Entrepreneur Wealth and the Value of Limited Liability

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Abstract

This paper uses variation in entrepreneur wealth to test the importance of limited liability in choice of organizational form. Economic theory suggests that wealthy entrepreneurs demand liability protection to shield their personal assets. Yet, despite an extensive theoretical literature on limited liability there are no empirical studies which directly address this issue. Using restricted-access data from the Kauffman Firm Survey, I find that for every $100,000 of exposed personal wealth an entrepreneur is about two percent more likely to form a corporation or LLC. I use state-level property exemptions to create variation in an entrepreneur's liability exposure. This study provides support for the economic theory of limited liability and improves our understanding of an entrepreneur's choice of organizational form.

Keywords: Limited liability, choice of form, property exemptions

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"The limited liability corporation is the greatest single discovery of modern times. . . . Even steam and electricity are far less important than the limited liability corporation, and they would be reduced to comparative impotence without it."

Nicholas Murray Butler (Pres. Columbia Univ. 1902 - 1945)[1]

1. Introduction

According to economic theory, limited liability encourages entrepreneurial formation and investment in risky projects.[2] Limited liability restricts a shareholder's risk to the amount of her initial investment in the firm. By contrast, without such protection an investor holding a single share of equity could lose her house and other valuable assets to satisfy business debts. Limited liability is particularly important to wealthy entrepreneurs/investors, who otherwise may be exposed to risk of a substantial loss from even a small investment (Manne, 1967; Carney, 2000).[3]

Despite an extensive theoretical literature, the practical relevance of limited liability to entrepreneurs with different levels of wealth is unclear. While researchers have looked at the consequences of introducing limited liability to a jurisdiction or regulated industry,[4] much less attention has been given to its effect on an entrepreneur's choice of form. Are wealthy entrepreneurs more likely to form a corporation/LLC?

To answer this question I collect data on over 2,500 businesses in the Kauffman Firm Survey (KFS). This database reports the organizational form, and detailed firm-level variables for each business. KFS also reports characteristics of the primary owner (the 'entrepreneur') of each business, including notably the entrepreneur's personal wealth divided into five broad categories. While this is an imprecise measure of wealth, it does allow me to compare the organizational form of businesses founded by entrepreneurs with different levels of personal wealth. High wealth entrepreneurs have more potential liability exposure, and consequently economic theory predicts they are more likely to form a limited liability entity.

To accurately measure liability exposure I compare each entrepreneur's wealth to property exemptions in her state. Property exemptions (also called 'bankruptcy exemptions') determine personal property – most notably the homestead – that is beyond the reach of creditors. Such exemptions vary widely from state to state. For example, 14 states have homestead exemption

[1] Quoted in Bainbridge (2001, pg. 479).

[2] Encouraging entrepreneurship and investment by risk-averse individuals is the standard justification for limited liability (Easterbrook and Fischel, 1985; Halpern, Trebilcock and Turnbull, 1980; Blumberg, 1986; Manne, 1967; Woodward, 1985; Carr and Mathewson, 1988; Leebron, 1991). Limited liability also encourages passive investors to diversify their equity portfolio (Manne, 1967; Ribstein, 1991), reduces shareholder monitoring of co-owners (Carr and Mathewson, 1988; Easterbrook and Fischel, 1985), and facilitates low cost transferability of shares (Woodward, 1985). For a review of the academic writing on limited liability see Carney (2000)

[3] One of the primary arguments for adopting limited liability in 19th century Britain was that wealthy individuals were reluctant to finance unlimited liability companies (Perrott, 1982).

[4] Studies look at 19th century laws introducing limited liability to Britain (Carr & Mathewson, 1988; Smart, 1996; Forbes, 1986; Evans & Quigley, 1995); the availability of limited liability forms for U.S. law firms (Carr & Mathewson, 1988; Romley & Talley, 2004; Gilson, 1991; Krawiec, 2005; Baker & Krawiec, 2005); and the effect of introducing limited liability to a jurisdiction on equity prices (Weinstein, 2003), ownership concentration (Acheson & Turner, 2006), and requirements for share ownership (Turner, 2009).

levels for a married couple capped at $30,000 or less, while 12 states protect the homestead up to $200,000 or more.

The risk of operating a business without limited liability depends on an entrepreneur's wealth in relation to such exemptions. If an entrepreneur with modest wealth lives in a state with generous exemptions she may be judgment proof and have no risk of personal liability regardless whether she forms a limited liability entity. An entrepreneur has more incentive to form a limited liability entity if her personal wealth exceeds state exemptions. I classify an entrepreneur as *judgment proof* if her personal wealth is below state exemption levels. If an entrepreneur's personal wealth exceeds state exemption levels I record the excess as *exposed wealth*.

By this classification 35% of the entrepreneurs in the KFS sample are judgment proof. Limited liability is redundant for many small business owners. Judgment proof entrepreneurs are 13% less likely – 58% versus 71% – to form a limited liability entity than non judgment proof entrepreneurs. I also find that the extent of an entrepreneur's exposed wealth matters. For every $100,000 of exposed wealth an entrepreneur is 2.2% to 2.6% more likely to form a limited liability entity. Liability exposure has a modest effect on choice of organizational form.

These results are generally robust to alternative specifications. To address potential endogeneity of entrepreneur wealth, I compare entrepreneurs with the same level of total wealth, but – due to variation in property exemptions – different levels of *exposed wealth*. This isolates variation to an arguably exogenous component of exposed wealth[5], and suggests that my results are not driven by an omitted variable bias. My findings are also robust to numerous controls for firm and entrepreneur characteristics, to the inclusion of state-level dummy variables, and the results hold in various subsamples of the KFS data.

To be sure, liability exposure is not the only (or even primary) consideration affecting choice of form. In the KFS sample, even judgment proof entrepreneurs typically form limited liability entities, and wealth exposure only has a marginal effect on choice of form. Other factors, such as the number of owners, have a larger impact. These results suggest that alternative explanations which apply primarily to multi-owner firms – such as transaction costs of contracting with multiple owners (Easterbrook & Fischel, 1991), flexibility/contractual freedom (Ribstein, 2009), entity shielding (Hansmann & Kraakman, 2000), and capital lock-in (Blair, 2003) – may be as, if not more, important than limited liability in explaining choice of form. Testing such alternative explanations, however, is beyond the scope of this project. Furthermore, my results do not measure the actual benefit of limited liability, but rather the perceived benefit to entrepreneurs with different levels of potential liability exposure. Nonetheless, my findings are consistent with economic theory, and suggest that liability exposure is at least one consideration driving an entrepreneur's choice of form.

This study contributes to the literature on limited liability. Voluntary creditors can fully price the increased risk of default associated with limited liability by demanding a higher interest rate or personal guarantees from the shareholders (Posner, 1976; Halpern et. al., 1980; Carney, 2000), whereas involuntary creditors are not compensated for the increased risk associated with

[5] Fan & White (2003) argue that state property exemptions are exogenous with respect to an individual's decision whether to become an entrepreneur. By contrast Hynes, Malani, & Posner (2004) argue that property exemptions are correlated with other features of the state. However, the only explanatory variable that Hynes, Malani, & Posner (2004) found to be "significantly related to current exemption levels is states' exemption levels in the 1920's. Thus whatever factor determine states' exemption levels, they appear to be very persistent." (White, 2005 at p. 58).

limited liability (Leebron, 1991). Regardless of the social desirability of making tort victims bear this risk (Hansmann & Kraakman, 1991; Ribstein, 1991), shareholders may benefit from protection against tort claims. This benefit is particularly important to wealthy shareholders, who demand liability protection to shield their personal wealth (Carney, 2000).[6]

Despite extensive theoretical work, there are few empirical studies examining an entrepreneur's choice of liability status when forming a new business.[7] To my knowledge this project is the first to show a link between entrepreneur wealth and the use of limited liability.[8] My findings support the economic theory of limited liability. Entrepreneurs are more likely to form a corporation or LLC as their exposed wealth increases.

Second, this study extends the literature linking bankruptcy protection to entrepreneurial formation. Bankruptcy protection insures personal wealth against business failure (White, 2005), and thereby encourages risk-averse individuals to become entrepreneurs (Fan & White, 2003; Armour & Cumming, 2008).[9] Fan & White (2003) find that individuals are more likely to become an entrepreneur if they live in a state with a large homestead exemption, and the effect on entrepreneurial formation is more pronounced for non-corporate businesses. My results suggest that property exemptions also impact choice of organizational form and can act as a substitute for limited liability.

The remainder of this paper is organized as follows. Section 2 describes the value of limited liability and then develops testable hypotheses predicting choice of organizational form. Section 3 describes the data used in this study, compares the use of limited liability by judgment-proof and non judgment-proof entrepreneurs, and then tests the liability exposure hypotheses in a multivariate setting. Section 4 concludes.

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[6] The value of limited liability to wealthy shareholders does not depend on externalization of risk onto involuntary creditors. Even if limited liability does not benefit shareholders as a class (due to higher interest rates), it may still benefit wealthy shareholders. This follows since the risk of unlimited liability falls disproportionately on wealthy shareholders, particularly under a joint & several liability regime; whereas the cost of paying higher interest rates to a creditor under limited liability is spread equally across low and high wealth shareholders. Consequently, if a firm hopes to attract high wealth investors it may need to select a limited liability form even absent externalization of risk onto involuntary creditors.

[7] There is some empirical work documenting the effect of taxes on choice of form (Goolsbee, 1998; 2004; Mackie-Mason & Gordon, 1997). Tax considerations, however, are orthogonal to the choice between limited and unlimited liability forms. With the development of the LLC an entrepreneur can elect pass-through tax treatment without giving up limited liability. Some tax studies include rough proxies (i.e. sector volatility) for the relevance of limited liability on choice of form (Ayers, Cloyd, & Robinson, 1996; Egger, Keuschnigg, & Winner, 2009). Such studies do not, however, measure entrepreneur wealth and are not primarily concerned with limited liability.

[8] In a study examining choice of liability status by German entrepreneurs, Horvath & Woywode (2005) use entrepreneur income and education as proxies for wealth, which they do not observe. By contrast the KFS dataset used in this paper reports entrepreneur wealth divided into five categories.

[9] Bankruptcy protection also stimulates entrepreneurial activity by allowing serial entrepreneurs to more rapidly re-enter the market after a failed business (Ayotte, 2007; Baird & Morrisson, 2005; Georgakopoulos, 2002). On the other hand, strong bankruptcy protection also reduces the supply and increases the cost of credit available to startup firms (Cerqueiro & Penas, 2010; Berkowitz & White, 2004).

2. Theory

In a partnership or sole proprietorship business debts are personal liabilities of the entrepreneur/owner. By contrast the owners of a limited liability entity are not personally liable for debts incurred by the business. Creditors of a corporate entity can only recover payment from the corporation. Limited liability creates a partition between (i) *personal assets* owned by the entrepreneur and (ii) *business assets* owned by the corporation/LLC (Hansmann & Kraakman, 2000). This partition can significantly reduce a wealthy entrepreneur's liability exposure, especially with respect to involuntary creditors who cannot demand a personal guarantee.[10]

An entrepreneur's potential liability exposure also depends on property exemptions in her home state. In addition to the homestead exemption most states offer an exemption for a motor vehicle and various other categories of property. Assets covered by a property exemption are beyond the reach of creditors. Property exemptions create a distinction between an individual's (i) exempt personal assets, and (ii) non-exempt personal assets. A creditor can only recover from non-exempt assets. Throughout the paper, I refer to an entrepreneur's non-exempt assets as *exposed wealth,* since this measures the entrepreneur's potential liability exposure. An entrepreneur with no *exposed wealth* is judgment proof.

An entrepreneur's exposed wealth depends on property exemptions in the state of residence. To illustrate, assume a married couple has $80,000 in home equity and owns a $10,000 automobile. If this couple were to live in Colorado (homestead exemption = $60,000; motor vehicle exemption = $10,000) they could exempt the full value of their car and up to $60,000 in home equity. The remaining $20,000 in home equity would be *exposed wealth*. By contrast if this same couple were to live in Kansas they would be judgment proof, since their house and car would both fit under existing property exemptions in Kansas. The appendix provides a table comparing property exemptions in different states (table A1).

This discussion illustrates the marginal value of limited liability. A limited liability entity provides a form of supplemental insurance, protecting an entrepreneur's exposed wealth against business liabilities. Limited liability is unnecessary to protect an entrepreneur's exempt assets, since these are already covered by property exemptions regardless of the entrepreneur's actions. By contrast, an entrepreneur's non-exempt assets are vulnerable unless she forms a corporation or LLC with the state.

Economic theory predicts that an entrepreneur will form a corporation/LLC whenever the marginal benefit, in terms of liability protection, exceeds the marginal cost – filing fees, franchise taxes, and other ongoing costs – of operating a corporation/LLC. While the initial filing fees for a corporation or LLC are generally fairly small, the ongoing costs – franchise taxes, observing corporate/LLC formalities (necessary to avoid veil piercing), and other administrative expenses – of operating a corporation / LLC can be more burdensome, especially for a small business (Glover & Short, 2009). At the margin an entrepreneur is more likely to form a corporation/LLC as her potential liability exposure increases.

[10] Joint and several liability suggests another reason why limited liability may be particularly important to a wealthy investor. Under joint and several unlimited liability a wealthy investor may bear all of the cost of judgment. "Pro rata liability shifts collection costs from wealthy investors who must seek contribution from other investors to judgment creditors, who must collect from all investors if they are to recover the entire judgment" (Carney, 2000).

In contrast, my null hypothesis predicts that limited liability is irrelevant to small businesses, and choice of form does not depend on an entrepreneur's liability exposure. There are several justifications for the null hypothesis, at least with respect to small businesses. Creditors financing a small business routinely contract around limited liability by demanding a personal guarantee from the owner (Mann, 1997). Also, even with respect to involuntary creditors, limited liability only protects a shareholder against torts committed by *other* agents of the firm. It does not apply if the shareholder is the tortfeasor, as is likely the case in an owner-operated business. Finally, small firms are significantly more likely to lose veil piercing motions (Boyd & Hoffman, 2010). While these considerations do not imply that limited liability is irrelevant, they do suggest that limited liability protection may be of little value to small business entrepreneurs.

This analysis leads to two testable predictions, which I refer to collectively as the liability exposure hypotheses:

- Judgment Proof Hypothesis: judgment proof entrepreneurs are less likely to form a limited liability entity than non judgment proof entrepreneurs.
- Exposed Wealth Hypothesis: an entrepreneur is more likely to form a limited liability entity as her exposed wealth increase.

3. Data

To test these hypotheses I use data from the Kauffman Firm Survey ("KFS"). This section (i) describes the KFS, (ii) provides summary statistics for the sample firms, (iii) compares the use of limited liability by judgment-proof and non judgment-proof entrepreneurs, (iv) tests the liability exposure hypotheses in a multivariate setting, and (v) provides robustness checks.

3.1. Data Source

The KFS is a longitudinal survey of 4,928 U.S. businesses formed in 2004. Sample businesses are resurveyed annually, with five years of data currently available (2004 – 2008). The KFS uses Dun & Bradstreet's (D&B) database as a sample frame, and only includes businesses formed in 2004.[11] Ballou et. al (2008) provides further information on the KFS survey design and methodology. The results reported below use data, most notably state location, from the confidential, restricted-access version of the KFS.[12]

KFS contains detailed information on each firm – including legal form, industry, accounting data, employment, location, and capital structure. It also includes characteristics of up

[11] To be eligible for inclusion in the KFS study at least one of the following had to have been performed in 2004 and none performed in a prior year: (i) payment of state unemployment (UI) taxes, (ii) payment of Federal Insurance Contributions Act (FICA) taxes, (iii) presence of a legal status for the business, (iv) use of an Employer Identification Number (EIN), or (v) use of Schedule C to report business income on a personal tax return

[12] In addition to the public-use dataset available on the Kauffman Foundation website, there is a more detailed confidential dataset available to researchers through a remote access data enclave operated by the National Opinion Research Center (NORC). For details on how to access both versions of the KFS data see www.kauffman.org/kfs.

to ten owners per each firm – including age, education, gender, ethnicity, industry experience, and prior startup experience. Of particular relevance, in the fourth follow-up survey (2008) KFS collected data on the primary owner's personal wealth. Given the importance of personal wealth to this study most of the results reported below are limited to the 2008 follow-up survey. Of the original 4,928 firm sample, some went out of business between 2004 and 2008 or the entrepreneur otherwise declined to participate in the 2008 follow-up. The effective sample size for most of the results reported below is 2,654 businesses.

3.2. Sample Description

Table 1 provides descriptive statistics for the businesses in the KFS, both from the 2004 and the 2008 sample. The firms are primarily in the services sector (48%), and to a lesser extent the manufacturing sector (18%). The KFS oversamples technology generating businesses, either Mid-tech or High-tech as classified by Hadlock et. al. (1991), which collectively account for about 40% of the sample. The businesses were first surveyed at formation, and consequently they are small by most measures. In 2008, four years after formation, 63% of the businesses had only one owner (mean = 2.2 owners) and 45% had no non-owner employees (mean = 5.5 employees). Despite being small, most of the sample businesses (82%) reported revenues in 2008. Approximately half the KFS firms receive outside debt financing, and for those that do it is a particularly important source of financing (Robb & Robinson, 2010).

[Insert Table 1 about here].

Table 1 also reports data on the primary owner (the 'entrepreneur') of each business. At the time of formation the average (mean) entrepreneur is 45 years old, and just over half the entrepreneurs have a college degree. The average entrepreneur works just over 40 hours per week, and she owns approximately 80% of the startup's equity at formation. The next two sections describe data from the KFS related to (i) the use of limited liability business forms, and (ii) the entrepreneur's exposed personal wealth.

3.2.1. Legal Form and Limited Liability

The availability of limited liability depends on an entrepreneur's choice of organizational form when founding the business. Corporations and LLCs provide limited liability for the owners, while partnerships and sole proprietorships do not.

Table 1 shows that 65.6% of the businesses in the 2008 sample choose an organizational form that provides limited liability. This is divided fairly evenly between LLCs (33.4%) and corporations (32.2%).[13] Unlimited liability businesses make up 33.0% of the 2008 sample. The vast majority of the unlimited liability businesses are sole proprietorships (30.6%), with general partnerships (2.4%) a small fraction of the sample. Hybrid forms, such as the limited partnership, which only provides liability protection for passive investors, are only 1.2% of the 2008 sample.

I use a categorical dependant variable – *limited liability* – to test the liability exposure hypotheses. I set *limited liability* equal to one if the business is a corporation or an LLC, and

[13] This combines S-corporations (24.4%) and C-corporations (7.8%).

equal to zero if the business is a sole proprietorship or partnership.[14] Since they have features of both, I do not include limited partnerships. The exclusion of limited partnerships, however, does not materially affect the regression results reported below.[15]

3.2.2. Exposed Wealth

In the 2008 follow-up survey, the KFS reports data on the primary owner's personal net wealth. The entrepreneur's wealth is reported in one of five categories: (i) $0 or less, (ii) $1 to $50,000, (iii) $50,001 to $100,000, (iv) $100,001 to $250,000, and (v) $250,001 and up. For analysis purposes I translate each category into a single numerical value. I define entrepreneur *total wealth* in category (i) equal to $0, and categories (ii) to (iv) equal to the midpoint of each range. For category (v), however, there is no upper limit and thus I cannot define a midpoint. In this case researchers typically add some amount to the lower-bound to create an estimate for the top category. To capture the possibility that many entrepreneurs may have wealth well about $250,001, I set this category equal to $500,000. This is admittedly an arbitrary assignment. To insure that the classification of the top wealth category is not driving my results I rerun the regression results reported in Table 4 below using $400,000 and $600,000 as alternative assignments for the top wealth category, and I find qualitatively similar results.[16]

The liability exposure hypotheses, however, are not based on *total wealth*. Rather, the theory depends on the portion of the entrepreneur's *total wealth* that is not protected by property exemptions (*exposed wealth*). I assume, consistent with White (1998), that an individual will structure her assets to take advantage of available exemptions. Thus, I do not distinguish between the homestead and other property exemption categories. Instead, I focus on the sum of these categories – *total exemptions* – offered in the entrepreneur's state, and subtract this from the entrepreneur's *total wealth*. *Total exemptions* are adjusted for the entrepreneur's marital status, as recorded in KFS. I also exclude from my definition of *exposed wealth* any equity the entrepreneur has in her business.[17] Business equity cannot be shielded from creditors even if the entrepreneur forms a limited liability entity, and thus it should not affect an entrepreneur's choice of organizational form. Putting this together, I define *exposed wealth* as follows:

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[14] Corporations and LLCs have similar limited liability protection. Boyd & Hoffman (2010) show that corporations and LLCs lose veil piercing motions with similar frequency.

[15] A limited partnership is an unlimited liability entity with respect to the active (i.e. 'general') partners, and a limited liability entity with respect to any passive (i.e. 'limited') partners. To address each possibility, I re-estimated the results reported in Model 2 below with limited partnerships alternatively included (i) as a limited liability entity, or (ii) as an unlimited liability entity. The results (not reported) are qualitatively unaffected.

[16] [add footnote].

[17] The KFS survey asks the entrepreneur to report her "net worth" into one of five categories (described above). Technically, the value of the entrepreneur's equity share in her business should be included in personal 'net worth', hence the definition of *exposed wealth* above. Given the difficulty valuing equity in a privately held business and the illiquid nature of such interests, it is possible, however, that some entrepreneurs do not include business equity in reporting their personal net worth to KFS. In which case, exposed wealth should alternatively be defined as:

$$\textit{Exposed wealth}^{*} = \max(0, \textit{total wealth} - \textit{total exemptions}) \qquad (1^{*})$$

In an earlier draft of this paper, I used "*Exposed wealth**" as the definition of exposed wealth. Using this alternative definition I found qualitatively similar results to those reported below in table 4. My findings do not depend on the treatment of the entrepreneur's business equity.

$$\textit{Exposed wealth} = \max(0, \textit{total wealth} - \textit{total exemptions} - \textit{business equity}) \quad (1)$$

Basically, if the entrepreneur's *total wealth* (excluding business equity) is fully covered by state exemptions I set *exposed wealth* equal to zero. But, if the entrepreneur's *total wealth* (excluding business equity) exceeds *total exemptions* I set *exposed wealth* equal to the surplus.

To illustrate, if an entrepreneur has *total wealth* equal to $150,000, *business equity* equal to $20,000, and *total exemptions* in her state are set at $90,000 then *exposed wealth* will equal $40,000 (= $150K - $20K - $90K). Such an individual could lose up to $40,000 of personal assets if her business suffers catastrophic liability and she has not formed a limited liability entity. By contrast, if *total exemptions* were set at $200,000 the same entrepreneur would be *judgment proof*, since her wealth would be fully covered by state exemptions. I define *judgment proof* as follows:

$$\textit{Judgment proof} = \begin{cases} 1 & \text{if Exposed Wealth} = 0 \\ 0 & \text{if Exposed Wealth} > 0 \end{cases} \quad (2)$$

Exposed wealth and *judgment proof* are the primary treatment variables in the regressions described below.

Table 2 provides data from 2008 sample regarding entrepreneur *total wealth* and *exposed wealth*. On average entrepreneurs in the 2008 sample have *total wealth* equal to $267,889 (median = $175,000) and *exposed wealth* equal to $183,933 (median = $95,400). However, there is considerable variance in *exposed wealth*. Approximately 35% of the entrepreneurs are *judgment proof*, and 29% hold over $400,000 in *exposed wealth*. Such variation is desirable for testing the liability exposure hypotheses, which predicts that *exposed wealth* will be positively correlated with the use of limited liability.

[Insert Table 2 about here]

3.3. Use of Limited Liability

Figure 1 illustrates a relationship between an entrepreneur's *exposed wealth* and the use of limited liability. As an entrepreneur's exposed wealth increases she is more likely to form a limited liability entity. Entrepreneurs with over $400,000 in exposed wealth form a limited liability entity approximately 78% of the time, compared to a 58% likelihood for judgment proof entrepreneurs. Most entrepreneurs form a limited liability entity even if they are judgment proof. But, entrepreneurs are more likely to form a limited liability entity as their liability exposure increases. Figure 1 suggests a gradual increase in the use of limited liability as an entrepreneur's exposed wealth increase.

The table below figure 1 provides a difference of means test comparing the use of limited liability by judgment proof and non judgment proof entrepreneurs. Non judgment proof entrepreneurs are 13% more likely – 71% versus 58% – to form a limited liability entity than judgment proof entrepreneurs. This difference is statistically significant at the 1% level. While these results do not control for other factors, they are broadly consistent with the liability exposure hypotheses.

[Insert Figure 1 about here]

3.4. Multivariate Results

In this section I test the liability exposure hypotheses in a multivariate setting. I estimate, using logit regression, the following equations for limited liability:

$$\textit{Limited liability} = F(\textit{exposed wealth, controls}) \quad (3)$$

$$\textit{Limited liability} = F(\textit{judgment proof, controls}) \quad (4)$$

In each equation the dependent variable, *limited liability*, equals one if the business is structured as a corporation or LLC, and zero otherwise.

The treatment variable in Eq. (3) is *exposed wealth*, and in Eq. (4) the treatment variable is *judgment proof*. In regressions where *exposed wealth* is the treatment variable I include *homestead unlimited* – a dummy variable equal to one if the state has an unlimited homestead exemption and zero otherwise – as an additional explanatory variable. In states with an unlimited homestead exemption, the variable '*exposed wealth*' was calculated as if the homestead exemption were set at $550,000 (the highest 'limited' homestead exemption). *Homestead unlimited* controls for the possibility that *exposed wealth* may understate exemptions available to high wealth individuals living in such states. To separate the effect of liability exposure from other factors that may affect an entrepreneur's choice of organizational form, I also include the following firm-level control variables:

- *multiple owners* (a dummy variable which equals one if the firm has more than one equity owner and zero otherwise. Limited liability may be more valuable to multi-owner businesses (Woodward, 1985). Also, having multiple owners may cause a business to form a corporation or LLC for reasons unrelated to limited liability: (i) transaction costs of contracting with multiple owners (Easterbrook & Fischel, 1991); (ii) flexibility / contractual freedom (Ribstein, 2009); and (iii) entity shielding (Hansmann & Kraakman, 2000));
- *number of owners* (which equals the number of equity owners);
- *multiple employees* (a dummy variable equal to one if the business has hired non-owner employees, and zero otherwise. Employees increase the risk that the business may be subject to vicarious tort liability, and also provide deductible expenses that a corporation may value for tax purposes);[18]
- *number of employees*;
- *credit score* (business credit score provided by Dun & Bradstreet); and
- *owner education* (on a 1 to 10 scale with higher numbers representing higher levels of education completed).

Choice of organizational form may vary across industries and depending on use of technology. To account for these considerations, I add industry dummy variables, using the Dun & Bradstreet industry classification reported in Table 1, and separate variables for businesses that Hadlock et.

[18] In addition, forming a corporate entity may make it easier to provide an equity compensation plan for a business with several employees.

al. (1991) classify as *High-tech* or *Mid-tech*. Table 3 defines all the variables used in the models below and provides summary statistics for each.

[Insert Table 3 about here].

Preliminary results are reported in table 4. Model 1 estimates the effect of being *judgment proof* on *limited liability* and model 2 estimates the effect of *exposed wealth* on *limited liability*. Each model includes the above firm-level controls as covariates. Model 3 adds industry dummy variables and separate controls for firms classified as *High-tech* or *Mid-tech*. The results reported in table 4 provide support for the liability exposure hypotheses. Model 1 shows that *judgment proof* is negatively correlated with *limited liability*, while models 2 & 3 show a positive correlation between *exposed wealth* and the use of *limited liability*. In each case the treatment variable is statistically significant at the 1% level. These results are robust to various firm-level and industry controls.

[Insert Table 4 about here]

One concern is that omitted state-level factors could affect the use of limited liability by entrepreneurs living in different states. In models 1 – 4 (table 4) I cluster the standard errors for each coefficient at the state level. Clustering the standard errors acknowledges that businesses located in the same state are not statistically independent observations. Clustering does not, however, solve the broader concern that omitted state-level variables may be correlated with both the use of *limited liability* and with *exposed wealth* – perhaps through variation in state property exemptions or through variation in the distribution of wealth across states. I address this concern in two ways. First, I add a series of state-level factors that may affect an entrepreneur's choice of legal form. Second, in an alternative set of regression models I add state dummy variables to control for any omitted factors unique to each state.

Model 4 adds the following state-level explanatory variables:

- *veil pierced* (the probability of piercing the corporate veil in the state from Thompson (1991));
- *state filing fee* (the average filing fee to form a corporation or an LLC in the state); and
- *state entrepreneurship*[19] (the average entrepreneurship rate for each state, per 1,000 people, from 2003 to 2006).

The inclusion of state-level controls does not substantively change my results. *Exposed wealth* remains positive and significant (1% level) in model 4.

Models 5 & 6 add a dummy variable for each state. I drop observations from states that have less than 10 businesses in the 2008 sample – Arkansas, Delaware, Hawaii, North Dakota, Nevada, Rhode Island, West Virginia, and Wyoming. For some states with a small number of observations the inclusion of a state dummy variable would perfectly predict *limited liability* or perfectly correlate with other explanatory variables. I avoid this problem by dropping all

[19] Data from Kauffman website [add cite]

observations from the above listed states. Models 5 & 6 are estimated on a subsample of 2149 business covering 42 states.

The use of a dummy variable for each state effectively controls for any omitted state-level variable, such as a unique law or business practice, that could affect the baseline rate of limited liability usage by entrepreneurs in the state.[20] The inclusion of state dummies does not change my main findings. *Judgment proof* remains significant at the 5% level (model 5) and *exposed wealth* remains significant at the 1% level (model 6). My results do not appear to be driven by omitted state-level heterogeneity.

To interpret the economics significance of the logit coefficients for *exposed wealth* and *judgment proof* I re-estimate Models 1–6 using OLS. For *exposed wealth (in $000)* I find point estimates between .00021 and .00026. The OLS estimates suggest that an increase of $100,000 in *exposed wealth* is associated with a 2.1% to 2.6% increase in the likelihood of limited liability. For *judgment proof* I find point estimates between .055 and .070, suggesting that judgment proof entrepreneurs are 5% to 7% less likely to form a limited liability entity, everything else equal.

These results suggest that liability exposure has an economically meaningful effect on choice of organizational form. Liability exposure, however, is not the only factor affecting choice of form, and the magnitude of the effect is not huge. Other considerations – such as tax planning (Gilson, 1991), transaction costs (Easterbrook & Fischel, 1991), flexibility / contractual freedom (Ribstein, 2009), entity shielding (Hansmann & Kraakman, 2000), and status (Krawiec, 2005) – may also have an important effect on choice of form. Also, my results do not measure the actual benefit of limited liability, but rather the perceived benefit to entrepreneurs with different levels of liability exposure. Nonetheless, the results reported in Table 4 are consistent with economic theory, and suggest that liability exposure has a meaningful effect on choice of organizational form.

3.5. Robustness Checks

In this subsection I consider the robustness of the above results to (i) alternative measurements of *exposed wealth*; (ii) various subsamples of the KFS data; and (iii) endogeneity of entrepreneur wealth.[21]

Measurement of Exposed Wealth: The KFS provides a very rough measure of entrepreneur wealth and does not specify whether the entrepreneur is a homeowner or how much value she holds in different types of assets. To measure exposed wealth the analysis above implicitly assumes the entrepreneur (i) is a homeowner, (ii) has no assets in a retirement account, and (iii) divides her wealth between the home and other property to take advantage of available exemptions. These assumptions may be unrealistic.

[20] The use of state dummy variables does not, however, rule out possible interaction effects between some of the other included explanatory variables and the state.

[21] Firms that survive into 2008 may be systematically different from other businesses included in the original 2004 KFS sample or from the population at large. To address the risk of selection bias – either due to survivorship or survey nonresponse - I use the sample weights provided by KFS. *[Results below are estimated using survey-weighted logit regressions that correct for risk of selection bias] [Update tables with weighted logit estimates and make necessary changes to the text]* .

Retirement Accounts – Assets held in a retirement account generally cannot be reached by a creditor,[22] and should be excluded from the definition of *exposed wealth.* Retirement savings is one of the largest sources of wealth for most U.S. households (White, 1998), and presumably many entrepreneurs have a significant portion of their wealth in a retirement account. Unfortunately, KFS does not provide data on each entrepreneur's retirement accounts. To address this concern I have created two alternative *exposed wealth* classifications:

- *Exposed wealth R25* (which assumes that 25% of each entrepreneur's total wealth is held in a retirement account) and
- *Exposed wealth R50* (which assumes that 50% of each entrepreneur's wealth is held in a retirement account).

After subtracting such amounts from total wealth, I calculate exposed wealth as above, giving me the following variables:

$$\textit{Exposed wealth R25} = \max(0, 0.75(\textit{total wealth}) - \textit{total exemptions} - \textit{business equity}) \quad (5)$$

$$\textit{Exposed wealth R50} = \max(0, 0.5(\textit{total wealth}) - \textit{total exemptions} - \textit{business equity}) \quad (6)$$

Entrepreneurs may have less exposed wealth than the results reported in table 2 would suggest. For example, table 3 shows the median *exposed wealth* is $95,400, while the median for *exposed wealth R25* is $51,650, and the median for *exposed wealth R50* is $22,000.

The inclusion of retirement accounts, also suggests that more entrepreneurs may be judgment proof. Under the original definition of exposed wealth I estimate that 34% of the KFS entrepreneurs are judgment proof. By contrast, approximately 38% of the sample would be judgment proof under the *R25* classification, and 44% would be judgment proof under the *R50* classification. In unreported regressions I re-estimate model 1 using these alternative classification of judgment proof, and find qualitatively similar results. Judgment proof entrepreneurs are significantly less likely to form a limited liability entity, regardless how retirement accounts are classified.

I also re-estimate model 2 using the *R25* and *R50* classifications as alternative treatment variables in place of *exposed wealth*. Table 5 reports results for *exposed wealth R25* (model 7) and *exposed wealth R50* (model 8). I find support for both the alternative classifications. Regardless the treatment of retirement accounts, entrepreneurs are significantly more likely to form a limited liability entity as exposed wealth increases.

Allocation of Wealth – [results to be added][23]

[22] Retirement plans covered by ERISA are beyond the reach of creditors regardless how much is in the account [cite]. IRAs are not covered by ERISA, but IRAs are exempt up to at least $1M in all states [cite]. As a practical matter, retirement accounts are beyond the reach of creditors.

[23] The assumption that an entrepreneur will structure her assets to take advantage of available exemptions may be unrealistic. To see how sensitive my results are to alternative measurements exposed wealth, I plan to create several classifications which define the distribution of entrepreneur wealth between (i) the homestead, (ii) other property, and (iii) retirement accounts (e.g. 40% homestead; 20% other property; and 40% retirement accounts). Each classification gives a separate measure of exposed wealth. For each classification I will re-estimate model 2 to verify whether my results are robust to alternative measurements of exposed wealth.

Subsample Analysis: I divide the KFS sample into various subsamples. Since KFS only provides data on the wealth of the primary owner, my results apply most directly to single-owner businesses. To verify this, I re-estimate model 2 limited to a subsample of single-owner businesses. Model 9 (table 5) shows that exposed wealth remains positive and significant (1% level) in the single-owner subsample. Interestingly, however, exposed wealth is not significant when limited to a subsample of multi-owner firms (table 5, model 10). Multi-owner businesses may incorporate for a number of reasons unrelated to limited liability, complicating the analysis. Also, since the exposed wealth variable only applies to the primary owner it is not surprising that this variable has less relevance in the multi-owner subsample.[24]

Endogeneity of Entrepreneur Wealth: The results reported in table 4 could be due to omitted variables that correlate both with entrepreneur wealth and with the use of limited liability. For example, an unobserved trait, such as 'responsibility', could affect both variables. A responsible entrepreneur may waste less money, thereby increasing her wealth, and she may form a limited liability entity simply because it seems the responsible thing to do, regardless of her financial position. I reduce, but cannot eliminate, such concerns by controlling for a broad range of firm and entrepreneur variables. Ideally, I would find an exogenous instrument for entrepreneur wealth.[25]

Instead, I use the fact that *exposed wealth* depends on two primary sources of variation: (i) the entrepreneur's *total wealth*, and (ii) property *exemptions* in the entrepreneur's state of residence. While total wealth may be endogenous, property exemptions are arguably exogenous with respect to entrepreneur behavior (Fan & White, 2003; Berkowitz & White, 2004).[26] I focus on the variation created by state exemptions, while holding the entrepreneur's total wealth constant. I compare entrepreneurs with the same level of *total wealth* but different levels of *exposed wealth*. Remaining variation in exposed wealth is due to differences in exemptions, the exogenous portion of my treatment variable.[27]

[24] Finally model 11 drops all single-member LLCs. This responds to Ribstein's (2005a) concern that some individuals – most notably doctors – may put their house and other personal assets in a single-member LLC to obtain reverse limited liability (I thank Larry Ribstein for suggesting this point). Such entities should not be included in the KFS sample since they are not operating businesses, but if any are in the D&B database they could be inadvertently included in the KFS sample. Regardless, exposed wealth remains significant in model 11, suggesting that my results are robust to this use of the LLC.

[25] One could use longitudinal variation in entrepreneur wealth coming from an exogenous event (perhaps a change in the law). For example, one could treat changes in state property exemptions over time as an exogenous source of longitudinal variation. Unfortunately, there is little variation in exemptions over time (White, 2005; Berkowitz & White, 2004).

[26] Fan & White (2003) argue that state property exemptions are exogenous with respect to an individual's decision whether to become an entrepreneur. By contrast Hynes, Malani, & Posner (2004) argue that property exemptions are correlated with other features of the state. However, the only explanatory variable that Hynes, Malani, & Posner (2004) found to be "significantly related to current exemption levels is states' exemption levels in the 1920's. Thus whatever factor determine states' exemption levels, they appear to be very persistent." (White, 2005 at p. 58).

[27] Exposed wealth is also affected by an entrepreneur's business equity. Business equity, unfortunately, may not be exogenous to other characteristics of the entity. For most entrepreneurs, however, business equity is a small fraction of net worth, suggesting this has less impact on the value assigned to exposed wealth than do property exemptions.

I divide the KFS sample based on the entrepreneur's wealth score, and then run a separate regression limited to entrepreneurs in each wealth category. The regressions reported in table 6 re-estimate model 2 applied to each wealth category. To illustrate, model 12 is limited to 321 businesses in which the primary owner reported total wealth between $1 to $50,000. Model 13 is limited to 304 entrepreneurs with reported wealth between $50,001 to $100,000; model 14 is limited to 427 entrepreneurs with reported wealth between $100,001 to $250,000; and Model 15 is limited to 984 entrepreneurs with reported wealth of $250,001 or greater. *Exposed wealth* is positively correlated with the use of limited liability in all models reported in table 6, but the coefficient estimate is only statistically significant in model 15. The estimate for exposed wealth has a p-value of .117 in model 13 and .178 in model 14, suggesting that the correlation between *exposed wealth* and *limited liability* is fairly reliable, even though it is not significant at normal levels.

Nonetheless, table 6 shows results broadly consistent with the liability exposure hypotheses. Collectively, models 12 – 15 suggest a causal link between *exposed wealth* and *limited liability*. The results, however, also suggest some caution. While, liability protection is a relevant consideration in choice of form, the magnitude of the effect is rather small.

4. Implications and Conclusion

Using restricted-access data from the Kauffman Firm Survey, I investigate whether entrepreneur wealth impacts demand for limited liability. I compare entrepreneurs with different levels of potential liability exposure. In the KFS sample judgment proof entrepreneurs are 13% less likely – 58% versus 71% – to form a limited liability entity than non judgment proof entrepreneurs. I also find that the extent of an entrepreneur's exposed wealth matters. For every $100,000 of exposed wealth an entrepreneur is 2.1% to 2.6% more likely to form a limited liability entity. Liability exposure has a modest effect on choice of organizational form.

This study contributes to the literature on limited liability. While there is an extensive theoretical literature on the benefits and costs of limited liability (Easterbrook and Fischel, 1985; Carney, 2000), there are few empirical studies testing the relevance of liability protection in an entrepreneur's choice of form. To my knowledge this study is the first to show a link between entrepreneur wealth and the use of limited liability. Entrepreneurs with greater potential liability exposure are more likely to form a corporation or LLC.

Second, this study extends the literature linking bankruptcy protection to entrepreneurial formation (Fan & White, 2003; Armour & Cumming, 2008). My results suggest that property exemptions impact choice of organizational form and can act as a substitute for limited liability.

Finally, my results leave several unanswered questions that may be addressed in future research. I find that the number of owners has a particularly large effect on the choice of organizational form. Multi-owner businesses choose a limited liability form approximately 90% of the time, whereas only 44% of single-owner businesses choose a limited liability form. The distinction between single-owner and multi-owner businesses appears to dominate all other factors influencing choice of form.[28] Liability exposure, while important, is not the only

[28] To get some sense of the magnitude of this effect note that in all models reported in table 4 *multiple owners* has a t-statistic greater than 10!

consideration affecting choice of form. These results also suggest a need for empirical testing of theories which apply primarily to multi-owner firms – such as transaction costs of contracting with multiple owners (Easterbrook & Fischel, 1991), flexibility/contractual freedom (Ribstein, 2009), entity shielding (Hansmann & Kraakman, 2000), and capital lock-in (Blair, 2003). While there is some historic data supporting some of these multi-owner theories (Blair, 2003; Hansmann, Kraakman, & Squire, 2006), there has been little research into their relevance on an entrepreneur's choice of form.

Appendix: State Property Exemptions

The following appendix describes state property exemptions and provides a table comparing property exemptions in different states.

Property Exemptions

Property exemptions effectively create a partition between an individual's (i) exempt assets, and (ii) non-exempt assets (Cole, 2002). Exemption laws operate the same way outside bankruptcy as they do inside bankruptcy. To illustrate, assume a debtor defaults on a loan. The creditor obtains a judgment against the debtor and then asks a local official to enforce the judgment by seizing the debtor's assets. The local official, however, will refuse to seize the debtor's assets to the extent they are covered by state exemptions. The creditor's judgment would remain valid, but the creditor can only enforce it against non-exempt assets that the debtor may currently own or acquire in the future. "The main difference between the nonbankruptcy and bankruptcy contexts is that in bankruptcy, the debtor can discharge the unsatisfied portion of the creditor's claim, so the creditor would not be able to seize nonexempt assets that the debtor subsequently obtains." (Hynes, Malani, & Posner, 2004). Bankruptcy provides a 'fresh start' for the debtor, but property exemptions operate the same in both contexts. In either case, a creditor can only recover payment from a debtor's non-exempt assets.

Although bankruptcy is regulated by the federal government, states set their own property exemption levels (Hynes, Malani & Posner, 2004). States typically provide several exemption categories: (i) homestead (protecting equity in an owner-occupied principal residence), (ii) motor vehicle, (iii) cash, (iv) wildcard, and (v) miscellaneous goods (which may include, among other things, a bible, a horse, a military uniform, tools of the trade, a sewing machine, etc.). Categories, such as the homestead, motor vehicle and wildcard, are generally subject to a dollar cap. The homestead exemption is typically the largest exemption, and it varies wildly from state to state; other exemption categories are smaller and vary less across states.

Coding bankruptcy exemptions is complicated by two facts: (i) categories vary from state to state, and (ii) some categories have a dollar cap while others allow an unlimited exemption. Some writers focus exclusively on the homestead (Fan & White, 2003), and ignore other property exemptions. This approach may misreport states with large wildcard or vehicle exemptions. Instead I follow a coding scheme similar to Hynes, Malani & Posner (2004) and Berkowitz & White (2004). I include the sum of the motor vehicle and wildcard exemptions under a category labeled 'other property'. For each state, Table A1 lists the *homestead* and *other property* exemption at the start of 2008 for a married couple with two children.[29]

[29] Assuming that individuals are married and have two children for the purposes of coding is consistent with Hynes, Malani & Posner (2004). In most states, a married couple can stack (i.e. double up) the individual bankruptcy exemptions allowed in their state. Following Hynes, Malani & Posner (2004), I assume that a state allows married couples to stack their exemptions unless a statute or a case suggests otherwise. Additionally, in a few states, the size of certain exemptions may depend on the number of children an individual has.

The *total* column reports the sum of the *other property* and *homestead* exemptions,[30] with unlimited homestead exemptions coded at the highest limited homestead exemption ($550,000) for purposes of calculating this value.[31]

There are also federal exemptions covering the homestead and other categories of property. Most states, however, have opted out of the federal exemptions. In states that have not opted out a debtor can choose whether to claim the federal exemptions or the exemptions offered by her state. In such states I assume in the analysis below that the entrepreneur will choose the higher total exemption: federal or state. Table A1 reports both state and federal exemptions, and designates which states that have not opted out of the federal exemptions.

For each individual the division between exempt and non-exempt assets depends on the state of residence.[32] To illustrate, assume a married couple has $80,000 in home equity and owns a $10,000 automobile. If this couple were to live in Maryland they would only be able to exempt $12,000 worth of property, meaning everything else, $78,000, would be non-exempt. In Colorado the couple could exempt the full value of their car and up to $60,000 in homestead equity, with the remaining $20,000 classified as non-exempt. And, in Kansas the couple would be judgment proof, since their house and car would both fit under existing exemption levels (*see Table A1*). The variance in exemption coverage emphasizes the importance of property exemptions for an entrepreneur operating without limited liability.[33]

[30] The regression estimates in Section 3 replace the total state exemptions in the total column with the federal exemption level when (1) a state has not opted out of the federal exemption scheme, and (2) the federal level of exemptions is higher than the state level. This assumes an entrepreneur will use the best available protection.

[31] Regression estimates in Section 3 include a separate dummy variable for "unlimited homestead", which captures the effect of the exemption being unlimited rather than $550,000.

[32] Unless an entrepreneur is willing to move to another state she cannot opt into heightened bankruptcy exemptions. This is unlike most features of organizational law which an entrepreneur can contract out of or avoid by incorporating in another jurisdiction (Ribstein, 2005b). Furthermore, given the high cost of moving compared to the relatively low cost of corporate/LLC formation it more likely that an entrepreneur will form a limited liability entity to respond to liability risk than move states.

[33] The liability exposure hypotheses implicitly assume that entrepreneurs (or their lawyers) have some awareness of property exemptions, such that they are aware of their potential liability exposure. This is not an obvious assumption. On the one hand, property exemptions are in the public domain and there are several guides and general access books that cover the subject (Steingold, 1999). Yet, it may be unrealistic to assume a typical entrepreneur, who may not have legal representation, bothers to research property exemptions at the business formation stage. Even if entrepreneurs are unaware of the exact exemption levels, however, they probably have a rough sense of how friendly the bankruptcy process is to debtors in their state (Fan & White, 2003). Personal bankruptcy filing rates are very high in the U.S., and consequently an entrepreneur is likely to know someone who went through bankruptcy (Fan & White, 2003). General awareness is sufficient to give entrepreneurs a rough – though imprecise – sense of their liability exposure when starting a new business. Furthermore, my hypotheses only require that some not-insubstantial fraction of entrepreneurs are aware of property exemptions. An informed minority of the entrepreneur population could cause exposed wealth to have the predicted effect on choice of legal form.

Table A1: State Property Exemptions

The following table lists state and federal exemptions for the *homestead* and *other property* for a married couple with two children as of the beginning of 2008. *U* indicates that the state had an 'unlimited' homestead exemption, in which case the *total* column is calculated as if the state had the highest limited homestead exemption ($550,000). States market with a '*' have not opted out of the federal exemptions (listed at the bottom of the table). In non-opt-out states the empirical results reported in Section 3 assume the entrepreneur will choose the higher total exemption: federal or state.

State	Home	Other Prop	Total	State	Home	Other Prop	Total
Alabama	10000	6000	**16000**	Montana	250000	5000	**255000**
Alaska	67500	15600	**83100**	North Carolina	37000	7000	**44000**
Arizona	150000	10000	**160000**	North Dakota	160000	7400	**167400**
Arkansas*	1250	2900	**4150**	Nebraska	25000	9800	**34800**
California	75000	4600	**79600**	Nevada	550000	32000	**582000**
Colorado	60000	10000	**70000**	New Hampshire*	200000	10000	**210000**
Connecticut*	150000	9000	**159000**	New Jersey*	40400	2000	**42400**
Delaware	50000	80000	**130000**	New Mexico*	120000	5000	**125000**
Florida	U	4000	**554000**	New York	100000	4800	**104800**
Georgia	20000	8200	**28200**	Ohio	10000	2800	**12800**
Hawaii*	30000	5150	**35150**	Oklahoma	U	15000	**565000**
Idaho	100000	11600	**111600**	Oregon	39600	5100	**44700**
Illinois	30000	12800	**42800**	Pennsylvania*	40400	600	**41000**
Indiana	30000	16000	**46000**	Rhode Island*	300000	20000	**320000**
Iowa	U	16000	**566000**	South Carolina	100000	2400	**102400**
Kansas	U	40000	**590000**	South Dakota	U	6000	**556000**
Kentucky*	10000	7000	**17000**	Tennessee	7500	8000	**15500**
Louisiana	50000	7500	**57500**	Texas*	U	60000	**610000**
Maine	70000	10800	**80800**	Utah	40000	5000	**45000**
Maryland	0	12000	**12000**	Vermont*	150000	5800	**155800**
Massachusetts*	500000	1400	**501400**	Virginia	11000	4000	**15000**
Michigan*	7000	3500	**10500**	Washington*	40000	5000	**45000**
Minnesota*	200000	4000	**204000**	West Virginia	50000	6400	**56400**
Mississippi	150000	20000	**170000**	Wisconsin*	40000	2400	**42400**
Missouri	15000	9150	**24150**	Wyoming	20000	4800	**24800**
Federal	40400	8600	**49000**				

References:

Acheson, G., Turner, J., 2006. The impact of limited liability on ownership and control: Irish banking, 1877 – 1914, Economic History Review 59(2), 320-346.

Armour, J., Cumming, D., 2008. Bankruptcy Law and Entrepreneurship, American Law and Economics Review 10, 303-350.

Ayers, B., Cloyd, C. and Robinson, J., 1996. Organizational form and taxes: an empirical analysis of small businesses. Journal of the American Taxation Association Supplement 18, pp. 49–67.

Ayotte, Kenneth M. 2007. "Bankruptcy and Entrepreneurship: The Value of a Fresh Start," 23 Journal of Law, Economics, and Organization 161–85.

Bainbridge, S., 2001. Abolishing Veil Piercing, 26 J. Corp. L. 479-535.

Baird D., Morrison, E., 2005. Serial Entrepreneurs and Small Business Bankruptcies. Columbia Law Review 105: 2310–68.

Baker, S., Krawiec, K., 2005. The Economics of Limited Liability: An Empirical Study of New York Law Firms. U. Ill. L. Rev. 2005, 107-169 .

Ballou, Janice, Barton, Tom, DesRoches, David, Potter, Frank, Reedy, E. J., Robb, Alicia, Shane, Scott A. and Zhao, Zhanyun, The Kauffman Firm Survey: Results from the Baseline and First Follow-Up Surveys (March 2008). Available at SSRN: http://ssrn.com/abstract=1098173

Berkowitz, J., White, M., 2004. Bankruptcy and Small Firms' Access to Credit. RAND Journal of Economics, 35:69–84.

Blair, M., 2003. Locking in capital: what corporate law achieved for business organizers in the nineteenth century, UCLA Law Review 51, 387 - ___.

Blumberg, Phillip L (1986), 'Limited Liability and Corporate Groups', 11 *Journal of Corporation Law*, 573-631.

Boyd C., Hoffman, D., 2010. Disputing limited liability, N.W. U. L. Rev. 104, …

Carney, William. 2000. "Limited Liability," in Boudewijn Bouckaert and Gerrit de Geest, eds., *Encyclopedia of Law and Economics*. Northampton, MA: Edward Elgar.

Carr, Jack L. and Mathewson, G. Frank (1988), 'Unlimited Liability as a Barrier to Entry', 96 *Journal of Political Economy*, 766-784.

Cole, M., 2002. Limiting liability through bankruptcy, U. Cin. L. Rev. 70, 1245-1295.

Easterbrook, Frank H. and Fischel, Daniel R (1985), 'Limited Liability and the Corporation', 52 *University of Chicago Law Review*, 89-117.

Easterbrook, F., Fischel, D., 1991. The Economic Structure of Corporate Law. Harvard University Press, Cambridge, MA.

Egger P., Keuschnigg, C., Winner, H., 2009. Incorporation and Taxation: Theory and Firm-level Evidence

Evans, L. 2009. _____

Evans, L., Quigley, N., 1995. Shareholder Liability Regimes, Principal-Agent Relationships, and Banking Industry Performance, Journal of Law and Economics, 38: 497-520.

Fan, W., White, M., 2003. Personal Bankruptcy and the Level of Entrepreneurial Activity. Journal of Law and Economics, 46:543–68

Forbes, Kevin. 1986. “Limited Liability and the Development of Business Corporation,” 2 *Journal of Law Economics and Organization* 163-177.

Georgakopoulos, N., 2002. “Bankruptcy Law for Productivity,” 37 Wake Forest Law Review 51–95.

Glover, A. Short, J., 2009. Incorporated Entrepreneurs: the first step from the basement to the boardroom. Working paper, available at …

Gilson, Ronald J (1991), ‘Unlimited Liability and Law Firm Organization: Tax Factors and the Direction of Causation’, 99 Journal of Political Economy, 420-428.

Goolsbee, Austan. 2004. “The Impact of the Corporate Income Tax: Evidence from State Organizational Form Data,” 88 *Journal of Public Economics* 2283-2299.

Goolsbee, A., 1998. Taxes, organizational form and the deadweight loss of the corporate income tax. Journal of Public Economics 69, pp. 143–152.

Grossman, Peter Z (1995), ‘The Market for Shares of Companies with Unlimited Liability: The Case of American Express’, 24 *Journal of Legal Studies*, 63-85.

Hadlock, P., Hecker, D., Gannon. J., 1991. High Technology Employment: Another View, Monthly Labor Review, July 1991, pp. 26–30.

Halpern, Paul; Michael Trebilcock; and Stuart Turnbull. 1980. "An Economic Analysis of Limited Liability in Corporate Law." 30 *University of Toronto Law Journal* 117-50.

Hansmann, Henry and Kraakman, Reinier (1991), ‘Toward Unlimited Shareholder Liability for Corporate Torts’, 101 *Yale Law Journal*, 1879-1934.

Hansmann, H., Kraakman, R., 2000. The essential role of organizational law, Yale L.J. 110, 387-440.

Hansmann, H., Kraakman, R., and Squire, R. 2006. Law and the Rise of the Firm, 119(5) Harvard L. Rev, 1333-1403.

Horvath, M., Woywode, M., 1996. *Entrepreneurs and the Choice of Limited Liability,* Working paper No. 129, John M. Olin Program in Law and Economics, Stanford University Law School.

Hynes, Richard, Anup Malani, and Eric Posner, 2004. “The Political Economy of Property Exemption Laws,” 47 *Journal of Law and Economics* 19-43.

Krawiec, K., 2005. Organizational form as status signal, Wake Forest L. Rev., 40, 977-1010.

Leebron, David W (1991), ‘Limited Liability, Tort Victims, and Creditors’, 91 *Columbia Law Review*, 1565-1650.

Mackie-Mason, Jeffrey, and Roger Gordon. 1997. “How Much do Taxes Discourage Incorporation?” 52 *Journal of Finance* 477.

Mann, R., 1997. The Role of Secured Credit in Small Business Lending, Georgetown Law Journal, 86, 1-44.

Manne, H., 1967. ‘Our Two Corporate Systems: Law and Economics’, 53 Virginia Law Review, 259-284.

Perrott, David L (1982), ‘Changes in Attitude to Limited Liability - the European Experience’, in Orhnial, Tony (ed), *Limited Liability and the Corporation*, London and Canberra, Croom Helm, 81-121.

Posner, Richard A (1976), ‘The Rights of Creditors of Affiliated Corporations’, 43 University of Chicago Law Review, 499-526.

Ribstein, L., 1991. Limited Liability and Theories of the Corporation’, 50 *Maryland Law Review*, 80

Ribstein, L., 2005a. Reverse limited liability and the design of business associations, Delaware J. Corp. L. 30, 199-229.

Ribstein, L., 2005b. The Important Role of Non-Organization Law, WAKE FOREST L. REV. 40, 751.

Ribstein, L., 2009. The rise of the uncorporation (Oxford, 2009).

Robb A., Robinson, D., 2010. The capital structure decisions of new firms,

Romley, J., Talley, E., 2004. Uncorporated Professionals, USC Law and Economics Research Paper No. 04-22. Available at SSRN: http://ssrn.com/abstract=587982

Smart, M., 1996. On limited liability and the development of capital markets: an historical analysis, working paper, available at …

Steinngold, F., 1999. Legal Guide to Starting and Running a Small Business

Sullivan T., Warren E., Westbrook J., 1989, As We Forgive Our Debtors: Bankruptcy and Consumer Credit in America.

Thompson, R. 1991. "Piercing the Corporate Veil: An Empirical Study." 76 *Cornell Law Review* 1036–74

Turner, J. 2009. Wider share ownership?: investors in English and Welsh bank shares in the nineteenth century, Economic History Review 62, 167 - __.

Warren E., Westbrook J., 2005. The law of debtors and creditors, 5th ed.

Weinstein, M., 2003. "Share Price Changes the Arrival of Limited Liability in California." 32 *Journal of Legal Studies* 1–25.

White, M., 1998. Why it pays to file for bankruptcy: a critical look at incentives under U.S. bankruptcy law and a proposal for change, Univ. of Chicago Law Rev. 65, 685-732.

White, M., 2005. Economic Analysis of Corporate and Personal Bankruptcy Law, NBER Working Paper 11536, available at www.nber.org/papers/w11536.

Woodward, S., 1985. 'Limited Liability in the Theory of the Firm', 141 *Journal of Institutional and Theoretical Economics*, 601-611.

Table 1: Descriptive Statistics

The following table provides descriptive statistics for the businesses in the KFS. Data is shown for the original 2004 survey (n = 4,928) and the 2008 follow-up survey (n = 2,654).

	2004 Survey (n = 4,928)		2008 Survey (n = 2,654)	
D&B Industry Code	**Count**	**Percent**	**Count**	**Percent**
Agriculture	104	2.11	59	2.25
Construction	344	6.98	184	7.03
Manufacturing	888	18.02	473	18.07
Trans., Comm., & Utilities	141	2.86	65	2.48
Wholesale Trade	199	4.04	89	3.40
Retail Trade	558	11.32	257	9.82
Finance, Insurance, Real Estate	318	6.45	161	6.15
Services	2,371	48.11	1,325	50.63
Technology Focus	**Count**	**Percent**	**Count**	**Percent**
High Tech	705	14.31	391	14.94
Mid Tech	1,329	26.97	750	28.66
Legal Form	**Count**	**Percent**	**Count**	**Percent**
Limited Liability Entities	3,038	61.64	1,741	65.60
LLC	*1,557*	*31.59*	*886*	*33.38*
S-Corporation	*1,040*	*21.10*	*648*	*24.42*
C-Corporation	*441*	*8.95*	*207*	*7.80*
Unlimited Liability Entities	1,805	36.63	876	33.00
Sole Proprietorship	*1,635*	*33.18*	*813*	*30.63*
General Partnership	*170*	*3.45*	*63*	*2.37*
Hybrid Entities				
Limited Partnership	*74*	*1.50*	*32*	*1.21*
Firm Characteristics	**Mean**	**S.D.**	**Mean**	**S.D.**
Multiple Owners (Y/N)	0.39	0.49	0.37	0.48
Number of Owners	1.75	2.93	2.17	6.31
Non-Owner Employees (Y/N)	0.41	0.49	0.55	0.50
Number of Employees	3.37	6.88	5.48	14.18
Credit Score (D&B)	3.40	0.72	2.84	0.99
Revenue in Past Year (Y/N)	0.65	0.48	0.82	0.39
Primary Owner	**Mean**	**S.D.**	**Mean**	**S.D.**
College Degree (%)	0.52	0.50	0.54	0.50
Age	44.95	10.86	49.76	10.63
Ownership %	79.54	28.60	80.90	27.19

Hours worked per week	42.26	23.86	39.66	22.46

Table 2: Total and Exposed Wealth

This table provides summary statistics and shows the distribution of entrepreneur *total wealth* and *exposed wealth* from a sample of 2,514 businesses included in the KFS 2008 follow-up survey.

Panel A: Summary Statistics

	Mean	Median	Standard Deviation
Total Wealth	$267,889	$175,000	212,008
Exposed wealth	$183,933	$95,400	198,757

Panel B: Total Wealth Distribution

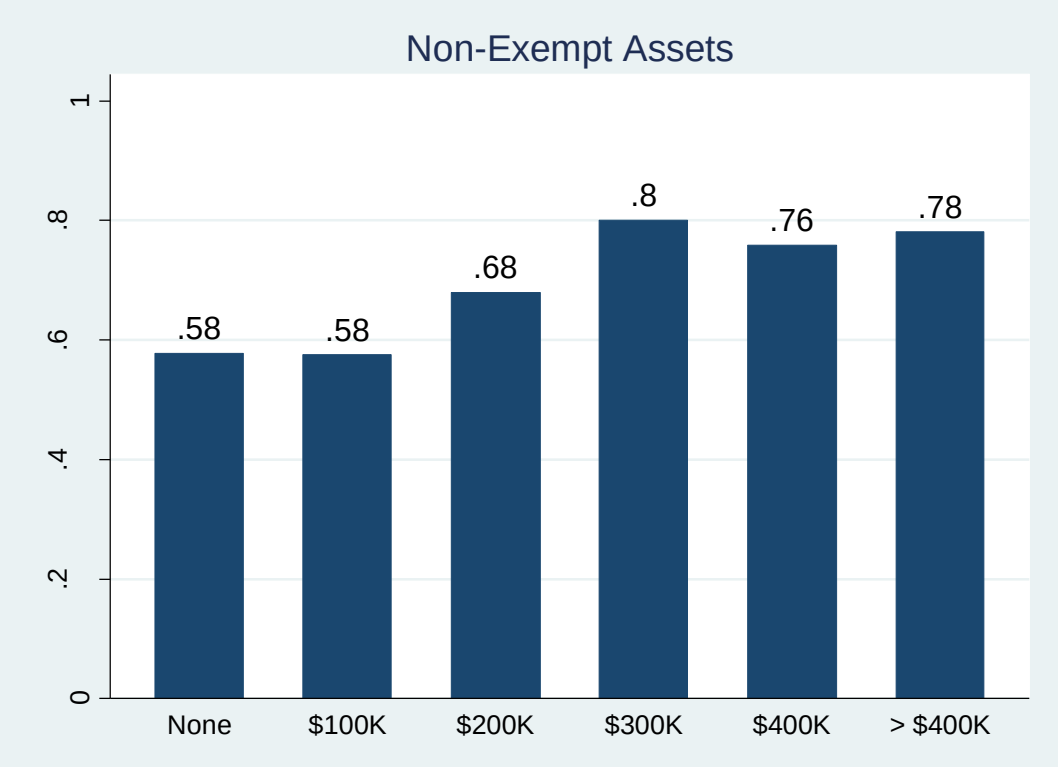
Total Wealth	Assigned Value	Count	Percent
$0 or less	$0	192	7.6%
$1 to $50,000	$25,000	380	15.1%
$50,001 to $100,000	$75,000	350	13.9%
$100,001 to $250,000	$175,000	487	19.4%
$250,001 and up	$500,000	1,105	43.9%

Panel C: Exposed Wealth Distribution

Exposed Wealth	Count	Percent
$0 (i.e. *judgment proof*)	870	34.6%
$1 to $100,000	396	15.8%
$100,001 to $200,000	328	13.1%
$200,001 to $300,000	45	1.8%
$300,001 to $400,000	145	5.7%
$400,001 and up	730	29.0%

Figure 1: Exposed Wealth & Use of Limited Liability

The following figure shows the likelihood a business will be structured as a limited liability entity depending on primary owner's *exposed wealth*. Data is from 2,514 businesses included in the KFS 2008 follow-up survey. The horizontal axis measures the entrepreneur's *exposed wealth* (labeled as "Non Exempt Assets"). The category $100K, for example, includes entrepreneurs with *exposed wealth* between $1 and $100,000. The table below figure 1 provides a difference of means t-test comparing the likelihood that a *Judgment Proof* entrepreneur forms a limited liability entity to the likelihood that a *Non Judgment Proof* entrepreneur forms a limited liability entity.



	Judgment Proof	Non Judgment Proof	T-test Equal Means
All Firms (n = 2,514)	870	1644	
Limited liability (n = 1670)	503 (58%)	1167 (71%)	-5.11**

Table 3: Variable Definitions and Summary Statistics

This table defines the variables and provides summary statistics (mean, median and standard deviation). Data are from the businesses in the KFS 2008 follow-up survey.

Variable Definitions: **Limited liability** is a dummy variable equal to 1 if the business is a Corporation or LLC, and 0 otherwise; **Judgment-Proof** is a dummy variable equal to 1 if the entrepreneur's total wealth minus business equity is less than the total property exemptions in her state of residence (exemptions are adjusted for marital status); **Exposed wealth (in $000)** is equal to the entrepreneur's total wealth minus business equity and minus state property exemptions (adjusted for marital status) or zero if this amount would be negative (dollar amount expressed in $000); **Exposed wealth R25 (in $000)** is equal to the entrepreneur's total wealth times 0.75 minus the entrepreneur's business equity and minus state property exemptions (adjusted for marital status) or zero if this amount would be negative (dollar amount expressed in $000); **Exposed wealth R50 (in $000)** is equal to the entrepreneur's total wealth times 0.5 minus the entrepreneur's business equity and minus state property exemptions (adjusted for marital status) or zero if this amount would be negative (dollar amount expressed in $000); **Multiple Owners** is equal to one if the business has multiple equity owners; **Number of Owners** is the number of equity owners; **Multiple Employees** is equal to one if the business has hired non-owner employees; **Number of Employees** is the number of employees; **Credit Score** is the business credit score provided by Dun & Bradstreet for each business (1 to 5 with lower numbers representing better credit); **Owner Education** is a 1 to 10 scale with higher numbers representing higher levels of education completed; **Homestead Unlimited** is a dummy variable equal to 1 if the state has an unlimited homestead exemption and zero otherwise; **Veil Pierced** is Thompson's (1990) probability of piercing the corporate veil in the relevant state; **State Filing Fee** is the average filing fee to form a corporation or an LLC in the relevant state; **State Entrepreneurship** is equal to the average entrepreneurship rate for each state (per 1,000 people) from 2003 to 2006; **State Exemptions 2008** is the total state property exemptions as reported in the appendix (Table A1); **Married** is equal to 1 if the primary entrepreneur was married in 2008, and 0 otherwise.

	Mean	Median	Standard Deviation
Limited Liability	0.665	1	0.472
Judgment-Proof	0.346	0	0.476
Exposed Wealth (in $000)	183.934	95.4	198.757
Exposed Wealth R25 (in $000)	128.651	51.65	144.392
Exposed Wealth R50 (in $000)	75.202	22	90.958
Multiple Owners	0.374	0	0.484
Number of Owners	2.159	1	6.348
Multiple Employees	0.552	1	0.497
Number of Employees	5.474	2	14.255
Credit Score	2.843	3	0.989
Owner Education	6.467	7	2.107
Homestead Unlimited	3.769	4	1.348
Veil Pierced	0.419	.413	0.116
State Filing Fee	162.835	137.5	89.039
State Entrepreneurship	0.298	.29	0.064
State Exemptions (2008)	131740.3	49500	182959.2
Married	0.75	1	0.432

Table 4: Multivariate Regression

This table reports Logit estimates on a sample of over 2,000 businesses in the KFS 2008 follow-up survey. The dependent variable is *Limited liability*, which equals one if the business is a Corporation or LLC, and zero otherwise. The treatment variables are *Judgment Proof* and *Exposed Wealth*. All explanatory variables are defined in Table 3. Robust standard errors are reported in parentheses below each coefficient estimate. Standard errors are clustered at the state level in Models 1 – 4.

	Logit (Dependent Variable = *Limited liability*)					
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment Variables						
Judgment-Proof	-.415**				-.334*	
	(.138)				(.150)	
Exposed Wealth (in $000)		.0015**	.0014**	.0013**		.0014**
		(.0002)	(.0003)	(.0003)		(.0003)
Firm-Level Variables						
Multiple Owners	2.721**	2.720**	2.757**	2.795**	2.912**	2.910**
	(.214)	(.218)	(.215)	(.206)	(.207)	(.206)
Number of Owners	.043	.045	.037	.037	.061	.063
	(.045)	(.049)	(.047)	(.045)	(.043)	(.043)
Multiple Employees	.372	.369	.377*	.390*	.452*	.448*
	(.199)	(.191)	(.192)	(.194)	(.197)	(.190)
Number of Employees	.026	.022	.020	.020	.026	.023
	(.037)	(.035)	(.035)	(.035)	(.040)	(.038)
Credit Score	-.241**	-.213**	-.202**	-.208**	-.286**	-.260**
	(.078)	(.077)	(.078)	(.075)	(.061)	(.062)
Owner Education	.215**	.200**	.194**	.202**	.212**	.196**
	(.023)	(.024)	(.028)	(.029)	(.028)	(.029)
High-tech			.909**	.953**		
			(.317)	(.309)		
Mid-tech			.719**	.742**		
			(.163)	(.165)		
Industry Dummies			Yes	Yes		
State-Level Variables						
Homestead Unlimited		.083	.090	.245		
		(.384)	(.399)	(.345)		
Veil Pierced				.679		
				(.566)		
State Filing Fee				-.001		
				(.001)		
State Entrepreneurship				-3.686		
				(2.275)		
State Dummies					Yes	Yes
Observations	2200	2200	2200	2200	2149	2149
Wald Chi2	502.1	599.5	1016.1	1157.8	484.3	498.2

* = 5% significance; ** = 1% significance [2-sided test]

Table 5: Robustness Checks

This table reports Logit estimates on a sample of over 2,000 businesses in the KFS 2008 follow-up survey. The dependent variable is *Limited liability*, which equals one if the business is a Corporation or LLC, and zero otherwise. Models 7 & 8 use an alternative coding of the entrepreneur's non-exempt assets – *Exposed Wealth R25* & *Exposed Wealth R50* – as the treatment variables. Model 9 only includes single-owner businesses, while Model 10 only includes multi-owner businesses. Model 11 drops all single-member LLCs. All explanatory variables are defined in Table 3. Robust standard errors, clustered at the state level, are reported in parentheses below each coefficient estimate.

	Logit (Dependent Variable = *Limited liability*)				
	(7)	(8)	(9)	(10)	(11)
Treatment Variables					
Exposed Wealth R25% (in $000)	.0021**				
	(.0004)				
Exposed Wealth R50% (in $000)		.0032**			
		(.0006)			
Exposed Wealth (in $000)			.0015**	.0013	.0010**
			(.0003)	(.0009)	(.0003)
Firm-Level Variables					
Multiple Owners	2.719**	2.716**			3.297**
	(.218)	(.217)			(.221)
Number of Owners	.044	.044			.030
	(.049)	(.048)			(.036)
Multiple Employees	.370	.371	.085	.935**	.564*
	(.191)	(.192)	(.143)	(.297)	(.218)
Number of Employees	.023	.023	.095**	-.009	.026
	(.035)	(.035)	(.029)	(.006)	(.039)
Credit Score	-.215**	-.218**	-.225**	-.204	-.220*
	(.077)	(.077)	(.084)	(.123)	(.092)
Owner Education	.202**	.204**	.198**	.265**	.153**
	(.024)	(.024)	(.024)	(.086)	(.028)
Homestead Unlimited	.078	.057	.066	.008	.117
	(.384)	(.385)	(.393)	(.510)	(.439)
Observations	2200	2200	1377	824	1862
Wald Chi2	598.1	602.2	209.2	61.9	540.9

* = 5% significance; ** = 1% significance [2-sided test]

Table 6: Robustness Checks – Wealth Subsamples

This table reports Logit estimates on a sample of over 2,000 businesses in the KFS 2008 follow-up survey. The dependent variable is *Limited Liability*, which equals one if the business is a Corporation or LLC, and zero otherwise. Each regression is limited to a subsample of entrepreneurs with the same *wealth score*. Model 12 is limited to entrepreneurs with total wealth between $1 and $50,000; Model 13 is limited to entrepreneurs with total wealth between $50,001 and $100,000; Model 14 is limited to entrepreneurs with total wealth between $100,001 and $250,000; Model 15 is limited to entrepreneurs with total wealth of $250,001 and up. All explanatory variables are defined in Table 3. Robust standard errors, clustered at the state level, are reported in parentheses below each coefficient estimate.

	Logit (Dependent Variable = *Limited liability*)			
	(12)	(13)	(14)	(15)
Treatment Variables				
Exposed Wealth (in $000)	.0090	.0100	.0028	.0011*
	(.0146)	(.0064)	(.0021)	(.0006)
Firm-Level Variables				
Multiple Owners	3.353**	2.016**	2.640**	2.620**
	(.377)	(.555)	(.500)	(.345)
Number of Owners	-.003	.287	.035	.076
	(.041)	(.367)	(.054)	(.087)
Multiple Employees	-.404	.011	.213	.796*
	(.320)	(.372)	(.238)	(.242)
Number of Employees	.193*	.065	.052	.002
	(.081)	(.041)	(.037)	(.028)
Credit Score	-.075	-.083	-.279	-.346**
	(.166)	(.140)	(.203)	(.094)
Owner Education	.260**	.298**	.246**	.150**
	(.066)	(.069)	(.069)	(.051)
Homestead Unlimited	-.883	.284	.092	.236
	(.597)	(.395)	(.461)	(.427)
Observations	321	304	427	984
Wald Chi2	161.4	149.4	80.3	193.2

* = 10% significance; ** = 1% significance [2-sided test]