provided by Medicare. Fourth, we calculate the impact of other policy interventions on married couples' willingness to pay for long-term care insurance.

The remainder of the paper is organized as follows. Section 2 outlines the financing of long-term care in the United States and explains the operation of the Medicaid spousal protection rules. Section 3 reviews previous research. Section 4 presents the intertemporal optimization model. Section 5 presents our results, and Section 6 concludes.

2. Financing long-term care in the United States

2.1 Nursing home care. Medicare, the public health insurance program for the elderly, covers nursing care for no more than 100 days, and only if this care is in a skilled nursing facility and follows a hospital stay of more than three consecutive days. Medicaid pays for the nursing home care of the indigent but subjects single individuals to a stringent means test. Importantly, Medicaid has secondary payer status, providing benefits only to those who are uninsured and who cannot afford care. Single individuals claiming Medicaid are typically permitted to retain assets of $2,000 and an income of $30 a month, contributing any excess toward the cost of their care. So, a single individual who is otherwise Medicaid-eligible and who purchases long-term care insurance or who self-insures by building up financial assets reduces their Medicaid benefits dollar-for dollar. Married couples are subject to a less stringent means test that often imposes a rather sharp penalty on the resources of the community spouse, discussed below.

2.2 Home health care. Medicare provides partial coverage for home health care. Medicare will pay for part-time or intermittent skilled nursing or home health aide care for qualifying individuals.[3] It will not pay for 24-hour daily home care or assistance with Medicaid will provide all these types of care, again subject to asset and income tests. In 2011, for single individuals, the asset test is $2,000, as for nursing home care. The income test varies

[3] A qualifying individual must satisfy the four following conditions: 1) he must be home bound, 2) his doctor must decide that medical care is required at home and make a care plan, 3) he must need intermittent (not constant) skilled nursing care, and 4) the home health agency providing the care must be Medicare approved. 4% of Medicare spending is directed to home health care (Kaiser Family Foundation 2012).

substantially across states, with most limits lying between 100 and 300 percent of Supplementary Security Income ($721 to $2,163 in 2014).

2.3 Medicaid spousal protection rules. Were the above means tests to be applied to married couples, they would result in the impoverishment of the non-institutionalized spouse, referred to in legislation as the "community spouse." Therefore, states have introduced so-called spousal impoverishment rules. Depending on the state, in 2014, the spousal protection income rules allow the community spouse to retain an income of between $1,939 and $2,931 a month. Asset allowances differ across states, subject to federal limits. In some states, the community spouse is permitted to retain $117,240 of "countable assets" as of 2014.[4] In other states, the community spouse may retain one half of the couple's countable assets, subject to a minimum of $23,448 and a maximum of $117,240. In a few states, the minimum lies between the above numbers. While several exceptions can be applied, these typically require legal advice, and we follow other research in omitting them from our analysis[5,6] Table 1 summarizes the rules by state.

The resulting impact of Medicaid on incentives to save on one's own to cover the cost of potential care are highlighted in Figure 1. The horizontal axis in Figure 1 shows pre-care wealth and the vertical axis shows post-care wealth. In more generous states, as indicated by the higher dashed line, the community spouse can keep all assets up to $117,240 and then must use everything above that amount to pay in case a spouse enters care; after assets above the threshold are exhausted, then Medicaid will pick up the care costs. In the least generous states, as

[4] Countable assets include stocks, bonds, IRAs, check and savings accounts, and the cash value of life insurance policies.

[5] Medicaid rules provide three pathways for community spouses to obtain a higher Minimum Maintenance Needs Allowance (MMNA. First, the allowance may be raised (up to the Federal maximum allowance) for community spouses who show that they have exceptional housing costs, defined as more than 30% of the standard allowance. Second, the allowance may be raised if a state Medicaid hearing finds that exceptional circumstances might otherwise cause extreme financial hardship. Third, a court may order additional support.

[6] There are special rules for computing income and the amount of income that can be transferred from one spouse to another. A couple's total income is divided into his and hers by the "name on the check." This includes pension benefits, IRA payouts, or other income paid only to the account holder, and accessible by the spouse only if deposited in a joint account. Income the couple receives jointly is divided in half. The community spouse keeps all of his or her own income plus half of any shared income. If this total is less than the MMNA, then the institutionalized spouse must be allowed to supplement the community spouse's income in an amount that increases the community spouse's total income up to the applicable MMNA. The Deficit Reduction Act of 2005 requires states to follow the "income first" rule, to first apply the institutionalized spouse's income to bridge the gap between the community spouse's needs and resources. So-called "income cap" states disqualify individuals from Medicaid if their income is even one dollar above the limit. These individuals must place either all their income or their income in excess of the limit into a Medicaid qualifying trust.

indicated by the lower solid line, the community spouse must use all assets above the amount of $234,480 to pay for care, 50% of assets between $46,896 and $117,240, and all assets between $23,448 and $46,896. In the most generous states, the spouse can retain $117,240 after spending down any wealth above that amount to pay for spousal care.

The Medicaid treatment of the house also differs across states and between married and single recipients.[7] Depending on the state, for single individuals, the first $500,000 to $750,000 of housing equity is not included in "countable assets," although a Medicaid lien may be placed on the property. The individual may be required to show intent to return home or prove a likelihood of returning home. For married couples, the full value of the house is protected as long as the community spouse continues to live there.

2.4 The market for long-term care insurance. In the United States, approximately 16 percent of individuals aged over 65 held long-term care insurance in 2010. These policies typically provide partial insurance, paying a daily benefit in the event that the individual requires home health care and a higher daily benefit if the individual requires care in an assisted living facility or nursing home. In the counterfactual simulations of Brown and Finkelstein (2008), they evaluated willingness-to-pay for three typical policies, providing a daily benefit of $100 in these three care states. These policies do not totally eliminate the financial risk posed by long-term care, in ways that our work and others' only partially capture. First, benefits are either fixed in nominal terms or increase at a pre-determined rate, so that the household faces the risk that long-term care costs may increase faster than policy benefits. Second, although policies are guaranteed renewable, insurance companies can and do apply to their state insurance regulator for permission to increase premiums, based on their claims experience. Third, premiums are usually payable until a claim is made, and as the age at which care is required is unknown, the present value of lifetime premiums is also unknown.[8] Using survey data, Brown, Goda Shah, and McGarry (2012) find that lack of trust in insurers contributes to unwillingness to purchase coverage. Although these uncertainties will reduce the value of long-term care insurance, we

[7] U.S. Department of Health and Human Services. 2005. "Medicaid Treatment of the Home: Determining Eligibility and Repayment for Long-Term Care"

[8] In comparison to auto insurance, for example, the premium reflects the annual risk of an accident. In the case of long-term care insurance, a substantial component of the premium paid at younger ages pre-fund later expected costs. Therefore, the premium is more than the expected present value in early years and less in later years, but uncertainty remains over how many years one will need to pay premiums.

follow Brown and Finkelstein (2008) and calculate the amounts households would be willing to pay in excess of the expected present value of premiums without them.

As mentioned above, women are at much greater risk of requiring long-term care than men, yet companies charge unisex premiums.[9] Brown and Finkelstein (2007) calculate that the average policy, absent Medicaid, would provide men with only 50 cents in expected present discounted value (EPDV) of benefits per dollar of premiums, while providing women with $1.06 in benefits.[10]

2.5 Medicaid partnership programs. In 1992, California, Connecticut, Indiana, and New York introduced long-term care insurance partnership programs. These exempt purchasers of qualifying policies (those providing a minimum level of benefit for a period of three years) from the Medicaid asset test, but not the Medicaid income test. Coverage has now spread to most states, enabled by federal legislation in 2005.[11]

3. Previous research

Previous research into the impact of Medicaid on long-term care insurance holdings falls into two categories: calculations of optimal behavior given assumed preference parameters, and empirical studies of actual behavior. All build on Pauly (1990), who provided a theoretical explanation of optimal non-purchase of long-term care insurance in the presence of Medicaid. He showed that, although it provided incomplete insurance, it could crowd out private insurance among individuals even at relatively low risk of spending down to Medicaid.

Brown and Finkelstein (2008) constructed an intertemporal optimization model of the decision to hold long-term care insurance by single individuals. This approach reinforced the finding that Medicaid crowd-out explains a large part of the lack of demand. For plausible preference parameters, they found that only those in the top three to four wealth deciles would be willing to pay for private long-term care insurance offered even on actuarially fair terms because much of the benefit accrues to the government in the form of lower Medicaid expenditure rather

[9] Colorado and Montana mandate unisex premiums. Genworth recently switched to gender specific pricing. It is as yet unclear whether other companies will follow.

[10] The price data upon which their calculations are based are from 2000. The calculations are highly sensitive to the choice of interest rate used to discount benefit and payment streams. We decided not to update the money's worth calculations because it is unclear what an appropriate interest rate would be today.

[11] 28% of new long-term care insurance policies sold in 2010 were partnership plans (AHIP 2012).

than to the individual in the form of higher consumption. Brown and Finkelstein (2007) presented evidence of supply side market failures, as we noted above, that render long-term care insurance policies even more unattractive to would-be purchasers.

Brown, Coe, and Finkelstein (2007) conducted an empirical reduced form investigation of the impact of state level variation in Medicaid spousal protection rules on long-term care insurance coverage rates.[12] They estimated that a $10,000 decrease in the level of assets that an individual can keep while qualifying for Medicaid would increase private long-term care insurance coverage by 1.1 percentage points. If every state in the country moved from their current Medicaid asset eligibility requirements to the most stringent Medicaid eligibility requirements allowed by federal law – a change that would decrease average household assets protected by Medicaid by about $25,000 – the estimates imply that demand for private long-term care insurance would rise by 2.7 percentage points.

Sun and Webb (2013) calculated the impact of state partnership programs on the long-term care insurance purchase decision of single individuals. They showed that these programs would increase purchase of policies by single individuals by only a little. Induced purchasers are at low risk of otherwise becoming Medicaid eligible, and the net effect is to increase Medicaid costs, as people who would purchase policies without a partnership program in place now incur greater Medicaid costs. An empirical study by Goda (2011) found that, although the subsidy raised coverage rates by 30 percent, the increase was concentrated among asset-rich individuals at relatively low risk of becoming Medicaid eligible, so that each dollar of subsidy yielded only 84 cents in Medicaid savings.

4. Model of Long-Term Care Planning by Married Couples

The literature thus suggests, using various approaches, that Medicaid substantially crowds out private long-term care insurance holdings, especially for singles. We extend past research by focusing on issues that are critical for married couples. In our model couples maximize joint utility that includes complementarity of consumption when spouses live together

[12] A reduced-form approach has the advantage of reflecting whatever explanations – Medicaid crowd-out, partial private insurance, incorrect expectations – affect actual insurance holdings. A structural approach has the advantage of quantifying some of the channels that influence insurance holdings, assuming that ones omitted from the model are irrelevant.

but not when one is in care. Decisions today take into account the expected wealth remaining for a surviving spouse in the future, as well as Medicaid spousal protection rules.

4.1 Objective Function

We consider a retired married couple both aged 65 with a stock of financial wealth and income from a real annuity such as Social Security. The household chooses consumption each month to maximize expected discounted lifetime utility until a terminal age of 105, subject to a budget constraint.[13] The household maximizes

$$U = \sum_{t=0}^{T} \sum_{s_m=1}^{5} \sum_{s_f=1}^{5} \beta^t Q_{s_m,s_f,t} U_{s_m,s_f,t}$$

where t is time, s_m and s_f are 5x5 matrices of the husband's and wife's care states (healthy, requiring home health care, residing in an assisted living facility, residing in a nursing home, or dead), Q is the age- and gender-varying probability of being in a particular state, and β is a discount factor. Consistent with standard assumptions in the literature and U.S. historical experience, we assume that the discount rate and real rate of interest both equal three percent.[14] This specification is much the same as in Brown and Finkelstein (2008), generalized to a married couple.

We assume that households have a constant relative risk aversion utility function that is a sum of individual utility: [15]

$$U_{s_m,s_f,t} = \frac{\left(C^m_{s_m t} + F^m_{s_m t} + I(s_m, s_f) * \lambda * \left(C^f_{s_f t} + F^f_{s_f t}\right)\right)^{1-\gamma} - 1}{1-\gamma} + \frac{\left(C^f_{s_f t} + F^f_{s_f t} + I(s_f, s_m) * \lambda * \left(C^m_{s_m t} + F^m_{s_m t}\right)\right)^{1-\gamma} - 1}{1-\gamma}$$

[13] The focus on months rather than years, which is more common in life cycle models of this type, is important to capture the impact of short nursing home stays.

[14] Long-term real interest rates are currently lower than three percent, and recent declines have contributed to increases in insurance premiums. Our interest rate assumption has a negligible effect on our estimates of willingness to pay for long-term insurance, because we use the same interest rate to calculate both premiums, based on our assumed expense load, and the return on household financial assets.

[15] Our unitary model assumes away intrahousehold bargaining. It would be quite complicated to consider bargaining over care as well as consumption. Moreover, evidence from Friedberg and Stern (forthcoming) that caring preferences operate even in the presence of bargaining would be an important consideration when modeling individual infirmity within a couple.

where superscripts *m* and *f* denote the husband's and wife's values, *C* is general consumption at time *t* for spouses in care states s_m and s_f, *F* is the value of board and lodging if residing in an assisted living facility or nursing home, $\boldsymbol{I}$ is an indicator that takes the value one if both husband and wife are living either at home, in an assisted living facility, or in a nursing home, and λ is the complementarity of consumption, assumed to be 0.5. This specification allows consumption of the spouses to be complementary or subject to scale economies, as in Brown and Poterba (2000), but only when they live together. We assume values of the risk aversion coefficient γ to be three, as in Brown and Finkelstein.

Joint utility maximization requires that the marginal utilities of consumption of husband and wife be equalized in each period, and so $C^m_{s_m t} = C^f_{s_f t}$ if neither or both spouses are in an assisted living facility or nursing home. If one spouse is in the community and the other is institutionalized (e.g. wife) and the marginal utility of consumption does not vary with care status, optimality requires that $C^m_{s_m t} = C^f_{s_f t} + F^f_{s_f t}$. Although the spousal protection rules only permit the institutionalized spouse to retain $2,000 of capital and $30 a month of income, the model allows the community spouse to add to the consumption of the institutionalized spouse out of the amounts that are protected under the spousal protection rules. Including *F* in the model reduces the extent to which the community spouse would be induced to do this. We follow Brown and Finkelstein in assuming that the value *F* that an individual in a nursing home derives from board and lodging (which they would otherwise pay for as part of *C*) is equal to the amount the Supplementary Security Income (SSI) program pays to a single individual ($721 in 2014).[16] We adopt the same treatment for married couples who are both in the same care state and assume that consumption value of their board and lodging is the $1,082 that the SSI program pays to married couples.

Our specification imposes the following assumptions: the marginal utility of consumption does not vary with health status; non-Medicaid home health and nursing home care is valued no more highly than Medicaid care; and the household lacks a bequest motive. We conduct the following sensitivity analyses, following Brown and Finkelstein (2004). 1. We allow utility to vary with care state, so utility in assisted living or a nursing home is only half of

[16] We disregard the SSI supplements paid by some states.

that in the healthy and home health care states: $U_{alf} = U_{nh} = 0.5 * U_s \forall s \neq alf, nh$.[17] In contrast to the base case, it would no longer optimal for the husband and wife to equalize consumption, and at a coefficient of risk aversion of three, it would be optimal for the institutionalized spouse to consume 30 percent less than the community spouse. 2. The dollar amount spent on home health care contributes to utility: $F_{hhc,t} = X_{hhc,t}$ 3. $F_{hhc,t} = \alpha X_{hhc,t}$ the consumption value of Medicaid care is half that of non-Medicaid care ($\alpha = 0.5$ if care is funded by Medicaid).[18] 4. As above, only the consumption value of Medicaid funded institutional care is also half that of non-Medicaid care: $F_{al,t} = \alpha X_{al,t}, F_{nh,t} = \alpha X_{nh,t}$, $\alpha = 0{,}5$ if care funded by Medicaid. 5. As in Ameriks, Caplin, Laufer, and Van Nieuwerburgh (2011), households have a bequest motive characterized by two additional parameters, $\overline{w}$, which governs the strength of the bequest motive, and ϕ, which governs the extent to which a bequest is a luxury good: $\upsilon(b) = \frac{\overline{w}}{1-\gamma}((\phi - c^{sub}) + \frac{b}{\overline{w}})^{1-\gamma}$, where c^{sub} is a subsistence level of consumption. When c^{sub} and $\phi = 0$, and $\overline{w} = 1$, $\upsilon(b) = \frac{b^{1-\gamma}}{1-\gamma}$ and the marginal utility of a bequest equals the marginal utility of the same amount of annual consumption.

A further assumption, as in Brown and Finkelstein (2008), is that housing wealth is ignored – in other words, it is not spent on consumption, care, or bequests. In reality, many enter retirement in owner-occupied housing and typically liquidate their housing wealth upon entry in long-term care (Venti and Wise, 2004), thus converting it into countable assets subject to the Medicaid asset test. Homeowners may also act in a less risk averse fashion than renters with similar amounts of non-housing wealth because they benefit from receipt of imputed rent. We defer to future research a detailed analysis of the effect of housing wealth on willingness-to-pay for long-term care insurance. For the purposes of this paper, we consider an alternative in which

[17] DeNardi, French, and Jones (2011) similarly include a preference shifter that allows the marginal utility of consumption to vary with care status. Finkelstein et al (2013) find that the marginal utility of consumption declines as health deteriorates among the elderly.

[18] Ameriks et al (2007) use survey data to estimate the magnitude of Medicaid aversion. They find that aversion is bimodal, with some individuals being indifferent between Medicaid and private care and others being highly averse to Medicaid care. Brown and Finkelstein find that willingness to pay for long-term care insurance is almost unchanged when α is increased from one to two. This suggests that Medicaid aversion is not a motive that drives relatively wealthy singles to save; we will examine the same issue for married households because the spouse who remains in the community may exhibit Medicaid aversion on behalf of the spouse needing care.

households are owner-occupiers and in which housing wealth provides a flow of housing services while the household is living in the community, but is not available to fund the costs of nursing home care or living in an assisted living facility. We do this by modifying the F_t^{sm} and F_t^{sf} terms in equation (2) to include a flow of housing services in the states in which one or both spouses is living in the community.

Our results yield willingness-to-pay for long-term care insurance. We compute willingness-to-pay at deciles of the wealth distribution. Because we would like to compare the willingness-to-pay of married couples with the willingness-to-pay of comparably situated single individuals, we make some an adjustment in computing wealth deciles. A married couple with $100,000 of financial assets is not as well-off as a single individual at that wealth level. Therefore, as in Brown and Finkelstein, we adjust the wealth of married couples using an equivalence scale of 1.25, so the married couple is treated as having wealth equivalent to a single individual with $100,000/1.25 = $80,000 . Even after making the above adjustment, married couples have, on average, a higher wealth distribution than singles, so that a married couple at some percentile of the distribution of married couples will be wealthier than a single individual at the same percentile of the distribution of singles. The results we report in this paper for willingness-to-pay for long-term care insurance therefore represent willingness-to-pay at various points of the distribution of wealth of all household types, not of the distribution of wealth of single individuals or of married couples.

4.2 Budget constraint

The budget constraint that a household faces will depend on whether either spouse is receiving care and qualifies for Medicaid. The general form of the budget constraint is as follows:

$$A_{t+1} = (A_t + I_t^m + I_t^f - P_{s_m t}^m - P_{s_f t}^f + \min(B_{s_m t}^m, M_{s_m t}^m) + G_{s_m s_f t}^m - M_{s_m t}^m + \min(B_{s_f t}^f, M_{s_f t}^f) + G_{s_m s_f t}^f - M_{s_f t}^f - C_{s_m t}^m - C_{s_f t}^f) R_f$$

where, suppressing subscripts, *A* is wealth, *I* is annuity income, *P* is the long-term care insurance premium, *M* is the per period maximum insurance benefits payable if a spouse is in care state *s* and *B* is the daily benefit cap of the insurance policy, and *G* is the Medicaid benefit. For those

without insurance, both P and B will be zero. R_f is one plus a real interest rate, assumed to be 3 percent. The cost of care is based on 2011 data from Metlife.[19]

The amount of the Medicaid benefit depends on the husband's and wife's income, the household's assets, and the husband's and wife's care states. When it is to the household's advantage to pool income, the Medicaid payment equals medical costs net of insurance benefits, minus the minimum of net medical costs and the sum of amounts by which assets exceed the asset limit and income exceeds the income limit:

$$G_t^m = M_{s_m t}^m - \min(B_{s_m t}^m, M_{s_m t}^m) - \min(M_{s_m t}^m - \min(B_{s_m t}^m, M_{s_m t}^m), \max(0, A_t - \underline{W_{s_m s_f, t'}}) +$$
$$\max(0, I_t^m + I_t^f + A_t * (R_f - 1) - \underline{I_{s_m, s_f, t}}))$$

where $\underline{W_{s_m s_f, t'}}$ is the asset limit and $\underline{I_{s_m, s_f, t}}$ is the income limit. Note that the asset limit is determined at time t', the time at which the household first entered the current combination of care states. When it is to the household's disadvantage to pool income, it becomes

$$G_t^m = M_{s_m t}^m - \min(B_{s_m t}^m, M_{s_m t}^m) - \min(M_{s_m t}^m - \min(B_{s_m t}^m, M_{s_m t}^m), \max(0, A_t - \underline{W_{s_m s_f, t'}}) +$$
$$\max(0, \min(I_t^m + I_t^f + A_t * (R_f - 1) - \underline{I_{s_m, s_f, t}}), I_t^m + 0.5 * A_t * (R_f - 1) - \underline{I_{s_m t}})$$

The income and asset limits vary by both spouses' care state. They can get quite complicated, but we outline the most common cases here. The full set of constraints appear in Table X .

Recall that Medicaid applies an income and a wealth test. The Medicaid income test is applied period by period. The amount the household is permitted to consume when one or both spouses is in care is $\underline{I_{s_m, s_f}}$. For example, an individual in a nursing home may consume \$30 a month and an individual receiving home health care (referred to as home and community based services or HCBS) may consume \$721.[20] The community spouse is permitted to retain income in his or her name, the "name on the check rule." But, if this falls short of the community spouse resource allowance, which is an amount varying from \$1,939 to \$2,931, then income may be transferred from the institutionalized to the community spouse to raise their income to the above amount. The above rule might bias households against using community based care. So, we

[19] While we use 2014 data for Medicaid and SSI benefits, we use data on care from Metlife that was published in 2011 (and in any case was no longer provided after 2012). A semi-private room in 2011 cost \$78,110 annually.

[20] As in Brown and Finkelstein, we use the amount of SSI monthly income to impute consumption while in care. Following Brown and Finkelstein and to yield comparability between our results for couples and their results for singles, we assume that both single and married individuals receiving HCHS are subject to the most restrictive HCBS Medicaid means test of 100 percent of SSI, or \$721 in 2014.

include the rule in place for 2014-2019 from the Patient Protection and Affordable Care Act, which extended the above protection to spouses of individuals receiving HCBS.

But, Medicaid also imposes an asset test, depending on the husband's and wife's care status, and designated by $\underline{W_{s_m s_f, t'}}$.[21] The asset test is applied by reference to wealth at the date *t'* when the individual first requires any type of long-term care and is illustrated in Figure 1. Medicaid first calculates the amount by which financial assets exceed the amount protected by the spousal protection rules. Only when this unprotected wealth has been consumed – whether on care or day-to-day living expenses – will Medicaid commence paying for the cost of care. For single individuals, protected wealth is $2,000, implying a Medicaid implicit tax rate of 100 percent on wealth in excess of $2,000. For married couples, the Medicaid implicit tax is 50 or 100 percent above a protected wealth level that is considerably higher, depending on the state of residence. Medicaid will pay the lesser of the amounts payable under the asset and income tests.[22]

When we solve the model, we calculate how much the household decides to consume in each period starting at age 65, given the husband's and wife's health status. We first calculate the path of consumption assuming that the household has no long-term care insurance coverage, so $B_{s,t}$ and $P_{s,t}$ are set to zero. We solve the model for monthly consumption, therefore capturing the impact of short durations of care. We then provide the household with long-term care insurance at either market loads or an actuarially fair premium and recalculate optimal consumption and expected discounted utility. We calculate the amount a household without insurance must be paid so that he is indifferent as to his insurance status. The value of insurance is undefined if, even after handing over all aged 65 financial assets, the household would have lower utility with insurance.

[21] A community spouse with income below the Medicaid income limit can apply for an increase in the spousal protection asset limits in order to increase their investment income. We do not model this interaction of the income and asset tests.

[22] Consider a married couple living in California, who each have income from Social Security of $2,000 a month and assets of $250,000. One spouse enters a nursing home. They would be required to spend down their assets to $ 117,920. At that point, the spouse in the nursing home would be permitted to keep $2,000 of assets, leaving $115,920 for the community spouse. He would be permitted to keep $30 a month as a personal needs allowance, to transfer $739 a month to his spouse, bringing her income up to $2,739 a month, contributing the remaining $1,231 a month of his income towards the cost of his care.

4.3 Estimating the probability of needing care

A key component of our analysis are new, updated estimates of the need for both in-home and nursing care from Friedberg, Hou, Sun, Webb, and Li (2014). New estimates of the need for care differ in important dimensions from earlier estimates based on Robinson (1996) and used in Brown and Finkelstein (2007) and others. Earlier estimates used information on long-term care use that is quite dated and included statistical design features that underestimated churn in and out of nursing home care.

Friedberg et. al. (2014) compute a revised and updated care matrix of monthly transitions between being healthy, living at home but requiring home health care, residing in assisted living, residing in a nursing home, or being deceased. These transition probabilities differ by age, and gender are estimated from disability and care data from the 1982-2004 NLTCS and the 1998-2010 HRS. Simulations of lifetime care utilization based on the updated model differ substantially from those in the Robinson model and closely match the utilization rates reported by Hurd, Michaud, and Rohwedder (2013) using the Health and Retirement Study. The new transition matrices show that many stays in nursing homes are relatively shorter duration events than was previously recognized, and fewer are the extremely high-cost long-duration events that would require substantial insurance. Table 1 compares Brown and Finkelstein (2008) descriptive statistics of care utilization based on 1982-84 data with Friedberg, et. al., (2014) descriptive statistics based on NLTCS and HRS data. The probability of nursing home use is substantially higher, rising from 0.27 to 0.44 for men and from 0.44 to 0.58 for women. Yet, mean years in care has not changed overall, while mean years conditional on using care has declined, from 1.30 to 0.88 for men and from 2.00 to 1.44 for women. Using the new estimates, predicted long-term care insurance holdings for single men and women in Friedberg et. al. drop by as much as one-half, compared to Brown and Finkelstein, though they remain roughly twice as high as actual holdings.

We do not address two related concerns. The first is that the transition probabilities of married individuals may not be independent of marital status. In particular, a healthy individual may follow his or her spouse into an assisted living facility, or a disabled individual may stay out of care because of care from a healthy spouse. The data set is not large enough to estimate separate care transition models for married and single individuals separately, however. Moreover, higher socio-economic status individuals are more likely to marry and to survive as an

in-tact couple, while health status is also highly correlated with socio-economic status. It is therefore difficult to disentangle the effects of socio-economic and marital status on care usage. The second potential concern is that the probability of returning from care to the community is assumed not to depend on duration of stay. Although this assumption is questionable, it is not possible to estimate a duration-dependent exit probability, given that care status is only observed at the start and end of a five-year time interval.[23]

4.4 Estimating policy loads

When we compute willingness-to-pay for long-term care insurance, we assume that long-term care insurance is sold at the expense loads, defined as *load* = 1 – (EPDV benefits/EPDV premiums), reported by Brown and Finkelstein (2007). They estimated loads of 1.06 for men and 0.50 for women, so in other words the typical policy returned $1.06 in EPDV benefits per dollar of EPDV premiums for men and $0.50 for women. Their premium data was collected in 2002, and long-term insurance premiums have substantially increased since then. It is unclear to what extent these increase reflect changes in actual and anticipated claims experience and changes in interest rates, or else changes in loads. Claims can arise in the far distant future, and premiums are therefore very sensitive to long-term interest rates, which have declined substantially since 2002. In the interests of comparability with Brown and Finkelstein (2008), we retain their expense load assumptions.

5. Results

We solve the model numerically for households at different deciles of the wealth distribution under different situations – if private long-term care insurance is unavailable, available at market loads, or available at actuarially fair premiums, and if the household lives in a state with high or low generosity of Medicaid spousal protection rules. We use more efficient discretization and interpolation algorithms than in Brown and Finkelstein in order to manage the computational complexity of the optimization problem for married couples, while ascertaining that our results for singles are extremely similar.[24] We consider single as well as married

[23] Even with data on the extent to which transition probabilities varied with duration of stay, it would be computationally infeasible to incorporate this feature into the numerical optimization model.

[24] We log-linearly discretize asset and consumption, so the grids have larger density at the lower end. In addition, we linearly interpolate assets between two grid points. We use 2014 values for Medicaid spousal protection rules

households and we use the old Robinson transition matrix as well as the new estimates from Friedberg, Hou, Sun, Webb, and Li (2014), so we can compare our results for couples and singles to the results for singles in Brown and Finkelstein. We also redo our analysis if spousal protection rules are eliminated.[25] We report several features of the optimal savings, long-term care insurance purchase, and Medicaid take-up decisions for households next.

5.1 Medicaid Implicit Tax

Medicaid crowd-out may be largely responsible for the small size of the long-term care insurance market. As defined in Brown and Finkelstein (2008), the implicit tax

$$\frac{\Delta EPV(Medicaid\ Expenditure)}{EPV(Gross\ benefits\ from\ insurance)} \qquad (6)$$

the change in the expected present value of Medicaid expenditures received by a household, resulting from the purchase of long-term care insurance, divided by the expected present value of the gross (of premiums) benefits from the insurance policy. It measures the percentage of insurance benefits that displace Medicaid payments, so a lower value of the implicit tax means that the insurance benefit displaces fewer Medicaid benefits.

Table 4 reports the implicit tax for married couples resident in states with generous spousal protection rules (protecting $117,240 of assets and $2,931 of income) married couples resident in states with restrictive rules (protecting $1,939 of income and $23,448 of assets), single men, and single women. In this and the following sections, we assume the purchase of a typical policy providing a $158 daily benefit for three years, without inflation protection (America's Health Insurance Plans 2012).

We find that, at lower wealth deciles, single individuals are subject to a very high implicit tax because, in the absence of long-term care insurance, Medicaid would cover almost all long-term care costs. At middle and high wealth percentiles, single individuals face a lower implicit tax because they are less likely to ever become eligible for Medicaid. In contrast, married couples face a high implicit tax at all but the highest wealth levels because Medicaid spousal

---

and SSI benefits, compared to 2000 values in Brown and Finkelstein; these have not changed substantively in real terms over this period.

[25] We are unable to carry out a simulation of state "partnership" programs, which increase Medicaid protection when households purchase long-term care insurance policies through these partnerships. This would require an additional state variable and is computationally infeasible for couples, though Sun and Webb (2013) analyze them for single households.

protection rules enable all but the very wealthy to qualify for Medicaid. The tax is highest in the states with generous Medicaid spousal protection rules. The difference between the implicit taxes faced by single individuals and married couples would be even larger were it not for the fact that most episodes of care occur not among intact couples but among surviving spouses.

5.2 Net Load

Table 5 reports the net load for the same household types. The net load equals:

$$1 - \frac{EPV(benefits) - \Delta EPV(MedicaidExpenditure)}{EPV(premiums)} \qquad (7)$$

one minus the EPV of policy benefits minus the EPV of the Medicaid benefits foregone, divided by the EPV of premiums. In contrast, the gross load equals

$$1 - \frac{EPV(benefits)}{EPV(premiums)} \qquad (8)$$

The net load takes account of the insurance benefits which would otherwise be paid by Medicaid. At low wealth percentiles, net loads for all household types are very similar. At higher wealth levels, the net load faced by single individuals declines dramatically, reflecting the lower expected present value of Medicaid benefits. The net load is lower for single women than for single men, due to unisex pricing and men's lower risk of care. At higher wealth levels, the net load faced by married couples is substantially higher, reflecting their greater likelihood of Medicaid eligibility. Net load is highest for married couples in states with generous Medicaid spousal protection rules.

5.3 Medicaid share of expected present value of care costs

Table 6 compares the Medicaid shares of the expected present value of care costs of insured and uninsured households, by household type. At low wealth levels, Medicaid pays most of the care costs of uninsured households, irrespective of marital status. At higher wealth levels, Medicaid pays a significantly larger proportion of the care costs of uninsured married couples. Medicaid pays a smaller proportion of the care costs of insured households. But, Medicaid still pays for a significant proportion of the care costs of wealthy insured married couples. In states with more generous spousal protection rules, Medicaid pays a larger share of the care costs of married couples.

5.4 Willingness to pay for insurance

Our numerical solution method to the intertemporal choice model is described in the Appendix. As noted above, we solve the model first assuming that no long-term care insurance is available and then assuming it is available at actuarially fair or at market loads. We report the willingness to pay for long-term care insurance of single men, single women, and married couples at the 10^{th} through to the 90^{th} percentile of the wealth distribution. In our base case, we assume the rates of interest and time preference both equal 3 percent. We consider an alternative in which the interest rate is 1 percent, reflecting the current low interest rate environment.

Figures 2A and 2B show willingness to pay for the market load and actuarially fair policies, respectively, for married couples, single men, and single women, assuming a coefficient of risk aversion of two. Figures 3B and 3B report corresponding results, assuming a coefficient of risk aversion of five. In each case, we assume that married couples live in one of the states whose Medicaid spousal protection rules protect $117,240 of countable assets. We do not report willingness-to-pay when it is worse than losing all financial wealth. Willingness to pay for single individuals follows the pattern reported in Brown and Finkelstein (2008).[26] At a coefficient of risk aversion of two, single men and women below the 59th and 63rd percentiles of the wealth distribution are unwilling to pay market premiums, and single men and women below the XX and YY percentiles are unwilling to pay actuarially fair premiums. Long-term care insurance policies are more than actuarially fair to single women, yet highly actuarially unfair to single men, and the difference in loads explains the difference between the percentages of single men and single women willing to purchase coverage. In contrast, married couples below the XX percentile of the wealth distribution are unwilling to pay market premiums, and those above the XX percentile are unwilling to pay an actuarially fair premium.

In Figures 4A and 4B, we show the effect of variations in spousal protection rules on the willingness of married couples to pay for long-term care insurance. Figure 4A assumes a coefficient of risk aversion of two, and Figure 4B assumes a coefficient of risk aversion of five. We compare states that exempt $117,240 of assets and $2,931 of income with states that exempt $23,448 of assets and $1,939 of income. We also consider a counterfactual in which spousal protection rules are eliminated so that the spouses are only able to keep $4,000 of assets and

[26] Our code is written in Matlab, whereas Brown and Finkelstein (2008) is written in Gauss. We obtain identical results when we impose their assumptions regarding wealth, long-term care insurance premium and coefficient of risk-aversion.

$674 of income. Spousal protection rules have a dramatic impact on willingness to pay for long-term care insurance. At a coefficient of risk aversion of five, XX percent have a positive willingness to pay in the generous states, compared with XX percent in the restrictive states. But if spousal protection rules were completely eliminated, coverage would increase to XX percent. This is higher than the coverage rates for single men and women. Although married couples benefit from the ability to pool long-term care risk, which will tend to decrease willingness to pay for long-term care insurance, this is more than offset by the value married couples place on protecting the community spouse against impoverishment.

Except at the top of the wealth distribution, married couples are relatively more willing to purchase insurance covering just the wife than covering both. This is surprising because our analysis of Health and Retirement Study (HRS) data indicates a high degree of correlation between coverage among couples. Among couples, XX percent have insurance on both husband and wife, XX percent have insurance only on the husband, XX percent have insurance only on the wife, and XX percent are uninsured.

Willingness to purchase long-term care insurance depends not only on net loads. It also depends on the value the household places on the insurance. The purpose of any insurance contract is to reallocate consumption from states of the world in which the marginal utility of consumption is low to states of the world in which it is high. Long-term care insurance enables single individuals to enjoy higher consumption while in care. It also insures them against the financially disastrous outcome of returning from a nursing home to live in the community, shorn of their wealth. In the absence of Medicaid spousal protection rules, married couples would place an even higher value on long-term care insurance because of the financial protection it provides to the community spouse. But Medicaid spousal protection rules render that insurance unnecessary over much of the wealth distribution. These rules also provide partial insurance to the institutionalized spouse. If that spouse returns to live in the community, he or she will be able to share the assets that have been protected by the spousal impoverishment rules.

5.5 Asset decumulation

Besides crowding out private insurance holdings, Medicaid may also crowd out private wealth holdings, at least above levels that are shielded by Medicaid spousal protection rules. To examine this, Figure 5 shows the asset decumulation path of households at the 70th percentile of

the wealth distribution, who are optimally uninsured. We consider single men, single women, and married couples facing 1) generous spousal asset protection rules, 2) restrictive spousal protection rules, and 3) no spousal protection. In each case, we assume that the household remains in the healthy state. Married couples decumulate their wealth more rapidly that single individuals. They have a stronger preference for consumption early in retirement because consumption complementarities increase the marginal utility of the consumption of in-tact couples relative to that of single individuals By the time a married couple living in a generous Medicaid state reaches an age with a significant risk of entering care, assets are below the Medicaid spousal protection limit and the household therefore has little need to engage in precautionary saving to protect the community spouse. Conversely, couples living in a generous state have less incentive to accelerate the rate of asset decumulation to escape the Medicaid tax imposed on financial assets above the spousal protection limit. In contrast, married couples in restrictive states have two conflicting goals. They want to consume early in retirement because if they preserve assets for later, they may be taxed away by Medicaid. But, they also want to protect the surviving spouse. The net effect is that they decumulate wealth more/less rapidly.

Figures 6A (single individuals) and 6B (married couples) compare the above decumulation paths with a counterfactual in which the household purchases insurance. In the absence of Medicaid, insured households would have less need to engage in precautionary saving and would decumulate their assets more rapidly. Medicaid reduces the need for precautionary saving, but also reduces or eliminates the Medicaid tax on financial assets. On balance….

5.6 Robustness

We now consider the sensitivity of our results to alternative assumptions regarding household preferences. We consider couples with a coefficient of risk aversion of two and who are resident in a state with generous spousal protection rules. The solid line in Figure 5 shows the base case, corresponding to the results in Figures 2A and 4A. The dotted line shows willingness-to-pay when utility in assisted living or a nursing home is only half of that in the healthy and home health care states. Willingness to pay is further reduced so that only couples above the XX percentile of the wealth distribution have a positive willingness-to-pay, compared with XX percent in the base case. But the effect is small. Most of the value of long-term insurance lies in its ability to protect consumption in the healthy and home health care states.

The dashed line shows willingness-to-pay when home health care contributes to utility. Willingness-to-pay is also reduced in this scenario, so that only XX percent of married couples have a positive willingness-to-pay. The explanation is that the consumption floor is increased when home health care contributes to utility, making households less risk-averse. The dotted and dashed line shows willingness –to-pay when home health care but the consumption value of Medicaid funded home health care is only half that of non-Medicaid care. Willingness-to-pay is only slightly higher than in the previous case. The grey line shows willingness to pay when all types of Medicaid care provide half the consumption value of non-Medicaid care. Willingness to pay is increased, but remains below the base case, and only XX percent of households have a positive willingness-to-pay.

Figure 6 reports the results of the bequest motive model. As in Figure 5, the solid line shows the base case. The dotted line shows willingness-to-pay when bequests contribute to liquidity. Willingness-to-pay is only slightly increased and only XX percent have a positive willingness-to-pay relative to XX percent in the base case.

The conclusion we draw from the above analysis is that, as in the corresponding Brown and Finkelstein (2004) analysis of single individuals, our finding that it is optimal for only a small percentage of wealthy married couples to purchase long-term care insurance is robust to plausible alternative assumptions regarding household preferences.

5. Conclusions

Brown and Finkelstein (2008) show that, over a wide range of plausible preference parameters, the means tested insurance provided by Medicaid crowds out the purchase of private insurance by single individuals over most of the wealth distribution. This paper investigates whether it similarly crowds out the purchase of insurance by married couples. Married couples face somewhat different considerations from single individuals. They will be concerned about the risk that the cost of long-term care may impoverish the community spouse. But they are afforded substantial protection by Medicaid spousal impoverishment rules.

We show that the latter effect outweighs the former and that married couples have an even smaller willingness to pay for long-term care insurance than comparably situated singles. Were these spousal impoverishment rules to be eliminated so that Medicaid treated married

couples similarly to single individuals, the percentage of married couples that would optimally choose to purchase insurance would increase from XX to XX percent.

References

Alliance for Health Reform. 2007. "Long-Term Care Partnerships: An Update." Washington, DC. Available at: http://www.allhealth.org/publications/long-term_care/long_term_care_partnerships_53.pdf.

America's Health Insurance Plans. 2012. "Who Buys Long-Term Care Insurance in 2010-2011? A Twenty Year Study of Buyers and Non-Buyers (In the Individual Market)." Washington, DC.

Ameriks, John, Andrew Caplin, Steven Laufer, and Stijn Van Nieuwerburgh. 2007. "The Joy of Giving or Assisted Living? Using Strategic Surveys to Separate Bequest and Precautionary Motives." Working Paper 13105. Cambridge, MA: National Bureau of Economic Research.

Brown, Jeffrey R., and Amy Finkelstein. 2007. "Supply or Demand: Why Is the Market for Long-Term Care Insurance So Low?" *Journal of Public Economics* 91(10): 1967-91.

Brown, Jeffrey R. and Amy Finkelstein. 2008. "The Interaction of Public and Private Insurance: Medicaid and the Long-Term Care Insurance Market." *American Economic Review* 98(3): 1083-1102.

Brown, Jeffrey R., Gopi Goda Shah, and Kathleen McGarry. 2012. "Long-Term Care Insurance Demand Limited by Beliefs About Needs, Concern About Insurers, and Care Available from Family." *Health Affairs* 31(6): 1294-1302.

De Nardi, Mariacristina, Eric French, and John Bailey Jones. 2012. "Medicaid Insurance in Old Age." Working Paper 2012-13. Chicago, IL: Federal Reserve Bank of Chicago.

Dushi, Irena and Anthony Webb. 2004. "Household Annuitization Decisions: Simulations and Empirical Analyses." *Journal of Pension Economics and Finance* 3(2): 109-143.

Finkelstein, Amy, Erzo F. P. Luttmer, and Matthew Notowidigdo. 2013. "What Good Is Wealth Without Health? The Effect of Health on the Marginal Utility of Consumption." *Journal of the European Economic Association* 11: 221-258.

Friedberg, Leora, Wenliang Hou, Wei Sun, Anthony Webb, and Zhenyu Li. 2014. "New Evidence on the Risk of Requiring Long-Term Care." Working Paper 2014-12. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Government Accountability Office. 2005. "Overview of the Long-Term Care Partnership Program." Washington, DC. Available at: http://www.gao.gov/new.items/d051021r.pdf.

Hurd, Michael, Pierre-Carl Michaud, and Susann Rohwedder. 2013. "The Lifetime Risk of Nursing Home Use." Unpublished Working Paper.

The Henry J. Kaiser Family Foundation. 2012. "The Facts on Medicare Spending and Financing." Available at: http://kff.org/medicare/fact-sheet/medicare-spending-and-financing-fact-sheet/.

Metlife Mature Market Institute. 2011. "Market Survey of Long-Term Care Costs." Available at: https://www.metlife.com/mmi/research/2011-market-survey-long-term-care-costs.html.

Redfoot, Donald L., and Ari Houser. 2010. "More Older People with Disabilities Living in the Community: Trends from the National Long-Term Care Survey, 1984-2004." Washington, DC: AARP Public Policy Institute. Available at: http://assets.aarp.org/rgcenter/ppi/ltc/2010-08-disability.pdf.

Robinson, James. 1996. "A Long-Term Care Status Transition Model." The Old-Age Crisis-Actuarial Opportunities: The 1996 Bowles Symposium.

Shah Goda, Gopi. 2011. "Do Tax Subsidies for Private Insurance Reduce Medicaid Costs? Evidence from the Market for Long-Term Care Insurance." *Journal of Public Economics* 95(7-8): 744-757.

Sun, Wei. 2010. "A Dynamic Analysis of Long-Term Care Insurance Decisions." Unpublished Working Paper.

Sun, Wei, and Anthony Webb. 2013. "Can Long-Term Insurance Partnership Programs Increase Coverage and Reduce Medicaid Costs?" Working Paper 2013-8. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Walker, Lina and Jean Acciius. 2010. "Access to Long-Term Services and Supports: A 50-State Survey of Medicaid Financial Eligibility Standards." Insight on the Issues I-44. Washington, DC: AARP Public Policy Institute.

Tables and Figures

Table 1. *Medicaid Spousal Protection Limits by State, 2014*

State	XXX	XXX
Alabama		
Alaska		
Arkansas		
Arizona		
California		
Colorado		
Connecticut		
Delaware		
District of Columbia		
Florida		
Georgia		
Hawaii		
Idaho		
Indiana		
Illinois		
Iowa		
Kansas		
Kentucky		
Louisiana		
Maine		
Maryland		
Massachusetts		
Michigan		
Minnesota		
Missisippi		
Missouri		
Montana		
Nebraska		
Nevada		
New Hampshire		
New Jersey		
New Mexico		
New York		
North Carolina		
North Dakota		
Ohio		
Oklahoma		
Oregon		
Pennsylvania		

Rhode Island
South Carolina
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

Table 3. *Comparison of Robinson with Friedberg et. al. Care Usage Statistics*

	Men		Women	
	Robinson	Friedberg et. al.	Robinson	Friedberg et. al.
Percent using	0.27	0.44	0.44	0.58
Mean age of first use	83	82	84	83
Mean years in care:				
Unconditional	0.35	0.3872	0.88	0.8352
Conditional on ever using	1.30	0.88	2.00	1.44
Probability of using for				
1 year	0.33	0.24	0.42	0.37
3 years	0.12	0.07	0.22	0.14
5 years	0.05	0.02	0.12	0.07
Conditional probability of ever exiting alive	0.65	0.84	0.62	0.84
Conditional probability of only one stay	0.75	0.65	0.65	0.58

Notes: Robinson data as reported in Table 1 of Brown and Finkelstein (2008). Friedberg et.al. as reported in Friedberg, Hu, Sun, Webb, and Li (2014).

Table 4. *Medicaid Implicit Tax, Married Couples By State Vs Single Men and Women, Friedberg et.al. Transition Matrix*

Wealth percentile	Married couples		Single men	Single women
	High spousal protection limit	Low spousal protection limit		
20th				
30th				
40th				
50th				
60th				
70th				
80th				
90th				

Notes: Authors' calculations. A high spousal protection limit state is one in which $2,931 of income and $117,240 of assets is protected. A low spousal protection limit state is one in which $1,939 of income and $23,448 of assets is protected.

Table 5. *Net Load: Married Couples By State Vs Single Men and Women, Friedberg et. al. Transition Matrix*

Wealth percentile	Married couples		Single men	Single women
	High spousal protection limit	Low spousal protection limit		
10th				
20th				
30th				
40th				
50th				
60th				
70th				
80th				
90th				

Note: See Table 4.

Table 6. *Medicaid Share of EPDV of Long-Term Care Costs, Married Couples By State Vs Single Men and Women, Friedberg et.al. Transition Matrix*

Wealth percentile	Married couples				Single men		Single women	
	High spousal protection limit		Low spousal protection limit					
	No insurance	Insurance	No insurance	Insurance	No insurance	Insurance	No insurance	Insurance
10th								
20th								
30th								
40th								
50th								
60th								
70th								
80th								
90th								

Note: See Table 4.

Appendix

Appendix Table 4. *Medicaid Implicit Tax, Married Couples By State Vs Single Men and Women, Robinson Transition Matrix*

Wealth percentile	Married couples		Single men	Single women
	High spousal protection limit	Low spousal protection limit		
20th				
30th				
40th				
50th				
60th				
70th				
80th				
90th				

Notes: Authors' calculations. A high spousal protection limit state is one in which $2,931 of income and $117,240 of assets is protected. A low spousal protection limit state is one in which $1,939 of income and $23,448 of assets is protected. The policy has a $158 daily benefit cap, market load, lifetime benefit, and 5% inflation protection.

Appendix Table 5. *Net Load: Married Couples By State Vs Single Men and Women, Robinson Transition Matrix*

Wealth percentile	Married couples		Single men	Single women
	High spousal protection limit	Low spousal protection limit		
10th				
20th				
30th				
40th				
50th				
60th				
70th				
80th				
90th				

Note: See Appendix Table 4.

Appendix Table 6. *Medicaid Share of EPDV of Long-Term Care Costs, Married Couples By State Vs Single Men and Women, Robinson Transition Matrix*

Wealth percentile	Married couples				Single men		Single women	
	High spousal protection limit		Low spousal protection limit					
	No insurance	Insurance	No insurance	Insurance	No insurance	Insurance	No insurance	Insurance
10th								
20th								
30th								
40th								
50th								
60th								
70th								
80th								
90th								

Note: See Appendix Table 4.