



Published in final edited form as:

*J Risk Insur.* 2009 February 10; 76(1): 5–29. doi:10.1111/j.1539-6975.2009.01286.x.

## The Private Market for Long-Term Care Insurance in the U.S.: A Review of the Evidence

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### Abstract

This paper reviews the growing literature on the market for private long-term care insurance, a market notable for its small size despite the fact that long-term care expenses are potentially large and highly uncertain. After summarizing long-term care utilization and insurance coverage in the United States, the paper reviews research on the supply of and the demand for private long-term care insurance. It concludes that demand-side factors impose important limits on the size of the private market and that we currently have a limited understanding of how public policies could be designed to encourage the growth of this market.

### 1. Introduction

Health insurance is a subject of perennial interest to economics and insurance researchers, as well as to the broader health policy community. While most of the research attention has focused on markets for acute health care insurance, in recent years a small but growing literature has analyzed the private market for insurance against long-term care expenditures. Unlike standard, annual health insurance policies that primarily pay for the diagnosis and treatment of medical conditions, long-term care insurance policies are long-term contracts designed to help pay for assistance (at home or in an institution) with “activities of daily living” for individuals who have difficulty performing them due to physical and/or cognitive impairments.<sup>1</sup>

Potential long-term care expenditures represent a significant source of financial uncertainty for most elderly households. For example, Brown and Finkelstein (2008) estimate that only about one-third of current 65 year olds will ever enter a nursing home and that most nursing home stays will last less than one year. However, of those who enter, 12 percent of men and 22 percent of women will spend more than 3 years there. These stays are financially costly: on average, a year in a nursing home costs \$50,000 in 2002 for a semi-private room, and even more for a private room (MetLife Mature Markets Institute 2002).

Given the uncertainty about these expenditures, and in particular the very “long tail” of potentially catastrophic financial outcomes, standard economic models suggest that risk averse individuals should place a high value on the ability to insure against these risks.<sup>2</sup> Yet the private

<sup>1</sup>The “activities of daily living,” or ADLs, are the basic tasks of everyday life, such as eating, bathing, dressing, toileting, and transferring (see Wiener et al 1990 for more discussion of ADL’s and how their measurement varies across countries.)

<sup>2</sup>In particular, standard models of a life-cycle, risk averse consumer who maximizes the expected utility of consumption indicates that there are substantial gains to the purchase of long-term care insurance in the absence of a payer of last resort, assuming that the pricing load on the policy (regardless of source) is not too high. See Brown and Finkelstein (2008) for a discussion of insurance demand in this context.

market for long-term care insurance is not very well-developed in the U.S., leaving much long-term care expenditure risk uninsured. Only 4 percent of long-term care expenditures are paid for by private insurance policies, while one-third are paid for out of pocket (Congressional Budget Office 2004). By contrast, in the health sector as a whole, private insurance pays for 35 percent of expenditures and only 17 percent are paid for out of pocket (National Center for Health Statistics 2002).

The extremely limited private insurance coverage for long-term care expenditures has important implications for the ability of the elderly to engage in optimal consumption smoothing, and therefore may have first-order welfare effects for the elderly. In addition, because large uninsured medical expenditure shocks can rapidly deplete one's resources, the lack of private insurance may have important welfare implications for the children of the uninsured as well. The number of U.S. residents over the age of 85 - a population among which the need for long-term care is quite prevalent - is projected to increase from just over 5 million in 2006 to over 20 million in 2050 (Oxford Analytica 2007). As such, the welfare implications of the limited private insurance market will only become more pronounced in the coming decades.

The limited private market for long-term care insurance also has important implications for public policy. At an aggregate level, expenditures on long-term care services in 2004 accounted for 8.5 percent of all health care spending in the United States and about 1.2% of GDP (CBO, 2004). These long-term care expenditures are projected to triple in real terms over the next few decades, in large part due to the aging of the population (CBO, 1999). Because over one-third of Medicaid expenditures are already devoted to long-term care (U.S. Congress, 2004), there is rising concern among policy makers about the fiscal pressure that further growth in long-term care expenditures will place on federal and state budgets in the years to come. For example, in a much-publicized press release issued in October 2004, the National Governors Association announced that states spent nearly as much money on Medicaid in fiscal year 2003 as they did on K-12 education, and expressed concern that Medicaid may put an increasing "squeeze" on state budgets going forward (National Governors Association, 2004). As a result, there is growing interest in stimulating the market for private long-term care insurance.

This article reviews the rapidly growing –but still nascent – body of work dedicated to better understanding the private long-term care insurance market in the United States. A general theme of our review is that, while we have learned much from the existing research, many important questions remain unexplored and unresolved. Updating and extending the existing analysis is thus an important area for future research.

The paper is organized as follows. Section 2 provides a brief overview of the distribution of long-term care utilization and its financing by various public and private payment sources. Section 3 reviews the literature on the supply of private insurance. It provides an overview of the private insurance market, including a discussion of the structure and pricing of a typical policy. It also describes the available empirical evidence on the existence of various supply side factors that may limit demand, including transaction costs, imperfect competition, asymmetric information and dynamic problems with long term contracting. Our reading of the evidence to date is that while supply side market imperfections appear to exist –and may pose substantial impediments to attempts to stimulate the private insurance market – solving these market problems is unlikely, by itself, to dramatically increase the amount of private long-term care insurance coverage.

Section 4 summarizes the literature on the demand for private long-term care insurance. It discusses factors that may limit consumer demand for insurance in spite of the highly uncertain nature of the expenditures. These include limited consumer rationality, the possibility that

individuals may not value consumption as highly when institutionalized, as well as the availability of imperfect but cheaper substitutes for formal insurance, such as the public insurance provided by the means-tested public Medicaid program, financial transfers from children, or unpaid care provided by family members. Our reading of the existing literature is that it provides evidence consistent with a potential role for each of these factors, and that there is a quantitatively important role for Medicaid in crowding out private insurance demand.

Section 5 provides a brief discussion of some of the challenges in designing public policy to stimulate the private market for long-term care insurance. In the concluding section, we highlight some important directions for future work. We emphasize that the quantitative importance of many of the potential demand side factors that may limited the private insurance market remains unexplored, and that there is a critical need for more work that can shed light on the likely impact of potential or actual public policy interventions designed to stimulate the private insurance market.

It is worth noting that, in addition to the large literature on private long-term care insurance that is summarized in this paper, there is a broader literature about non-insurance aspects of long-term care provision, which will not be summarized in this article. For example, researchers have extensively studied the market for nursing homes, including studies of the extent of competition and the supply of beds, as well as models of access and quality of care. Readers interested in this rich and interesting literature can find a very useful summary in Norton (2000).

## 2. Who Uses Long-Term Care and Who Pays for It?

### 2.1 Utilization of Long-Term Care

Long term care primarily consists of varying degrees of custodial care for individuals who have difficulty performing basic functions of daily living (such as bathing, dressing, eating or using the toilet) due to (permanent) physical and/or cognitive impairments. This care may be provided in an institution (such as a nursing home or assisted living facility) or at home. Institutional care is more expensive than home care, and accounts for the majority of long-term care expenditures; less than one-third of total long-term care expenditures are devoted to home health care (CBO 2004).

A number of studies (e.g., Dick et al 1994, Kemper and Murtaugh 1991, Murtaugh et al 1997, Society of Actuaries 1992) have estimated nursing home utilization among the elderly. Brown and Finkelstein (2007, 2008) make use of the “Robinson model” that also includes transitions across assisted living and home health care, in addition to nursing homes.<sup>3</sup> Table 1 compares the some of the key summary statistics about nursing home utilization across these studies. Perhaps not surprisingly, given the overlap in the data sets used to construct the distribution estimates, the various models report broadly similar patterns of use. The probability that a 65 year old individual will use a nursing home at some point in his or her life is quite substantial, with estimates ranging from 35 to nearly 50 percent. In the two studies that report probabilities by gender, the probability of ever using a nursing home is substantially higher for women than for men.

Conditional on the 65 year old needing nursing home care at some point in life, the average age of entry is 83. This is notable because the purchase of long term care insurance tends to occur substantially earlier, often in one’s 60’s (Health Insurance Association of America,

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<sup>3</sup>The Robinson model, which is also based on the National Nursing Home Survey and the National Long Term Care Survey, is explained in more detail in Robinson (1996) and Brown and Finkelstein (2004).

2000a). Thus payouts from most long-term care insurance policies will occur, if at all, many years after purchase, underscoring the long-term nature of the contract.

The remaining columns help to characterize the distribution of nursing home stays, and underscore the tremendous ex ante uncertainty about the total lifetime care costs that an individual may experience. For example, whereas the average stay varies from 1.8 to 2.7 years, depending on the study, there is tremendous variation around this average. 45 to 60 percent of all stays last less than one year, whereas 11 to 21 percent last 5 years or longer. The financial uncertainty imposed by this distribution is the basic rationale for why this is such a natural environment to expect individuals to have a high demand for insurance.

## 2.2 How is Long-Term Care Financed?

According to the CBO (2004), when informal unpaid care is excluded, Medicaid, the public health insurance program for the indigent, is the single largest source of funding for long-term care expenditures, covering approximately 35 percent of all expenditures. Medicaid is a secondary payer relative to any private insurance policy, meaning that if an individual with private long-term care insurance is eligible for Medicaid, the private policy must pay whatever benefits it owes before Medicaid makes any payments. Medicaid is also a means-tested payer-of-last resort, meaning that it will cover an individual's long-term care expenditures only when his income and assets are below the qualifying thresholds. As a result, Medicaid is likely to be an imperfect substitute for private insurance: it allows the individual to keep very little in the way of income and assets to finance non-care consumption while receiving Medicaid-financed long term care or to consume or bequeath after exiting from care. Of course, individuals may try to "hide" assets from Medicaid by transferring them to a spouse or children. In order to make this more difficult, state Medicaid programs impose a 3 to 5 year look back period on assets (Stone, 2002). The fact that one-third of long-term care expenditures are paid for out of pocket points to limits to individuals' ability to "game" the Medicaid system.

After Medicaid, the second largest source of financing – comprising 33 percent of total spending on formal care – is out-of-pocket payments. This underscores the potentially costly nature of long-term care and the highlights the initial "puzzle" of why so few people private insure given the large dollars involved.

Medicare, the public health insurance program for the elderly, covers another 25 percent of total expenditures. However, approximately half of these expenditures are for short-term nursing home stays designed to help beneficiaries recover from acute illnesses rather than to provide for long-term care per se. Arguably, such expenditures should be excluded from estimates of long-term care expenditures; most private insurance contracts, for example, define reimbursable long term care expenditures to be care for a chronic condition, rather than acute rehabilitative care (see e.g. Wiener et al., 2000, Lewis et al., 2003). The remaining Medicare dollars cover home health benefits, which has evolved to cover genuine long-term care. In contrast to Medicaid, Medicare coverage is not means tested and Medicare is a primary payer; it thus pays first, even if the individual has private insurance.

Private insurance covers only 4 percent of all care, while the remaining 3 percent is covered from other sources (e.g., charity).

## 3. The Supply of Long-Term Care Insurance: Coverage, Benefits and Prices

### 3.1 Who Owns Private Long-Term Care Insurance, and What Types of Contracts do they Buy?

The market for long-term care insurance in the U.S. is primarily an individual, rather than a group, market. Indeed, whereas employer-sponsored insurance policies are the most common form of private insurance for acute health care, group policies for long-term care were not even

available prior to 1987 (Scanlon, 1992) and by the late 1990s accounted for only 20 percent of policies sold (Health Insurance Association of America, 2000b)..

Table 2 reports descriptive statistics on private long-term care insurance coverage rates among the elderly from the 2000 Health and Retirement Study. Only about 10 percent of individuals age 60 and over own a private long-term care insurance policy. Over three-quarters of the policies held by the sample cover both institutional care and home care, while about one-quarter do not cover home care (not shown). The probability of owning a policy is quite similar among men and women, at 10.1 and 10.7 percent respectively. Married individuals are more likely to own a policy (11.8 percent) than singles (8.4 percent). By looking across columns, one can also see that the probability of ownership rises sharply with wealth. An industry survey of long-term care insurance purchasers in 2000 suggests that among individuals age 55 and older, the average age of buyers was around 67 years of age (HIAA, 2000a).

Brown and Finkelstein (2007) present detailed information on the characteristics of insurance policies that were sold in 2002. Most policies have an “elimination period,” typically 30 to 100 days in length, which is the number of days a person must be in care before insurance payments commence; this is analogous to a deductible in other insurance contracts. Most policies also specify a maximum “benefit period,” often 1 to 5 years, which caps the total number of days that an individual can receive benefits. Policies are typically written to provide payments equal to the cost of care but only up to a specified maximum daily benefit. The modal daily maximum benefit is \$100, substantially below the contemporaneous daily cost of most nursing homes which averaged \$143 per day nationwide for a semi-private room in 2002, with private rooms costing even more (MetLife Mature Markets Institute 2002). About 60 percent of policies have a daily benefit maximum that is fixed in nominal terms, despite the fact that long-term care costs have historically grown faster than the rate of inflation and the fact that the average age of first use of long-term care comes about 15 years after the average purchase age.

### 3.2 How Comprehensive is the Coverage?

Because of this benefit structure, most policies are not very comprehensive. Brown and Finkelstein (2007) calculate that the typical purchased policy covers only about one-third (34%) of the expected present discounted value of long-term care expenditures. This finding of substantial limitations on benefits helps to reconcile the fact that even though 10 percent of the elderly population owns private policies, private insurance payments account for less than 4 percent of payments for long-term care expenditures in the U.S.

This is problematic not just because the policies are not very comprehensive on average, but also because much of the lack of comprehensiveness occurs precisely in those states of the world in which the financial costs of care are the greatest and for which consumers ought to value insurance the most. For example, the 1 to 5 year maximum benefit period leaves individuals exposed to the right tail of the distribution. Among those who enter institutionalized care (assisted living or nursing home), Brown and Finkelstein (2007) report that 38% of men and 48% of women will be in care for more than a year, and 7% of men and 15% of women will be in care for more than 5 years.

Brown and Finkelstein (2007) note that the limited coverage is primarily due to the daily benefit cap, rather than to the deductible or the maximum benefit period. Specifically, if one maintains the \$100 daily benefit cap, but eliminates the deductible and maximum benefit period, the comprehensiveness rises from 34% to 49%. In contrast, if one maintains those features, and instead eliminates the daily benefit cap, the comprehensiveness rises to 68%.

It is important to note that more comprehensive policies are available to consumers. For example, a consumer wishing to have a more comprehensive benefit package could purchase

a policy with no elimination period, an unlimited benefit period, and a daily benefit that rises each year by a pre-determined (e.g., 5%) rate. Brown and Finkelstein (2007) estimate that such a policy would cover over 90 percent of the expected present discounted value of long-term care expenditures. Yet despite the existence of these comprehensive policies, very few consumers purchase them. As will be noted below, the reason that people do not purchase more comprehensive policies does not appear to be driven by pricing. One might expect, for example, that more comprehensive policies suffer from more intense adverse selection, being purchased by those who expect to need care, thus making the price per unit of coverage more expensive. This turns out not to be the case, however, as the pricing loads on these policies tend to be quite similar to the loads on less comprehensive policies that people do buy.

### 3.3 The Pricing of Private Contracts

The market for private long-term care insurance has traditionally been largely unregulated, although in the past decade the National Association of Insurance Commissioners (NAIC) has put forth model regulations to avoid setting rates at a level that will result in large future premium increases on entire blocks of business (NAIC 2002; Lewis et al, 2003). It is still too early to know whether these regulations will have a significant impact on the likelihood of rate increases over the long-run.

What we do know is that policies are currently offered at premiums that are substantially higher than actuarially fair levels. An actuarially fair policy (i.e. a policy with zero load) is one in which the expected present discounted value of premiums paid into the insurance company is equal to the expected present discounted value of benefits paid out to the policyholder. Brown and Finkelstein (2007) estimate that the typical policy purchased by an average 65 year old in the population and held until death has a load of 0.18; in other words, the buyer will on average get back only 82 cents in expected present discounted value benefits for every dollar paid in expected present discounted value premiums.<sup>4</sup>

Our estimate of the load rises substantially once we account for the fact that individuals often stop paying premiums at some point after purchase, and therefore forfeit any right to future benefits. Because the premium profile of these policies is heavily front-loaded relative to the expected time profile of benefit payments, accounting for policy forfeiture raises our central estimate of the average load considerably, from 18 cents on the dollar to 51 cents on the dollar.

This 51 cent load for long-term care insurance is substantially higher than loads that have been estimated in other private insurance markets. For example, the estimated load on life annuities purchased by a typical 65 year old in the population is about 15 to 25 cents on the dollar (e.g., Mitchell et al 1999) and the estimated load for health insurance policies is about 6 to 10 cents on the dollar for group health insurance and 25 to 40 cents on the dollar for the (less commonly purchased) non-group acute health insurance (Newhouse, 2002).

Importantly, however, these estimates of pricing loads are based on a unisex utilization rate. Yet utilization of long-term care differs tremendously by men and women, while the prices charged to men and women do not differ. As a result, when we estimate loads separately by men and women, we find that loads are about 25 to 50 cents per dollar of premium higher for men than for women.<sup>5</sup>

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<sup>4</sup>Brown and Finkelstein (2007) describe the assumptions used in this calculations in much more detail. Transition probabilities are estimated based on the model of Jim Robinson. Data on average daily costs of care were taken from the Metlife Market Survey. These costs are projected forward under the assumption that LTC expenses will grow with average wage costs, which is assumed to be 1.5% over inflation, although we also conduct sensitivity tests to understand the impact of both higher and lower cost growth. Inflation is taken from the March 2002 differential between nominal and inflation indexed treasury securities.

There are, of course, numerous reasons that prices in this market may deviate from actuarially fair levels. First, insurance companies must mark up the price enough to cover transactions costs (e.g., the costs of underwriting the policies, administration of the contracts, etc.) and earn at least a zero economic profit. Second, the private market for these policies may be imperfectly competitive, although we know of no studies that have examined this for the long-term care insurance market specifically.

Third, the market may suffer from adverse selection or moral hazard. Consistent with such asymmetric information problems, Finkelstein and McGarry (2006) find evidence that individuals have private information about their long-term care utilization risk that insurance companies do not have, and that individuals with private information that they have higher expected long-term care utilization than the insurance companies would predict are more likely to have private long-term care insurance. Such asymmetric information likely impairs market efficiency as it makes it difficult for individuals to be able to buy private insurance at prices that are actuarially fair for them, given their (privately known) risk of long term care use. Yet asymmetric information is unlikely to be a cause of above-actuarially fair pricing. For Finkelstein and McGarry (2006) also find that the privately insured do not, on average, use more long term care than those without insurance. This is because there is also offsetting selection into the market from individuals with strong tastes for insurance (due e.g. to higher risk aversion) who are, in fact, lower risk than the insurance company would predict.

Fourth, a variety of dynamic contracting problems may lead to higher prices. These problems can arise because with long-term contracts, thus both sides must agree on the extent to which a premium payment schedule will be locked-in now for a benefit payment that, if paid, may be decades into the future. This raises concerns about how to handle the risk of bankruptcy of the insurance company (a point explored in the context of annuity demand by Babbel and Merrill 2006). As Cutler (1996) notes, the long-term nature of the contracts also exposes insurance companies to aggregate risks (such as nationally rising rates of long term care utilization or costs) that cannot be diversified away simply by pooling individual risks. The difficulty diversifying aggregate risk can lead insurers to avoid insuring long-term risk, such as by offering payments on an indemnity basis rather than a service benefit, and can also lead to higher prices. Yet another issue that can arise in long-term contracts is that individuals who learn over time that their health is better than expected will have an incentive to drop out of the insurance pool, thus raising the average risk of the pool and hence the average premium. Consistent with this explanation, Finkelstein, McGarry and Sufi (2005) find that individuals who let their long-term care insurance policies lapse are about one-third less likely to subsequently have a nursing home admission than those who maintain their coverage

### 3.4 Are Supply Constraints to Blame for the Small Market?

The high loads in this market points to the existence of one or more of the various supply side market imperfections just described. However, Brown and Finkelstein (2007,2008) make the case that even if public policy could achieve actuarially fair pricing in this market, it is likely that the vast majority of the elderly would still find it unattractive to purchase private insurance. They base this conclusion on several complementary pieces of evidence. As already noted, unisex pricing in the face of significantly higher long term care utilization by women than by men results in dramatically higher loads for men than for women. Yet we do not observe significant differences in long-term care insurance coverage by gender. As noted in Table 2, the probability of owning insurance is very similar for men and women. Furthermore, among

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<sup>5</sup>It is puzzling that an easily observable characteristic (such as gender) that is strongly correlated with expected insurance claims is not priced by insurance companies despite the absence of regulatory constraints from doing so. Such a puzzle is not unique to private long-term care insurance markets. Finkelstein and Poterba (2006) describe several other insurance markets in which insurers voluntarily forego pricing on observable and risk-relevant characteristics, and discuss several possible explanations.

those who purchase insurance, women do not purchase more comprehensive policies than men (Brown and Finkelstein) 2007. The similarity in insurance coverage by gender despite dramatic differences in loads suggests that something other than above-actuarially fair pricing is needed to explain the limited size of the private insurance market. Consistent with this conclusion, Brown and Finkelstein (2008) present calibration results from life-cycle simulations which suggest that even if, contrary to fact, the supply side of the market were “perfect,” in that fully comprehensive policies were offered at actuarially fair rates, the majority of individuals would not purchase them. This suggests important limitations on the demand side of the market, and it is to a discussion of demand side limitations that we now turn. We note that the evidence of pricing and utilization by gender suggests that a necessary criterion for a demand-side explanation for the limited size of the private insurance market is that it curtails demand more for women than by men; we return to this point in Section 4.4 below, where we note that recent research suggests that Medicaid is likely to reduce demand for private insurance more for women than for men.<sup>6</sup>

#### 4. The Demand for Private Long-Term Care Insurance

A number of demand side explanations have been offered as a potential explanation for the small size of the market. One broad class of explanations is based on limited consumer knowledge or rationality that causes individuals to “mistakenly” not purchase insurance even when it is in their interest to do so. A second explanation is that individuals have a particular form of state-dependent utility that leads them to rationally choose not to purchase insurance because they place a low value on consumption while in care. A third broad class of explanations is the existence of potential substitutes for formal insurance. These include: (i) informal financial or in kind insurance provided by families (ii) illiquid housing equity that may be liquidated to pay for care; and (iii) the public insurance provided through Medicaid.

There is some evidence consistent with each of these potential explanations, although their relative quantitative importance is not yet apparent. It is possible that a combination of some or all of these factors may be important, and that even if one barrier is eliminated, the other factors may still conspire to limit demand. For example, as will be discussed below, Brown and Finkelstein (2008) provide evidence of a quantitatively large effect of the Medicaid program in crowding out private long-term care insurance demand. Indeed, even in the absence of any other supply or demand limitation, they find that Medicaid could explain why as much as two-thirds of the wealth distribution does not purchase insurance. However, this clearly does not preclude a potentially important role for other factors, suggesting that while Medicaid reform may be necessary to increase demand, it is not at all clear that it is sufficient. In the sections that follow, we review the evidence on each of these areas independently, while noting that more research is needed on the interaction of these factors and their quantitative impact.

##### 4.1 Limited Consumer Knowledge or Rationality

A large and growing body of research suggests that many consumers exhibit poor financial knowledge. Lusardi and Mitchell (2007a) provide a review of the evidence on financial literacy in several countries. They note that a large share of the population in several industrialized countries that has been studied is unable to make simple financial calculations and have a poor understanding of basic financial products. For example, using the 2004 Health and Retirement Survey, they find that even among those respondents who were able to answer a simple percentage calculation *or* a simple division problem correctly, only 18% correctly computed compound interest over two years. Lusardi and Mitchell (2007b) also find that financial literacy

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<sup>6</sup>Brown and Finkelstein (2007) discuss other possible explanations for these patterns by gender (such as within household correlation in coverage decisions or differences in insurance demand by gender) and suggest that they are unlikely to be able to explain the findings.

has important implications for retirement planning, even after controlling for numerous other factors. This work builds on the insights of Bernheim (1998) who suggested that levels of financial literacy are too low for most households to make appropriate saving decisions.

Given low levels of financial literacy in general, it is quite conceivable that many households do not purchase long-term care insurance simply because they do not fully understand the financial implications of the decision. However, it is worth underscoring that, in contrast to the large and growing literature exploring behavioral anomalies in other, related contexts, such as retirement savings decisions, we are aware of no research examining behavioral aspects in the area of long-term care insurance. Lacking such research, one cannot rule out, *a priori*, the possibility that limited rationality could increase the demand for insurance, rather than decrease it.

The long-term care insurance decision would seem to be a useful place for learning more about the interaction of consumer rationality, financial literacy, and economic decision-making. In contrast to many other forms of insurance products, such as acute health insurance or private pensions, the market for long-term care insurance is almost entirely an individual, rather than a group, market. As a result, employers are far less likely to serve as a source of information or provide an implicit endorsement of the need for this type of coverage. It would be worth examining whether this implicit default option of not buying private insurance has as much power as default options in other contexts.

It is also possible that consumers misperceive the nature of the long term care expenditure risk. They may have difficulty understanding low-probability, high-loss events (Kunreuther 1978), or mistakenly believe that Medicare covers most long-term care expenditures (e.g., AARP 1985). If the elderly systematically underestimate the need for long-term care, this would reduce their demand even if they were otherwise behaving rationally. The available evidence on biases in beliefs about nursing home utilization is not dispositive either way. On the one hand, several studies have found that elderly who report that they believe that they are more likely to move into a nursing home are indeed subsequently more likely to do so (Taylor et al 2005, Finkelstein and McGarry 2006), and that the elderly's self-assessed probabilities of needing care correlate in a sensible way with observables risk factors such as gender, age, and health status (Holden, McBride and Perozek 1997, Lindrooth, Hoerger and Norton 2000, Finkelstein and McGarry 2006). On the other hand, the propensity of respondents to report round probabilities of subsequent nursing home entry (i.e. 0, 50, or 100) makes it difficult to assess the depth of their understanding and, particularly, the potential for systematic over- or underestimation of expected care utilization (Finkelstein and McGarry, 2006).

## 4.2 State Dependent Utility

In standard models of expected utility maximization, it is most common to assume that the form of the utility function (e.g., CRRA utility over consumption) is the same in all states of the world. If ever there were a time when this assumption might be violated, the case of chronic health changes would seem to be a likely candidate, a point that has long been understood (e.g., Zeckhauser 1970, Arrow 1974).

The reason that state dependence matters is straightforward: in standard utility maximization problems, the first-order conditions that characterize the optimum equate the marginal utility of consumption across states. Under the assumption that the utility function (defined over consumption) is the same in all states, an individual equates marginal utility of consumption by equating the level of consumption across states. Insurance products are valuable in these models because they provide a simple mechanism for smoothing consumption across states of the world.

Suppose, however, that an individual places a lower value on consumption while in a nursing home than he does when he is healthy at home. In this case, equating marginal utilities no longer implies equal consumption, and thus the individual would not place as much value on an insurance product that transfers wealth from healthy to institutionalized states. This could lead to limited demand for long-term care insurance.

Finkelstein, Luttmer and Notowidigdo (2008) note that it is *a priori* ambiguous whether the marginal utility of consumption rises or falls with deteriorating health, given that some goods (e.g., travel) are complements to good health while other goods (e.g., assistance with self-care) are substitutes for good health. However, they also provide evidence, using subjective well-being measures from the Health and Retirement Survey, that a one standard-deviation increase in an individual's number of chronic diseases is associated with an 11 percent decline in marginal utility. They report that this lowers the optimal share of medical expenditures covered by health insurance by about 20 to 45 percentage points (although they caution against taking the point estimates too literally, given the stylized assumptions needed to make these calculations.)

### 4.3 The Role of the Family

There are several potential ways in which family dynamics can influence the demand for long-term care insurance. The first is by direct provision of care. As noted by the CBO (2004, p. ix), "the value of donated care probably exceeds that of any other category of LTC financing, but it is difficult to quantify in dollar terms." The CBO update of a 1998 Department of Health and Human Services study suggests that the value of informal care ranges between \$50 billion and \$103 billion. Arno, Levin and Memmott (1999) estimate the value of informal care in 1997 in terms of the foregone wages of caregivers and find it to be nearly \$200 billion.

Lakdawalla and Philipson (2002) make the point that spousal provision of long-term care services leads to the interesting result that population aging may actually *decrease* the per capital demand for long term care if it has the effect of increasing the supply of informal care produced by other elderly individuals, such as spouses. The basic logic is that women tend to live longer than men. Thus, when there is an increase in the average longevity of men, couples tend to stay married longer, which increases the supply of informal care and reduces the demand for formal care. The opposite holds for women living longer. Because the spousal provision influences the demand for formal, market-based long-term care, it would also have implications for the demand for long-term care insurance.

Children may also serve as informal substitutes for formal long-term care, such as when an adult child cares for her ailing parents. There are a large number of papers that examine, both theoretically and empirically, a wide range of trade-offs between work, leisure, the supply of informal care, the demand for formal care, and end-of-life transfers (e.g., Chang and White-Means, 1995; Stern, 1995; Nocera and Zweifel 1996; Sloan, Hoerger and Picone 1996; Sloan, Picone and Hoerger, 1997; Pezzin and Schone, 1999; Engers and Stern, 2002; Lo Sasso and Johnson 2002; Brown, 2006;) A very careful summary of the literature through the late 1990s can be found in Norton (2002) and is therefore not re-created here. One theme of the theoretical work is that the extent of informal care-giving ought to be influenced by such factors as the wage rate available to care-givers from working in the formal sector, the marginal rate of substitution between consumption and leisure, the marginal rate of substitution between consumption and care-giving, productivity of the various activities, and the like.

Many of the models in the literature treat the decision from the perspective of the care-giver. It is worth noting, however, that one might also need to consider the utility function of the care recipient. Here, it is not clear whether care received from family members would be strictly preferable to formal care (e.g., being taken care of by someone you trust) or inferior to formal

care (e.g., “I do not want to be a burden on my children.”) Because LTC insurance policies are primarily purchased by the individuals who expect to receive the care, rather than by their potential caregivers, the views of the purchaser would seem to be the ones that would have the largest effect on the insurance decision. We have little empirical knowledge, however, of the relative utility consequences of formal versus informal care.

Bequests are another pathway through which families may influence the demand for private long-term care insurance coverage, although the sign of any such effect is not *a priori* obvious. On the one hand, if individuals place a high value on leaving a bequest to the next generation, this could increase demand for private insurance in order to avoid exhausting one’s resources due to catastrophic long-term care expenses. On the other hand, if the “strategic bequest motive” hypothesis of Bernheim, Shleifer and Summers (1985) is correct, and if a parent prefers to have care from a child than from formal sources, then the parent might prefer *not* to insure and to instead use the risk to one’s bequest as a way to elicit informal care from a child. Empirically, Sloan, Hoerger and Picone (1996) find little support for the hypothesis that caregiving by children is motivated by the prospect of receiving bequests from their parents. Sloan and Norton (1997) do not find any support for the hypothesis that self-reported bequest motives or the presence of children is significantly correlated with the probability of owning long-term care insurance. Brown (2006), however, provides evidence from the AHEAD study that unmarried parents receive most of their long-term care from children and that end-of-life transfers tend to favor current and expected caregivers.

#### 4.4 Illiquid Housing

Davidoff (2008) suggests that home equity that can be accessed when an individual needs long-term care reduces the value of long-term care insurance. In the presence of illiquid housing wealth, individuals have a higher marginal utility of consumption from liquid financial wealth than they would if their housing wealth were also liquid. They may therefore find it optimal to use their housing wealth to insure long term care – liquidating it if necessary in the event of an adverse long term care expenditure shock – rather than pay long term care insurance premiums out of liquid wealth.

This raises the possibility that home equity crowds out private insurance for long-term care. An implication is that attempts to expand the market for private long-term care insurance may also require expanding the demand for products – such as reverse mortgages – that allow elderly households to access home equity more easily.

#### 4.5 Medicaid Crowd-Out of Private Long-Term Care Insurance Demand

Pauly (1990) was among the first to suggest that the non-purchase of long-term care insurance by the elderly may, in fact, be perfectly rational. He showed that it was theoretically possible for Medicaid to explain “why a rational risk-averse person who is not poor might, nevertheless, choose not to buy conventional insurance against nursing home costs.” (p. 167).

To investigate the role of Medicaid more formally, Brown and Finkelstein (2008) developed and calibrated a utility based model of an elderly individual’s demand for private insurance. This model considers the demand for private insurance given the current structure of policies discussed above, and the presence of the public Medicaid program.

The Brown-Finkelstein model is able to replicate basic stylized facts concerning the portion of elderly that buy private insurance, as well as the similarity in insurance coverage by gender and the positive wealth-coverage profile. The results suggest that most of the wealth distribution would find it rational *not* to purchase existing private long-term care insurance policies given the presence of the Medicaid program.

The initial Brown-Finkelstein model incorporates many of the limits on benefits from existing policies, such as the daily benefit cap, thus leaving open the possibility that it is the benefit limits rather than Medicaid that limits insurance demand in their model. Thus, Brown and Finkelstein also show that even if (contrary to fact) comprehensive private insurance were available at actuarially fair prices, nearly two-thirds of the wealth distribution would still not wish to purchase insurance.

This points to the important role played by Medicaid in limiting demand even when insurance markets are operating perfectly. The large estimated crowd-out effect of Medicaid persists even when the model is extended to allow for considerably higher consumption value of privately-financed care than Medicaid-financed care, as the evidence on “Medicaid aversion” (Norton 1995, Ameriks et al 2007) suggests may be the case. The finding that Medicaid limits the demand for private insurance is also robust to allowing utility to be state-dependent. Brown and Finkelstein (2004) show that when the marginal utility from consumption while in assisted living or a nursing home is only half of the non-institutionalized marginal utility, the crowd-out effect of Medicaid remains strong. A series of sensitivity analyses show that the core findings about the role of Medicaid are also robust to a wide range of assumptions about moral hazard, bequest motives, a desire to not burden one’s family with care responsibilities, and more (Brown and Finkelstein, 2004, 2008).

Medicaid’s large crowd-out effect arises because of the “implicit tax” that Medicaid imposes on the purchase of private policies. Specifically, a large part of the premium that individuals pay for the purchase of a private policy goes to pay for benefits that end up duplicating benefits that Medicaid would have paid for in the absence of a private policy. Brown and Finkelstein (2008) estimate that the implicit tax imposed by Medicaid on private insurance policies is substantial. For example, they estimate a 60 percent implicit tax for a male at the median of the wealth distribution; in other words, for such an individual, three out of every five dollars worth of benefits paid from the private policy simply serve to replace benefits that Medicaid would have provided. For a female at the median of the wealth distribution, the implicit tax is closer to 75 percent. As a result of these very high implicit taxes, the “net load” of the policy – i.e., a calculation that accounts for both the implicit tax from Medicaid and the standard pricing load imposed by the insurance company – are extremely high. For example, the male at the median of the wealth distribution would pay \$5 in premium for every \$1 of net benefit from the private policy. Put differently, even a policy that is “actuarially fair” in the sense of having zero gross load – i.e. expected premiums paid into the insurance company are equal to expected benefits paid out to the policyholder – will still have a considerable net load from the policyholder’s perspective since a large portion of the benefits paid out are redundant of benefits that, absent the private insurance policy, he would otherwise have received from Medicaid.

The implicit tax from Medicaid arises from two sources. First, Medicaid is, by law, considered a “secondary payer.” This means that the private insurance policy has to pay benefits first, even if the individual is otherwise eligible for Medicaid. Second, because Medicaid is means-tested, private insurance reduces the probability of becoming eligible for Medicaid in the first place. This is because private insurance protects the individual’s assets, thus making it less likely that the individual will spend down enough to meet the asset test imposed by Medicaid. Our research suggests that the reduction of this implicit tax is a necessary, although perhaps not sufficient, condition for private insurance demand to expand significantly.

Interestingly, the implicit tax imposed by Medicaid may also help explain the ostensible puzzle discussed earlier that coverage rates for private insurance are very similar for men and women, despite substantially higher loads on private policies for men relative to women. Brown and Finkelstein (2008) show that the implicit tax imposed by Medicaid is much larger for women

than men because women have higher expected long-term care expenditures (see Table 1); therefore, for a given wealth level, in the absence of private insurance, a higher proportion of their expenditures would have been covered by Medicaid.

Why does crowd-out matter? Above and beyond the standard deadweight loss that arises from the need to raise tax revenue to finance the Medicaid program, Brown and Finkelstein (2008) also emphasize that Medicaid provides an inadequate consumption smoothing mechanism for all but the poorest of individuals. In other words, Medicaid crowds out private insurance, even though Medicaid itself does not provide very good insurance. The reason is that Medicaid's income and asset spend-down requirements impose severe restrictions on an individual's ability to engage in optimal consumption smoothing across care states and over time. We estimate that, for most of the wealth distribution, the welfare loss associated with incomplete Medicare coverage - relative to full insurance coverage - is substantial.

## 5. Public Policy and the Market for Private Insurance

### 5.1 Public versus Private Provision

To our knowledge, there has been very little theoretical work analyzing the optimal mix of public and private insurance for long-term care. Ideally, such a theoretical framework would consider the relative benefits and costs of private versus public provision, taking into account the role of both supply and demand size limitations.

At one extreme, one could eliminate Medicaid (and thus the implicit tax it imposes) and rely entirely on private insurance markets. At the other extreme, one could move to comprehensive public provision of long term care insurance. For example, one could cover long-term care expenditures via mandatory, universal public insurance, similar to Medicare's current coverage of acute health care expenditures. If this coverage were fully comprehensive and comparable in quality to the care provided through the private market, the implicit tax would rise to 100%, but consumers would be able to fully smooth consumption.

Of course, either of these extreme approaches faces significant challenges. Relying solely on private insurance is unlikely to be optimal if, for example, consumers are not fully informed or fully rational. Indeed, the Samaritan's dilemma suggests that it is not feasible to commit as a society to having no payer-of-last-resort for those who need long-term care but do not have the resources to pay for it.

Comprehensive public insurance also poses considerable challenges. Like private markets, public insurance provision may be afflicted by moral hazard, which may make fully comprehensive insurance sub-optimal. While consumers face substantial loads in existing private markets, it is also the case that the taxes needed to pay for public provision are likely to distort economic behavior, thus generating deadweight losses. The direction and magnitude of the differences in the social costs of providing insurance in these alternative ways would be important for designing an optimal policy.

Of course, the existing financing structure also faces significant challenges. Medicaid provides catastrophic coverage, but it does so only after impoverishing individuals through the means-tests. As a result of the means-test and Medicaid's position as secondary payer, the coverage that Medicaid provides is not comprehensive: indeed, estimates suggest that individuals would be willing to pay a substantial amount for the ability to "top up" Medicaid if they were able to do so without the supplemental policy being subject to the implicit tax.

The state of the theoretical and empirical literature in this area is such that we simply do not yet know enough about the structure of an optimal long-term care insurance program to be able

to make clear policy statements about the social welfare implications of undertaking a complete overhaul of our system of long-term care financing. What we do know is that the existing structure is one in which the public Medicaid program faces a large and growing financial burden from long-term care, that private insurance plays a modest role, and that private insurance alternatives are unlikely to solve the public sector's funding problem so long as Medicaid exists in its current form. This has not, however, stopped policymakers from exploring a wide range of approaches to doing so, which we explore next.

## 5.2 An Overview of the Existing Policy Environment

There have been several types of efforts (or proposals) to alter the long-term care financing landscape while maintaining a role for Medicaid, including (i) regulation of the private insurance market, (ii) tax subsidies for private insurance purchases, and (iii) Medicaid reforms. Lewis et al (2003) provide an overview of recently enacted or considered regulations of the private long term care insurance market.

The last decade has also seen an expansion and clarification of tax subsidies for private long term care insurance (Wiener et al., 2000). At the federal level, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) clarified the federal tax benefits for the premiums on "qualified" long term care insurance policies; as with acute health insurance, employer-provided long-term care insurance is not counted as taxable income to the employee. At the state level, there is wide variation in the tax treatment of long-term care premiums. As detailed in Wiener et al (2000), some states provide individual tax deductions, others provide tax credits, while still others provide tax credits to employers who offer group policies. Because state tax income tax rates tend to be low in comparison to federal marginal rates, state tax incentives do not dramatically affect the after-tax price of insurance. Indeed, some states only allow the taxpayer to take the federal *or* state tax incentive, not both. Policy proposals to further expand the existing tax subsidies are periodically floated (see e.g. Lewis et al. 2003).

Another pathway through which states can try to influence the demand for private insurance is by making the public Medicaid program more or less generous. One policy parameter at their disposal is Medicaid's asset and income eligibility limits; in principle, more stringent eligibility requirements should make Medicaid should serve as a less attractive substitute for private insurance. In recognition that more radical reform of Medicaid may be required to stimulate private demand, California, Connecticut, Indiana and New York have been participating in a "Long-Term Care Partnership Program." This program is a demonstration project designed to allow individuals who purchase a private long-term care insurance policy to be eligible for Medicaid while shielding a larger amount of wealth from the asset test. While the details differ across states, an example is that, in California or Connecticut, a person purchasing a policy with \$100,000 of total coverage would have \$100,000 of assets protected from the asset test (GAO 2005). The key to this approach is that the asset limits are increased only for those who purchase insurance, the idea being that this would make private coverage look more attractive.

## 5.3 Evaluating Policy Interventions Designed to Promote Private Insurance

Compared to the substantial empirical literature evaluating policies designed to expand private acute health insurance coverage (see e.g. Gruber 1995 for an overview), we know relatively little about the likely efficacy of the variety of policies designed to increase private long-term care insurance coverage. This section briefly reviews the main findings thus far of the impact of tax subsidies and Medicaid policy; we are unaware of any estimates of the consequences of regulatory reform in the private long-term care insurance market.

As described by Wiener et al (2000), “most observers believe that the tax incentives are not large enough to lead to a major increase in sales [of private long term care insurance]” (p. 64). Reasons include the fact that a tax deduction offers no benefit to the many households without a tax liability and only a small benefit to those who are in the lower marginal income tax brackets. While more work is needed to assess the impact of tax subsidies, the existing evidence is consistent with this prevailing view. Using data from the Health and Retirement Study, Johnson et al. (2007) estimate that additional federal tax incentives (such as making premiums fully tax deductible for all tax payers) would have only modest effects on coverage. Likewise, Brown and Finkelstein’s (2008) calibrated life cycle model of long term care insurance demand suggests that even if premiums in both the group and non group market were fully deductible from federal income taxes (and the full incidence of the subsidy were on the purchaser), the tax subsidy would do little to stimulate demand for private insurance.

The intuition behind these findings lies at least in part in the sizable implicit tax imposed by Medicaid. While a tax subsidy obviously lowers the cost of buying private insurance, Brown and Finkelstein (2008) estimate that for most of the wealth distribution, the size of the subsidy (i.e., the marginal tax rate faced by the individual purchasing the insurance) is substantially lower than their estimates of the size of Medicaid’s implicit tax; thus a substantial net tax on these policies would remain. Moreover, if structured as a tax deduction, the largest subsidies would go to those with the highest incomes, who presumably also have the highest wealth levels on average. Since, they estimate, the Medicaid implicit tax is decreasing in one’s wealth, tax subsidies accrue predominantly to those who face the lowest Medicaid implicit tax. Thus, a tax deduction does not appear to be a very efficient or effective way to stimulate private demand by those who would not otherwise find insurance attractive.

The available evidence also suggests that changes to Medicaid’s design that do not substantially reduce the implicit tax Medicaid imposes on private insurance are also unlikely to make private insurance purchase attractive to most of the elderly. Brown, Coe and Finkelstein (2007) use HRS data to empirically examine the effect of Medicaid’s asset protection rules on long-term care insurance coverage. Their estimates imply that if every state in the country moved from their current Medicaid asset eligibility requirements to the most stringent Medicaid asset eligibility requirements allowed by federal law – a change that would decrease average household assets that could be kept while qualifying for Medicaid by about \$25,000 – demand for private long-term care insurance would rise by only 2.7 percentage points. While this represents about a 30 percent increase in insurance coverage relative to current ownership rates, it is still a trivial change relative to the roughly 90 percent of individuals that lack coverage.

Likewise, Brown and Finkelstein’s (2008) calibrated life cycle model indicates that the Medicaid Partnership programs described in Section 5.2 are also unlikely to be successful in generating substantial increases in private insurance coverage. Consistent with these simulation results, the available empirical evidence suggests that these programs have not had a substantial impact. According to the GAO (2005), the number of partnership policies sold in 2004 ranged from about 4,000 in Indiana to nearly 10,000 in California, a very small number relative to the potential insurable population in these states. Further, it is unknown what fraction of those who purchased a policy would have done so even in the absence of this program. Moreover, Brown and Finkelstein (2008) show that even if one went further than the Partnership programs and completely eliminated the asset limits for individuals who purchase private insurance – so that these individuals are automatically eligible for Medicaid – Medicaid’s implicit tax would remain large because of the program’s status as a secondary payer when individuals have private insurance. In other words, because the private policy must pay benefits before Medicaid, it is still the case that a large share of the benefits provided by the policy duplicate benefits that, in absence of the private policy, would have been covered by Medicaid.

Aside from the elimination of Medicaid, which eliminates the implicit tax, or the conversion of long-term care insurance into a social insurance program, which eliminates the need for a private market, is there a way to structure Medicaid so that the implicit tax is eliminated or vastly reduced?

To do so, it is necessary to structure Medicaid so that the expected present discounted value of Medicaid payments to an individual are not reduced when the individual buys private insurance. Theoretically, this could be accomplished by allowing individuals who purchase private insurance to receive a tax credit equal to the expected amount of the Medicaid benefits that the private policy replaces. In other words, in exchange for purchasing a private insurance policy, the individual would receive a lump-sum payment equal to the expected present discounted value of all future Medicaid expenditures that the individual would have incurred in the absence of Medicaid. Implementing such a policy would be difficult, however, as the appropriate lump sum subsidy to each individual would need to vary based not only on his wealth, but also on his expected care utilization, which is likely a function of both observable and unobservable characteristics. As such, it would be difficult to implement a program without creating the potential for adverse selection of the healthiest individuals out of the public program. Similarly, one could substantially reduce the implicit tax by making Medicaid the primary payer and by allowing the asset test threshold to vary with wealth (perhaps measured at the time of admission subject to a look-back period). Of course, such a policy would likely increase the public sector's share of expenditures, and thus carries with it the costs of raising public funds.

Perhaps the most important caveat, however, is that the existing research only suggests that the reduction of Medicaid's implicit tax is necessary for stimulating private insurance demand. It does not however provide evidence that this would be sufficient. It is quite possible that, even in the absence of Medicaid's implicit tax, the private long term care insurance market would remain quite small due to other factors limiting demand – such as limited consumer rationality or the role of the family as an informal substitute for formal insurance – or to supply side market imperfections such as imperfect competition or dynamic contracting problems. Currently, we lack sufficient evidence to be able to predict with confidence the effect on the private market's size from even elimination of Medicaid's implicit tax (were it to be feasible to do so).

## 6. Conclusions

Standard theories of insurance demand suggest that individuals should place high value on policies that insure against highly uncertain but potentially costly events. Yet most elderly households in the United States do not purchase insurance for one of the most significant sources of financial uncertainty – expenditures on long-term care – and much of this expenditure risk is therefore uninsured.

In this paper we reviewed the findings of the burgeoning literature devoted to characterizing and understanding the limited size of the private market for long-term care insurance in the United States. The existing literature offers some initial insights, and clearly highlights the need for additional research.

There is evidence of high loads on private insurance policies, resulting in prices that are substantially above actuarially fair levels. A variety of supply-side market failures could contribute to these high loads, including transaction costs, imperfect competition, asymmetric information and a slew of dynamic contracting problems. Existing evidence is consistent with the presence of both asymmetric information and dynamic contracting problems; we lack evidence on the nature of transaction costs or of competition in this market. The relative

contribution of each of these factors to the observed loads is not currently known. Moreover, whatever the source of the high prices, the existing evidence suggests that even if pricing were made actuarially fair – so that (appropriately discounted) expected premiums paid in to the insurance company were equal to expected benefits paid out to policyholders – most elderly individuals would still be unlikely to purchase private insurance.

Relatedly, it seems likely that one or more of a variety of potential factors on the demand side are important contributors to the private insurance market's limited size. One such factor that has not been adequately researched in this context is the role of limited consumer understanding of these products and/or limited consumer rationality in reducing demand for private insurance. Other plausible explanations revolve around the potential for "substitutes" for formal insurance contracts that serve to limit demand. These include the role of families in providing informal care and/or influencing insurance and bequest decisions in other ways, the role of home equity as an asset that is tapped only when long-term care is needed, and the role of Medicaid in crowding out private insurance demand. Each of these explanations have varying degrees of theoretical and/or empirical support from existing research.

It seems likely that the current structure of Medicaid creates substantial impediments to private long term care insurance demand. However, it is currently an open question whether Medicaid reform by itself might be sufficient to induce substantial growth in the private long term care insurance market, or whether other factors on either the supply-side or demand-side would continue to constrain the market's size. This is an important area for future research.

Finally, more work is needed to understand the likely consequences of existing or proposed public policies designed to encourage the growth of the private long term care insurance market. This can be accomplished both through better understanding of the factors limiting the market's size, and through direct examination of the impact of existing public policies. The existing literature offers some guidance, but leaves most questions concerning the likely efficacy of actual or potential policy interventions unresolved.

## Acknowledgments

We are grateful to the National Institute of Aging and the Robert Wood Johnson Foundation for financial support and to two anonymous referees for helpful comments.

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**Table 1**

Comparison of Nursing Home Utilization Estimates for 65 Year-Olds

Model	Data Sources	Probability of ever entering a nursing home		Average age of first entry into nursing home (conditional on entry)		Expected time in nursing home (conditional on entry)	% of those who enter nursing home who spend more than	
		Male	Female	Male	Female		1 year (Unisex)	5 years (unisex)
Robinson Model	NLTCS (1982, 1984, 1989 and 1994) and NNHS (1985)	0.30	0.48	83 (median)	84 (median)	1.8 years	40%	11%
Dick et al (1994)	NLTCS (1982, and 1984) and NNHS (1985)			81 (median)	84 (median)	1.8 years	40%	12%
Kemper and Murtaugh (1991)	1986 National Mortality Followback Survey	0.33	0.52			83 (mean)	55%	21%
Murtaugh et al. (1997)	1985 NNHS						51%	20%
Wiener et al.	NLTCS (1982, 1984) and NNHS (1985)						45%	14%

Note: The "Robinson Model" is described in more detail in Robinson (1996) and Brown and Finkelstein (2004). Although the model allows for estimation of care utilization that satisfies the health criteria that private insurance policies typically require for care to be reimbursable, for comparability with the rest of the literature the estimates presented here do not impose this requirement.

Source: Brown and Finkelstein (2007), Appendix Table A-1

**Table 2**  
 2000 Private long-term care insurance coverage rates among the elderly in the Health and Retirement Study (HRS) (%)

	Wealth Quartile				
	Whole Sample	Top	Second	Third	Bottom
Whole Sample	10.5	19.6	11.3	6.0	2.8
<b>Gender</b>					
Men	10.1	18.4	9.5	5.9	2.1
Women	10.7	20.9	12.9	6.2	3.3
<b>Marital status</b>					
Married	11.8	19.4	10.6	6.4	2.8
Single	8.4	20.3	12.8	5.5	2.8
<b>Age Group</b>					
Age 60-64	8.2	13.9	8.5	5.7	2.5
Age 65-69	11.1	21.0	10.4	5.6	2.6
Age 70-74	13.1	24.7	14.2	7.4	3.4
Age 75-79	12.2	23.8	13.5	6.3	3.2
Age 80-84	8.9	19.7	9.6	4.1	2.6
Age 85+	8.1	11.3	12.8	6.8	2.7

Note: Sample consists of individuals in 2000 HRS aged 60 and over. Average age is 72. Sample size is 14,598. All means are weighted using household weights.  
 Source: Brown and Finkelstein (2007), Table 1