

Bankruptcy Reform Act of 2005 and Entrepreneurial Activity

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Abstract

This paper investigates the effect of the bankruptcy reform act of 2005, formally known as the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA), on entrepreneurial activity, measured by the likelihood of switching into self-employment. The analysis of this paper suggests that the probability of becoming self-employed with an unincorporated firm, regardless of firm size, declined after the bankruptcy reform act of 2005, and in this way entrepreneurial activity decreased. On the other hand, the probability of becoming self-employed with an incorporated firm was virtually unchanged by the revised bankruptcy law. However, the size of the incorporated firm makes a difference with small incorporated firms being different from medium- or large- incorporated firms. That is, the probability of becoming self-employed with a small incorporated firm declined after the bankruptcy reform act of 2005 in a similar manner to the probability of becoming self-employed with an unincorporated firm, but the probability of becoming self-employed with a medium- or large-size incorporated firm does not change significantly.

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1 Introduction

Small businesses are an important feature of the U.S. economy. Small businesses (defined as firms with fewer than 500 employees) account for almost half of all gross revenues generated by U.S. businesses, employ half of all private sector workers, and generate between 60 and 80 percent of net new jobs (Gates and Leuschner 2007). Entrepreneurship is an important element of technological progress and economic growth, and many government policies have important implications for entrepreneurs and small-business owners. Among the government policies that have profound implications on small business and self-employment is bankruptcy law because it dictates the severity of the consequences of business failure (Armour and Cumming 2008).

Bankruptcy is the legal process by which financially distressed firms and individuals resolve their debts. Bankruptcy law also affects the possibility for a bankrupt entrepreneur to start again (Landier 2005). In the U.S., there are two types of bankruptcy procedures depending on the entity that files for bankruptcy – personal bankruptcy procedure and corporate bankruptcy procedure. While corporate bankruptcy refers to the bankruptcies of large- or medium-sized incorporated firms, personal bankruptcy refers to the bankruptcies of individual households and small businesses (White 2007a). Small business bankruptcy is treated as part of personal bankruptcy because many small businesses are not incorporated and are owned by individuals who are legally responsible for their businesses' debts; the business and its owner are legally the same. This means that debts of the business are personal liabilities of the business owner. When their businesses fail, owners often file for bankruptcy so that their businesses' debts will be discharged along with their unsecured personal debts.

Even when small businesses are incorporated, personal bankruptcy law is important when they fail. This is because lenders that make loans to small incorporated firms, usually startups, often require the owner to personally guarantee the debt and may also require that the owner give the lender a second mortgage on the owner's house. The lenders know that the firm does not have adequate assets to back the debt, and the firm's assets can be diverted to the owner. In effect, lenders do not see small businesses as a separate

corporation or entity (Berkowitz and White 2004). Thus, despite limited liability, these guarantees and liens eliminate the legal distinction between the corporation and its owner for purposes of the particular loan. The fact that about 20% of all personal bankruptcy filings in the U.S. include some business debt suggests the importance of personal bankruptcy policy for small businesses (Sullivan, Warren, and Westbrook 1999, Lawless and Warren 2005). In this sense, the U.S. personal bankruptcy system is the de facto bankruptcy procedure for small firms whether they are incorporated or not, although it is primarily intended as a bankruptcy procedure for consumers (Fan and White 2003).

Prior to the bankruptcy reform of 2005, if a small business failed, entrepreneurs were allowed to choose between two different personal bankruptcy procedures known as Chapter 7 (also known as “liquidation”) and Chapter 13 (also known as “adjustment of debts of consumers with regular income”). Under both procedures, creditors must immediately terminate all collection efforts and legal actions to obtain repayment once debtors file for bankruptcy. Entrepreneurs filing under Chapter 7 give up all assets that exceed their state exemption level to the bankruptcy trustee who uses these assets to repay debt, and all future earnings are completely exempt from the obligation to repay— this is known as the “fresh start” in bankruptcy. Exemption levels are set by the states and vary widely¹. Most types of unsecured debt were discharged including credit card debt, installment loans, medical debt, unpaid rent and utility bills, tort judgments, and business debt if the debtor owns an unincorporated business². Other types of debt, including secured loans, student loans, child support obligations, and debts incurred by fraud, cannot be discharged in Chapter 7. Under Chapter 13, entrepreneurs are not obliged to give up any of their assets, but instead they must propose a plan, called a “repayment plan”, to repay part of their debt from future earnings over three to five years, which only the bankruptcy judge – not creditors - can approve³. The plan must give creditors as much as they would have received under Chapter 7, but because debtors had the right to choose between Chapter 7

¹ Elias (2006) provides a list of asset exemptions by state.

² If the debtor owns a corporation, then the owner of the firm should follow the corporate bankruptcy procedure as far as the business debt is concerned. If, in addition, the owner had personal debt, then the debtor should separately file under the personal bankruptcy procedure as far as the personal debt is concerned.

³ This is different from Chapter 11 bankruptcy for corporations where creditors can approve or reject.

and Chapter 13 they had no incentive to offer any more than what they would have repaid under Chapter 7 (Berkowitz and White 2004, White 2007b). Only debtors who completed their repayment plans received a discharge from their remaining unsecured debts (White 2007c).

Debtors would choose to file under whichever chapter minimized their cost and liability. However, Chapter 13 is generally less favorable to business owners than Chapter 7, because failed entrepreneurs often have no nonexempt assets and because having an obligation to repay past debt from future earnings would make it difficult to start a new business (Berkowitz and White 2004). Entrepreneurs may also shift assets from nonexempt to exempt categories before filing under Chapter 7 in order to minimize nonexempt assets⁴. In addition, unsecured debt discharged in Chapter 13 cannot be higher than \$250,000, while there is no limit in Chapter 7⁵. In fact, about 70 percent of bankruptcy filings occur under Chapter 7, and 95% of debtors who file under Chapter 7 have no non-exempt assets and repay nothing to creditors (Fan and White 2003, Fay, Hurst and White 2002).

U.S. bankruptcy law used to allow additional benefits under Chapter 13 in order to induce more bankrupts to file under Chapter 13 and repay from future income. If the secured debt is a car loan, then the principle amount of the loan is reduced to the current market value of the car under Chapter 13. Debts incurred by fraud and cash advances obtained shortly before filing could be discharged in Chapter 13, but not in Chapter 7. These are only some of the examples that only apply to Chapter 13 cases. These features were known as the Chapter 13 “super-discharge.” Some bankrupts took advantage of the super-discharge by filing first under Chapter 7, where most of their debts were discharged, and then converting their filings to Chapter 13, where they proposed a plan to repay part of the additional debt covered by the super-discharge. This two-step procedure, known as filing a “Chapter 20,” increased debtors’ financial gain from bankruptcy relative to filing under either procedure by itself (White 2007b). Finally, debtors can file under Chapter 13

⁴ For example, a nonexempt bank account can be used to pay down mortgages in order to convert it into home equity which is exempt in many states.

⁵ The cost of filing for bankruptcy is also lower in Chapter 7 (about \$600 in 2001) than in Chapter 13 (about \$1,600 in 2001) according to Flynn and Bermant (2002).

as frequently as every six months. In contrast, if the debtor has filed under Chapter 7 within the past six years then the debtor is ineligible to file under Chapter 7 again.

Overall, these features made earlier U.S. bankruptcy law very pro-debtor and meant that the obligation to repay in bankruptcy bore little relationship to the debtor's ability-to-repay. Many debtors could gain financially from filing for bankruptcy even if their ability-to-pay was high (White 2007c). The number of bankruptcy filings rose dramatically over the years, until 2005 when lenders, such as credit card companies, lobbied long and hard for bankruptcy reform and eventually succeeded which became more pro-creditor.

The bankruptcy reform act of 2005, which is formally known as the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA), enacted some major changes. First, the new bankruptcy law does not allow the debtor to automatically choose between Chapter 7 and Chapter 13, but instead has additional requirements that must be met in order to file under Chapter 7, called the "means test", which basically states that debtors who earn more than a certain income level in the state they are filing for bankruptcy are no longer eligible to file under Chapter 7 (details below). Instead, they must file under Chapter 13. Second, the Act imposes additional costs in filing for bankruptcy by imposing a number of new requirements to debtors, such as taking credit counseling courses and debt management courses, and paying higher filing fees. Debtors may also face higher lawyer fees because bankruptcy lawyers now face strict requirements and can be found liable if debtors provide false information when filing for bankruptcy, and so attorneys might charge a premium for the additional risk and time required for preparation of bankruptcy filing. Finally, restrictions on applying homestead exemptions, allowing super-discharge, and time between multiple bankruptcy filings have been added. All in all, the bankruptcy system after 2005 became less favorable to debtors (White 2007c). As expected, the number of personal bankruptcy filings dramatically decreased after 2005. However, how this new pro-creditor bankruptcy law affects the behavior of small businesses and self-employment is unclear.

This paper examines the effect of the bankruptcy reform act of 2005 on entrepreneurial activity as measured by the likelihood of becoming self-employed. Two

counter-acting primary effects can be expected: 1. Interest rates on loans can go down, which may increase entrepreneurship, 2. The level of expected wealth insurance can go down, which may decrease entrepreneurship. This study shows the net effect of this trade-off on entrepreneurial activity after the bankruptcy reform act of 2005 made the personal bankruptcy code more anti-debtor. An estimation using a binary logit model suggests that the bankruptcy reform act of 2005 reduced entrepreneurial activity, primarily because the probability of becoming self-employed with an unincorporated firm declined. The probability of becoming self-employed with an incorporated firm was virtually unaffected by the change in bankruptcy law.

Section 2 discusses the bankruptcy reform act of 2005 in detail, Section 3 provides an analytical framework on how bankruptcy law affects entrepreneurship, and Section 4 discusses the data, empirical method and results. Section 5 concludes and discusses policy implications.

2 Bankruptcy Abuse Prevention and Consumer Protection Act of 2005

After multiple failed attempts since 1997 and massive lobbying largely by banks and credit card companies, the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, commonly referred to as the “new bankruptcy law”, was signed into law by President George W. Bush on April 20, 2005. Most provisions of the Act took effect on or after October 17, 2005. The reform was mainly in response to the dramatic increase in consumer bankruptcy filings and had the explicit intent of discouraging filings by irresponsible debtors. The legislation represents the largest overhaul of the bankruptcy code affecting both consumer and business bankruptcies since its enactment in 1978.

The Supreme Court summarized the intent of modern bankruptcy laws when it said that they are intended to give debtors a “fresh start”, “a new opportunity in life, unhampered by the pressure and discouragement of pre-existing debt”.⁶ The general

⁶ The U.S. Supreme Court expressed this motivation for bankruptcy law in *Local Loan v. Hunt case*, 292 U.S. 234, 244 (1934).

perception prior to the new bankruptcy law in 2005 was that bankruptcy law favored debtors. After the reform, however, the general perception is that the new bankruptcy law predominantly favors creditors by introducing provisions that dramatically make it difficult to file for bankruptcy, especially under Chapter 7, or restricts protections offered by the bankruptcy system. In sum, the new act makes it more difficult and expensive to file for bankruptcy, and less lenient to debtors.

Specifically, the Act's most significant anti-debtor provisions include (but are not limited to) the following, which affects a potential entrepreneur's decision to start a new business.

2.1 Means Test

Prior to the reform in 2005, debtors of all income levels could file for bankruptcy under Chapter 7, which wipes out debts and gives a "fresh start". Under the new law, debtors no longer have an automatic right to file for bankruptcy under Chapter 7, but instead, a "means test" is used to determine if debtors can file a Chapter 7 case. The test is a formula designed to keep filers with higher incomes from filing for Chapter 7 bankruptcy. This test is complex and confusing to many, but, in essence, it uses the debtor's monthly family income averaged over the six months prior to filing and compares it with the state median monthly family income, adjusted for family size, in order to determine eligibility for Chapter 7. If the income level is below the state median level then the debtor is still eligible to file under Chapter 7, but if it is above the state median level then additional tests comes into play. When the average monthly family income exceeds the state median income level, the next step of the test determines whether the debtor has enough income left over, called "disposable income", after paying "allowed" monthly expenses, to pay off at least a portion of unsecured debts such as credit card bills. The allowed monthly expense is based on Internal Revenue Service formula for collecting from delinquent taxpayers, and for each debtor it determines an allowance for living expenses that may vary by metropolitan area. If the disposable income adds up to more than a certain amount, then the debtor cannot file for Chapter 7 bankruptcy. If it is less than the specified amount then the

debtor may use Chapter 7 in some cases after applying additional tests, which I omit here for the sake of simplicity. Of course, median income levels vary by state and household size, and each county and metropolitan region has different allowed amounts for categories of expenses. In sum, the means test is a series of complex tests that determines, or thereby restricts, the eligibility for filing under Chapter 7, given the debtor's monthly income level.

If the debtor is not eligible to file under Chapter 7 because of failure of the means test, or if the Court finds that the debtor is abusing the system based on the totality of the circumstances of the debtor's financial situation or because the debtor filed a petition in "bad faith", then the case will be dismissed, or with the debtor's consent converted to Chapter 13 reorganization plan. Debtors in the new Chapter 13 must use part of their post-bankruptcy earnings for a mandatory five years to repay their debt⁷. The fact that there is no longer an automatic right to choose between Chapter 7 and Chapter 13 implies that the debtor may end up repaying more under Chapter 13 repayment plan than the amount that could have been repaid under Chapter 7. The remaining unsecured debts are still not discharged until the repayment plan is completed.

For entrepreneurs, filing under Chapter 7 is particularly favorable, because they usually have large debts from their failed businesses and both their business and personal debts will be immediately discharged under Chapter 7 which renders a fresh start. If they instead filed under Chapter 13, the obligation to use part of their future earnings to repay debt for five years would be equivalent to imposing heavier taxes on the business, which would make starting a new business difficult once the entrepreneur fails. Ayotte (2007) shows the importance of a "fresh start" policy especially for small entrepreneurial firms. It shows that the entrepreneurial firm, whose value depends on the effort of a key individual, is better served by the bankruptcy principles that were designed for the individual debtor rather than the corporate debtor, and social gains can be made from bankruptcy law that offers entrepreneurs an opportunity for a fresh start—a second chance to succeed that would otherwise be encumbered by debt obligations carried over from its previous failure. Therefore, the fact that there is more uncertainty in the eligibility for Chapter 7 makes it

⁷ Prior to the new bankruptcy law in 2005, this used to be three to five years.

particularly unattractive for potential entrepreneurs to even start their first venture. In effect, bankruptcy law may serve as an entry barrier because it affects the cost of exit⁸.

In principle, the new means test applies only to debtors who have “primarily consumer debts”, so that small business owners are allowed to file under Chapter 7 without going through the means test restriction as long as most of their debt is business debt. In practice, however, the distinction between business and consumer debt itself is crude and misleading. According to Lawless and Warren (2005), about one in seven persons appearing in bankruptcy court as a consumer is actually there in connection with his or her own business, and if you ask the average entrepreneur—especially one in serious financial trouble—whether he or she has business or consumer debt, the answer will probably be “both.” For many entrepreneurs, their personal finances are so intertwined with their business finances that it is difficult to distinguish between consumer and business debt. Furthermore, because many small businesses finance themselves with credit cards (Mann 1997, Chatterji and Seamans 2009), a credit card balance can represent a personal vacation or equipment for a business just as a second mortgage can represent cash sunk into home improvements or into a business venture. The line between personal and business debt for an entrepreneur trying to get a small business off the ground may be so blurred that any subsequent effort to segregate the debt is doomed (Lawless and Warren 2005). We can also imagine a self-employed individual needing to file under Chapter 7 because of accumulated consumption debt after failing to procure a contract when trying to get his business off the ground. Therefore, it is likely that a debtor would still face the complication and uncertainty of the means test when the debtor is filing for bankruptcy because of a failed business even though the means test only applies to primarily consumer debts. Even if the entrepreneur may be exempted from the means test, ample hurdles were added by the reform as described below.

2.2 Time between Multiple Bankruptcy Filings

⁸ By the same token, Lee, Yamakawa, and Peng (2008) suggests that entrepreneur-friendly bankruptcy law reduces *entry* barriers, by reducing the cost of business failure and thus facilitating more entrepreneurial entries.

Under the new law, the length of time after a Chapter 7 case that a person must wait before filing another Chapter 7 case has been increased to 8 years (previously 6 years), i.e., a debtor would be denied a discharge if the debtor had received a discharge in a prior Chapter 7 case filed within 8 years. The new bankruptcy law thus makes it harder to get a “fresh start” in the future. It also increased the minimum time that must elapse between successive Chapter 13 filings from six months to two years. Furthermore, if the debtor has filed for Chapter 7 bankruptcy then the debtor may not file for Chapter 13 within four years of the Chapter 7 being discharged. Prior to the reform, debtors were allowed to file a Chapter 13 bankruptcy immediately following a Chapter 7 bankruptcy in order to pay remaining outstanding debts after a discharge under Chapter 7. This new provision practically eliminates the so-called “Chapter 20”. The literature on bankruptcy has pointed out that the time between successive discharges is an important variable that reflects the harshness of bankruptcy law and is negatively correlated with entrepreneurial activity (Armour and Cumming 2008, Jia 2009).

2.3 Limiting the Use of Exemptions

When a debtor files under Chapter 7, the debtor must give up all assets above an exemption level. The largest and most variable bankruptcy exemption is the exemption for equity in owner-occupied housing, called the homestead exemption. Homestead exemptions are set by the states and vary widely, with some states having unlimited homestead exemptions such as in Texas and Florida, which makes filing for bankruptcy particularly attractive in these states.

The new bankruptcy law puts restrictions on the use of the homestead exemption. Under the new law, a debtor who has moved from one state to another within two years of filing the bankruptcy case (730 days) must use exemptions from the place of the debtor’s domicile for the majority of the 180 day time period preceding the two years before the filing. If the new residency requirement renders the debtor ineligible for any exemption, then the debtor can choose the federal exemptions. These provisions were largely intended to prevent filers from “forum shopping”, i.e. moving assets and domiciles to a state with

more favorable exemptions and filing. Also, there is a “cap” placed on the homestead exemption in situations where the debtor, within 1215 days (about 3 years and 4 months) preceding the bankruptcy case added value to a homestead. The provision provides that “any value in excess of \$125,000” added to a homestead within the period cannot be exempted. This provision is intended to prevent debtors from abusing the bankruptcy system who strategically converts assets into those that are covered by the homestead exemption.

2.4 Increase in Cost of Filing and No “Super-Discharge”

The new law increases the amount of paperwork involved in filing and raises the filing fees. Debtors are now required to take a credit counseling course before they file and a financial management course before their debts are discharged. In addition, they must file detailed financial information with the bankruptcy court along with copies of their tax returns for the past four years⁹. Bankruptcy lawyers are now required to conduct an investigation of their clients' filings and can be held personally liable for inaccuracies. Furthermore, bankruptcy filings are now subject to audit in a manner similar to tax returns. Lawyers are likely to charge higher fees because of the additional risk and burden the lawyers face. Under the old law, the average cost of filing for Chapter 7 was about \$800 to \$1,400 in attorney and other fees, according to Henry J. Sommer, president of the National Association of Consumer Bankruptcy Attorneys. Elias (2006) estimates that these new requirements raised the cost of filing to \$2,500-\$3,500, plus the cost of two courses and preparation of tax returns (if they haven't filed in the past). When the out-of-pocket cost of filing for bankruptcy increases, a debtor will be left with even less wealth after filing or may not be able to afford the protection from bankruptcy altogether. The new law also abolished the Chapter 13 “super-discharge” and increased the amount of credit card debt not discharged in bankruptcy. Hence, less wealth insurance is offered by the new bankruptcy law.

⁹ Debtors might have to first file taxes for previous years if they have not done so.

3 How Does Bankruptcy Law Affect Entrepreneurship?

3.1 Literature Review

Assume entrepreneurs face liquidity constraints. This assumption is consistent with the empirical findings in prior literature (Evans and Leighton 1989, Evans and Jovanovic 1989, Holtz-Eakin, Joulfaian, and Rosen 1994, Black and Strahan 2002). Evans and Jovanovic (1989) examine the importance of liquidity constraints by estimating a model of entrepreneurial choice in which the tightness of the liquidity constraint is a parameter. Their empirical findings show that most individuals who enter self-employment face a binding liquidity constraint and as a result use a suboptimal amount of capital to start up their businesses. Holtz-Eakin, Joulfaian, and Rosen (1994) examine to what extent liquidity constraints increase the likelihood of entrepreneurial failure by using data from a group of people who received inheritances. They find that the effect of inheritance on raising the probability of survival of an entrepreneurial firm is small but noticeable, which provides evidence that entrepreneurs are credit constrained and that receiving an inheritance loosens the constraint. The fact that entrepreneurs are undercapitalized is consistent with the results of Fazzari, Hubbard, and Petersen (1988), which suggest that even corporations are constrained in capital markets. Therefore, it is inevitable that entrepreneurs seek external credit before engaging in a new business.

Personal bankruptcy law affects entrepreneurial activity primarily in two ways, assuming entrepreneurs face liquidity constraints. On the one hand, personal bankruptcy law provides a partial insurance against business failure by discharging unsecured debt and offering a fresh start (supply-side effect). On the other hand, it affects the borrowing cost of capital, as financial institutions charge lower interests on loans as the personal bankruptcy law becomes more pro-creditor (demand-side effect). Recent studies on the relationship between bankruptcy law and entrepreneurship has taken this trade-off into account in various forms in theoretical models and empirical investigations (Berkowitz and White 2004, Fan and White 2003, Armour and Cumming 2008, and Jia 2009)¹⁰.

¹⁰ In a similar vein, Akyol and Athreya (2008) investigate the trade-off in the context of the relationship between “limited liability” and entrepreneurship.

A number of recent studies indeed show that potential entrepreneurs respond to how tough or lenient bankruptcy law is before starting a new business. Fan and White (2003) uses the variation in homestead exemptions across states to show that higher bankruptcy exemption levels benefit potential entrepreneurs who are risk averse by providing partial wealth insurance and therefore that the probability of owning a business increases as the exemption level increases, implying more lenient personal bankruptcy laws promote entrepreneurship. Jia (2009) extends the model of Livshits, MacGee and Tertilt (2007) to include occupational choice and small business venture and show that tougher bankruptcy regimes lead to lower levels of entrepreneurship across countries. Armour and Cumming (2008) empirically investigate the link between bankruptcy and entrepreneurship using data on self employment over 13 years (1990-2002) and 15 countries in Europe and North America. Using the time to discharge as a measure of how ‘forgiving’ personal bankruptcy laws are, they find that more forgiving bankruptcy law is positively correlated with the levels of entrepreneurship across countries, supporting the rationale behind recent initiatives by the UK and the EU to reduce the harshness of the consequences of personal bankruptcy law in order to promote entrepreneurship. They conclude that bankruptcy laws are a significant policy instrument for enhancing entrepreneurial activity because bankruptcy law dictates the severity of the consequences of failure. Indeed, Eurobarometer survey results show that the fear of bankruptcy is one of the most important reasons given by individuals for not forming their own business (Armour and Cumming 2008). By making the personal bankruptcy law more onerous to debtors in 2005, all else being equal, we would expect potential entrepreneurs to be discouraged from starting a new business because of less protection against the downside risk.

In a similar vein, prior studies have also shown that financial institutions also respond to whether personal bankruptcy law is pro-debtor or pro-creditor when charging the interest rates on loans, and thus affect the supply and demand for credit (Gropp, Scholz and White 1997). Scott and Smith (1986) show that the bankruptcy reform act of 1978 contains many provisions that rendered increasing protection to debtors¹¹, and resulted in

¹¹ Most of these provisions persisted until the bankruptcy reform act of 2005.

higher cost of producing loans for financial intermediaries. For example, the Code expanded the list of personal property exemptions that may be claimed upon filing bankruptcy, and provided for an automatic stay upon filing which prevents secured creditors from taking any immediate action to recover their collateral. As a result, the expected bankruptcy and foreclosure costs associated with a loan increased along with increase in administration and monitoring costs because lenders had to engage in more extensive credit analysis when producing a loan. Consistent with the competitive market prediction, the study finds that the borrowers bear these increased costs in the form of higher interest rates. By the same token, we would expect the opposite to happen after 2005 when bankruptcy law became more pro-creditor. Berkowitz and White (2004) show that small firms are more likely to be turned down for loans if they are located in states that have higher bankruptcy exemptions implying more forgiving bankruptcy law is negatively correlated with access to external credit. However, they conclude that this supply-side effect is dominated by the demand-side effect documented in Fan and White (2003). In other words, individuals living in states with higher bankruptcy exemptions are more likely to start their own businesses because of the greater insurance effect *despite* having unfavorable access to external credit. Armour and Cumming (2008) make a similar conclusion for a cross-country study. Even though prior empirical studies have shown that the supply-side effect dominated the demand-side effect, we do not know *a priori* that a same conclusion can be made for the effect of the bankruptcy reform act of 2005. Hence, we need an empirical investigation.

We can at least expect the bankruptcy reform act of 2005 to have different effects on the choice of organizational forms, i.e., incorporated or unincorporated. As mentioned earlier, when businesses are incorporated, owner's assets and debts are legally distinct, in principle, from the assets and debts of their corporations¹². Therefore, a change in personal bankruptcy procedure will not have any effect on the decision to start an incorporated firm which is subject to corporate bankruptcy procedure upon failure. However, in practice, the distinction between small incorporated firms and unincorporated firms may be blurred

¹² Akyol and Athreya (2008) show that the effect of limited liability is itself similar to that of bankruptcy law.

because lenders often require the owner of a small incorporated firm to personally guarantee the loan. Therefore, a change in personal bankruptcy law may still have an effect on the decision to start a small incorporated firm if the firm does not have adequate assets to back the debt. In contrast, if businesses are not incorporated, the business and its owner are legally the same. Owners are legally responsible for their businesses' debts and will follow the personal bankruptcy procedure upon failure. Therefore, a change in personal bankruptcy procedure will have a profound effect on the decision to start an unincorporated firm.

Prior literature investigated the relationship between personal bankruptcy law and entrepreneurship in a cross-sectional setting or examined the effect of the bankruptcy reform act of 1978. This study contributes to the literature by providing an analysis of the impact of the recent bankruptcy reform act of 2005 on entrepreneurial activity. Because of the trade-off between the supply-side effect and the demand-side effect mentioned above, it is not clear how the new bankruptcy law affects entrepreneurial activity and hence warrants further analysis.

3.2 Empirical model

To investigate the relationship between the new bankruptcy law and entrepreneurial activity, I use a random utility model to determine the probability that an individual would choose to become an entrepreneur. Following Train (2003), a random utility model (RUM) is derived as follows. A decision maker, labeled n , faces a choice among J alternatives. The decision maker would obtain a certain level of utility (or profit) from each alternative. The utility that decision maker n obtains from alternative j is U_{nj} , $j = 1, \dots, J$. This utility is known to the decision maker but not observed by the researcher. The decision maker chooses the alternative that provides the greatest utility. The behavioral model is therefore: choose alternative i if and only if $U_{ni} > U_{nj} \forall j \neq i$. A random utility model is then defined as

$$U_{nj} = V_{nj} + \varepsilon_{nj},$$

where $j = 1, \dots, J$ and V_{nj} is the deterministic part of utility, often called *representative utility*, that the researcher can construct using observed attributes of the alternatives and that of the decision maker, and ε_{nj} is the random component that affects the utility but is not included in V_{nj} . The probability that decision maker n chooses alternative j is

$$\begin{aligned} P_{ni} &= \text{Prob}(U_{ni} > U_{nj} \quad \forall j \neq i) \\ &= \text{Prob}(V_{ni} + \varepsilon_{ni} > V_{nj} + \varepsilon_{nj} \quad \forall j \neq i) \\ &= \text{Prob}(\varepsilon_{nj} - \varepsilon_{ni} < V_{ni} - V_{nj} \quad \forall j \neq i). \end{aligned}$$

This probability is a cumulative distribution, namely, the probability that each random term $\varepsilon_{nj} - \varepsilon_{ni}$ is below the observed quantity $V_{ni} - V_{nj}$. If we assume each ε_{nj} is independently and identically distributed (iid) extreme value, then the difference between two extreme value variables ($\varepsilon_{nji}^* = \varepsilon_{nj} - \varepsilon_{ni}$) is distributed logistic. The logistic distribution is often used in describing binary logit models with two alternatives ($j = 1, 2$), i.e., to become an entrepreneur or not in this case. The most attractive feature about the logit model is that it has a succinct, closed form expression for the choice probability:

$$\begin{aligned} P_{ni} &= \frac{e^{V_{ni}}}{e^{V_{ni}} + e^{V_{nj}}} \\ &= \frac{e^{\beta' x_{ni}}}{e^{\beta' x_{ni}} + e^{\beta' x_{nj}}} \\ &= \frac{1}{1 + e^{-\beta'(x_{ni} - x_{nj})}}. \end{aligned}$$

where the representative utility is specified to be linear in parameters.

4 Empirical Estimation

4.1 Data

The data used in this paper come primarily from the *March Current Population Survey* (CPS)¹³. The dataset includes March CPS from 2002-2008. The data start in 2002 because of a significant sample expansion starting in the 2002 *March CPS* compared to earlier years.¹⁴ The pooled sample includes over 1.4 million observations (N=1,479,137) at the individual level, as Table 1 shows by survey year. For the purpose of this study, for each *March CPS* I drop all cases that are under age 18 (N=448,437; 30.32% of sample), who are still legal minors in terms of financial obligation, and those in the armed forces (N=4,992; 0.34% of sample) during the entire sample period because these sub-populations are not subject to founding firms. Those who are not in the labor force (N=371,438; 25.11% of sample), and those individuals aged 80 or above are also dropped from the sample because age is top-coded above age 80 (N=35783; 2.32% of sample)¹⁵. These excluded subgroups are not necessarily mutually exclusive (N=765, 506; 51.75% of sample dropped in total). As a result of applying these cut-off rules, the sample size for this study is N=712,146 when the adjusted *March CPS* is pooled across years. This is shown in the two right-hand columns of Table 1.

Next, we define entrepreneurial activity. No consensus exists in the literature on how entrepreneurship can be measured. In this study, entrepreneurship is based on one's entry in self-employment as reported by the CPS, I construct an indicator variable which equals 1 if the individual was a wage worker in the year prior to the survey year but indicates self-employment in the survey year and 0 otherwise. Because this variable is surveyed only once a year in the *March CPS*, we cannot identify exactly in what month a switch into self-employment has occurred. Respondents were classified by the job that they held for the longest time during the previous year. For the purpose of this study, I assume all individuals who were identified to have switched into self-employment in the survey year of 2006 had knowledge of the new bankruptcy law when making the decision to become an entrepreneur because the bill was signed in April 2005. Similarly, I assume all

¹³ Available via IPUMS-CPS at <http://cps.ipums.org> (King et al. 2009).

¹⁴ In 2002, the March CPS file officially began to be referred to as the Annual Demographic File (ADF) as a result of a significant sample expansion. In 2002, the sample was expanded primarily to improve state estimates of children's health insurance coverage. <http://www.census.gov/apsd/techdoc/cps/cpsmar02.pdf>

¹⁵ I also use the age group 18-65 for a robustness check in my regression analysis.

individuals who were identified to have switched into self-employment in the survey year of 2005 had no knowledge of the new bankruptcy law when making the decision to become an entrepreneur. This indicator variable represents a switch into self-employment whether the firm is incorporated or not. As an alternative measure, I will also use an indicator variable that includes only a switch into self-employment that starts an unincorporated firm, and similarly for incorporated firms. I also use a number of other alternative ways to define entrepreneurship as a dependent variable in order to check the robustness of various analyses.

In Table 2, we can see the frequency and proportion of switches into self-employment as a whole and by organizational form over time. A total of 8,670 individuals switched into self-employment during the sample period, which constitutes 1.22% of the sample. Figure 1 is a graphical representation of the number of individuals that switched into self-employment. The graph does not show a clear change in the pattern of individuals switching into self-employment before and after 2005, although it appears there might be a downward trend in self-employment after 2005.

To give some historical perspective, I show the proportion of individuals switching into self-employment in Figure 2a, which extends the sample period to 1998-2008. Note that the proportion of individuals switching into self-employment is shown instead of the actual frequency in the sample year in order to make a straightforward comparison across years because of the significant increase in sample size starting in 2002 *March CPS*. In Figure 2b, I show the same graph for only 2002-2008. Again, the graph does not show any clear change in the pattern.

As noted earlier, if the bankruptcy reform act of 2005 had any effect, it might have the most significant effect on unincorporated firms and possibly on small incorporated firms. To see whether the new bankruptcy law had a disproportionate effect on those individuals who form different self-employment organizational forms, I look at incorporated firms and unincorporated firms separately. Figure 3a shows the number of individuals that switched into self-employment over time by whether the business was incorporated or not. Apparently, a sharp decline in the switching into self-employment that

is not incorporated occurs at year 2005, while no such apparent decline exists for switching into self-employment that is incorporated. Figure 3b shows the proportion of individuals who switched into self-employment over time that was and was not incorporated, and it basically tells the same story as in Figure 3a. Figure 3a and Figure 3b both suggest that the new bankruptcy law could be constraining entry into entrepreneurship when the firm is not incorporated.

I estimate a binary logit regression model using an indicator variable that represents a switch into self-employment, a switch into self-employment that starts an unincorporated firm, and a switch into self-employment that starts an incorporated firm as three alternative dependent variables. The main explanatory variable of interest is *BAPCPA_dummy* which equals 1 if the survey year was after 2005 and 0 otherwise. I construct a variable, *Surplus Income*, which is a proxy for how much family income is potentially available to the individual who is deciding to start a business. Because many individuals first rely on their family before tapping into other sources of fund, this variable is defined as family income less the individual's income. Prior empirical studies (Boden 1996, Borjas 1986, Dunn and Holtz-Eakin 2000, Evans and Leighton 1989, Fairlie 1999, Fairlie and Meyer 1996, Hamilton 2000) have shown that certain personal characteristics such as age, race, educational attainment¹⁶, gender, marital status are important factors that affect the decision to become an entrepreneur. I, therefore, extract these data from the CPS and use them in my regression analyses. Figure 4 shows the distribution of switch into self-employment by age¹⁷, and Tables 3~6 show the distribution of switch into self-employment by race, educational attainment, gender, and marital status respectively. As in Fan and White (2003), I use the state-level annual unemployment rate from the previous year to control for local macroeconomic conditions. Because the individual characteristics are from the March survey and the variable that indicates the individual's decision to become self-employed is from previous year's information, I use the annual state unemployment rate from the previous year to reflect the labor market conditions when the decision was being made. I

¹⁶ Educational level is constructed using educ99 from the CPS.

¹⁷ I use both age and age² in my regression analyses as a robustness check. The results are qualitatively similar.

also add state, industry, occupation, and year dummies as control variables in my regression analyses¹⁸. Table 7 shows the distribution of self-employed in the 25 most frequent non-agricultural industries and Table 8 shows the distribution of self-employed in the 25 most frequent non-farming occupations¹⁹. We can see that “Managers, officials, and proprietors” are the most frequently appearing occupation in self employment and “Construction” has more self-employment than any other industry.

Table 9 shows the distribution of switched into self-employment by firm size as measured by the number of employees²⁰. Many switches into self-employed firms have no employees other than the self-employed owner, and many switches into self-employed firms have 1000 or more employees. In general, the switches into self-employment for unincorporated firms have fewer employees than the switches for incorporated firms. Observations that fall into the zero employee and the >1000 employee categories have “Managers, officials, and proprietors” as the most frequently appearing occupation class. However, firms with no employees also include many observations with occupations such as “Designers”, “Authors”, “Drivers”, and “Real Estate Agents”. In the case of firms with 1000 or more employees, many have occupations such as “Lawyers”, “Physicians”, and “Accountants”.

4.2 Results

Table 10 shows the estimation results of the binary logit model on switching into self-employment by organizational form. The first specification uses the switch into self-employment, regardless of the organizational form, as a measure of entrepreneurial activity. If an individual was not self-employed in the year prior to the survey year but was self-employed in the survey year, it is counted as having switched into self-employment. Using

¹⁸ Industry dummies are constructed using *ind1950*, which recodes industry into a common format (3-digit) using the 1950 census classification scheme, provides comparability over time beginning in 1968, and occupation dummies are constructed using *occ1950*, which recodes occupation into a common format (3-digit) using the 1950 Census Bureau occupational classification system from the CPS.

¹⁹ In my regression analyses, all industries and occupations are used as control variables.

²⁰ This is constructed using the variable *FIRMSIZE* from the CPS. If the individual was self-employed, the response to *FIRMSIZE* indicates how many employees worked for the respondent. CPS uses label NIU (Not in Universe) for firms with only one employee (the founder).

this dependent variable, the coefficient for *BAPCPA_dummy* is -0.152 and is statistically significant at the 1% level. This means that, all else being equal, the probability of switching into self-employment decreased after the bankruptcy reform act of 2005, which implies that the change in bankruptcy law is negatively related to new entrepreneurial activity. Specifically, the log of odds decreases by -0.152 after the bankruptcy reform act of 2005 because the logit model assumes a logistic distribution.

Two alternative specifications are shown in order to see how the new bankruptcy reform affected the choice of organizational forms. In the second specification, the dependent variable is a dummy variable equal to 1 if an individual started an unincorporated firm and 0 otherwise. In the third specification, the dependent variable is a dummy variable equal to 1 if an individual started an incorporated firm and 0 otherwise. As is evident in Table 10, the reduction in the probability of switching into self-employment after the bankruptcy reform act of 2005 discussed above mainly reflects the reduction in the probability of becoming self-employed with an unincorporated firm. The coefficient for *BAPCPA_dummy* is negative (-0.193) and statistically significant at the 1% level for unincorporated firms while that for incorporated firms is negative but smaller in magnitude, and more importantly, not statistically significant. As a robustness check, I repeated the three alternative specifications using only the age group 18-65, and the result was qualitatively similar²¹. The fact that the coefficient for *BAPCPA_dummy* is negative for unincorporated firms while that for incorporated firms is not statistically significant is consistent with the interpretation of Figure 3a and Figure 3b. After the bankruptcy reform act of 2005 the probability of becoming self-employed with an unincorporated firm declined, and in this way the level of overall entrepreneurial activity decreased. The probability of becoming self-employed with an incorporated firm was virtually unchanged by the revised bankruptcy law. This is consistent with the prediction that a change in personal bankruptcy procedure will not be related to the decision to start an incorporated firm that is subject to corporate bankruptcy procedure upon failure.

²¹ Not reported here.

The variable *Surplus Income* shows a positive effect on the probability of becoming self-employed in all three specifications, which is consistent with the assumption that entrepreneurs are liquidity constrained. The more funds there are from family income less personal income the more likely it is for an individual to start a firm regardless of the organizational form. Hispanics are less likely to start a firm in all three specifications compared to Whites. Asians are less likely to start an unincorporated firm, but more likely to start an incorporated firm than Whites. It is also interesting to note that males are less likely to start an unincorporated firm but more likely to start an incorporated firm, and less likely overall to switch into self-employment than females. The findings of this analysis is largely consistent with that of Boden (1996), Dunn and Holtz-Eakin (2000), Evans and Leighton (1989), and Fairlie and Meyer (1996).

The analytical framework suggests that the case of small incorporated firms might be different from large- or medium-sized incorporated firms because owners of small incorporated firms often personally guarantee business debts and makes the distinction between the owner and the firm blurry. Ideally, we would define small incorporated firms in terms of the size of firm's asset and investigate whether the decision to start a small incorporated firm is different from the decision to start larger incorporated firms. Unfortunately, data on firms' assets are not available in the CPS. Instead, an analysis of small incorporated firms defined by the number of employees is used. Table 11 shows the result of a binary logit regression that estimates the log odds of starting a small incorporated firm where small incorporated firms are define as firms with less than 25 employees. Indeed, we see that the decision to start a small incorporated firm responds to the change in the bankruptcy reform act of 2005 in a manner similar to the decision to start unincorporated firms. The coefficient for *BAPCPA_dummy* is negative (-0.340) and statistically significant. This is in contrast to the coefficient for *BAPCPA__dummy* in the case of large incorporated firms defined as firms with 25 or more employees. The coefficient in this case is not statistically different from 0. This is consistent with the view that, small incorporated firms are similar to unincorporated firms for the purpose of loans (White 2007b).

5 Conclusion

This paper investigates the effect of the bankruptcy reform act of 2005, formally known as the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA), on entrepreneurial activity, where entrepreneurial activity is measured by the likelihood of switching into self-employment. A change in the personal bankruptcy law affects entrepreneurial activity primarily in two ways, assuming entrepreneurs face liquidity constraints: 1) Personal bankruptcy law provides a partial insurance against business failure by discharging unsecured debt and offering a fresh start (supply-side effect), and 2) It affects the borrowing cost of capital, as financial institutions charge lower interests on loans as the personal bankruptcy law becomes more pro-creditor (demand-side effect). This study shows the net effect of this trade-off on entrepreneurial activity after the bankruptcy reform act of 2005 made the personal bankruptcy code more anti-debtor. An estimation using a binary logit model suggests that the probability of becoming self-employed with an unincorporated firm, regardless of firm size, declined after the bankruptcy reform act of 2005, and in this way entrepreneurial activity decreased. The probability of becoming self-employed with an incorporated firm was virtually unchanged by the revised bankruptcy law. This is consistent with the prediction that a change in personal bankruptcy procedures is not related to the decision to start an incorporated firm that is subject to corporate bankruptcy procedures upon failure. However, the case of small incorporated firms is different from large- or medium-sized incorporated firms. The decision to become self-employed by a small incorporated firm responds to the change in the bankruptcy reform act of 2005 in a manner similar to the decision to become self-employed by an unincorporated firm. That is, only the probability of becoming self-employed with a small incorporated firm declined after the bankruptcy reform act of 2005. This is consistent with the view that the distinction between the owner and the firm is blurry for small incorporated firms because owners of small incorporated firms often personally guarantee business debts.

The research discussed here suggests that potential entrepreneurs are responsive to the terms of the personal bankruptcy law, and that the new law reduces the partial insurance

provided by bankruptcy more than it improves access to or cost of credit. Under the new bankruptcy law, entrepreneurs bear greater risk. The findings indicate that potential entrepreneurs are less likely to go into business and fewer firms are likely to be started. To the extent that unincorporated firms and, perhaps, small incorporated firms represent disguised unemployment (i.e., respondent is trying to earn some income until a suitable job can be found), the results suggested by this study may not indicate a decline in innovation. However some businesses that might have been started by potential entrepreneurs who were discouraged by the increased risk of entrepreneurship may have contributed to innovation with job creation. Those entrepreneurs who do start a new business despite bearing greater risk will face more constraints in starting a new business, once their first venture fails. This suggests that the intention to prevent consumers from abusing the bankruptcy system has the side effect of deterring some types of entrepreneurship.

Many entrepreneurs go through several business models before they are successful. Failure is part of being an entrepreneur. The harsh provisions of the new law appear to discourage some potential entrepreneurs from starting new businesses and to keep entrepreneurs who have a business failure from starting anew. In this sense, the new bankruptcy law constrains serial entrepreneurship. Personal bankruptcy should provide an adequate safety net for entrepreneurs if an economy wants to foster conditions that lead to the creation of new businesses, jobs and technologies.

References

- Akyol, Ahmet, and Athreya, Kartik (2008), "Unsecured Credit and Self-Employment", *working paper*.
- Armour, John and Douglas Cumming (2008), "Bankruptcy Law and Entrepreneurship", *American Law and Economics Review*, Vol. 10, No. 2, pp. 303-350.
- Ayotte, Kenneth (2007), "Bankruptcy and Entrepreneurship: The Value of a Fresh Start", *Journal of Law, Economics and Organization*, Vol. 23, No. 1, pp. 161-185.
- Berkowitz, Jeremy and Michelle J. White (2004), "Bankruptcy and Small Firms' Access to Credit", *RAND Journal of Economics*, Vol. 35, No. 1, pp. 69-84.
- Black, Sandra E. and Philip E. Strahan (2002), "Entrepreneurship and Bank Credit Availability", *Journal of Finance*, vol. 57, No. 6, pp. 2807-2833.
- Boden, Richard J., Jr. (1996), "Gender and Self-Employment Selection: An Empirical Assessment", *Journal of Socio-Economics*, Vol. 25, No. 6, pp. 671-682.
- Borjas, George J (1986), "The Self-Employment Experience of Immigrants", *Journal of Human Resources*, Vol. 21, No. 4, pp. 485-506.
- Chatterji, Aaron K. and Robert C. Seamans (2009) "How do Credit Card Interest Rates Impact Entrepreneurship?", *working paper*.
- Dunn, Thomas, and Douglas Holtz-Eakin (2000), "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links", *Journal of Labor Economics*, Vol. 18, No. 2, pp. 282-305.
- Elias, Stephen (2006), *The New Bankruptcy: Will it Work for You?* Nolo Press.
- Evans, David S. and Boyan Jovanovic (1989), "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints", *Journal of Political Economy*, Vol. 97, No. 4, pp. 808-827.
- Evans, David S. and Linda S. Leighton (1989), "Some Empirical Aspects of Entrepreneurship", *American Economic Review*, Vol. 79, No. 3, pp. 519-535.
- Fairlie, Robert W. (1999), "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment", *Journal of Labor Economics*, Vol. 17, No. 1, pp. 80-108.

Fairlie, Robert W. and Bruce D. Meyer (1996), "Ethnic and Racial Self-Employment Differences and Possible Explanations", *Journal of Human Resources*, Vol. 31, No. 4, pp. 757-93.

Fan, Wei and Michelle J. White (2003), "Personal Bankruptcy and the Level of Entrepreneurial Activity", *Journal of Law and Economics*, Vol. 46, No. 2, pp. 543-567.

Fay, Scott, Erik Hurst, and Michelle J. White (2002), "The Household Bankruptcy Decision", *American Economic Review*, Vol. 92, No. 3, pp. 706-718.

Fazzari, Steven, R. Glenn Hubbard, and Bruce C. Petersen (1988), "Financing Constraints and Corporate Investment", *Brookings Papers on Economic Activity*, No. 1, pp. 141-195.

Flynn, Ed, and Gordon Bermant (2002), "Bankruptcy by the Numbers: A Tale of Two Chapters: Financial Data", *American Bankruptcy Institute Journal*, Vol. 21, No. 8, pp. 20-38.

Gates, Susan M. and Kristin J. Leuschner (2007), *In the Name of Entrepreneurship? The Logic and Effects of Special Regulatory Treatment for Small Business*, RAND Corporation.

Gropp, Reint, John Karl Scholz, and Michelle J. White (1997), "Personal Bankruptcy Law and Credit Supply and Demand", *Quarterly Journal of Economics*, Vol. 112, No. 1, pp. 217-251.

Hamilton, Barton H. (2000), "Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment", *Journal of Political Economy*, Vol. 108, No. 3, pp. 604-31.

Holtz-Eakin, Douglas, David Joulfaian, and Harvey S. Rosen (1994), "Sticking it Out: Entrepreneurial Survival and Liquidity Constraints", *Journal of Political Economy*, Vol. 102, No. 1, pp. 53-75.

Jia, Ye (2009), "The Impact of Personal Bankruptcy Law on Entrepreneurship", *working paper*.

King Miriam, Steven Ruggles, Trent Alexander, Donna Leicach, and Matthew Sobek (2009), *Integrated Public Use Microdata Series, Current Population Survey: Version 2.0*. Minneapolis, MN: Minnesota Population Center.

Landier, Augustin (2005), "Entrepreneurship and The Stigma of Failure", *working paper*.

Lawless, Robert M. and Elizabeth Warren (2005), "The Myth of the Disappearing Business Bankruptcy", *California Law Review*, Vol. 93, p.743.

Lee, Seung-Hyun, Yasuhiro Yamakawa, and Mike W. Peng (2008), "Entrepreneurship and the Barrier to Exit: How Does an Entrepreneur-Friendly Bankruptcy Law Affect Entrepreneurship Development at a Societal Level?", *working paper*, U.S. Small Business Administration, Office of Advocacy.

Livshits, Igor, James MacGee, and Michele Tertilt (2007), "Consumer Bankruptcy: A Fresh Start", *American Economic Review*, Vol. 97, No. 1, pp. 402-418.

Mann, Ronald J. (1997), "The Role of Secured Credit in Small-Business Lending", *Georgetown Law Journal*, Vol. 86, pp. 1.

Scott, Jonathan A. and Terence C. Smith (1986), "The Effect of the Bankruptcy Reform Act of 1978 on Small Business Loan Pricing", *Journal of Financial Economics*, Vol. 16, No. 1, pp. 119-140.

Sullivan, Teresa A., Elizabeth Warren, and Jay Lawrence Westbrook (1999), *As We Forgive Our Debtors: Bankruptcy and Consumer Credit in America*, Beard Books.

Train, Kenneth (2003), *Discrete Choice Methods with Simulation*, Cambridge University Press.

White, Michelle J. (2007a), "Bankruptcy Law", in A. Mitchell Polinsky and Steven Shavel (eds.), *Handbook of Law and Economics*, Volume 2, Chapter 14, North-Holland Publisher, Elsevier.

White, Michelle J. (2007b), "Bankruptcy Reform and Credit Cards", *Journal of Economic Perspectives*, Vol. 21, No. 4, pp. 175-299.

White, Michelle J. (2007c), "Abuse or Protection: The Economics of Bankruptcy Reform under BAPCPA," *University of Illinois Law Review*, Vol. 1, pp. 275-304.

Table 1. Sample Size Before and After Applying Cut-Off Rule by Survey Year.

Survey Year	<i>Before cut-off rule</i>		<i>After cut-off rule</i>	
	Frequency	Percent (%)	Frequency	Percent (%)
2002	217, 219	14.69	104,529	14.68
2003	216, 424	14.63	103,808	14.58
2004	213, 241	14.42	102,106	14.34
2005	210, 648	14.24	100,813	14.16
2006	208, 562	14.10	100,351	14.09
2007	206, 639	13.97	100,164	14.07
2008	206, 404	13.95	100,375	14.09
Total	1, 479, 137	100	712,146	100

Note: For the purpose of this study, for each *March CPS*, I drop all cases that are under age 18 (N=448,437; 30.32% of sample), who are still legal minors in terms of financial obligation, and those in the armed forces (N=4,992; 0.34% of sample) during the entire sample period because these sub-populations are not subject to founding firms. Those who are not in the labor force (N=371,438; 25.11% of sample), and those individuals aged 80 or above are also dropped from the sample because age is top-coded above age 80 (N=35783; 2.32% of sample).

Table 2. Frequency of Switching Into Self-Employment by Year and by Organizational Form.

	Frequency			Proportion		
	<i>Self-Employed (SE)</i>	<i>SE, non-INC.</i>	<i>SE, INC.</i>	<i>Self-Employed (SE)</i>	<i>SE, non-INC.</i>	<i>SE, INC.</i>
2002	1252	775	477	1.20%	0.74%	0.46%
2003	1287	766	521	1.24%	0.74%	0.50%
2004	1198	730	468	1.17%	0.71%	0.46%
2005	1318	811	507	1.31%	0.80%	0.50%
2006	1216	738	478	1.21%	0.74%	0.48%
2007	1246	707	539	1.24%	0.71%	0.54%
2008	1153	651	502	1.15%	0.65%	0.50%
Total	8670	5178	3492			

Figure 1. Graphical Representation of the Frequency of Switching into Self-Employment by Year.

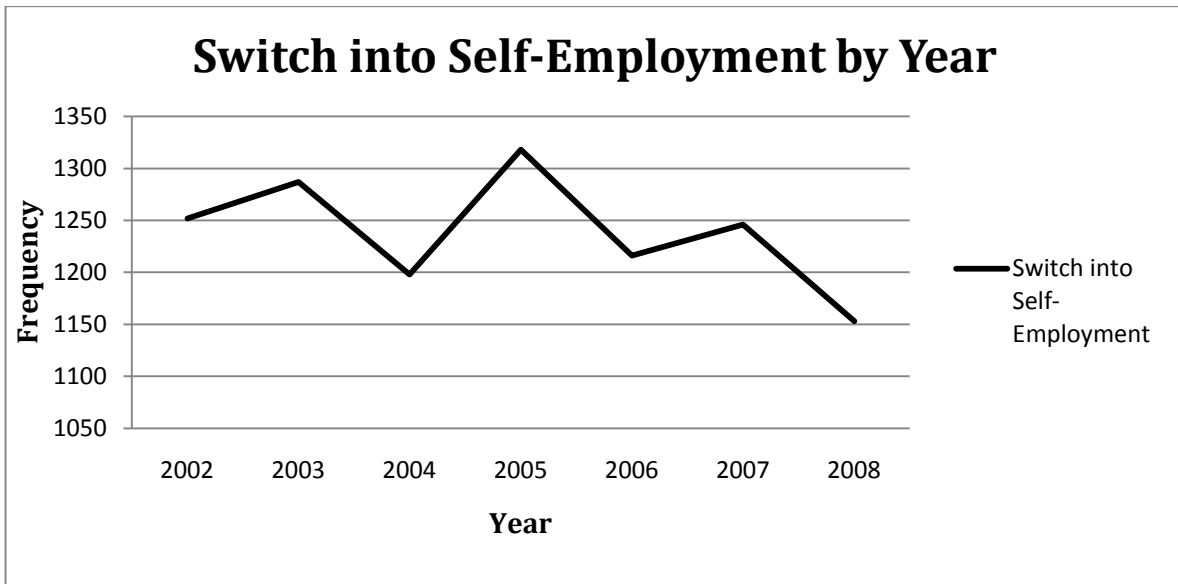


Figure 2a. Proportion of Individuals Switching into Self-Employment by Year (1998-2008).

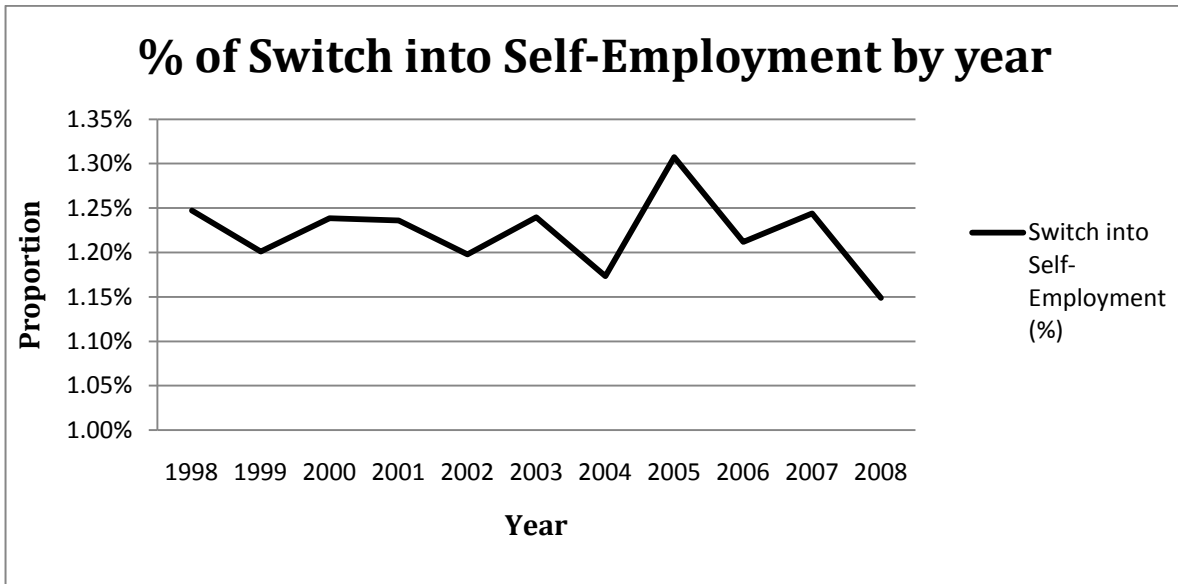


Figure 2b. Proportion of Individuals Switching into Self-Employment by Year (2002-2008).

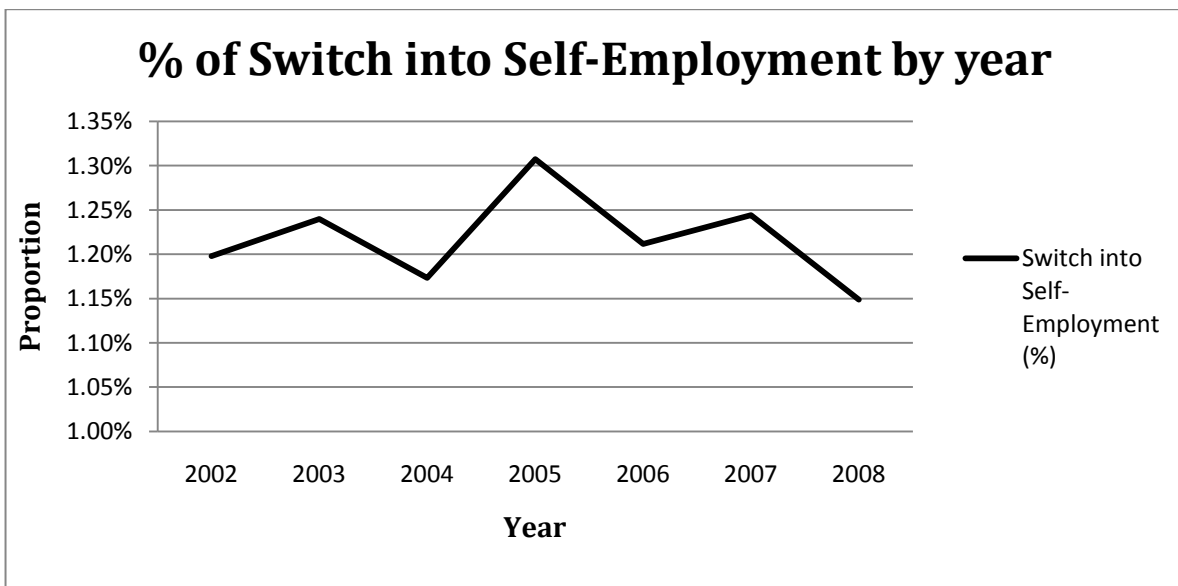


Figure 3a. Switch into Self-Employment by Organizational Form (INC. vs. *not* INC.).

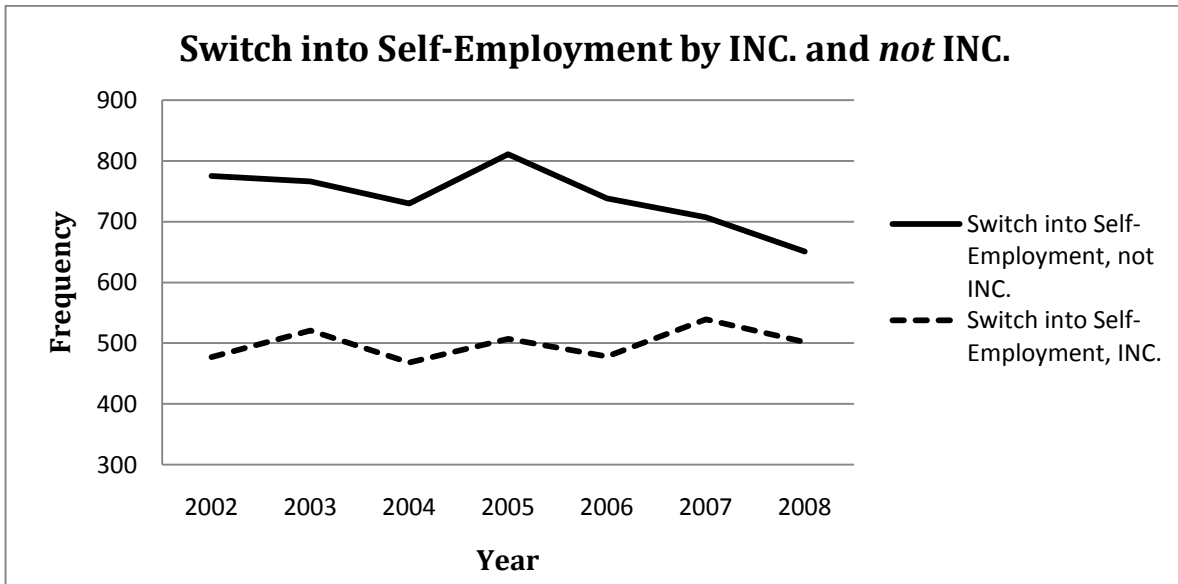


Figure 3b. Proportion of Switch into Self-Employment by Organizational Form (INC. vs. *not* INC.).

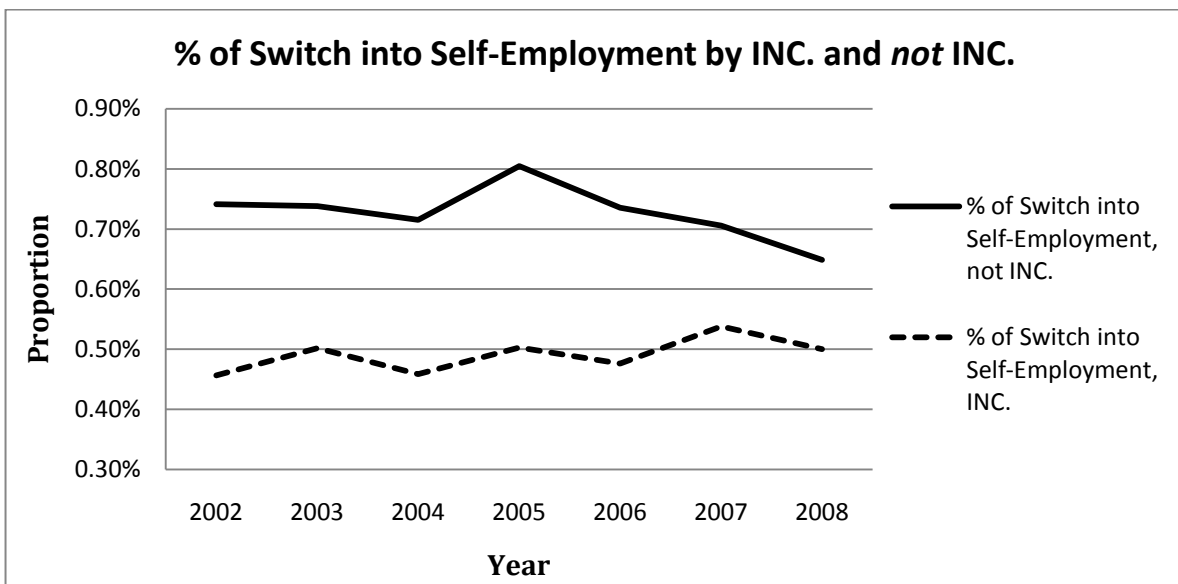


Figure 4. Distribution of Switch into Self-Employment by Age.

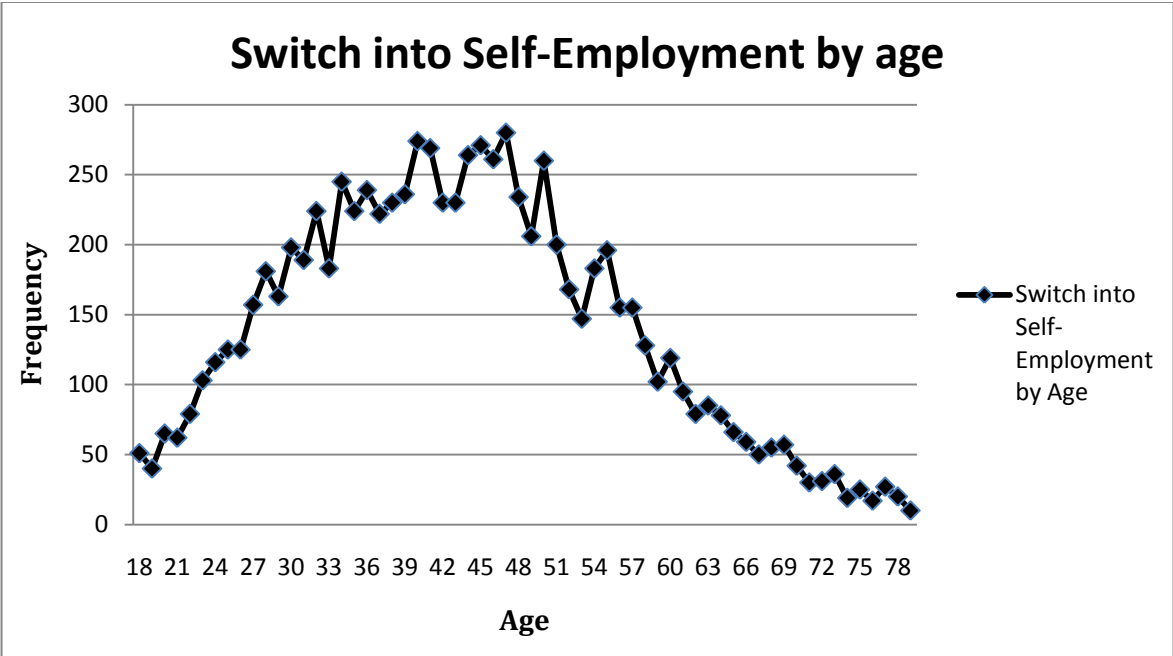


Table 3. Distribution of Switch into Self-Employment by Race and by Organizational Form.

	<i>Self-Employed (SE)</i>	<i>SE, non-INC.</i>	<i>SE, INC.</i>
White	6,529	3,763	2,766
Hispanic	910	648	262
Black	572	383	189
Asian	411	189	222
Miscellaneous	248	195	53
Total	8,670	5,178	3,492

Table 4. Distribution of Switch into Self-Employment by Educational Attainment.

Educational attainment	Frequency	Percent (%)
Less than High School Graduate	859	9.91
High school graduate, or GED	2,311	26.66
Some college, no degree	2,488	28.7
Bachelors degree	1,916	22.1
Masters degree	664	7.66
Professional degree	253	2.92
Doctorate degree	179	2.06
Total	8,670	100

Table 5. Distribution of Switch into Self-Employment by Gender.

Gender	Frequency	Percent (%)
Male	4,878	56.26
Female	3,792	43.74
Total	8,670	100

Table 6. Distribution of Switch into Self-Employment by Marital Status.

Marital status	Frequency	Percent (%)
Married, spouse present	6,002	69.23
Married, spouse absent	120	1.38
Separated	162	1.87
Divorced	912	10.52
Widowed	156	1.8
Never married/single	1,318	15.2
Total	8,670	100

Table 7. Distribution of Self-Employed in the 25 Most Frequent Non-Agricultural Industries.

Industry	Frequency	Percent (%)
Construction	13,115	16.90
Miscellaneous business services	7,037	9.07
Educational services	4,268	5.50
Medical and other health services, except hospitals	3,532	4.55
Miscellaneous personal services	3,325	4.29
Real estate	3,323	4.28
Eating and drinking places	2,382	3.07
Miscellaneous entertainment and recreation services	2,224	2.87
Miscellaneous retail stores	2,185	2.82
Auto repair services and garages	2,011	2.59
Trucking service	1,945	2.51
Miscellaneous professional and related services	1,768	2.28
Legal services	1,644	2.12
General merchandise stores	1,318	1.70
Insurance	1,198	1.54
Miscellaneous repair services	1,127	1.45
Accounting, auditing, and bookkeeping services	1,112	1.43
Engineering and architectural services	1,033	1.33
Miscellaneous wholesale trade	972	1.25
Security and commodity brokerage and investment companies	935	1.20
Food stores, except dairy products	923	1.19
Motor vehicles and accessories retailing	863	1.11
Printing, publishing, and allied industries	682	0.88
Furniture and house furnishing stores	515	0.66
Banking and credit agencies	503	0.65

Table 8. Distribution of Self-Employed in the 25 Most Frequent Non-Farming Occupations.

Occupation	Frequency	Percent (%)
Managers, officials, and proprietors	19,366	24.96
Attendants, professional and personal service	3,117	4.02
Professional, technical and kindred workers	2,928	3.77
Carpenters	2,617	3.37
Real estate agents and brokers	2,037	2.63
Salesmen and sales clerks	1,926	2.48
Truck and tractor drivers	1,884	2.43
Barbers, beauticians, and manicurists	1,723	2.22
Foremen	1,537	1.98
Lawyers and judges	1,516	1.95
Gardeners, except farm, and groundskeepers	1,411	1.82
Operative and kindred workers	1,386	1.79
Bookkeepers	1,243	1.60
Laborers	1,189	1.53
Mechanics and repairmen, automobile	1,152	1.48
Clerical and kindred workers	1,126	1.45
Service workers, except private household	1,092	1.41
Physicians and surgeons	1,085	1.40
Painters, construction and maintenance	1,067	1.38
Managers and superintendents, building	1,006	1.30
Teachers	988	1.27
Accountants and auditors	986	1.27
Designers	961	1.24
Mechanics and repairmen	885	1.14
Stenographers, typists, and secretaries	817	1.05

Table 9. The Distribution of Switch into Self-Employment by Firm Size.

Employees	<i>Self-employment (SE)</i>		<i>SE, non-INC.</i>		<i>SE, INC.</i>	
	Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
None	2,389	27.55	1,978	38.2	411	11.77
Under 10	1,199	13.83	703	13.58	496	14.2
10 to 24	774	8.93	408	7.88	366	10.48
25 to 99	1,011	11.66	499	9.64	512	14.66
100 to 499	872	10.06	393	7.59	479	13.72
500 to 999	307	3.54	150	2.9	157	4.5
1000+	2,118	24.43	1,047	20.22	1,071	30.67
Total	8,670	100	5,178	100	3,492	100

Table 10. Logit Regression Model on Switching into Self-Employed by Organizational Form²².

Explanatory Variables	<i>Self-Employed (SE)</i>		<i>SE, non-INC.</i>		<i>SE, INC.</i>	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
<i>BAPCPA_dummy</i>	-0.152***	0.047	-0.193***	0.062	-0.081	0.073
<i>Race:</i>						
Hispanic	-0.201***	0.041	-0.119**	0.050	-0.364***	0.070
Black	-0.016	0.047	0.045	0.059	-0.080	0.079
Asian	0.067	0.056	-0.137*	0.081	0.270***	0.076
Misc.	0.277***	0.068	0.417***	0.079	-0.139	0.142
White*						
<i>Gender (Male=1)</i>	-0.185***	0.028	-0.462***	0.037	0.169***	0.044
<i>Age</i>	0.008***	0.001	0.002	0.001	0.017***	0.002
<i>Marital Status:</i>						
Married, Spouse Present	0.265***	0.035	0.119***	0.043	0.554***	0.063
Married, Spouse Absent	0.330***	0.098	0.294**	0.119	0.441**	0.172
Separated	0.240***	0.086	0.235***	0.101	0.264*	0.160
Divorced	0.250***	0.047	0.243***	0.058	0.341***	0.084
Widowed	0.267***	0.092	0.325***	0.108	0.162	0.175
Never Married/Single*						
<i>Education:</i>						
Some College Education	0.130***	0.029	0.111***	0.036	0.152***	0.047
Bachelors Degree	0.212***	0.034	0.144***	0.045	0.281***	0.052
Masters Degree	0.319***	0.050	0.258***	0.067	0.375***	0.073
Professional Degree	-0.363***	0.110	-0.554***	0.168	-0.191	0.147
Doctoral Degree	0.088	0.106	-0.303*	0.168	0.365***	0.139
High School Graduate or less*						
<i>Surplus Income (× 10⁻⁶)</i>	1.190***	0.201	0.501*	0.289	1.880***	0.275
<i>State Unemployment Rate</i>	-0.002	0.027	0.046	0.035	-0.064	0.042
<i>State Dummies</i>	Yes		Yes		Yes	
<i>Occupation Dummies</i>	Yes		Yes		Yes	
<i>Industry Dummies</i>	Yes		Yes		Yes	
<i>Year Dummies</i>	Yes		Yes		Yes	
<i>Constant</i>	-3.456***	1.078	-5.634***	1.081	-4.197***	1.128
Number of Observations	648,624		622,769		625,012	
Pseudo-R ²	0.128		0.139		0.140	

²² *, **, and *** correspond to statistical significance levels of 10%, 5%, and 1% respectively. Coefficients and standard errors on state, occupation, industry, and year dummies are omitted for the sake of brevity.

Table 11. Logit Regression Model on Switching into Self-Employment by Firm Size For Incorporated Firms Only (For Firm Size < 25 Employees And ≥ 25 Employees).²³

Explanatory Variables	<i>Small Inc. (<25)</i>		<i>Large Inc. (≥25)</i>	
	Coeff.	Std. Err.	Coeff.	Std. Err.
<i>BAPCPA_dummy</i>	-0.340**	0.152	-0.008	0.086
<i>Race:</i>				
Hispanic	-0.756***	0.158	-0.256***	0.080
Black	-0.569***	0.199	0.013	0.090
Asian	0.252	0.157	0.284***	0.088
Misc.	-0.212	0.296	-0.103	0.165
White*				
<i>Gender (Male=1)</i>	0.190**	0.092	0.161***	0.051
<i>Age</i>	0.015***	0.004	0.019***	0.002
<i>Marital Status:</i>				
Married, Spouse Present	0.612***	0.130	0.500***	0.073
Married, Spouse Absent	0.463	0.356	0.405**	0.203
Separated	0.477	0.303	0.173	0.190
Divorced	0.181	0.182	0.366***	0.097
Widowed	0.356	0.404	0.170	0.238
Never Married/Single*				
<i>Education:</i>				
Some College Education	-0.059	0.095	0.239***	0.056
Bachelors Degree	0.141	0.105	0.326***	0.062
Masters Degree	0.060	0.165	0.486***	0.085
Professional Degree	0.162	0.299	-0.338*	0.178
Doctoral Degree	0.126	0.315	0.466***	0.163
High School Graduate or less*				
<i>Surplus Income (× 10⁻⁶)</i>	1.240**	0.616	2.160***	0.311
<i>State Unemployment Rate</i>	-0.055	0.088	-0.073	0.049
<i>State Dummies</i>	Yes		Yes	
<i>Occupation Dummies</i>	Yes		Yes	
<i>Industry Dummies</i>	Yes		Yes	
<i>Year Dummies</i>	Yes		Yes	
<i>Constant</i>	-7.558***	1.329	-6.300***	1.091
Number of Observations	486,258		594,744	
Pseudo-R ²	0.111		0.136	

²³ *, **, and *** correspond to statistical significance levels of 10%, 5%, and 1% respectively. Coefficients and standard errors on state, occupation, industry, and year dummies are omitted for the sake of brevity.