How Does Personal Bankruptcy Law Affect Start-ups?

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April 24, 2012
This paper

- Exploits the variation of personal bankruptcy law within U.S. states through time to study the effect of debtor protection on:
  1. Start-ups financing structure
     - Bank loans and owner funds
  2. Start-ups performance
     - Growth rate and survival

- Dataset used: Kauffman Firm Survey
  - Longitudinal dataset covering a nationally representative sample of 4,928 firms that started in 2004
  - Panel covers 2004–2008 period
Some related literature

- Literature on the effect of the legal system on credit markets has focused on:
  - Bank lending to large companies
    - Esty & Megginson (*JFQA* 2003); Sufi (*JF* 2005); Qian & Strahan (*JF* 2007)
  - Private equity markets
    - Lerner & Schoar (*QJE* 2005); Kaplan, Martel & Stromberg (*JFI* 2007); Bottazzi, Da Rin & Hellmann (*JFI* 2009)
  - Households
    - Gropp, Scholz & White (*QJE* 1997)
  - Small businesses
    - Effect on bank financing
    - Exploit variation of laws across states
      - Berkowitz & White (*Rand* 2004); Berger, Cerqueiro & Penas (*JBF* 2011)
Our contribution

- We add to the previous literature both on the methodology and the research questions

- We exploit changes in exemption laws within states through time, which allow us to overcome a potential unobserved heterogeneity problem of the previous literature

- We study not only the effect of debtor protection on bank financing, but also on owner’s capital injections and on start-up performance
Our findings

- State laws that raise the level of debtor protection reduce the inflow of bank financing for all start-ups
- Owners of *proprietorships (unlimited liability)* offset this effect by investing more personal funds in the company
  - Rational response to an exogenous increase in wealth insurance
  - No such effect for the corporations, whose owners were already legally protected by limited liability
- The decrease in total financing is sharper for the *corporations (limited liability)*, which experience as a result:
  - Slower growth rates (revenues and employees)
  - Higher failure rates
- No negative real effects on the *proprietorships*
Main personal bankruptcy procedure is Chapter 7
- Future earnings exempt from obligation to repay ("fresh start")
- Secured debts cannot be discharged
- Debtors must turn over any unsecured assets above a predetermined exemption level
  - Exemption = maximum asset value that can be shielded from creditors in a particular state

Two types of exemptions:
- Homestead exemptions: for equity in residences
- Personal property: other personal assets
  - We consider only: cash, jewelry, motor vehicles, and wildcard
- We add the two types of exemptions into a single measure
**Exemptions**

- **Example:**
  - Consider an entrepreneur with personal (unsecured) debts
  - Home equity of the entrepreneur = HOUSE
  - Homestead state exemption = EXEMPTION

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Debtor keeps...</th>
<th>Creditor gets...</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXEMPTION ≥ HOUSE</td>
<td>HOUSE</td>
<td>0</td>
</tr>
<tr>
<td>EXEMPTION &lt; HOUSE</td>
<td>EXEMPTION</td>
<td>HOUSE – EXEMPTION</td>
</tr>
</tbody>
</table>
## Increase in exemption levels

<table>
<thead>
<tr>
<th>Magnitude</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta\text{Exemption} \geq $100,000</td>
<td>Minnesota, Montana, Nevada, Rhode Island</td>
</tr>
<tr>
<td>$50,000 \leq \Delta\text{Exemption} &lt; $100,000</td>
<td>Delaware, Idaho, New Mexico, New York, South Carolina, Washington</td>
</tr>
<tr>
<td>$10,000 \leq \Delta\text{Exemption} &lt; $50,000</td>
<td>Ohio, Illinois, North Carolina, Indiana, Colorado, Maine, Nebraska</td>
</tr>
<tr>
<td>$\Delta\text{Exemption} &lt; $10,000</td>
<td>District of Columbia, New Jersey, Pennsylvania, Hawaii, Michigan, Connecticut, Arkansas, Kentucky, Oregon</td>
</tr>
</tbody>
</table>
We collected anecdotal evidence from the proposed bills about the reasons for these changes. Main arguments:

- House prices increased sharply in past years (e.g., Las Vegas)
- Medical costs skyrocketed in past years
- Surrounding states offer higher exemption levels
- Main lobbyists: attorneys, bar associations, realtors

Nevertheless, to address the potential problem that these changes in the law could be correlated with state-specific shocks, we analyze the differential effect of the exemptions for:

- Proprietorships (owners have unlimited liability)
- Corporations (owners have limited liability)
Dataset: Kauffman Firm Survey (KFS)

- Longitudinal U.S. representative survey of start-ups
- Tracks annually 4,928 firms founded in 2004
- Panel data covers 5 years (2004-2008)
- The survey provides detailed information on:
  - Financing activities
  - Firm characteristics
  - Up to 10 owners’ characteristics
  - Intellectual property
  - Firm performance
## Descriptive statistics (KFS)

<table>
<thead>
<tr>
<th></th>
<th>In 2004</th>
<th>Δ in 2004-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. dev.</td>
</tr>
<tr>
<td>Bank financing ($000)</td>
<td>52.18</td>
<td>365.05</td>
</tr>
<tr>
<td>Personal loans ($000)</td>
<td>21.84</td>
<td>101.45</td>
</tr>
<tr>
<td>Owner equity ($000)</td>
<td>53.41</td>
<td>1240.98</td>
</tr>
<tr>
<td>Bank financing (% of capital)</td>
<td>29.40</td>
<td>35.87</td>
</tr>
<tr>
<td>Personal loans (% of capital)</td>
<td>19.16</td>
<td>30.01</td>
</tr>
<tr>
<td>Owner equity (% of capital)</td>
<td>60.92</td>
<td>38.73</td>
</tr>
<tr>
<td>Employees</td>
<td>1.59</td>
<td>4.84</td>
</tr>
<tr>
<td>Revenues ($000)</td>
<td>116.61</td>
<td>741.09</td>
</tr>
<tr>
<td>Credit risk (1-5)</td>
<td>3.33</td>
<td>0.66</td>
</tr>
<tr>
<td>Credit risk missing (0/1)</td>
<td>0.24</td>
<td>0.43</td>
</tr>
<tr>
<td>Proprietorship (0/1)</td>
<td>0.41</td>
<td>0.49</td>
</tr>
</tbody>
</table>
Hypotheses: Exemptions and financing

- An increase in exemptions should lead to:

1. Reduction in *personal* bank loans used to finance firm
   - If reduction in supply stronger than increase in demand
   - Applies to all firms independently of their legal form

2. Proprietorship owners inject more funds in the company
   - Results from the exogenous decrease in their risk exposure
   - Weaker effect expected for corporations, since their owners are legally protected by limited liability
Methodology: Exemptions and financing

- Panel regression model:

\[ y_{it} = \alpha_i + \lambda_t + \beta_1 EX_{it} + \beta_2 (EX_{it} \times UL_i) + Controls_{it} + u_{it} \]

- \( \alpha_i \) = firm fixed effect
  - Shuts down a potential “pool” effect
- \( \lambda_t \) = year fixed effect
- \( EX_{it} \) = exemption level
- \( UL_i \) = 1 if firm adopted unlimited liability form at start
- Interaction term to assess differential effect of exemptions for proprietorships and corporations
  - Ameliorates concern that changes in exemptions could be correlated with unobserved state shocks
Findings: Exemptions and financing

- State laws that raised the level of debtor protection reduced the inflow of personal bank loans used to finance the company
  - Larger effect for corporations

- Owners of proprietorships offset this effect by investing more personal funds in the company
  - Doubling exemptions raises owner’s equity by 20%

- Overall, there is a decrease in total financing for the corporations and no significant effect for the proprietorships
Hypotheses: Exemptions and real effects

- Financing constraints should negatively affect firm growth potential and survival
  - Holtz-Eakin, Joulfaian & Harvey (JPolEc 1994); Albuquerque & Hopenhayn (REStud 2004)

- Given that an increase in exemptions reduces total financing inflows more for corporations than for proprietorships, then corporations should:
  1. Experience slower growth rates
  2. Be more likely to fail
Methodology: Exemptions and real effects

A. Firm growth rate: Panel regression model

\[ y_{it} = \alpha_i + \lambda_t + \beta_1 EX_{it} + \beta_2 (EX_{it} \times UL_t) + Controls_{it} + u_{it} \]

\[ y_{it} = \ln(\text{Employees}) \text{ and } \ln(\text{Revenues}) \]

B. Firm Survival: Cox proportional model

\[ \log h_i = \lambda_t + \theta_0 EX_{i,2004} + \theta_1 \Delta EX_{it} + \theta_2 (\Delta EX_{it} \times UL_t) + Controls_{it} \]

- Separate initial conditions from subsequent changes
- Uses change in exemptions within state
- Control for owner characteristics
Findings: Exemptions and growth rates (employees and revenues)

- **Corporations**
  - Doubling exemptions reduces the employee growth rate by 10% and the revenues growth rate by 28%.

- **Proprietorships**
  - Doubling exemptions increases the employee growth rate by 20% and the revenues growth rate by 40%.
Findings: Exemptions and failure rates

- Corporations
  - Doubling exemptions increases annual failure rate by 27%

- Proprietorships
  - Doubling exemptions decreases annual failure rate by 26%
Conclusions

- High debtor protection decreases bank financing to all start-ups.
- Owners of proprietorships react to the additional insurance by investing more personal funds in the company.
- Proprietorships maintain their level of financing and do not experience negative effect on performance.
- Corporations face a sharp reduction in overall financing and experience lower survival rates.