

ISSUANCE DECISIONS AND STRATEGIC FOCUS: THE CASE OF LONG-TERM CARE INSURANCE

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ABSTRACT

Increasing costs of long-term care are placing ever greater burdens on state and federal budgets, yet private long-term care insurance remains a relatively minor financing vehicle. Although many researchers provide rationales for the limited private market, some life–health insurers have forged ahead into this relatively new and risky line of business. We investigate what makes these insurers different and whether managers are following a diversification or strategic focus strategy. We find that strategic focus is a consistently important factor and that managers' participation and volume decisions are made independently.

INTRODUCTION

Private long-term care insurance (LTCI) is a relatively new product that has not yet contributed substantially to the financing of long-term care.¹ The Congressional Budget Office estimates that less than 5 percent of long-term care expenditures are covered by LTCI (Marron, 2006), whereas Medicaid covers almost half. Currently, only about 10 percent of life–health insurers are active in the LTCI market. If private LTCI is to become part of the solution to reduce the tremendous pressure that Medicaid puts on both state and federal government budgets, we need to understand the forces that stimulate managers of insurers to become active in the LTCI market.²

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¹ Life–health insurers began developing LTCI, as we know it today, in the early 1980s (Health Insurance Association of America, 2001). LTCI provides benefits when the insured requires substantial assistance in performing specified activities of daily living. These plans can cover a wide range of needs ranging from part-time, in-home care to full-time nursing home services.

² Nearly one-third of current spending on the Medicaid program is for long-term care. In fact, nursing home care is now the largest single component of Medicaid spending—approximately 17 percent. Long-term care is expected to account for an increasing share of Medicaid spending as the baby boom generation becomes elderly (O'Brien, 2005).

Policies issued by insurers essentially are liabilities and arguably represent the primary source of default risk for those entities (Downs and Sommer, 1999). Factors influencing managers to issue liabilities have rarely been explored in the risk management and insurance literature, however. Our objective in this study is to provide insight into the determinants of insurance managers' decisions to enter a relatively new and risky line of business, i.e., LTCI, and the extent of their commitment.

Some researchers consider the private LTCI market to be potentially huge as the populations of developed nations age and the post-World War II baby-boom generation retires (see, e.g., Doeringhaus and Gustavson, 1999; Cohen and Weinrobe, 2000). Many others suggest that the market is rather limited for reasons such as Medicaid "crowd out" (Doeringhaus and Gustavson, 2002; Brown and Finkelstein, 2004), complex intrafamily interactions (Pauly, 1990; Zweifel and Struwe, 1998), limited actuarial experience (Murtaugh, Kemper, and Spillman, 1995), uncertainty about future costs of care (Cutler, 1993; Cohen, 1998; Moore and Santomero, 1999), and asymmetric information (Sloan and Norton, 1997; Finkelstein and McGarry, 2003). For years, LTCI nevertheless was the fastest growing sector in the U.S. life-health insurance industry, with average annual growth rates approximating 20 percent between the late 1980s and 2000 (Coronel, 2000; Life Insurance Marketing Research Association, 2001). Industry LTCI premiums have actually shrunk since 2001 (Panko, 2005), however, which may indicate that the private LTCI market now is being limited by the constraints mentioned previously.

The combination of burgeoning LTC needs, increasing stress on government-provided insurance plans, and tepid growth of private markets means that a better understanding of decisions to underwrite private LTCI should be of interest to many different groups. These include aging consumers and their families facing the substantial, future expense of long-term care services;³ managers of life-health insurers who must at least consider participation in this relatively new, yet untested, market; and state regulators who now face federally induced legal incentives to encourage the private LTCI market and/or have embraced economic development roles.⁴

Without fundamental changes, Medicaid spending on long-term care services could quadruple in constant dollars over the next 50 years, creating an unsustainable burden on future generations (Government Accountability Office, 2005).

³ From 1974 to 1999, the number of nursing home residents increased by 51 percent from 1.08 to 1.63 million, and this growth is expected to accelerate with the baby boom population becoming elderly. Over 1.3 million people received home health care from agencies in 2000, which does not include those who received informal care from family, friends, and nonagencies. In 2006, the average annual cost of nursing home care in the United States was approximately \$75,190 for a private room and \$66,795 for a semiprivate room, while the average hourly rate for a home health aide was about \$19 per hour (MetLife, 2006).

⁴ The Deficit Reduction Act of 2005 includes a mix of mandated and optional reforms for the states that should have positive consequences for private LTCI insurance. One major change makes it much more difficult for those not in poverty to transfer assets and qualify for Medicaid payment of long-term care expenses. Another change allows the expansion of long-term care partnership programs from four states to all states. Overall, the Act creates both incentives and opportunities for states to reduce Medicaid spending on long-term care and increase financing by private LTCI (Crowley, 2006).

Among the critical factors we examine is whether insurance managers active in LTCI do so for strategic focus or diversification reasons. According to the *diversification hypothesis*, firms add value by diversifying into a variety of business lines, which results in benefits such as reduced risk and access to internal capital markets. Alternatively, advocates of the *strategic focus hypothesis* contend that firms add value by focusing on core competences. The extant research applicable to the insurance industry contains conflicting theory and evidence. Instead of following the previous literature, which generally attempts to determine which strategy adds more value, we explore whether the few life–health insurers that decide to become active in the new, risky line of LTCI are following a diversification or focus strategy.

Our primary premise is that relatively greater underwriting activity in health insurance lines other than LTCI allows insurers to exploit core competences that provide a competitive information advantage in the LTCI market. A positive relation between activity in other health insurance lines and LTCI issuance would be supportive of the strategic focus hypothesis, whereas a negative or insignificant relation would be more consistent with the diversification hypothesis.

In this study, we examine the activity of life–health insurers in LTCI markets during the period 1999 through 2001. Our evidence reveals that relative specialization in health insurance lines consistently and positively influences both participation and volume decisions in LTCI markets, which is consistent with the strategic focus hypothesis. Firm age, financial strength, and New York licensing also are positively related to both participation and volume decisions, which suggests that insurer reputation and external monitoring are important in the long-tailed LTCI line. Other factors, such as distribution system, organizational form, and size have signs or significances that differ across the two decisions, which may reflect such factors as the fixed costs of initially entering a new, risky line of business.

The next section contains a review of the relevant literature. We explain the variables used in this study and develop hypotheses in the third section. Our fourth section includes descriptions of our data, empirical model, and estimation methods. In the fifth section, we provide results, while a summary and conclusion follow in the final section.

LITERATURE REVIEW

Researchers have extensively examined the determinants of insurance managers' asset portfolio decisions (see, e.g., Lee, Mayers, and Smith, 1997; Colquitt, Sommer, and Godwin, 1999), as well as hedging activity with regard to these portfolios (see, e.g., Colquitt and Hoyt, 1997; Cummins, Phillips, and Smith, 1997, 2001). Despite the substantial supply of asset-focused research, the fundamental source of risk for insurers remains uncertain and might lead to future losses on insurance underwriting operations. Downs and Sommer (1999) assert that the risk of underwriting liabilities is the most significant contributor to insurer insolvency, particularly noting that these risk charges are more than triple the asset risk charges impounded in the risk-based capital (RBC) formula computed by the National Association of Insurance Commissioners (NAIC). Similarly, Cummins and Nini (2002) posit that the primary source of informational asymmetry between managers of property–liability insurers and other claimants stems from reserve liabilities for unpaid losses. Managerial decisions to

issue liabilities, such as insurance policies, have not been as rigorously explored as asset portfolio decisions. Kleffner and Doherty (1996) provide a notable exception by showing how an insurer's comparative advantage in risk bearing can explain the amount of earthquake insurance underwritten by individual insurers.

A fundamental choice in a firm's corporate strategy is deciding the portfolio of business lines in which to compete. The LTCI market offers a unique opportunity to explore a variety of factors that influence insurance managers to participate in a relatively new and risky line of insurance. In particular, we can explore whether focus or diversification strategies are explicitly pursued in such a market. In earlier corporate finance work, researchers find a diversification discount (see, e.g., Lang and Stulz, 1994; Berger and Ofek, 1995), which implies that diversification destroys value. Later work reveals either smaller diversification discounts, or even premiums, after correcting for selection bias (Campa and Kedia, 2002; Graham, Lemmon, and Wolf, 2002) or data problems (Villalonga, 2004).

Among the benefits attributed to diversification are the sharing of inputs that allow low cost scope economies, cross-selling opportunities that lead to revenue scope economies, cheaper financing engendered by access to larger internal capital markets, and lower risk that allows firms to take on a greater debt burden resulting in lower taxes (see, e.g., Berger et al., 2000). Choi and Weiss (2005) specifically describe how diversified insurers can derive revenue X-efficiency by mining detailed customer databases to identify profitable cross-selling opportunities.

Alternatively, researchers supporting the strategic focus hypothesis contend that firms can maximize value by focusing on their core skills. They argue that agency and other costs can more than offset the benefits of diversification and predict a negative relation between diversification and performance. Agency costs include inefficient use of internal capital markets and cross-subsidization of lower performing segments by higher performing segments because managers act in their own interest rather than in the firm's interest (see, e.g., Berger, 2000). Another argument against diversification is that managers are more likely to be operating in lines of business outside their core competence and the lack of expertise results in lower performance.⁵

The preponderance of the diversification research simply omits the financial services industry. Researchers recently have begun to explore the insurance and banking

⁵ Strategic management researchers often distinguish between related and unrelated diversification and couch their arguments in terms of "core skills," "core competences," and "competitive advantage" (see, e.g., Palich, Cardinal, and Miller, 2000). The resource-based view of diversification advanced in this literature contends that firms are more likely to add value when they diversify based on their core skills (see, e.g., Markides and Williamson, 1994, 1996). In addition, they argue that core skills are strategically more valuable and harder to imitate when they are accumulated through experience. Furthermore, Miller (2006) states that firms create value by diversifying into lines of business where they have applicable knowledge relative to firms that diversify for other reasons. Although the debate remains unsettled, a substantial majority of strategy researchers find that firms implementing related diversification outperform both single-business entities and those using unrelated diversification (see, e.g., Palich, Cardinal, and Miller, 2000 and Miller, 2006). Alternatively, some researchers in strategic management raise concerns about methods applied and find less support for the superiority of related diversification (see, e.g., Robins and Wiersema, 2003).

sectors, however. The results to date are mixed for insurance industry studies, however.⁶ Meador, Ryan, and Schellhorn (2000) find that diversified insurers are more efficient. On the other hand, Berger et al. (2000) offer mixed evidence on whether diversified or focused insurers are more efficient, whereas Cummins, Weiss, and Zi (2003) provide general support for diversified insurers being less efficient. In performance studies, Hoyt and Trieschmann (1991), Cummins and Nini (2002), and Liebenberg and Sommer (2008) find a negative relation between insurer diversification and returns, which supports the strategic focus hypothesis.

Consistent with the Kleffner and Doherty (1996) approach to the issuance of earthquake insurance, we view LTCI as a product line that is offered after insurance managers have determined their organizational, marketing, and financial structures. We note that this scenario runs counter to that of Baranoff and Sager (2003), who suggest that insurance managers first select their product focus, which then affects strategic decisions regarding organizational, marketing, and financial structures. This view does not resonate when one considers the decisions of established insurers to participate in a relatively new and small product line like LTCI, however. For our sample of LTCI insurers in the United States, this line generally represents a very minor portion of total business.⁷ The Kleffner and Doherty approach is more feasible as life-health insurance managers consider supplementing their existing insurance underwriting portfolios by adding the LTCI line. Our goal is to understand which characteristics of an insurer make it more likely that managers will decide to be active in this new line of insurance and whether the relatively few managers who have done so are following a focus or diversification strategy.

VARIABLE MOTIVATION AND DEVELOPMENT OF HYPOTHESES

A number of factors can affect the decisions of insurance managers regarding whether to enter the LTCI business and, if they do so, the appropriate level of commitment. We discuss these factors subsequently.

Strategic Focus

Life-health insurers mainly sell three broad categories of products: life insurance, annuities, and accident and health insurance (Pottier and Sommer, 1997). We contend that life-health insurers with relatively greater experience in health insurance lines develop core competences that give them a competitive advantage in the relatively new and risky LTCI market. Insurers more heavily engaged in issuing other health insurance policies should have better data, experience, and foresight than other

⁶ For an overview of diversification research in the banking industry, see Laeven and Levine (2007). Their work offers strong evidence of a diversification discount. They state that economies of scope should be an especially strong benefit of diversification in the information-intensive financial services industry, but these benefits apparently are overwhelmed by the greater agency costs of diversification. In examining the integration of the financial services industry, Berger (2000) suggests that senior managers may realize lower scope efficiencies and operating performance if they operate outside their core-business expertise.

⁷ LTCI premiums account for a median of only 1 percent of total premiums written by the insurers in our sample of U.S. insurers that underwrite LTCI.

life–health insurers with respect to the declining health of an aging clientele. These insurers should have a better understanding of morbidity and greater knowledge of medical conditions that develop as policyholders age because of their access to prior records of medical services provided. They also should benefit from greater experience dealing with third-party providers than insurers that concentrate mainly on the life and annuity lines.

Compared to the more mature life–health insurance lines, such as life insurance and annuities, the underwriting of the relatively new LTCI line engenders greater uncertainty because actuarial tables are less developed (Moore and Santomero, 1999).⁸ As with medical expenses, long-term care costs have risen rapidly, are relatively hard to predict, and are subject to more uncertain legal interpretation (Murtaugh, Kemper, and Spillman, 1995; Cohen, 1998; Doerpinghaus and Gustavson, 1999).

Citing transaction cost economics, Baranoff and Sager (2002) consider health-related insurance products to be the most risky product line offered by life–health insurers. Their rationale is that these contracts are more relational, less certain, and less complete compared to life insurance and annuity products. They note that regulators also consider health insurance to be relatively risky, as evidenced by the life RBC formula, which contains relatively higher risk charges for health insurance underwriting activities than for life insurance and annuities. Hendel and Lizzeri (2003) touch on the relational aspect of health insurance lines and the added complexity compared to life insurance and annuities because health insurers have to deal with third-party health-care providers for which customers are sensitive to quality of service. Similarly, LTC insurers must interface with providers that supply insureds with a variety of health, personal care, and support services for which insureds and their families are quality sensitive. Hence, LTCI should be a more risky, complex, and relational product line compared to life insurance and annuities.

The preceding discussion naturally leads to our contention that insurers with greater experience in other health insurance lines should gain a competitive advantage in the LTCI market. If we find a positive relation between experience in other health insurance lines and managers' willingness to participate and issue greater amounts of LTCI products, such a finding should be indicative of insurance managers' abilities to exploit core competences via a focus strategy. A neutral or contrary finding would be more consistent with managers being active in the LTCI line as part of a diversification strategy. As our proxy for strategic focus, we apply the ratio of health premiums written, excluding LTCI premiums, to total premiums written.

Size

Doerpinghaus and Gustavson (1999) argue that larger firm size produces greater name recognition and a positive reputation, which should be very important in a long-tailed, comparatively new line of business like LTCI. In addition, Kleffner and Doherty (1996) note that bankruptcy costs can be relatively higher for smaller firms and this

⁸ In the Explanatory Notes for the Long-Term Care Experience Rating Forms, the NAIC writes, "Because of the relatively small claims rates and variable long-term care claims, the statistical credibility of long-term care insurance experience is lower than the amount of credibility assigned to similar amounts of experience in other types of health insurance."

can discourage these firms from participating in newer, riskier lines of business. We therefore contend that larger firms are better positioned to handle the reputation and potential bankruptcy costs of entering a new line of business and therefore expect size to be positively related to LTCI activity. Our size variable is measured by the natural log of total assets.

Firm Age

Older insurers generally should possess greater actuarial experience in life–health lines that gives them some additional insight into the aging process, which implies a positive relation between firm age and LTCI issuance. We note the difference between this variable and our strategic focus variable, which serves as a proxy for the incremental experience and expertise of insurers specific to underwriting health insurance lines. Age also is an indicator of expected firm longevity because it signals that the insurer will still be around many years later to pay off long-term care claims. For the reasons discussed, we expect age to be positively related to LTCI activity. We measure firm age as the number of years the insurer has been in operation.

Financial Strength

Previous research based on property–liability insurance data reveals that firms with greater financial strength command higher premiums (see, e.g., Sommer, 1996; Cummins and Danzon, 1997; Phillips, Cummins, and Allen, 1998). Cummins and Nini (2002) suggest that insurers with higher ratings are perceived as safer and their empirical tests reveal a positive relation between Best’s rating and returns. Doerpinghaus and Gustavson (1999) hypothesize a positive relation between financial strength and LTCI premiums. They argue that financial strength and, hence, claims-paying ability are particularly critical for insurers issuing longer-tailed lines, such as LTCI. In other words, consumers should be willing to pay more for LTCI insurance from insurers they perceive as less risky, all else equal. We consequently expect that financially stronger insurers will find the LTCI market more attractive because they will be able to charge higher premiums, all else equal. We therefore anticipate that financial strength positively affects an insurer’s LTCI activity.

Commonly used measures of financial strength include regulatory measures, such as the NAIC’s RBC ratios and private sector measures, such as A.M. Best ratings. Pottier (1997) and Pottier and Sommer (2002) contend that the Best ratings better reflect the ability of an insurer to meet policyholder obligations and are superior overall measures of risk because the ratings consider both quantitative and qualitative factors unlike regulatory measures. Their empirical evidence in the latter study supports this contention. We therefore use Best ratings as our financial strength measure.⁹ We follow the Pottier and Sommer (2002) convention for Best ratings as

⁹ For robustness purposes, we also applied RBC ratios as an alternative financial strength proxy. In contrast to our significant findings for Best ratings, the RBC coefficient is not significant for the participation decision. The RBC coefficient for the volume decision is significantly positive, similar to our finding when we use Best ratings. No other coefficients in our model changed substantially when we substituted the RBC proxy. Our findings indicate that the choice of financial strength makes some difference in the participation decision,

follows: A ++, A+ = 5; A, A- = 4; B++, B+ = 3; B, B- = 2; C++, C+ = 1; and other = 0.

Organizational Form

The managerial discretion hypothesis of Mayers and Smith (1981, 1988) and adverse selection theory of Smith and Stutzer (1990) indicate that stock firms will more actively underwrite riskier insurance lines than will mutual firms. Lamm-Tennant and Starks (1993) provide empirical support. In contrast, Doherty (1991) and Doherty and Dionne (1993) expect mutual firms to accept more product risk based on an efficient risk-sharing hypothesis. Furthermore, Cummins, Weiss, and Zi (1999) expect mutual insurers to be more successful in issuing long-tailed personal lines because they reduce the costs of policyholder-owner conflicts. Kleffner and Doherty (1996) find that stock insurers issue only a marginally larger amount of earthquake insurance, which they regard as a relatively risky line of business. In addition, they note that stock insurers generally have lower costs of raising new capital than mutual insurers, which we suggest as a possible advantage in expanding into a new line of business. Baranoff and Sager (2002, 2003) examine insurers that offer riskier products, such as health insurance, and do not find a significant relation between organizational form and product risk. Given the widely varying theories and empirical evidence, we cannot predict the effect of organizational form on LTCI issuance.

We classify a firm as a stock insurer if it is so listed in the NAIC data, even if the stock is completely owned by a mutual firm. We note that Mayers and Smith (1994) conclude that mutual-owned stock insurers have operating characteristics more similar to those of mutual insurers. More recent work, partly emanating from the same authors, shows that managers of mutual-owned stock insurers behave more like stock managers, however (Lee, Mayers, and Smith, 1997).

Distribution System

Grace and Timme (1992) describe insurer production and distribution structures, categorizing insurers as those that mainly produce insurance products and those that both produce and distribute insurance products. We similarly distinguish between insurers that distribute insurance directly or through exclusive agencies, which we denote as direct distribution, and those for whom products are distributed by independent agents or brokers, which we reference as broker distribution. Regan and Tzeng (1999) hypothesize that insurers selling through independent brokers are more likely to participate in relatively risky and complex lines of business because brokers monitor insurers and act as a buffer when conflicts occur. They provide supporting evidence from the property-liability insurance industry. Similarly, Regan (1999) surmises that direct distribution systems enjoy comparative advantages in more standardized, less

but the previously discussed research supports Best ratings as more comprehensive and empirically stronger measures of financial strength. One concern is that line of business distribution is considered by Best when formulating their ratings and this could imply a simultaneity problem. Pottier (1997) finds that line of business mix is not a significant determinant of Best ratings for life-health insurers, however. Further, for the LTCI issuers in our sample LTCI premiums generally represent a very small share of total premiums, with a median of less than 1 percent.

complex lines, whereas broker distribution can have advantages in more complicated lines. Because LTCI is a relatively complex line within the life–health insurance industry, an independent broker system could have a positive effect on activity in this line.

In contrast to the previously discussed literature, Cummins and Weiss (1992) and Kleffner and Doherty (1996) suggest that distribution through independent brokers involves relatively higher cost. If so, upward pricing pressure may limit demand. Gardner and Grace (1993) state that direct distribution may have lower agency costs than broker distribution, but they find no statistical differences in efficiency between the two distribution systems. We consequently deduce that broker distribution may be better suited to more complex and risky products, such as LTCI, but that higher costs could mitigate this advantage. Our expectation for the effect of broker distribution on LTCI activity consequently is indeterminate.

For our broker distribution system variable, we follow Baranoff and Sager (2003) by classifying an insurer as using an independent broker system if the A.M. Best Key Rating service assigns it a marketing code that contains a B (e.g., B, BA, AB, BD, and DB). Under the Key Rating scheme, B, A, and D indicate broker, agent, and direct marketer, respectively.

New York Regulation

Because New York insurance regulation is perceived as particularly stringent and is applied extraterritorially, researchers often control for whether an insurer is licensed to sell insurance in the state of New York (see, e.g., Boose, 1990; Wells, Cox, and Gaver, 1995). Pottier and Sommer (1998) provide evidence indicating that New York–licensed life insurers generally face more stringent regulatory monitoring than non–New York–licensed insurers. If New York regulation is more rigorous and costly, then managers should be more reluctant to issue relatively risky lines such as LTCI. On the other hand, Sommer (1996) argues that if strict New York regulation is related to lower default risk because of the more stringent monitoring, New York–licensed insurers will be viewed as safer and even be able to command a higher price. His empirical evidence is weakly supportive at best, however. Sommer (1996) finds a positive, but insignificant, relation between New York licensing and price, whereas Cummins and Sommer (1996) observe a negative, but insignificant, relation between New York licensing and default risk. In light of the opposing arguments and inconclusive results, we cannot predict the direction of the relation between New York regulation and LTCI activity. Our measure for New York regulation is a binary variable that is 1 if the insurer is licensed in New York and 0 otherwise.

Group Affiliation

Grace and Klein (2000) argue that economies of scope may enable insurance groups to provide services at lower costs than unaffiliated insurers. They find a positive relation between group affiliation and expenses, however. A possible explanation is that the more complex group structure entails higher organizational costs that more than offset any group economies (Colquitt and Sommer, 2003). In addition, consumers may view a group-affiliated insurer as riskier because an insurance group can allow an affiliated insurer to fail while, at the same time, protecting its other assets (Cummins

and Sommer, 1996). With these conflicting rationales, we have no expectation about the specific relation between group affiliation and LTCI activity.¹⁰ Group affiliation is measured by a binary variable equal to 1 if the insurer is a member of a group and 0 if the insurer is unaffiliated.

RESEARCH DESIGN

We construct a model to test the impact of the previously discussed determinants on the issuance of LTCI liabilities. Next, we describe our data, estimation methods, and model.

Data

Our primary data sources are the NAIC InfoPro Database and the NAIC Long-Term Care Database for 1999 through 2001. These contain annual statement information for virtually the universe of insurers licensed in the United States. We omit firms that do not have positive assets, premiums, or surplus. We also collected financial strength and distribution system information from the A.M. Best Key Rating database. After merging the data sets and retaining only data for firms with complete information, we have 958 insurers in 1999, 955 in 2000, and 966 in 2001. Of these, 114, 120, and 122 insurers offered LTCI in 1999, 2000, and 2001, respectively.

Empirical Model

We implement a participation–volume model using the technique introduced by Cragg (1971). The Cragg method uses probit regression for the participation decision and truncated regression for the volume decision. Lin and Schmidt (1984) argue that the Cragg method is better suited than other participation–volume methods when some observations of the dependent variable are known to be exactly zero, which is the case for our study.¹¹

In their study of the determinants of derivatives usage by insurers, Cummins, Phillips, and Smith (2001) justify use of the two-part Cragg model by arguing that the participation decision is driven by fixed cost considerations, whereas the volume decision is driven mainly by marginal costs. We similarly argue that the fixed costs of entering the LTCI market are substantial. In particular, actuarial tables are not well developed because of limited experience, so initial reserve development is costly. The fact that only about 10 percent of all U.S. life–health insurers participate in the LTCI market

¹⁰ We considered aggregating data by insurance group. The NAIC requires individual property–liability insurers that are members of an insurance group to file an annual consolidated group report in addition to an individual annual report but does not require life–health insurers to file consolidated group reports (Gaver and Pottier, 2005). Without a consolidated report, reliable aggregation of group-level data for life–health insurers is problematic.

¹¹ The Cragg method is classified as a generalized Tobit model and generally referred to as a *two-part model*. Other generalized Tobit models that allow participation and volume decisions to be made independently are categorized as sample selection models. Leung and Yu (1996) and Puhari (2000) discuss a number of researchers employing Monte Carlo methods and conclude that sample-selection models are dominated by two-part models.

supports our contention that fixed costs are important factors in the LTCI participation decision. Although the participation decision should be substantially driven by fixed-costs considerations, we expect that, among the insurers participating in the LTCI market, those with lower costs of risk bearing will issue higher volumes of LTCI. The Cragg method can provide insight into whether a variable affects the participation and volume decisions differently, which would not be possible in the standard Tobit model.¹²

The first step in the Cragg method is a probit regression for the participation decision:

$$\text{LTCIpart} = \beta \mathbf{X} + \varepsilon_1, \quad (1)$$

where

$\text{LTCIpart} = 1$ if the insurer participates in the LTCI market and 0 otherwise,

β = vector of coefficients, and

$\mathbf{X}$ = vector of explanatory variables for the participation decision.

The second step is a truncated regression for the volume decision, as follows:

$$\text{LTCIvol} = \gamma \mathbf{Z} + \varepsilon_2, \quad (2)$$

where

LTCIvol = ratio of LTCI premiums written to total premiums written,

γ = vector of coefficients, and

$\mathbf{Z}$ = vector of explanatory variables for the volume decision.

The truncated regression applies only to the nonlimit observations. That is, only the set of insurers that participate in the LTCI market are included.

We combine all 3 years of data into a panel and estimate our regressions using both pooled and random effects methods. The use of panel data increases sample size and also allows better control for individual insurer heterogeneity and secular changes that may occur over time. Pooled regressions are appropriate when there are no unobserved differences between companies that affect the dependent variable, a typically unrealistic scenario. We consequently perform a likelihood ratio (LR) test to determine whether the more restrictive pooled regression or random effects approach

¹² The *standard Tobit model* is a restricted version of the more general Cragg method in that participation and volume decisions are not estimated separately. If managers make participation decisions independently of volume decisions, the standard Tobit model is misspecified, so the more general Cragg method is appropriate. If the decisions are not made independently, the standard Tobit model is more efficient. We consequently perform the LR test suggested by Greene (2003, p. 770) to determine whether the Tobit restrictions are supported. We find that the LR test does not support the Tobit restrictions at any reasonable significance level.

is most appropriate. Various econometric issues prevent us from using fixed effects estimation.¹³

Our model for the participation and volume decisions is as follows:

$$\begin{aligned} \text{LTCI}_{it} = & \beta_0 + \beta_1 \text{Focus}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Age}_{it} + \beta_4 \text{FinStr}_{it} + \beta_5 \text{Stock}_{it} + \beta_6 \text{Broker}_{it} \\ & + \beta_7 \text{NY}_{it} + \beta_8 \text{Group}_{it} + \beta_9 \text{Year2000}_{it} + \beta_{10} \text{Year2001}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

where

LTCI = long-term care insurance activity,

Focus = strategic focus,

Size = firm size,

Age = firm age in years,

FinStr = financial strength rating,

Stock = organizational form (1 if stock, 0 if mutual),

Broker = broker distribution system (1 if independent broker used, 0 otherwise),

NY = New York regulation (1 if insurer is licensed in New York, 0 otherwise),

Group = Group affiliation (1 if insurer is member of a group, 0 otherwise),

Year2000 = 2000 data (1 if data are for 2000, 0 if otherwise), and

Year2001 = 2001 data (1 if data are for 2001, 0 if otherwise).

The LTCI activity proxy for the participation decision is a binary variable equal to 1 if the insurer collects LTCI premiums and 0 otherwise. For the volume decision, the LTCI variable is the ratio of LTCI premiums written to total premiums written.

Heteroskedasticity and Marginal Effects

Heteroskedasticity can be a particular problem in probit, Tobit, and truncated regressions (see, e.g., Maddala and Nelson, 1975). We check and correct for heteroskedasticity assuming multiplicative heteroskedasticity as prescribed by Greene (2003, pp. 680, 768). We also apply the methods he describes to estimate marginal effects. All regression coefficients reported subsequently are the marginal effects estimated at the means of the regressors.

¹³ Greene (2001, 2004a, b) discusses problems when using fixed effects estimation for Tobit, probit, and truncated panel data models. Even if fixed effects estimation is applied in such models, Greene argues that researchers cannot determine whether fixed or random effects estimation is more appropriate. In essence, a Hausman test cannot be devised because of the incidental parameters problem. Finally, fixed effects is not suitable for estimating variables with insufficient within-firm variation, which is the case for some of our binary independent variables.

TABLE 1
Summary Statistics

Continuous Variables	Exp. Sign of <i>t</i> Test	LTCI Issuers <i>n</i> = 122		LTCI Nonissuers <i>n</i> = 844		Two-Sample <i>t</i> Test: <i>t</i> Stat (<i>p</i> Value) for Difference in Means
		Mean	Std. Dev.	Mean	Std. Dev.	
<i>Focus</i>	+	0.40	0.36	0.33	0.39	2.01 (0.046)
<i>Size</i>	+	\$11.3B	\$29.9B	\$2.0B	\$7.97B	3.41 (0.001)
<i>Age</i>	+	62.2	37.3	38.5	28.9	6.72 (<0.001)
<i>FinStr</i>	+	3.8	1.2	2.4	2.0	10.92 (<0.001)
Dummy Variables		Obs.	Proportion	Obs.	Proportion	
<i>Stock</i>	±	105	0.86	774	0.92	-1.98 (0.050)
<i>Broker</i>	±	41	0.34	199	0.24	2.21 (0.029)
<i>NY</i>	±	38	0.31	111	0.13	4.07 (<0.001)
<i>Group</i>	±	114	0.93	604	0.72	8.81 (<0.001)

Note: *Focus* = ratio of health insurance premiums written, excluding LTCI premiums written, to total premiums written; *Size* = total assets in dollars; *Age* = age of firm in years; *FinStr* = financial strength (Best's rating); *Stock* = organizational form (stock = 1, mutual = 0); *Broker* = distribution system (independent broker = 1, 0 otherwise); *NY* = New York regulation (if insurer licensed to do business in New York = 1, 0 otherwise); and *Group* = group affiliation (if insurer is member of a group = 1, 0 otherwise). Summary statistics are calculated by first averaging all 3 years for each insurer, then calculating the mean for each variable for LTCI issuers and nonissuers.

RESULTS

Table 1 contains summary statistics for both issuers and nonissuers of LTCI. Our primary variable of interest, strategic focus, is significantly greater for the subsample of LTCI issuers. That is, LTCI issuers write a much larger proportion of their premiums in health insurance lines other than LTCI than do nonissuers. Mean values for firm size, firm age, and financial strength are significantly greater for LTCI issuers than nonissuers. Among the variables for which we have indeterminate expectations, we find that LTCI issuers are more likely to be mutual firms, use independent brokers, be licensed in New York, and be members of an insurance group.

Correlation analysis in Table 2 reveals Pearson coefficients for the relation between size and age of 0.50 and between size and financial strength of 0.68, although these are the only coefficients that were 0.50 or above. We therefore compute the variance inflation factors (VIFs) developed by Belsley, Kuh, and Welsch (1980). With all VIFs below 2.5, collinearity is unlikely to be a problem.

Table 3 contains the results for our panel data analysis. An LR test does not support the critical restriction of the pooled model that there are no unobserved differences between companies affecting the dependent variable, so random effects is more credible. The following discussion is for the random effects results.¹⁴

¹⁴ For the participation decision, the pooled and random effects results are similar except for the New York licensing and group affiliation variables. The New York coefficient is positive

TABLE 2
Pearson Correlation Coefficients

	<i>Focus</i>	<i>Size</i>	<i>FinStr</i>	<i>Age</i>	<i>Stock</i>	<i>Broker</i>	<i>NY</i>	<i>Group</i>
Panel A: Entire Sample (2,832 Firm-Year Observations)								
<i>Focus</i>	1.000							
<i>Size</i>	−0.250	1.000						
<i>FinStr</i>	−0.132	0.681	1.000					
<i>Age</i>	−0.135	0.454	0.231	1.000				
<i>Stock</i>	−0.042	−0.114	−0.043	−0.423	1.000			
<i>Broker</i>	0.060	0.234	0.237	0.067	−0.014	1.000		
<i>NY</i>	−0.061	0.310	0.340	0.166	−0.073	0.120	1.000	
<i>Group</i>	−0.011	0.370	0.392	0.024	0.124	0.182	0.169	1.000
Panel B: Subsample of Participants in LTCI Market (336 Firm-Year Observations)								
<i>Focus</i>	1.000							
<i>Size</i>	−0.303	1.000						
<i>FinStr</i>	−0.263	0.585	1.000					
<i>Age</i>	−0.161	0.500	0.145	1.000				
<i>Stock</i>	−0.120	−0.046	0.069	−0.417	1.000			
<i>Broker</i>	−0.039	0.150	0.083	0.125	0.002	1.000		
<i>NY</i>	−0.141	0.245	0.253	0.219	−0.050	0.079	1.000	
<i>Group</i>	−0.057	0.221	0.228	0.037	0.125	0.112	0.094	1.000

Note: *Focus* = ratio of health insurance premiums written, excluding LTCI premiums written, to total premiums written; *Size* = total assets in dollars; *Age* = age of firm in years; *FinStr* = financial strength (Best's rating); *Stock* = organizational form (stock = 1, mutual = 0); *Broker* = distribution system (independent broker = 1, 0 otherwise); *NY* = New York regulation (if insurer licensed to do business in New York = 1, 0 otherwise); and *Group* = group affiliation (if insurer is member of a group = 1, 0 otherwise).

Coefficients for the strategic focus variable are positive and significant at the 1 percent level in all specifications for both the participation and volume decisions. In essence, managers of life–health insurers with more experience in health-related lines are more willing to underwrite the relatively new and ostensibly risky LTCI line. These findings support the strategic focus hypothesis in that managers are expanding into a line of

in both cases but significant only in the random effects results. Group affiliation is positive and significant in the pooled results but negative and insignificant in the random effects results. For the volume decision, the pooled and random effects results are similar except for the size and New York variables. The size coefficient is negative in both cases but significant only in the pooled regression. The New York licensing coefficient is positive in both cases but significant only in the random effects results. Further analysis finds that a significant percentage of the New York–licensed insurers are group-affiliated, single-state insurers. Pottier and Sommer (1998) argue that insurers generally try to avoid the extraterritorial application of stringent New York regulation by creating single-state New York affiliates, thereby isolating the rest of the group from New York regulation. We suspect that the differences in our pooled and random effects results are attributable to unobserved effects of the relation between New York licensing and group affiliation, for which we can control in the random effects method but cannot in pooled regression.

TABLE 3
Cragg Model Results (1999 Through 2001)

Variable	Exp. Sign	Probit: Participation Decision		Truncated: Volume Decision	
		Pooled	Random Effects	Pooled	Random Effects
Intercept		-0.8626 <0.001***	-0.7402 <0.001***	0.0692 <i>0.105</i>	-0.0148 <i>0.076*</i>
<i>Focus</i>	+	0.2045 <0.001***	0.1382 <0.001***	0.0495 <0.001***	0.0556 <0.001***
<i>Size</i>	+	0.0259 <0.001***	0.1536 <0.001***	-0.0066 <i>0.001***</i>	-0.0041 <i>0.244</i>
<i>Age</i>	+	0.0008 <0.001***	0.0039 <0.001***	0.0002 <i>0.031**</i>	0.0017 <i>0.033**</i>
<i>FinStr</i>	+	0.0125 <i>0.002***</i>	0.1281 <i>0.001***</i>	0.0084 <i>0.002***</i>	0.0237 <i>0.072*</i>
<i>Stock</i>	±	0.0265 <i>0.117</i>	0.0186 <i>0.186</i>	0.0255 <i>0.012**</i>	0.0197 <i>0.009***</i>
<i>Broker</i>	±	0.0087 <i>0.850</i>	0.0081 <i>0.306</i>	-0.0142 <i>0.059*</i>	-0.0014 <i>0.003***</i>
<i>NY</i>	±	0.0085 <i>0.474</i>	0.0152 <i>0.062*</i>	0.0080 <i>0.329</i>	0.0163 <i>0.005***</i>
<i>Group</i>	±	0.0324 <i>0.064*</i>	-0.0037 <i>0.693</i>	-0.0104 <i>0.301</i>	0.0082 <i>0.125</i>
<i>Year2000</i>	±	0.0036 <i>0.754</i>	-0.0039 <i>0.881</i>	-0.0025 <i>0.744</i>	0.0014 <i>0.766</i>
<i>Year2001</i>	±	0.0064 <i>0.580</i>	0.0031 <i>0.514</i>	-0.0016 <i>0.834</i>	0.0008 <i>0.476</i>
No. of obs.		2,832	2,832	336	336
Log likelihood		-769.9	-443.4	555.4	758.5

***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Note: All coefficients are marginal effects estimated at the mean; *p* values are in italics.

Dependent variable: For probit: 1 if insurer has LTCI premiums, 0 otherwise.

For truncated: LTCI premiums written/total premiums written.

Independent variables: *Focus* = ratio of health insurance premiums written, excluding LTCI premiums written, to total premiums written; *Size* = natural log of total assets; *Age* = age of firm in years; *FinStr* = Best's rating (A++/A+ = 5, A/A- = 4, etc.); *Stock* = 1 if stock, 0 if mutual; *Broker* = 1 if independent broker used, 0 otherwise; *NY* = 1 if insurer licensed in New York, 0 otherwise; *Group* = 1 if insurer is member of a group, 0 otherwise; *Year2000* = 1 if data are for year 2000, 0 otherwise; and *Year2001* = 1 if data are for year 2001, 0 otherwise. Omitted year dummy is 1999.

business in which they have core competences rather than expanding for diversification purposes.

Firm size coefficients are positive and significant for the participation decision, which is consistent with larger firms enjoying greater name recognition, reputation, and/or lower costs of financial distress that provide advantages in a risky, long-tailed line

like LTCI. For the volume decision, the size coefficient is negative but insignificant. A possible explanation is that larger firms are better able to overcome the fixed costs of participating in the LTCI market but that among firms that do participate, the differences in name recognition, reputation, and financial distress costs are relatively inconsequential. Another possibility is that the small size of the LTCI market makes it difficult for LTCI premiums to become a substantial proportion of total premiums in a large insurer.¹⁵ We find some support for this possibility by using a dependent variable that is the natural log of LTCI premiums instead of a proportion. Size becomes marginally positive in this case.

Firm age coefficients are positive in both the participation and volume models, which support the argument that older insurers possess greater experience in life–health lines that gives them insight into the aging process. Older firms may benefit from enhanced reputations, an important factor to potential policyholders considering whether to purchase insurance for which claims payments are highly unlikely until many years in the future. The financial strength coefficient is positive and strongly significant in the participation decision results and marginally significant for the volume decision. These findings support the argument that firms perceived by external monitors as better able to meet policyholder obligations have competitive advantages that allow them to be more active in the relatively long-tailed LTCI line.

The stock organizational form coefficient is positive and not significant in the participation decision, but highly significant in the volume decision. Our evidence indicates that stock and mutual insurers are equally likely to participate in this line of business but that among participating insurers, stock insurers are more prone to expand LTCI volume. A possible explanation is that a stock insurers' advantage in controlling owner–manager conflict and a mutual insurers' advantage in controlling owner–policyholder conflict may be balanced in the participation decision, but the superior capability of stock insurers in raising external funds allows more rapid expansion in this new line of business.

An insurer's distribution system does not appear to affect the likelihood of participation in the LTCI market, but among those who do participate, broker distribution is negatively related to volume. As suggested earlier, the higher costs of broker distribution can outweigh the advantage that brokers have in relatively complex product markets. The New York licensing coefficient is positive and significant for both the participation and volume decisions. This finding is consistent with the argument that New York–licensed insurers have an advantage because strict New York regulation is related to lower default risk, which should be appealing to potential policyholders concerned with the safety of insurers in this new long-tailed line. Finally, group affiliation is not significant in either regression, which supports the view that higher organizational costs of complex group structures can offset any benefits from economies of scope.

SUMMARY AND CONCLUSIONS

The private LTCI market has been described as both potentially huge and severely constrained. This relatively new line of insurance is viewed by many as a possible

¹⁵ We thank an anonymous reviewer for this suggested rationale.

solution to the huge financial burden placed on government programs by a rapidly aging society and the increasing costs of long-term care. However, private LTCI has not yet contributed substantially to the financing of long-term care, and only about 10 percent of life–health insurers currently participate in the LTCI market.

To gain insight into why a relatively small group of insurers has become active in LTCI despite market limitations, we identify and test potential determinants. Although similar studies are common for asset portfolio decisions, very few have addressed the liability issuance decisions of insurance managers. This discrepancy strikes us as curious considering that liabilities issued by insurers have been shown to pose greater risk than asset holdings.

Our tests indicate that the two-part Cragg model is more appropriate for our data than the standard Tobit model, which cannot disentangle participation and volume decisions. We generate evidence strongly consistent with the strategic focus hypothesis. Activity and, presumably, expertise in related lines of business enhance insurance managers' propensities to both participate in and issue greater amounts of LTCI. Our results imply that insurance managers are expanding into a new line of business in which they have core competences that provide a competitive advantage, as opposed to following diversification strategies.

We further find that firm age, financial strength, and New York regulation all have a significantly positive influence on both the participation and volume decisions. We therefore conclude that the favorable reputation and perceived safety implied by firm longevity and external monitors, such as rating agencies and regulators, provide insurers with a competitive advantage in this long-tailed line of business for which policyholders are not expecting to file claims until many years later.

Our two-part model reveals some differences in managerial participation and volume decisions. For example, size is positively related to the participation decision but insignificant in the volume decision, which indicates that larger firms are better able to overcome the fixed costs of entering the LTCI market but that among the generally larger participating firms, differences in name recognition, reputation and financial distress costs become relatively inconsequential. Organizational form and distribution systems are not significant factors in determining whether an insurer participates in the LTCI market. However, for the volume decision, stock insurers are more likely to issue larger amounts, with a possible explanation that managers of stock insurers are better able to raise funds for expanding into such a new business line.

The results of this study should be of interest to state regulators in their mission to increase the use of private LTCI as an expedient to reduce Medicaid costs. Consumers facing the increasing costs of long-term care services with an increasingly porous social safety net and managers of life–health insurers, who must at least consider opportunities in this new and potentially lucrative LTCI market, also should be concerned. Recent federal and state incentives should only raise interest in private LTCI in the foreseeable future.

One question arising from our research is whether insurers underwriting riskier lines of business, as defined by traditional standards of underwriting uncertainty, really are so risky if the insurer has core competences that generate competitive advantages

in new lines. Future research on the effects of core knowledge and skills, along with other information advantages, should be relevant to policyholders, investors, and regulators as they assess the risk of insurers. Further theoretical and empirical research on the possibly independent effects of firm characteristics on participation and volume decisions in the markets for insurance liabilities also impresses us as warranted.

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