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Abstract

The risk of high costs of long-term care services and supports (LTSS) is one of the largest uninsured risks for American families and a major challenge to the sustainability of Medicaid. To address the latter, the long-term care partnership (LTCP) program was an initiative designed to encourage middle-class individuals to purchase private long-term care insurance to cover at least the non-catastrophic costs of LTSS. The goal was to defer the time when an individual would become eligible for Medicaid to pay her LTSS expenses, and thereby reduce Medicaid expenditures. This paper exploits two unique sources of variation in the effects of LTCP, (i) the long term effects in the four states that were allowed to implement partnership programs in 1993-4, and (ii) the short-term effects in the states that implemented LTCP programs after 2005. Given the progressive development of the LTCP, we identify differences in trends in insurance uptake and Medicaid long-term care expenditures and claims. Both sources of variation suggest LTCP programs modestly stimulated LTC insurance uptake and slowed Medicaid LTC expenditures and claims trends.

JEL-Code: H310, I180, I380, J140.

Keywords: Long Term Care (LTC) Insurance, LTC Partnerships (LTCP), subsidization, medicaid, differences in trends, catastrophic costs.

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1. INTRODUCTION

Long-term care services and supports (LTSS) comprise a range of services for people with limited capacity for self-care due to physical or cognitive disability.¹ Expenditures for LTSS are not only a significant financial burden to families, but they also account for more than a third of Medicaid expenditures (Eiken et al. 2014). There is growing concern that as the baby-boomers age, many of them will not have sufficient incomes to pay for LTSS and will become eligible for Medicaid if their need for LTSS becomes great enough that they require formal or paid LTSS. Barely 14 percent of Americans over the age of 50 purchase private insurance to protect against the costs of long-term care needs (Heath and Retirement Survey 2012).² Limited private insurance coupled with (many people's) failure to save enough to self-insure long-term care costs puts pressure on Medicaid to finance LTSS when people have exhausted their savings. Hence, it appears that there is some role for policy intervention.

Both the federal and state governments have developed strategies that attempt to shift long-term care costs away from Medicaid. These include incentives at the *point of purchase* by developing both state and federal tax deductions for purchasing long-term care insurance (LTCI). However, analyses of these strategies indicate limited returns of state tax deductions on the dollar (Goda 2011); the effect of the federal tax treatment of long-term care insurance premiums is not known.³ An alternative strategy aimed at increasing long-term care insurance purchases was to introduce incentives *at the point of use*. In particular, one version of this strategy allows people to sequester a portion of their assets – equivalent to the value of a special long-term care insurance policy – from Medicaid requirements that they spend all of their assets (other than their house or car)

¹ Most LTSS refers to personal assistance for activities of daily living (ADLs), and includes both medical and non-medical care (Centers for Medicare and Medicaid Services 2012).

² The costs of LTSS can be catastrophic for the 5% incurring amounting to 260,000 US\$. In 2011, the average annual cost for nursing home care was over \$78,000, while assisted living communities cost an average of almost \$42,000, 18,000-day care and 30,000 home help (O'Shaughnessy 2012).

³ The federal tax treatment of long-term care insurance premiums is that they may be counted as deductible medical expenses but medical expenses may only be deducted if they exceed 10 percent of a person's income (for people under age 65; for those 65 years of age and older, the threshold for deducting medical expenses is 7.5 percent of income through 2016).

before becoming eligible for Medicaid coverage. This strategy was developed with support from the Robert Wood Johnson Foundation in the 1980s and the initiative is known as the Long-Term Care Partnership Program (LTCP).

The welfare gains from LTCP include the reduction in the financial risk exposure of needing LTSS, and greater control over at least the initial provision of LTSS. In addition, LTCP can be expected to provide an incentive for middle-income people to save more for possible expenses in their older years and to reduce use of “spend down” strategies to qualify for Medicaid coverage of LTSS. Hence, LTCP can be thought of as a strategy to promote private LTCI purchases and reduce Medicaid expenditures in the future. For this to occur, LTCP needs to alter historical trends in purchases of long-term care insurance and attract middle-class individuals who otherwise cannot afford LTCI. However, LTCP programs were not designed to specifically target middle-class individuals, and hence their effect depends on changing the dynamics of the LTCI market.

The LTCP programs were initially developed in four states (California, Connecticut, Indiana, and New York) in the early 1990s, with grants from the Robert Wood Johnson Foundation (RWJF). Since 2005, 36 more states also have created LTCP programs. In addition to spreading the financial risk of LTSS needs, the LTCP programs seek to increase private LTCI coverage by linking the purchase of specific LTCI policies to special eligibility rules for accessing Medicaid benefits.⁴ However, to date there have been limited evaluations of the LTC that draw upon econometric techniques. Liu and Prince (2013), using the Health and Retirement Survey, examines the effects of being a state that has adopted LTCP, and finds only modest effects on LTCI uptake. However, the study’s empirical identification relies on the unlikely assumption that after a state made the LTCP available all subsequent LTCI purchases were comprised of partnership

⁴ There has been considerable literature – which we substantiate later in the text – devoted to the effect of Medicaid as an implicit tax on long-term care insurance. The Partnership program has been conceived as a potential solution that groups both public and private insurance entitlements, which could plausibly eliminate the so-called implicit tax on Medicaid

policies.⁵ Further, Liu and Prince (2013) focuses primarily on the introduction of a new LTCP but does not distinguish between the two primary types of partnerships (explained more fully below). Importantly, one would expect differences between those states that adopted the program in the 1990's (RWJF states) and the states that did so since 2005.

In this paper, we draw upon the data from LTCP states, chaining both long and short-run trends of LTCI uptake, and Medicaid expenditures and claims. Given that the introduction of the LTCP occurred over a number of years and had some marketing shortcomings, we focus on an examination of differences in trends in the four original LTCP states ("RWJF states") compared to the rest of the United States (US) states. Specifically, we analyze difference in trends of the LTCP program uptake, the overall uptake of private LTCI contracts, and Medicaid expenditure and claims in the four original LTCP states ("RWJF states") compared to the rest of the United States (US) states. We adopt a flexible strategy so we can separate the pre-existing trends in the market for LTCI from the dynamic effects of the LTCP. In the next section, we provide background on the market for long-term care insurance and on the Partnership program. In section three, we describe the data and our methods for analyzing the data. We report our results in section four, and conclude with a discussion of the results' policy implications in the final section.

2. BACKGROUND

2.1 The Market for Long-Term Care Insurance

The U.S. private market for long-term care insurance was established in the mid-1980s, but demand has remained anemic since policies were first sold (Somers and Merrill 1991). Given the small number of Americans over age 50 who hold policies, the LTCI market is only a fraction of its potential size (Stoltzfus and Feng 2011; AHIP

⁵ As we show below, there is wide variability in the uptake of LTCP over time, and some state show a poor uptake.

2012).⁶ Finkelstein and McGarry (2006) find a lack of accurate perceptions regarding the risk of needing long-term care. In an effort to combat myopic decision-making and lack of consumer knowledge, a goal of the LTCP program is to educate consumers about potential long-term care needs and planning.

With the theoretical and empirical evidence indicating that price and affordability are strong factors in individuals' decision to purchase long-term care insurance, one would expect high estimates of price elasticity of demand for LTCI. Premiums for LTCI are viewed as relatively unaffordable (Robert Wood Johnson Foundation 2014). Contributing to suggestions that LTCI is not for everyone, the National Association of Insurance Commissioners (NAIC) discourages consumers from buying a policy if premiums account for more than 7 percent of their income or if they have less than \$35,000 in assets (Kaiser 2006; Feder et al. 2007). Moreover, many people believe that Medicaid is available to cover LTSS costs (creating what is known as Medicaid crowd-out), and because a number of large LTCI insurers stopped selling policies after 2008, there are well-founded concerns that LTCI companies may not exist by the time an individual might need to use a policy. Myopia also contributes to low demand for LTCI as well as any type of long-term care planning.

2.2 The Partnership for Long-Term Care

The Partnership program promotes the purchase of private long-term care insurance by offering policyholders' access to Medicaid under special eligibility rules regarding asset levels (Meiners et al. 2002). Cost-effectiveness is a key rationale behind the Partnership program. Proponents of the program aim to reduce Medicaid spending in the future by creating an incentive for individuals to assume responsibility through LTCI for at least the initial phase of their need for LTSS (Rothstein 2007). It is the intertwining of private insurance with a public program that makes it a public-private partnership program. The goal is to attract individuals who might not otherwise purchase

⁶ Norton (2000) provides summary explanations for a limited market for LTCI, including adverse selection, moral hazard, Medicaid crowd out, high administrative costs, and the long period between purchase and pay out. Below, we briefly review some additional demand side factors and the role of price elasticity of demand.

private LTCI so if they need formal LTSS the insurance will pay at least their initial LTC costs and thereby reduce the amount that Medicaid otherwise would have spent for their LTSS (Stone-Axelrad 2005; Meiners 2009). Although the Partnership plans were intended to appeal to middle-income individuals, there are no income restrictions or eligibility criteria for who may purchase a LTCP policy.

The RWJF initiated its Partnership program demonstration in 1987, and as noted, the initiative led to four states implementing Partnership programs: California (1994), Connecticut (1992), Indiana (1993), and New York (1993) (Alper 2006). These state programs are referred to as the RWJF Partnership programs. Table A1 in the Appendix provides an overview of the different LTCP policy models that were developed in the RWJF programs and then evolved during their first dozen years of operation.⁷

New York initiated the “total asset protection” policy model in its LTCP, and Indiana added it as an option in 1998 (ILTCIP 2011). The New York policies are required to pay for three years of nursing home care or six years of home care, or some combination of the two. A policyholder who exhausts these benefits does not have to spend any remaining assets before being eligible for Medicaid to pay for LTSS; such assets are protected under the terms of the total asset protection model. Thus, it provides a strong incentive to purchase long-term care insurance. The program is targeted more to middle and upper-income people as an alternative to transferring assets to become Medicaid eligible (Meiners et al. 2002; Rothstein 2007).

The “dollar-for-dollar” model originated in California, Connecticut, and Indiana, and was adopted by New York in 2006 (Meiners et al. 2002; NYSPLTC 2011). The dollar-for-dollar approach allows people to buy a policy that offers a specified dollar amount of services and protects that same amount of assets from eligibility determination for Medicaid coverage of LTSS. Insurance payments for long-term care are considered

⁷ Table B provides a summary of results from earlier studies of the RWJF programs.

the equivalent of spending or divesting assets to establish Medicaid eligibility.⁸ The dollar-for-dollar model is intended to be attractive to people with modest incomes because the limited coverage might still have been viewed as unaffordable without the asset protection. Dollar-for-dollar plans also are appealing to those with fewer resources because they are more likely to over-insure their assets (saving Medicaid money) than people with greater resources (who are more likely to over-insure risk but under-insure assets) (Meiners 2009). Participants must have LTSS expenses that reach their chosen policy maximum benefit before they can qualify for Medicaid, so holding a Partnership policy generally entails a limited amount of self-insurance and out-of-pocket spending (Meiners 2009). Policyholders who die before or while receiving policy benefits represent potential savings to Medicaid.

Shortly after the four RWJF states established their Partnership programs, Congress passed a law effectively prohibiting other states from creating their own Partnership programs due to doubts about the effects of the policy. However, by the early 2000s, it was clear that federal and state Medicaid costs were rising due to expenditures for LTSS. Congress passed the 2005 Deficit Reduction Act, which included a provision permitting all states to implement Partnership programs. As of November 2013, 36 states have implemented Partnership programs (Truven Health Analytics 2013). All new programs are required to use the dollar-for-dollar model.

Timing remains an issue for any evaluation of the Partnership programs because there is generally a lag between policy purchase and benefit payout. This is more important regarding the cost-effectiveness and Medicaid budgetary impact than it is for determining the programs' effects on LTCI market size (Meiners et al. 2002; Meiners 2009; Ahlstrom et al. 2004). Assessments of the Partnership Programs' budgetary impact

⁸ Indiana added a total asset protection option to the dollar-for-dollar model in 1998; it operates such that up to a threshold amount of coverage (the dollar equivalent of the cost of four years in an average Indiana nursing home), the policyholder is eligible for dollar-for-dollar asset protection when determining eligibility for Medicaid benefits. But a person also can purchase a partnership LTCI policy that provides protection for costs above the dollar-for-dollar threshold. Anyone who does that receives total asset protection along with Medicaid benefits when they exhaust their policy benefits (Meiners et al. 2002).

have different conclusions.⁹ The Department of Health and Human Services (HHS) assumed that the program is at least budget neutral, with opportunities for savings because it provides an alternative to transferring assets and because income from protected assets can be applied to the cost of care (Meiners 2009). A Government Accountability Office (GAO 2007) study found that Medicaid savings were not likely but that costs to Medicaid would be minimal because it assumed that many participants would still be too wealthy to qualify for Medicaid. The GAO study also assumed that policyholders do not over insure their assets, which is a major source of potential savings, and it assumed that people do not often transfer their assets to qualify for Medicaid (GAO 2007; Meiners 2009).

3. DATA AND EMPIRICAL STRATEGY

3.1 Data

Our analysis of the Partnership programs' effects differs from earlier assessments because we take advantage of a dataset containing the most comprehensive data available on LTCI policies. It was constructed for the purpose of examining total and Partnership sales of private LTCI policies by state, and covers the time period 1999 to 2008. The data include information (for each state) on all newly purchased LTCI contracts each year, all newly purchased Partnership contracts, average premiums, GDP per capita, Medicaid expenditure per capita, population information by age and sex, as well as various summary statistics and demographic information on the Partnership programs. Appendix C contains a full list of details on the dataset and variable construction. Table 1 provides a description of the key variables used, with the total number of LTCI and Partnership contracts per 10,000 people age 65 and older in logs.

Note that we examine 'satisfied demand' (but not unmet demand) for both traditional and Partnership LTCI policies. Our analysis does not include potentially wider demand of

⁹ Table A1 in the Appendix reports a summary of the main studies undertaken to examine the immediate effects of LTCP.

those who were underwritten by insurance companies or insurance agents.¹⁰ However, we include the number of applications to be able to disentangle the effect of ‘satisfied’ demand from that of demand, which includes individuals underwritten by insurance companies. Similarly, we have data on total Medicaid expenditures and the number of claims for LTSS.¹¹

[Insert Table 1, Figure 1a and 1b around here]

Figure 1a shows the Partnership sales in California, Connecticut, Indiana, and New York.¹² Although Partnership policies exhibit low sales numbers, the Partnership numbers did not fall in 2004 like the traditional policies did. Moreover, California and New York follow similar trend lines, despite New York selling different Partnership policy types until 2006 when New York introduced dollar-for-dollar plans. Interestingly, there are not any substantial shifts in New York Partnership sales after 2006, although it is possible the new plans helped buffer sales after traditional LTCI policy rates and several insurers exited the market after 2004. In Connecticut, sales dropped after 2004 but picked up again in 2008 – suggesting perhaps that among some higher-income consumers, Partnership policies were substituted for traditional policies. In Indiana, sales fell between 2002 and 2006 by half, and then stabilized. The Connecticut Partnership program holds public forums and gives private presentations to various organizations around the state; this proactive effort to educate consumers may account for comparatively higher sales numbers than observed in the other RWJF Partnership states.

In Connecticut and Indiana, Partnership policies are a larger percentage of the LTCI market than in California and New York (Figure 1b). The changes over the time-period in the percentages represented by Partnership policies are due to different underlying

¹⁰ Although it is common practice to equate demand and insurance uptake (e.g., Sloan and Norton (1997)), the latter might not necessarily apply.

¹¹ We are able to observe the number of policies purchased, the number of Partnership applications and the number of Partnership applications denied in each state.

¹² There are no yearly data for Connecticut in 2000. The total sales in 2007 in New York are an estimation based on Q1 and Q2 figures.

patterns of sales of traditional LTCI policies and Partnership policies. The large increases in percentage in Connecticut and Indiana in 2004 are due to declines in traditional policy sales whereas the decreases in percentage in 2006 are because Partnership sales declined and traditional policy sales increased again. The increasing percentages in 2007 and 2008 are due to traditional policy sales declining while Partnership policies in Indiana declined comparatively less and increased in Connecticut. In California and New York, Partnership policies remain a steady percentage of overall sales, between 10 and 20 percent.

Our identification strategy relies on “exposure” to LTCP, using a zero-one variable to identify states that offered Partnership programs each year. In some robustness checks we run the analysis for the subsample excluding New York, which is the only state that does not follow a ‘dollar-for-dollar’ model. We analyze data after 1999, given the progressive implementation of LTCP schemes over time. Because there are no public available micro datasets that allowed us to identify whether an individual purchased a Partnership policy, we have relied on aggregate data on the number of Partnership contracts per state, alongside data on Medicaid expenditures and claims for the period. Our study complements preliminary evidence by examining the long-term effect of the four original Partnership states and the immediate short-term effect of those Partnership programs implemented after 2005. Specifically, we address the question of whether the progressively evolving market for private long-term care insurance market, which followed a pre-LTCP trend, might have been modified by the Partnership programs.

Our dataset includes a number of different controls. In particular, we consider the size of the market and how concentrated it is by including the total number of LTCI policies purchased, the number of companies earning premiums, the state income per capita, average LTCI premium (but we cannot distinguish the traditional and Partnership policy premiums), and total state population.

3.2 Empirical Strategy

Early studies of the LTCP programs focused primarily on their sales relative to potential buyers and the programs' budgetary impact on Medicaid (Meiners *et al.* 2002). Only one study employs the HRS data and assumes (incorrectly) that Partnership states would switch to offer Partnership contracts only (Liu and Prince 2013). To our knowledge there are no studies that perform a subsample econometric analysis of the LTCP. Figures 1a and 1b reveal a sluggish Partnership LTCI contract development with a very smooth trend. With the exception of Connecticut, where in some years the majority of LTCI contracts were indeed Partnership policies, sales of Partnership policies were small in the remaining three RWJF states, and overall sales of LTCI are subject to a state specific declining trend over time. The overwhelming picture of private LTCI sales is that of sluggish market penetration, with substantial declines in sales in 2004 and 2007. There were several contributing factors to the large decline in 2004, including general consumer perception of rate increases, rate stability regulation, and the exit of insurers CNA and AEGON from the industry, which is likely responsible for much of the decrease (Society of Actuaries 2005). The lower sales in 2007 and 2008 also may be attributed to rising premiums and more insurers exiting the market.

One of the difficulties in examining effects of programs such as LTCP is separating pre-existing trends from the dynamic effects of a policy change. LTCP might be subject to state specific effects, which could be captured easily, but the development of the policy itself might give rise to a shift in the pre-policy trend. (For example, Figures 2 and 3 show increasing Medicaid expenditures, although state-specific data reveal that Partnership states have higher Medicaid expenditures for LTSS.) To address this concern, we analyzed trends in purchases of total LTCI policies and Partnership policies, Medicaid expenditures and claims for LTSS. We supplement our analyses with descriptions of characteristics of Partnership versus non-Partnership states.

Specifically, our empirical strategy uses a quasi-treatment effect approach where we define an intervention variable for the states that were able to implement a LTCP

program – either binary or continuous when referring to market shares – and has a value of zero in non-Partnership states.¹³

The specification that we primarily specify is the following:

$$Y_{it} = \alpha + \gamma LTCP_{it} * Trend_{it} * POST + \beta X_{it} + \epsilon_{it}$$

$$\begin{aligned} \epsilon_{it} &= \varphi POST + \delta_t + \sigma_i + \eta_{it} \\ X_{it} &= \theta_1 GDP_{it} + \theta_2 Premium_{it} + \theta_3 NCom_{it} \end{aligned}$$

where (as in Table 1) Y_{it} can be the log of total LTCI policy sales per 10,000 people age 65 or older, or the log of Medicaid expenditures for LTSS per 10,000 people age 65 or older as well as claims paid per 10,000 people age 65 and older. We define a variable ‘LTCP’ to refer to the effect of the introduction of a LTCP program in a state, and another variable ‘POST’ to refer to the period post treatment. The model also contains a time trend, which is the same for both treated and controlled states, and is interacted with the LTCP and POST variables. In addition, GDP is the log of per capita income, NCom is the number of insurers earning premiums or paying out benefits, i is state i , t is year t , and σ is systematic variations by state that are constant over time – e.g., insurance preferences or nursing home regulations as well as time effects δ_t and an idiosyncratic effect η_{it} . All time-constant variables between different locations are controlled by the time trend interacted with Partnership status to determine if effects are due to insurance purchasing or Medicaid spending trends over time, rather than the presence and demand for Partnership insurance policies. Robustness checks were conducted by varying the time trends. The parameter of interest is the value of γ .

All specifications provide robust standard errors when non-clustered. The baseline specifications are estimated by OLS, though alternative specifications use GLS with fixed effects to pick up alternative unobserved heterogeneity. The advantage of this strategy is

¹³ Table D2 in the Appendix reports the regression results assuming a standard difference-in-differences model without a trend interaction.

that it should be able to identify the effect of treated states or RWJF states versus control states. Other potential explanations for differences in the expansion of the number of contracts, Medicaid expenditures and claims include the existence of different premiums across states (due to state regulations or company strategies), differences in income and hence capacity to pay, differences in underwriting and the extent of competition in the insurance market. All of these controls are combined with state-specific effects. To take advantage of the panel data, we estimate a fixed effects within-groups model, with the observations clustered by state. Theoretically, the motivation is to control for unobserved state-specific effects that are constant over time. Empirically, the null hypothesis of the Hausman test is rejected ($\chi^2 = 21.60$), which confirms the use of fixed effects rather than random effects estimation. We estimate a series of regressions with overall sales per person 65 and older as the dependent variable, and then a series with Partnership sales as the dependent variable.

4. RESULTS

4.1 Effects on Total LTCI Uptake

Table 2a reports the effect of a Partnership program on the number of LTCI policies purchased in a state; the estimated effect varies primarily by the empirical specification (in columns) followed and by the number of controls (in rows). Partnership status and time trend – controlling for per capita income, premiums, and number of insurers selling LTCI – have small but positive and significant effects on LTCI uptake. The results in Table 2a, with different specifications of the determinants of insurance contract uptake by state, suggest that there is a very modest but positive effect of Partnership programs on total LTCI uptake. One additional year of having a Partnership program increases the uptake of LTCI by 2% on the trend.

However, when we run a subsample analysis of the periods before and after 2005 (see Table 2b) in order to conduct robustness checks, we find a significant negative effect of Partnership programs on insurance uptake for the period 2005-2008 when only the RWJF states are included in the sample. This result appears to be due to New York, however;

when New York is excluded from the RWJF states, we find no effect of the original Partnership programs on LTCI uptake between 2000 and 2008. Table 2c shows parameter estimates using the same model for overall demand, using Partnership program applications as a proxy for overall demand. Again the results suggest a small effect of the Partnership programs on the overall trend in LTCI take-up. Moreover, the effect is tiny but negative when fixed effects are included.¹⁴

[Insert Table 2a, Table 2b and Table 2c about here]

4.2 Effects on Medicaid expenditure and claims

Table 3 shows the estimated parameters of the model when the dependent variable is Medicaid expenditures for LTSS per 10,000 people age 65 and older in a state. The empirical results indicate unambiguously that the Partnership programs have had a negligible coefficient on the trend of Medicaid expenditures for LTSS. When a model with fixed effects is estimated, the estimates indicate that Medicaid expenditures grew during the period.

Table 4 reports the results distinguishing between RWJF states and those states that introduced Partnership programs after 2005. Again, the results suggest that the Partnership programs had no short-term effect on the underlying trends for (higher) Medicaid expenditures for LTSS. Controlling for income per capita, premiums, competition, and state fixed effects, the time trend negatively impacts the total Partnership applications and policies purchased, which is consistent with the general trends illustrated in the earlier figures.

[Insert Table 3 and Table 4 about here]

¹⁴ Difference-in-difference estimates, such as those reported in Appendix Table D2, indicate non-significant effects – supporting the implication of our empirical results that the Partnership programs had little effect on total LTCI uptake

4.2 RWJF states and Post-2005 Partnership Program States

Most of the 36 new Partnership programs went into effect in 2008. There have been steady sales of a little less than 200,000 Partnership contracts per year across all new programs. The RWJF programs sold a total of approximately 20,000 contracts per year during the 2000s, so the expansion programs are generating similar sales numbers. Thus, the following robustness check results should be generalizable to the expansion programs given the similarity in trends and program structure. We have expanded the analysis by examining the effects on Medicaid expenditures and our results indicate that Medicaid expenditures and claims that are very moderate in nature.

Table 3 contains parameter estimates of our model with the Partnership effects restricted to just the RWJF states; that is, only the four RWJF states are indicated as having Partnership programs. Consistent with expectations that the programs might not have an effect for some time on Medicaid expenditures for LTSS, the estimates indicate extremely tiny and largely non-significant Medicaid expenditure savings after the introduction of a Partnership program.

[Insert Table 3 around here]

Effects on Medicaid Claims

We examine as a last feature the impact of Partnership programs on Medicaid claims for different subsamples of Partnership states displayed in Table 4. The estimation strategy followed here relies on employing both the variable indicating the quasi-treatment effect strategy and a variable for the number of years of the Partnership insurance scheme. Consistently, the results suggest a negligible effect of the Partnership programs and only negligible evidence of a reduction in Medicaid claims for non-RWJ states. However, these effects may be more related to between state variation – for example, states that were earlier adopters of their Partnership programs may be more innovative in general about ways to curb Medicaid cost growth.

[Insert Table 4 around here]

Price and Income Elasticity Estimates

Table 5 provides estimates (based on the model's parameter estimates) for price and income elasticities of demand for LTCI. The elasticity estimates indicate that demand for LTCI is relatively price inelastic but highly income elastic, where income is measured as a state's per capita income. These estimates are consistent with previous elasticity estimates (Courtemanche and He 2009), and have implications for public policies that are designed to reduce premiums for LTCI.

[Insert Table 5 around here]

5. Discussion

Drawing on a unique dataset from 1999-2008 that contains state-specific data on long-term care insurance contracts, Partnership LTCI contracts, and other state-specific information, we examined whether the presence of a Partnership program has expanded take-up of LTCI policies in a state's market for private long-term care insurance. Taking advantage of the fact that the introduction of Partnership programs was largely an exogenous event (given the moratorium in 1994) and a difference in trends empirical strategy, we analyzed the impact of Partnership contracts on LTCI uptake. We find the impact to be non-significant. We rely on a very rich dataset that contains information on partnership insurance contracts, Medicaid LTC expenditure and claims data to examine how sensitive each was to the introduction of the Partnership programs.

Our preferred estimates suggest no significant effects of the Partnership programs on Medicaid expenditures and claims, and very small positive effects on total long-term care insurance uptake. Importantly, the results remain once we control for a long list of

potential explanations including income, premium trends, demographics, and the competitive insurance environment at the state level. Several explanations for our results include poor targeting of the Partnership policies to middle-class individuals, along with poor informational and marketing campaigns about the programs (Alper 2006). It could be also that insurance agents believed they would earn less selling Partnership policies compared to standard LTCI policies since a commission is a percentage of the premium, and premiums for Partnership policies are lower than standard LTCI.¹⁵

For all LTCI contracts, it could be that the Partnership programs' crowd-in effect is so great as to obscure the crowd-out effect documented by Sloan and Norton (1997) and Brown and Finkelstein (2004); this seems unlikely. It is also possible that welfare aversion stands out as an alternative factor, as the Partnership programs can be envisaged as reducing the stigma in having Medicaid pay for LTSS. Consumers that can afford LTCI policies could be averse to the Medicaid element in the Partnership plans, and instead choose traditional plans. This substitution could be part of why Partnership sales are not a higher percentage of overall LTCI sales, particularly in New York and California, which are less proactive about consumer education. Welfare stigma may also motivate middle-income individuals to forego purchasing a Partnership policy in favor of limited self-insurance or to gamble on not needing long-term care. This could help explain lack of growth in sales to middle-income consumers, although affordability is almost certainly the primary obstacle to market penetration. But given the basic difficulty and myopia surrounding long-term care planning, it is not surprising that some would be averse to the idea of planning on becoming a Medicaid participant. Further evidence of welfare aversion is limited, and Norton (1995) shows that welfare aversion may increase savings in some instances as elderly individuals receive asset transfers to avoid Medicaid eligibility.

In contrast, Partnership programs create a purchasing incentive by protecting assets up to the value of the insurance policy together with an insurance-created delay in Medicaid

¹⁵ The Partnership insurance design itself is not being evaluated here and therefore any interpretation of our results should not include a conclusion that the Partnership design is a problem.

eligibility. The results of our analyses indicate that the incentive is modestly effective. Of course, the incentive depends on an absence of welfare stigma or on the utility from asset protection and Medicaid long-term care benefits outweighing the disutility generated from welfare participation (Moffitt 1983). However, Stuber and Kronebusch (2004) show that those who need Medicaid benefits are not necessarily more likely to overcome participation disutility; the ability to internalize welfare stigma is not systematically and inversely associated with individual-level needs.

The price inelastic demand for Partnership policies suggests that tax incentives or subsidies to reduce (net) premiums will not be effective in increasing LTCI coverage. Extrapolations by Courtemanche and He (2009) and estimations for lower income groups by Goda (2011) also suggest that tax incentives do not have a significant impact on the purchase of long-term care insurance. Brown and Finkelstein (2011) also argue that increased tax incentives will be ineffective until certain Medicaid reforms take place.

Ultimately, the Partnership program has no real control over the stability of the LTCI market or dynamic contracting issues with the LTCI market. The program has attempted to diminish myopic decision-making and lack of consumer knowledge, but even the efforts of Connecticut's program have not produced increases in LTCI take-up necessary to make this a viable national solution. Affordability remains an issue: the Partnership programs have not made insurance policies more affordable overall (as reflected in Appendix D) and does not appear to have yet reduced the costs of LTSS for Medicaid.

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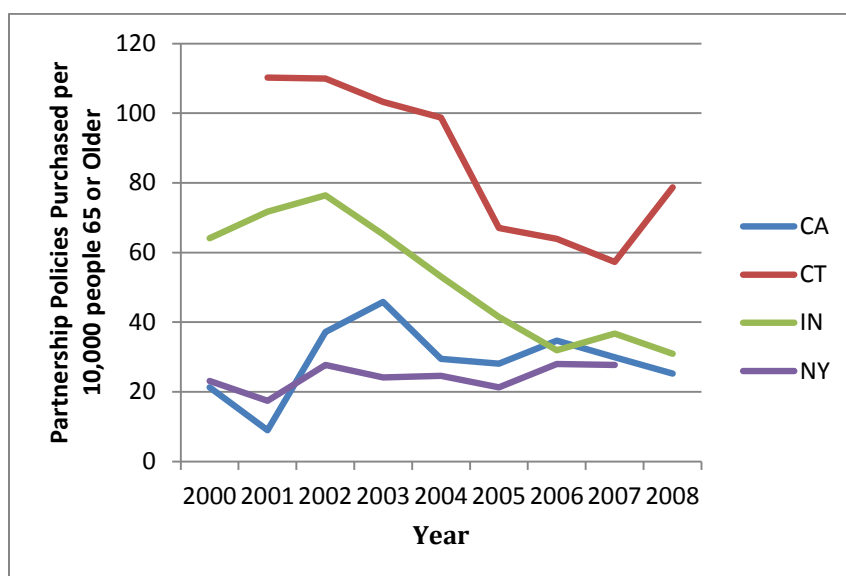
Table 1: Descriptive Statistics and Variable List

Variable	Description	Type	RWJ States, 2000-2004: Mean (S.D)	Non- RWJ States, 2000- 2004: Mean (SD)	RWJ States, 2005-2008: Mean (SD)	Non-RWJ States, 2005- 2008: Mean (SD)
Dependent Variables						
NLTCl65 _{it}	Number of insured lives per 10,000 people age 65 and older (in logs)	Continuous	4.937 (0.303)	4.923 (0.576)	4.909 (0.488)	4.945 (0.567)
NLTCP65 _{it}	Number of Partnership policies purchased per 10,000 people age 65 and older (in logs)	Continuous	3.783 (0.699)	- -	3.643 (0.388)	- -
MSLTc65 _{it}	State Medicaid expenditure on LTC per 10,000 people age 65 and older (in logs)	Continuous	3.135 (0.527)	2.649 (0.489)	3.379 (0.456)	2.881 (0.469)
MTLTC65 _{it}	Total (Federal and State) Medicaid expenditure on LTC per 10,000 people age 65 and older (in logs)	Continuous	3.895 (0.484)	3.629 (0.467)	4.129 (0.405)	3.837 (0.437)
MTC65 _{it}	Average total Medicaid claims per 10,000 people age 65 and older (in logs)	Continuous	18.075 (0.389)	17.838 (0.354)	18.303 (0.370)	18.072 (0.330)
LTCPA _{it}	Partnership policies and applications per person age 65 and older (in logs)	Continuous	4.612 (0.631)	- -	4.405 (0.425)	- -
Treatment Variables						
LTCP _{it}	Dummy variable; 1= Partnership state (RW) or Expansion	Binary	1 -	0.489 -	1 -	0.489 -
YLTCPI _i	Years under a Partnership program	Continuous	5.213 (4.101)	0 (0)	14.5 (1.366)	0.277 (0.636)
POST _{it}	Dummy variable; 1= time when Partnership program active in one state i, =0 otherwise	Binary	0.800 -	0 -	1 -	0.191 -
Controls						
NLTCl _{it}	Number of insured lives (all policies)	Continuous	27723.5 (22507.52)	9260.58 3 (10738.79)	33478.88 (34261.04)	9956.952 (13102.22)
			43.15 (12.180)	40.264 (12.240)	48.063 (13.359)	50.277 (13.049)
NCom _{it}	Number of companies earning premiums or paying out benefits	Continuous				
GDP _{it}	Per capita real GDP (chained 2005 dollars) in logs	Continuous	10.712 (0.143)	10.573 (0.246)	10.793 (0.159)	10.637 (0.252)

			9.314 (0.430)	9.060 (0.634)	10.211 (0.375)	10.019 (0.401)
PREMIUM _{it}	Average premium (in logs)	Continuous				
POP _{it}	Total population	Continuous	15900000 (12800000)	4765552 (4453396)	16300000 (13300000)	4993909 (4735734)

Notes: Column 1 provides the mean and standard deviation in RWJ states for the period 2000-2004. Column 2 provides the mean and standard deviation in non-RWJ states for the period of 2000-2004. Column 3 provides the mean and standard deviation in RWJ states for the period of 2005-2008. Column 4 provides the mean and standard deviation in non-RWJ states for the period of 2005-2008. non-RWJ states for the period of 2000-2004. Column 3 provides the mean and standard deviation in RWJ states for the period of 2005-2008. Column 4 provides the mean and standard deviation in non-RWJ states for the period of 2005-2008

Figure 1a. Partnership policies purchased by 10,000 in RWJF States California, Connecticut, Indiana, New York



**Figure 1b. Percentage of partnership policies purchased in RWJF Partnership States
California, Connecticut, Indiana, New York**

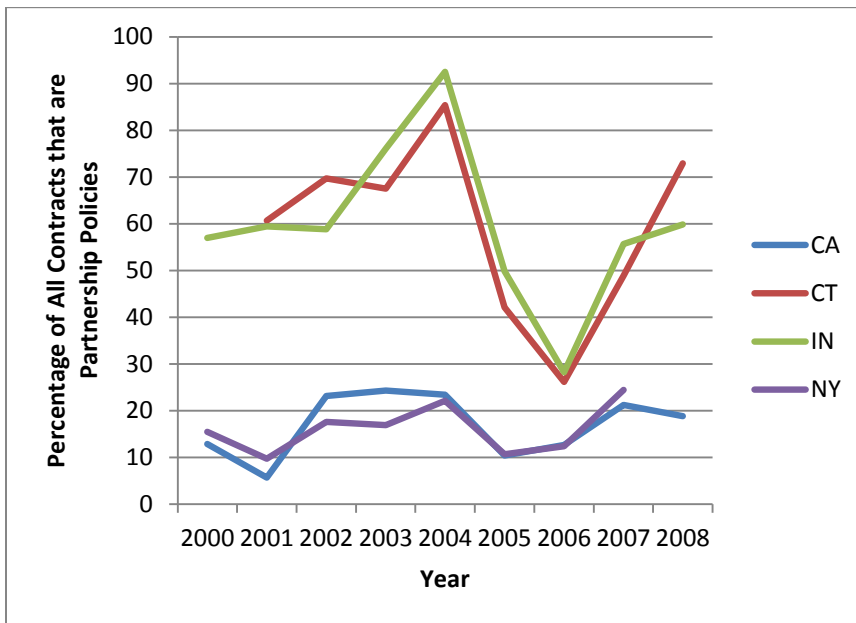


Figure 2. Evolution of State and Total Expenditure per person age 65 and older in Partnership and Non-Partnership states

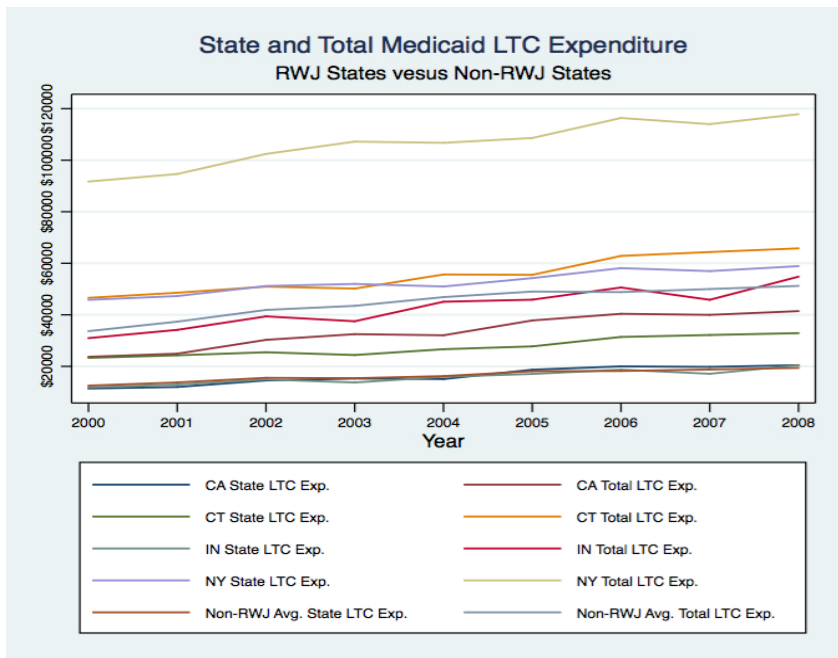


Figure 3. Average Total Medicaid Claims Paid per person age 65 or older – RWJ versus non-RWJ states, 2000-2008

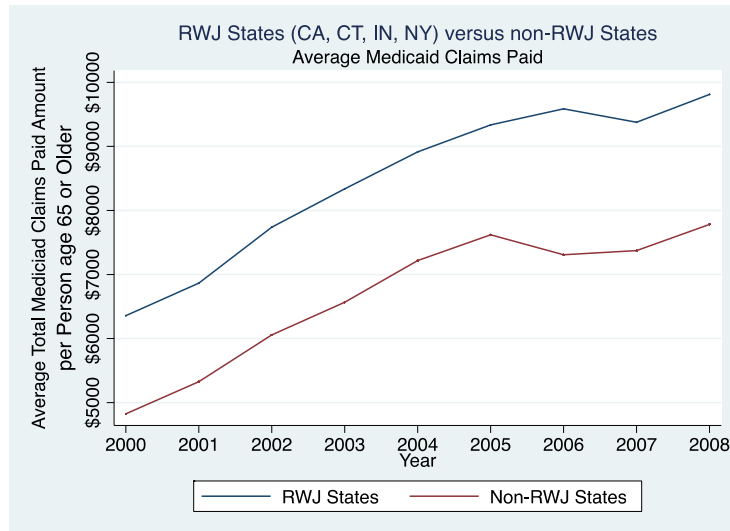


Table 2a: Total Insurance Uptake per 10,000 people age 65 and older (in logs) (NLTCI65_{it}) – OLS, Random Effects, and Fixed Effects Estimation

	(1)	(2)	(3)
<i>Panel A: OLS</i>			
LTCP _{it} x TREND	0.000063***	0.0000776***	0.0000327
	(0.00000225)	(0.0000256)	(0.0000227)
LTCP _{it} x NLTCI	0.00000828***	0.00000965***	0.00000593***
	(0.00000107)	(0.00000104)	(0.00000113)
<i>Panel B: Random Effects</i>			
LTCP _{it} x TREND	0.0000735	0.0000894	0.0000243
	(0.0000527)	(0.0000546)	(0.0000516)
<i>Panel C: Fixed Effects</i>			
LTCP _{it} x TREND	0.0219000**	0.0493576***	0.021182**
	(0.0107054)	(0.0123737)	(0.0105778)
GDP _{it}	Yes	Yes	Yes
PREMIUM _{it}	Yes	Yes	Yes
NCom _{it}	No	No	Yes

N = 459

Hausman Test Statistic comparing fixed effects versus random effects

$$\chi^2(4) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 32.66$$

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: The dependent variable, NLTCI65_{it}, is a continuous variable denoting the log number of insured lives per 10,000 people age 65 and older. The right-hand side variables LTCP and TREND are interacted; LTCP is a binary variable indicating status as a Partnership state (RW) or Expansion), and TREND is a year trend term. For the basic OLS model, the right-hand side variables LTCP and NLTCI are interacted; NLTCI denoting the number of insured lives across all long-term care insurance policies. Panel A contains coefficients of OLS estimates. Panel B contains coefficients of GLS random effects estimates. Contains coefficients of the state fixed effects model estimates. The first column contains state level controls for logged GDP per capita and logged average premiums, but no other right-hand side variables. Column (2) adds a binary variable controlling for when a Partnership program is active in a state, in addition to logged GDP per capita and logged average premiums. Column (3) controls for competition, logged GDP per capita, and logged average premiums.

Table 2b: Robustness Checks: Total Insurance Uptake per 10,000 people age 65 and older

(in logs) (NLTCI65_{it}) – OLS, 2000/2005-2008

	(1)	(2)
<i>Panel A: OLS, Non-RWJF 2005-2008</i>		
LTCP _{it} x TREND	0.0000689** (0.0000329)	0.0000496 (0.000033)
<i>Panel B: OLS, RWJF 2005-2008</i>		
LTCP _{it} x TREND	-0.1790955*** (0.0268384)	-0.1822844*** (0.0391757)
<i>Panel C: OLS; CA, CT, IN 2000-2008</i>		
LTCP _{it} x TREND	0.0623409 (0.0416671)	0.0607649 (0.0518554)
GDP _{it}	Yes	Yes
PREMIUM _{it}	Yes	Yes
NCom _{it}	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

N = 188 (Panel A) N=16 (Panel B)

Notes: The dependent variable, NLTCI65_{it}, is a continuous variable denoting the log number of insured lives per 10,000 people age 65 and older. The coefficients in Panel A are for OLS estimates using the non-RWJF states for the period of 2005-2008. The coefficients in Panel B are for OLS estimates using the RWJF states for the period of 2005-2008. The right-hand side variables LTCP and TREND are interacted; LTCP is a binary variable indicating status as a Partnership state (RWJF or Expansion), and TREND is a year trend term. The first column contains state level controls for logged GDP per capita and logged average premiums, but no other right-hand side variables. Column (2) controls for competition, logged GDP per capita, and logged average premiums.

Table 2c: Partnership Policy Applications and Purchases per 10,000 people age 65 and older

(in logs) (LTCPA65_{it}) – OLS, Random Effects, and Fixed Effects Estimation

	(1)	(2)	(3)
<i>Panel A: OLS</i>			
LTCP _{it} x TREND	0.0003727*** (0.000059)	0.000379*** (0.0000584)	0.0003945*** (0.0000623)
<i>Panel B: Random Effects</i>			

LTCP _{it} x TREND	0.0002966*	0.0003148**	0.0003212**
	(0.0001701)	(0.0001594)	(0.0001603)
<i>Panel C: Fixed Effects</i>			
LTCP _{it} x TREND	-0.0085044***	-0.0086049***	-
	(0.0025463)	(0.0032575)	0.0092194***
			(0.0032493)
GDP _{it}	No	Yes	Yes
PREMIUM _{it}	No	Yes	Yes
NCom _{it}	No	No	Yes

N = 422

Hausman Test Statistic comparing fixed effects versus random effects

$\chi^2(4) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 10.79$ suggesting a fixed effects is a better estimate

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: The dependent variable a continuous variable denoting the log number of partnership policies and application per 10,000 people age 65 and older. The right-hand side variables LTCP and TREND are interacted; LTCP is a binary variable indicating status as a Partnership state (RWJ or Expansion), and TREND is a year trend term. Panel A contains coefficients of OLS estimates. Panel B contains coefficients of GLS random effects estimates. Panel C contains coefficients of the state fixed effects model estimates. The first column contains no state level controls. Column (2) controls for logged GDP per capita and logged average premiums, but no other right-hand side variables. Column (3) controls for competition, logged GDP per capita, and logged average premiums.

Table 3: Log Total and State Medicaid LTC Expenditure per 10,000 people age 65 and older (MTLTC65_{it}, MSLTC65_{it}) – OLS, 2005-2008

	(1)	(2)	(3)
<i>Panel A: OLS, Non-RWJF Total Medicaid LTC Expenditures</i>			
LTCP _{it} x TREND	-0.00004	-0.0000275***	0.00000366*
	(0.0000313)	(0.00003)	(0.0000316)
<i>Panel B: OLS, RWJF State Medicaid LTC Expenditures</i>			
LTCP _{it} x TREND	0.0000355	0.0000511	0.0000773**
	(0.0000345)	(0.000031)	(0.0000352)
GDP _{it}	No	Yes	Yes
NCom _{it}	No	No	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

N = 188

Notes: The coefficients in Panel A are for OLS estimates using the non-RWJ states for the period of 2005-2008. In Panel A, the dependent variable is MTLTC65; a continuous variable denoting logged total (Federal and State) Medicaid expenditures on LTC per 10,000 people age 65 and older. The coefficients in Panel B are for OLS estimates using the non-RWJ states for the period of 2005-2008. In Panel B, the dependent variable is MSLTC65, continuous variable denoting logged state Medicaid expenditures on LTC per person age 65 and older. The right-hand side variables LTCP and TREND are interacted; LTCP is a binary variable indicating status as a Partnership state (RWJ or Expansion), and TREND is a year trend term. Column (1) does not include any state level controls. Column (2) controls for logged GDP per capita. Column (3) adds a control for insurance market competition.

Table 4: Log Average Total Medicaid Claims Paid Amount per 10,000 people age 65 and older (in logs) (MTC65_{it}) – OLS 2000/2005-2008

	(1)	(2)
<i>Panel A: OLS, RWJ 2000-2004</i>		
YLTCP _i		-0.108 (0.088)
<i>Panel B: OLS, Non-RWJ 2005-2008</i>		
YLTCP _i	-0.098 (0.030)	-0.125*** (0.034)
<i>Panel C: OLS, RWJ 2005-2008</i>		
YLTCP _i	-0.026 (0.060)	-0.090 (0.099)
<i>Panel D: OLS, RWJ 2000-2008</i>		
YLTCP _i	0.026 (0.021)	-0.098 (0.063)
GDP _{it}	Yes	Yes
TREND	No	Yes
NCom _{it}	No	No

*** p<0.01, ** p<0.05, * p<0.1

N = 20 (Panel A); N=188 (Panel B); N=16 (Panel C); N=36 (Panel D)

Notes: A panel including Non-RWJ states from 2000-2004 is omitted because during that period there were no extant Partnership programs in those states. The dependent variable is MTC65, a continuous variable denoting logged average total Medicaid claims per 10,000 people age 65 and older. The right-hand side variable YLTCP is a continuous variable denoting years under a Partnership program. Panel A contains coefficients of OLS estimates for RWJ states for the period of 2000-2004. Panel B contains coefficients of OLS estimates for Non-RWJ states for the period of 2005-2008. Panel C contains coefficients of OLS estimates for RWJ states for the period of 2005-2008. Panel D contains coefficients of OLS estimates for RWJ states for the period of 2000-2008. Column (1) controls for logged average GDP per capita. Column (2) adds a time trend control

Table 5: Income and Price Elasticity – Total Insurance Uptake per 10,000 people age 65 and older (in logs) (NLTCI65_{it}) – OLS, Random Effects, and Fixed Effects Estimation

	(1)	(2)
<i>Panel A: OLS</i>		
Income elasticity	0.734*** (0.1104)	0.834*** (0.1065)
Price elasticity	-0.304*** (0.0337)	-0.382*** (0.0027)
<i>Panel B: Random Effects</i>		
Income elasticity	1.144*** (0.1979)	1.188*** (0.1912)
Price elasticity	-0.489*** (0.0319)	-0.0091*** (0.0008)
<i>Panel C: Fixed Effects</i>		
Income elasticity	4.209*** (0.539)	3.579*** (0.565)
Price elasticity	-0.5847*** (0.0378)	-0.6347*** (0.0403)
Competition	No	Yes

N = 459

Hausman Test Statistic comparing fixed effects versus random effects

$\chi^2(4) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 32.66$

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: The dependent variable a continuous variable denoting the log number of insured lives per 10,000 people age 65 and older. The right-hand side variables LTCP and TREND are interacted; LTCP is a binary variable indicating status as a Partnership state (RWJ or Expansion), and TREND is a year trend term. For the basic OLS model, the right-hand side variables LTCP and NLTCI are interacted; NLTCI denoting the number of insured lives across all long-term care insurance policies. Panel A contains income and price elasticity using OLS estimate coefficients of logged state GDP per capita and logged average premiums. Panel B contains income and price elasticity estimates GLS random effects estimations of logged GDP per capita and logged average premiums. Panel C contains income and price elasticity using state fixed effects model estimation of logged GDP per capita and logged average premiums. The first column contains no additional right-hand side control variables. Column (2) controls for competition.

APPENDICES:

APPENDIX A:

Table A1. Long Term Care Partnership Models in the four RWJF states

State	First Year Operational	Program Model	Reciprocity	Total Policies Purchased	Total Policies Dropped	Total Policies Denied
California	1994	Dollar for Dollar	No	142,474 as of 2011 Q1	20,571 as of 2011 Q1	27,178 as of 2011 Q1
Connecticut	1992	Dollar for Dollar	Yes, with Indiana in 2001; National Reciprocity Compact 2009	54,969 as of 2011 Q3	Unavailable	8,809 as of 2011 Q3
Indiana	1993	Dollar for Dollar; hybrid model with Total Asset 1998	Yes, reciprocity with CT in 2001; National Reciprocity Compact in 2009	52,070 as of 2011 Q4	6,461 as of 2011 Q4	9,826 as of 2011 Q4
New York	1993	Total Asset; Dollar for Dollar 2006 Q1	Yes, 2012	95,702 as of 2011 Q2	23,292 as of 2011 Q2	22,531 as of 2011 Q2

APPENDIX A:

Table B. Summary of previous literature

Subject	Author	Results
Partnership policyholder Income Level ¹	Feder et al. (2007)	CA, CT, IN majority greater than \$350,000 in assets
	GAO (2007)	CA, CT majority monthly household incomes \$5,000+; 53% of households with assets \$350,000+; nationally only 36% of traditional LTC policyholders and only 17% without LTC insurance have assets \$350,000+

	CT OPM (2012)	Cumulative, 44% policies sold to households with assets \$350,000+ (not including home and car)
Traditional policyholder age	HIAA (2000); AHIP (2012)	Average buyer age in 2000: 67; average buyer age in 2010: 59; non-buyer: 67
Partnership policyholder age	CPLTC (2011)	Median age 59
	CT OPM (2012)	Average age 58
	ILTCP (2011)	Average age 61
	NYSPLTC (2011)	Average age 60
Market size	Stevenson et al. (2010)	Growth of 18% per year during 1987-2001; decline by 9% per year from 2000-2005
	Stoltzfus and Feng (2011)	Significant sales declines in 2008 and 2009; sales increase 18% 2010
Price elasticity of demand	Cramer and Jensen (2006)	Demand for private long-term care insurance: -0.23 to -0.87
	Courtemanche and He (2009)	Demand for private long-term care insurance: -3.9
	Goda (2011)	Demand for private long-term care insurance with respect to after-tax price: -3.3

APPENDIX C: DATA APPENDIX

C.1. Dataset Sources: NAIC

The principal source of data on the general long-term care insurance market is the National Association of Insurance Commissioners (NAIC), which collects experience reports from companies selling insurance in the US. For long-term care insurance, the purpose is to monitor the amount of long-term care coverage provided and compliance with lifetime loss ratio standards. The Long-Term Care Reporting Forms A through C are filed whenever long-term care insurance is sold, regardless of the category of annual statement that the company files, which can be either Life, Accident and Health, Property and Casualty, Fraternal, and Health.

Form C collects cumulative claim experience by state, and the reports from 2000 to 2008 are one of the main components of the Private/Partnership Long-Term Care Insurance (P/PLTCI) dataset used in this paper (Figure C.1). Form C requires information on all long-term care insurance policies and contracts except for accelerated death benefit-type products (which is often the type of rider included in life insurance combined products). Long-term care insurance policies are those meeting the definition in the NAIC Long-Term Care Insurance Model Act or anything that would have met the definition in previous versions of the Model Act. The experience reported is the direct experience on all long-term care insurance policies and contracts issued within the state, including Partnership policies if the state considers them long-term care insurance at the time of the report. The experience reported in Form C is the experience in that statement year.

The experience reported for each plan is broken down by calendar duration categories of 0, 1, 2, 3, 4, 5-9, 10+ years. Information for a plan of calendar duration 0 years applies to plans sold the same year as the statement form. Actual earned premiums and incurred claims are determined for each combination of calendar duration and calendar year of issue starting with the first year of issue; actual earned premiums are interest adjusted. Actual incurred claims are calculated by discounting appropriate claim payments and are adjusted for interest. The number of insured lives as of the end of the experience period is reported by calendar duration for each plan. Form C also contains information on policy

type (individual or group), anticipated earned premiums, anticipated incurred claims, policy reserves, and the company identification code (NAIC 2009).

The data purchased from the NAIC was originally broken into four categories of company reports by year: Fraternal, Health, Life, and Property and Casualty. The first step was to label the columns within the .csv files and convert them into .xls files. We then combined the spreadsheets within each category into one single spreadsheet with data from 2000 to 2009. We imported the .xls files into Stata 12.1, and combined them into a single data file that contained all of the Form C data across all years. We sorted the data file by state, company code, and year. Then we order to isolate the policies newly active each year, and used the line number variable to create a calendar duration variable that corresponds to the calendar duration indicated in the text version of Form C. We dropped all observations except those in which the calendar duration equals zero. At this point it became clear that it would not be possible to separate out plans newly in force in 2009, so all 2009 observations were dropped from P/PLTCI dataset.¹⁶ We consolidated the dataset by collapsing the number of insured lives variable by year and state, and then dropped all observations except for the 50 US states and the District of Columbia.

The key variables in P/PLTCI dataset from the NAIC reports are: *STABBR* (state abbreviation), *Year* (Form C Statement Year), *NUM_INSURED_LIVES* (number of insured lives at end of experience period), *ACT_EARNED_PREMS* (actual earned premiums), and *ACT_INCUR_CLAIMS* (actual incurred claims). From these variables we created *Avg_Premium* (average premium) by dividing actual earned premiums by number of insured lives. To calculate price elasticity of demand, we took the log of average premiums (*lpremium*) for the logarithmic model.

C.2. Partnership Programs

C.2.1 California

¹⁶ In 2009 the NAIC introduced a new set of forms to replace Forms A through C, in order to shift the reporting focus to monitoring assumptions about morbidity and persistency. Form 5 is the corresponding replacement for Form C; it includes data on earned premiums, incurred claims, and policies in force at the end of the year (NAIC 2012a).

The quarterly reports issued by the California Partnership for Long-Term Care (CPLTC) program provided data on California from 2000 to 2008. The reports include information on participating insurers, quarterly and cumulative statistics, maximum benefit amounts, policyholder age, trends, policyholders and asset protection earned, and service utilization. The reports were obtained from the CPLTC website (CPLTC 2008).

C.2.2 Connecticut

Data for Connecticut was gathered from the Annual Progress Reports on the Connecticut Partnership for Long-Term Care from 2000 to 2008. These reports provide information on agent training and outreach, public forums, public relations activities, outreach to associations and employers, program reciprocity, outreach to nursing facilities, presentations and media coverage, and summary statistics. The reports were obtained courtesy of David Guttchen of the Connecticut Partnership for Long-Term Care, along with Annual Program Evaluations (CT OPM 2008).

C.2.3 Indiana

The quarterly reports issued by the Indiana Long-Term Care Program (ILTCP) provide the data on Indiana's program from 2000 to 2008. The reports include summary statistics, statistics on policyholders in benefits, claimant profiles, and age distributions. The reports were obtained from the ILTCP and Indiana Department of Insurance (ILTCP 2008).

C.2.4 New York

Quarterly reports issued by the NYSPLTC provided the main source of data on the New York program. The quarterly reports contain information on participating insurers, summary statistics, age distribution, and policy features. However, reports were only available covering the time period of Q1 2000 to Q2 2007. The data for the first half of 2007 is doubled to obtain full estimates for 2007 in P/PLTCI dataset (NYSPLTC 2007).

We created .xls files with information from each of the states' reports, and then imported the spreadsheets into Stata 12.1. The four files were appended into a single Stata data file, which were merged into the P/PLTCI dataset.

The key variables from the original four Partnership programs include: *Apps_Received* (number of Partnership applications received), *Policied_Purchased* (number of Partnership policies purchased), *Apps_Denied* (number of Partnership applications denied), and *PP_Married* (percentage of Partnership policies purchased by married individuals).

C.3. Population

The primary source of population data is the US Census Bureau. The state resident populations are drawn from the Annual Estimates of the Resident Population by Sex and Age for each state, covering April 1, 2000 to July 1, 2009 (U.S. Census Bureau Population Division 2010a). The population estimates for the US are from the Annual Estimates of the Resident Population by Sex and Selected Age Groups for the United States: April 1, 2000 to July 1, 2009 (U.S. Census Bureau Population Division 2010b). The individual .xls files were downloaded from the Census Bureau and imported into Stata. After appending the state and US data files, all groups were removed except for total population (*Total_Pop*), 65 and older (*_65_older*), 85 and older (*_85_older*), total males (*TotalMales*), males 65 and older (*Males65older*), males 85 and older (*Males85older*), total females (*TotalFemales*), females 65 and older (*Females65older*), females 85 and older (*Females85older*), and under 18 (*Under_18*). These variables were merged with P/PLTCI dataset and used to create a number of variables weighted by population.

We calculated the percentage of people in each age group (total population, 65 and older, 85 and older) with private long-term care insurance, e.g. *NIL_Total_Pop* is the total number of policies purchased per 100 people. For the logarithmic specifications, the log of the various dependent variables is taken, e.g. *logNinsu65* is the log of total policies purchased per 100 people age 65 or older: $\log(NIL_65_older + 1)$.

C.4. Medicaid

Medicaid expenditure data comes from Centers for Medicare & Medicaid Services (CMS) data on state health expenditures by state of residence (CMS 2011). We use these

estimates instead of expenditure by state of provider because per capita estimates are only appropriate when using state of residence estimates. MEDICAID_AGGREGATE09.CSV contains total Medicaid personal health care spending by state and service, from 1991 to 2009. We converted the .csv file into .xls and aggregated spending across all spending codes for each state from 2000 to 2008. We imported this file into Stata, sorted by state, reshaped the dataset to be in long format, and then merged the total expenditure variable (*Medicaid_Exp*) with P/PLTCI dataset. For the logarithmic model, we take the log of Medicaid expenditure per capita (*lmedicaid*).

C.5. GDP

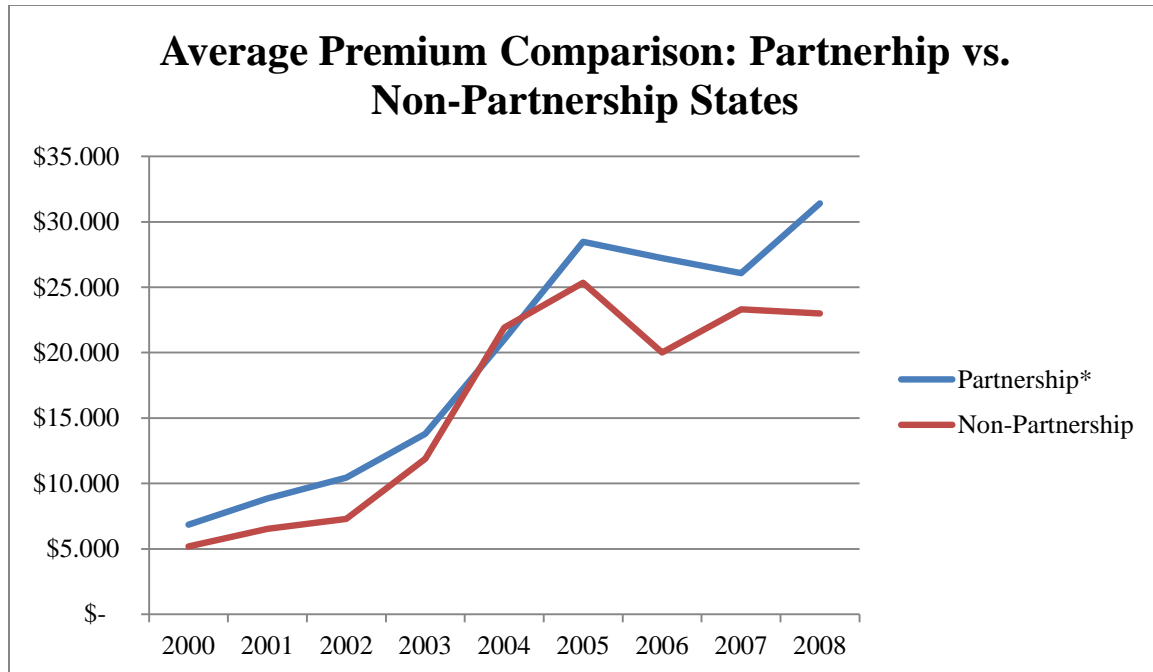
Per capita real GDP by state (chained 2005 dollars) comes from the Bureau of Economic Analysis (BEA 2012). We imported the .xls file into Stata, reshaped it long, dropped regional observations, and merged the state GDP per capita variable (*GDP*) into P/PLTCI dataset. For the logarithmic model, we take the log of GDP per capita (*lgdp*).

C.6. Expansion Partnership Programs

The Long-Term Care Partnership Program Technical Assistance website operated by Truven Health Analytics for HHS provides information on the expansion Partnership programs (Truven Health Analytics 2012). We use the state reports to help code the dummy variable (*Partnership*) on Partnership status to equal 1 if the state has a Partnership program in effect that year, and to equal 0 if it does not; this variable includes both original RWJF and expansion Partnership programs. This dummy variable is used to create an interaction variable between state Partnership status and state GDP (*int_Partnershipgdp*).

APPENDIX D

Table D1. Premium comparison



*Classification based on Partnership program status in the current year for which average is computed.

Table D2: Total Insurance Uptake per 10,000 people age 65 and older (in logs) (NLTCI65_{it})

– OLS, Random Effects, and Fixed Effects Estimation

	(1)	(2)	(3)
<i>Panel A: OLS</i>			
LTCP _{it}	0.0013627 (0.000977)	0.0021911 ** (0.0010424)	0.0002559 (.0010867)
<i>Panel B: Random Effects</i>			
LTCP _{it}	0.0015615 (0.0019958)	0.0022942 (0.002065)	-0.000294 (0.0020051)
<i>Panel C: Fixed Effects</i>			
LTCP _{it}	0.0015615 (0.0019958)	0.0022942 (0.002065)	-0.000294 (0.0020051)
GDP _{it}	Yes	Yes	Yes
PREMIUM _{it}	Yes	Yes	Yes
POST	No	Yes	No
NCom _{it}	No	No	Yes

N = 459

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: The dependent variable, $NLTCI65_{it}$, is a continuous variable denoting the log number of insured lives per 10,000 people age 65 and older. LTCP is a binary variable indicating status as a Partnership state (RW) or Expansion). Panel A contains coefficients of OLS estimates. Panel B contains coefficients of GLS random effects estimates. Panel C contains coefficients of the state fixed effects model estimates. The first column contains state level controls for logged GDP per capita and logged average premiums, but no other right-hand side variables. Column (2) adds a binary variable controlling for when a Partnership program is active in a state, in addition to logged GDP per capita and logged average premiums. Column (3) controls for competition, logged GDP per capita, and logged average premiums.