UNEQUAL HARD TIMES: EXAMINING THE RELATIONSHIP BETWEEN FIRM OWNER CHARACTERISTICS AND SMALL BUSINESS PERFORMANCE DURING THE GREAT RECESSION

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By

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ABSTRACT

Over the past few years, there has been a growing interest from federal, state and local governments in initiating and expanding efforts to support the young and small business ecosystem as a way to spur job creation, encourage innovation and close gaps in wealth inequality, especially in the wake of the Great Recession. In this paper, I examine the relationship between small business owner characteristics and small business performance during and after the Great Recession. I use data from the Kauffman Firm Survey, a longitudinal study of 4,928 newly-formed small businesses, to conduct a difference-in-differences analysis to compare 1) women-owned and men-owned small businesses and 2) minority-owned and non-minority-owned small businesses during the time period of 2004-2011. I find that minority-owned and women-owned small businesses perform relatively worse during and after the Great Recession, compared to non-minority-owned and men-owned small businesses. The relationship between firm owner characteristics, such as race and gender, and small business performance suggests that, with further research into why there are differences in firm performance, that policymakers may want to consider targeting or tailoring resources and supports toward specific groups of small business owners, such as women and minorities.
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Many thanks,
Sindhu Lakshmanan
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INTRODUCTION

Over the past few years, there has been a growing interest from federal, state and local governments in initiating and expanding efforts to support the young and small business ecosystem as a way to spur job creation, encourage innovation and close gaps in wealth inequality, especially in the wake of the Great Recession.

Policymakers have come to view small businesses as essential to job creation and economic recovery for two main reasons. The first reason is that small businesses comprise a significant portion of the U.S. labor market, accounting for 99.7% of all U.S. firms and employing 49.2% of the private sector workforce, according to the 2010 U.S. Census and U.S. Small Business Administration (SBA). The second reason is that small businesses tend to grow faster than large businesses, and as they grow, they create more jobs (Haltiwanger et al., 2010). The U.S. SBA has found that since 1995, small businesses have created approximately two out of every three new jobs in the nation.

Young and small businesses were hit hard during the Recession, however, and their rate of growth post-Recession declined until 2014 (Wiens, 2015). Recognizing the need to boost small business creation and performance rates, federal, state, and local governments have enacted policies to offer contracting set-asides, price discounts, and loans to small businesses. The most notable legislation has been the Small Business Jobs Act, signed into law by President Obama in 2010, which increased the availability of credit and capital for small businesses.

At the same time, while most U.S. businesses are still owned by white men, the number of women and minority-owned businesses has been steadily increasing (SBA). The number of women-owned businesses in the U.S., for example, has increased by 27.5
percent since 2007 (National Women’s Business Council). Similarly, minority-owned businesses have increased 46 percent between 2002 and 2007, while nonminority-owned businesses grew just 10 percent during that same period, according to the Minority Business Development Agency (MBDA). As minority populations are projected to take on an increasingly larger share of the U.S. population, the number of minority business owners and the impact their businesses have will continue to grow.

The numbers, and prior research, show that minority-owned and women-owned businesses are becoming major contributors to the economy, and play an important role in creating jobs, ensuring family security, and contributing to the vitality of communities (Allien et al., 2007; Bosma et al., 2008). Given their growing importance in creating a stronger, more resilient economy, we need to know more about the performance of minority and women-owned businesses, not just small businesses in general.

While we know that young and small business performance suffered during the Great Recession, there is not a great deal of research focused specifically on minority and women-owned small business performance. Was there a difference in firm performance for women and minorities compared to men and non-minorities? I seek to provide insight into this question by analyzing data from the Kauffman Firm Survey, a longitudinal survey of 4,928 small businesses from 2004-2011, to examine how firm owner characteristics, specifically race and gender, were related to small business performance in the U.S.

BACKGROUND

The Great Recession had a profound impact on workers and businesses, and although its impact was widespread, some markets and populations were hit harder than
others. Recent papers by Fort et al. (2013), Kleiner (2013), Adelino et al. (2014) and Zarutskie and Yang (2015), for example, demonstrate that young\(^1\) and small businesses were disproportionately impacted during the 2008-2009 recession. In general, young and small businesses are believed to be more sensitive to business cycles, due to being more dependent on friends-and-family types of financing, and are more likely to be financially constrained than other types of businesses (Gertler et al., 1994; Hancock et al., 1998; Fort et al., 2013). As Coleman (2007) summarizes, the lack of access to capital becomes more pronounced during Recessions when financial institutions are adverse to taking on high-risks, and are therefore less likely to lend money to young businesses (Verheul et al., 2006).

While previous research indicates that young and small businesses struggle during Recessions, the evidence is not disaggregated to focus on specific subgroups of small businesses, such as those owned by women and minorities. In this paper, I build off the work of Zarutskie and Yang (2015), which examined how young businesses performed during the Great Recession. Using the same dataset, reasoning and motivation, I seek to add another layer of analysis to their work by focusing specifically on women and minority-owned young and small businesses.

As noted by Zarutskie and Yang (2015), while federal agencies such as the Bureau of Labor Statistics and Federal Reserve Board have collected and published data on the effects of the financial crisis on the U.S. economy, there is not much publicly-available aggregated data on the economic activity and dynamics of subgroups of businesses over the period of the Great Recession. As a result of the lack of usable data,

\(^1\) In this context, “young” means a “newly-formed” business.
there is little research on how subgroups of businesses fared during the Great Recession, compared to the average business. Zartuskie and Yang (2015) found the two most notable exceptions to be Chodorow-Reich (2014) and Siemer (2014), both of whom examined employment effects of credit market disruptions during the Great Recession years, using confidential micro-data from the Bureau of Labor Statistics. As Zartuskie and Yang (2015) point out, while the research of Chodorow-Reich and Siemer is valuable, it does not examine other firm-level variables, such as race and gender of the firms’ owners, because the dataset used did not include that data.

Including business ownership characteristics, such as race and gender, is important when analyzing the effects of the Great Recession on business performance though, because we know from existing research that there are differences in performance for minority-owned versus white-owned businesses and women-owned versus men-owned businesses (Fairlie & Robb, 2008). As an example, Fairlie and Robb (2008) have found that on average, businesses owned by African Americans have lower profits and are more likely to shutdown than those owned by whites, with white-owned businesses bringing in average annual sales of $439,579 compared with only $74,018 for African-American-owned businesses.

Although Fairlie and Robb’s research looks at the relationship between business owner characteristics and business performance, their research does not examine small business performance specifically. And overall, the existing research provides limited insights into how women and minority-owned small businesses fared during the Great Recession; we only have evidence for small business performance in general or women and minority-owned business performance but not women and minority-owned small
business performance. My paper seeks to add evidence to this gap in the research by providing insight into the relationship between small business owner characteristics and small business performance during the Great Recession.

CONCEPTUAL MODEL AND HYPOTHESES

My hypothesis is that women and minority-owned small businesses were hit harder during the Great Recession than men and non-minority-owned small businesses were, and I would expect to see lower levels of firm performance for women and minority-owned small businesses as a result.

Underperformance of Women and Minority-Owned Businesses

Previous research has provided evidence on why businesses owned by women and minorities underperform compared to businesses owned by men and non-minorities. As depicted in Figure 1, reasons for underperformance are driven by three major factors: 1) less capital; 2) human capital—differences in experiences and networks; and 3) concentration in certain sectors, like retail and service.

Less Capital

The most-cited reason is less capital: a Kauffman Foundation study shows that businesses that start with higher levels of capital show significantly better performance (Robb, 2014). Kauffman Foundation survey data also shows, however, that women tend to start companies using more of their own capital and less capital from outside investors, than men and non-minorities do (Verheul et al., 2008). There a couple of reasons why women and minorities use more of their own capital. As Coleman (2007 & 2009) summarizes, since women and minorities own smaller-scale businesses and have less hands-on knowledge of the business sector, they tend to have more difficulty in finding
and obtaining external financial support (Bird & Brush, 2002; Carter, 2000; Coleman, 2002). In addition, compared to men-owned businesses, women-owned businesses are not only less successful in acquiring external financial support, such as a bank loan, but are also less likely to seek financing outside of their friends and family in the first place (Heilbrunn, 2005). As a result, as Robb (2014) states, women-owned and minority-owned businesses start out with less capital and end up underperforming in terms of assets, revenue, profitability, and survival (Carter, 2000; Marlow & Patton, 2005). The funding gap is one potential barrier, harming the ability of women and minority-owned firms to survive, generate earnings, and grow (Fairlie & Robb 2008).

Personal wealth also plays a role in the funding gap. For many minorities, starting out at lower wealth levels acts as a barrier to entrepreneurship. Fairlie (2006), for example, found that historical differences in the number of Whites versus African-American entrepreneurs can be attributed to differences in levels of personal wealth between the two groups. Research has shown that minorities have less personal wealth than non-minorities. Robb (2014) uses data from the U.S. Census Bureau to estimate that Hispanic wealth levels are 12 percent of nonminority wealth levels, with approximately half of all Hispanic families possessing less than $13,375. African-Americans are worse off: their wealth levels are 8 percent of non-minority wealth levels, and half of African-American families have less than $8,650, according to Robb (2014). A lack of personal wealth presents liquidity constraints because an owner's wealth can be “invested directly in the business, used as collateral to obtain business loans, or used to acquire other businesses” (SBA).
Discrimination in business lending practices contributes to the lack of access to capital for women and minorities as well. Robb (2014) finds that despite controlling for other factors, such as creditworthiness, personal wealth, and education, Hispanic and African-American business owners are more likely to have a business loan application rejected than their white counterparts; and even if they do receive a loan, they are likely to pay higher interest rates.

*Human Capital: Differences in Experiences and Networks*

Access to capital is one major reason why women and minority-owned businesses are underperforming. A second important reason is differences in levels of human capital, such as the experiences and networks people have had access to. Several studies such as Bosma et al. (2004), Swinney et al. (2006), and Verheul and Stel (2007) distinguished a positive relationship between a high level of education of a business founder or owner and overall performance of the business (as cited in Coleman 2007). According to Coleman (2002), women face an “educational constraint,” lagging behind men in terms of their business education and hands-on experience in the sector. Access to role models or mentors also make a difference: a significant number of women who run successful high-growth companies say their motivation for starting a business came from having a mentor or role model (Robb et al., 2014).

Fairlie and Robb (2007) report a long history of studies showing that weak networking opportunities put potential black entrepreneurs at a disadvantage compared to their white counterparts. In general, the Kauffman Foundation has found that women and minority firm owners are perceived as less likely to have a robust network that they can tap into for business and partnership opportunities.
Concentration in Certain Sectors

As Coleman (2002 & 2007)’s work has found, the third major reason to potentially account for the differences in performance is that women and minority-owned businesses tend to be in sectors that are more likely to have low entry barriers, low profit margins, and high competition (Verheul & Thurik, 2001, as cited in Coleman). Women-owned businesses in the U.S., for example, are more concentrated in the service and retail sectors (Coleman, 2002).

Access to Capital During the Great Recession

As mentioned previously, one of the main reasons why women and minority-owned businesses typically underperform compared to their counterparts is access to capital. I believe the constrained capital environment of the Great Recession only served to make the differences in access to capital issue starker and made it even more difficult for women and minority small business owners to find capital to keep their businesses afloat, as further explained below, leading to lower levels of firm performance.

Lack of Alternative Sources of Capital

The recession tightened access to credit even further, drying up alternative sources of capital women and minority owners typically relied on, such as the ability to mortgage their property, their own savings, and their friends and families. The consequences of the recession were that minority- and women-owned small businesses were further undercapitalized, which meant lower sales, profits, and employment, and that they were more likely to fail than businesses receiving the optimal amount of capital.

Bank Lending
Lending is adversely affected by a tightening of monetary policy, which hurts women and minorities more than it hurts men and non-minorities. If banks avoid making riskier loans in times of financial crisis, then it makes sense that businesses that are inherently more risky—such as young and small businesses, or tech-ventures—might be most affected during times of financial crisis (SBA). Women-backed ventures are also seen as higher-risk investments, since as Coleman (2007 & 2009) summarizes, investors tend to view women entrepreneurs as less competent, credible, and investment-worthy than men, even if they have identical qualifications (Bigelow et al., 2011; Brooks et al., 2014; Thébaud, 2014). Recessions cause a period of widespread uncertainty, and since markets in general do not respond well to uncertainty, status-based discrimination may matter more. Past research by Robb et al. (2014) supports this idea: women entrepreneurs experienced significantly higher failure rates when it came to obtaining a bank loan during the Great Recession than men did.

**Hypotheses**

Based on this premise laid out in the conceptual model, this paper will focus on the following hypotheses:

1) Minority-owned small businesses disproportionately felt the effects of the recession, and were worse off compared to non-minority-owned small businesses after the Great Recession.

2) Women-owned small businesses disproportionately felt the effects of the recession, and were worse off compared to men-owned small businesses after the Great Recession.
DATA AND DESCRIPTIVE STATISTICS

The Kauffman Firm Survey (KFS) was commissioned by the Ewing Marion Kauffman Foundation and was administered every year by Mathematica Policy Research. The information in this section is drawn from the Kauffman Firm Survey Data Wiki, Data Dictionary and Annotated Questionnaires, as well as based on Zarutskie and Yang (2015)'s characterization of the KFS dataset. As stated on the Kauffman Data Wiki, the main objective of the KFS was to close the information gap on new businesses by creating publicly-available data that longitudinally tracked new businesses at both the owner and business level. By collecting a holistic set of data, Kauffman hoped to gain more insight into the entrepreneurial ecosystem.

Per the Data Wiki, the KFS survey focused on 4,928 businesses founded in 2004; the selected group was surveyed annually until 2011, resulting in eight years of panel data. As Zarutskie and Yang (2015) mention, as the largest panel of young businesses over this time period, it contains data on business performance, firm capitalization, and owner characteristics, which no other dataset does.

The survey contained detailed information on business and owners' characteristics for each of the 4,928 businesses, covering everything from work behavior to demographics to finances. Each business could list up to ten owners (referred to as owner-operators in the survey), but the primary owner was the person who filled out the survey. Owner characteristics were collected for all business owners listed, so if there were 3 owners, then characteristics of all 3 owners will be included in the survey responses.
The panel of 4,928 businesses was created by using a random sample from Dun & Bradstreet’s (D&B) database of new businesses started in 2004, which was a total pool of about 250,000 firms. Since the KFS sought to “create a panel that included new businesses founded by a person or team of people”, it excluded those businesses that were “wholly owned subsidiaries of existing businesses; businesses inherited from someone else; and not-for-profit organizations” (KFS Data Wiki).

As Zarutskie and Yang (2015) and Mathematica note in their descriptions of the KFS dataset, data for the baseline survey was initiated through a mailed letter to approximately 11,460 prospective businesses, asking them to fill out a self-administered web questionnaire. Trained interviewers follow-up with those who did not complete the web questionnaire. Overall, the KFS baseline survey reported a 43 percent response rate, resulting in a sample of 4,928 businesses, with 77 percent of the baseline survey questionnaires completed via telephone interviews, and the remaining 23 percent completed using the self-administered web questionnaire (KFS Data Wiki). After the initial interview, Mathematica conducted follow-up interviews with the 4,928 selected businesses annually through 2012.

The composition of the dataset has changed over time as some businesses have gone out of business, ceased to operate for other reasons, or have failed to respond to the survey. Due to the changes over the years, there could be a potential data quality issue, but Thebaud (2014) found that attrition rate in the KFS dataset was not a major concern because the response rate in follow-up years was quite high. In 2011, researchers found that conditional on still being in business, only 11 percent of business owners that
participated in the first year of the survey, 2004, did not respond to follow-up questionnaires over the lifetime of the survey (Thebaud, 2014; KFS Data Wiki).

**Descriptive Findings**

I replicate some of Robb’s (2014) descriptive statistics for the KFS dataset; Robb used the KFS dataset to explore differences in access to capital amongst different firm-owner and industry subgroups. Table 1 disaggregates firm owner characteristics by race and gender. As prior research has indicated, I found similar trends within the KFS dataset. As Robb (2014) found in her research when using the KFS dataset, I find that about 20 percent of minority small business owners have a net wealth above $250,000 or more, compared with more than 45 percent of non-minority owners, although men and women have almost the same levels of wealth in the KFS dataset. 13.7 percent of non-minority small business owners report having a high credit score, compared to 7 percent of minority small business owners. In terms of startup capital, minorities and women start their businesses with about half the capital that non-minorities and men use. The differences appear to persist over time.

**EMPIRICAL STRATEGY**

The overall approach used to explore the hypothesis is a difference-in-difference (DID) model to compare 1) women-owned and men-owned businesses and 2) minority-owned and non-minority-owned businesses during the time period of 2004-2011. The financial crisis in 2008 is used as a natural experiment to observe whether there is a differential effect on business performance based on race or gender. To do so, I test whether women-owned small businesses do better or worse than men-owned small businesses during and after the Great Recession and the same for minority-owned versus
non-minority-owned businesses. In order to use all eight years of panel data in the DID model, I calculated a baseline mean model for the pre-period (averaging all the pre-years from 2004-2007) and then the post-years (2008-2011) for each variable.

Essentially, the DID model allows for the comparison of two groups, who are assumed to be similar apart from gender or race, to see how they react to the financial crisis, since it differences out common time effects and controls for fixed characteristics to identify the relationship between race and gender and business performance. Based on the hypothesis, it would be expected that after the recession, women-owned businesses decrease more from their pre-recessionary trend line than men-owned businesses do. Similarly, minority-owned businesses would be expected to decrease more from their pre-recessionary trend line than non-minority-owned businesses do.

Since the KFS data allows for up to ten individuals to be designated as an owner in the survey, and about 35 percent of the sampled firms list multiple primary owners, I needed to designate a primary firm owner for each business. To do so, I followed Robb et al.’s methodology (2009), in which for firms with multiple owners the primary owner was determined by who held the largest equity share. In cases for which two or more owners held equal shares, Robb (2009) used hours worked and other firm owner variables, such as years worked, to create a rank ordering in order to define a primary owner, which is what I did as well.

**Difference-in-Differences Model**

The difference-in-differences method can be implemented as a linear regression, shown below, with $\beta_3$ being the coefficient of interest for this study.

**Hypothesis 1:** $ROA_i = \beta_0 + \beta_1Recession + \beta_2Race + \beta_3 (Recession*Race) + X_i + \varepsilon_i$

**Hypothesis 2:** $ROA_i = \beta_0 + \beta_1Recession + \beta_2Gender + \beta_3 (Recession*Gender) + X_i + \varepsilon_i$
In this model, \( ROA \) is the dependent variable (described below). \( Recession \) indicates the time period during and post-Recession, from 2008-2011. The key explanatory variable for my first hypothesis, \( Race \), is a dummy variable indicating if the business owner is a minority, defined as African-American or Hispanic, or a non-minority, defined as White. Non-minority business owners are considered to be the control group and minorities are the treatment group. For my second hypothesis, the key explanatory variable is \( Gender \), a dummy variable indicating if the primary business owner is part of the control group (male) or part of the treatment group (female). \( \beta_1 \) and \( \beta_2 \) estimate the differences in ROA between the treatment-control groups and pre-post Recession period groups, respectively. \( \beta_3 \), the coefficient on the interaction terms (\( Recession*Race \) and \( Recession*Gender \)), is the DID estimator, which indicates if the change in ROA between the pre and post-Recession periods is higher in the treatment group than it is in the control group. A positive estimate for \( \beta_3 \) would indicate there is a relatively higher ROA during and after the Recession for non-minority-owned and men-owned small businesses. \( X \) refers to owner-specific covariates, such as age and highest level of education attained, and \( \varepsilon \) is the error term.

**Dependent Variable: Firm Performance**

Firm performance can be measured in a number of ways. Generally, most studies use employment growth to assess firm performance, but I plan to use return on assets as the indicator instead. Following the logic Corsman (2015) employed in his work, firm performance is measured through firms’ return on asset (ROA), which explicitly measures whether the business is able to generate return on assets rather than simply
showing robust return on sales. ROA is measured as net income divided by total assets, where net income is the annual profit or loss and total assets is equal to the sum of cash, current assets, and tangible assets of a firm in a given year.

While return on equity (ROE) could be another possible measurement of firm’s financial performance, it is a measurement focusing on return to the shareholders of the firm. Since KFS is a survey of young firms, and the baseline is administered to firms established in 2004, many of them did not have any shareholders during the time period of the survey. ROE as a measurement of firm performance has also been criticized for making it possible for firms to maintain artificially high ROE by debt leverage and stock buybacks financed through borrowing (Hagel et al., 2010). ROA is less likely to be distorted by financial strategies and provides a clear measurement on firm performance by asking, very simply, are firms able to provide an adequate return on assets? ROA as the performance indicator also has the added benefit of making firms of different sizes comparable.

**Secondary Analysis**

To strengthen my analysis of the relationship between firm owner characteristics and small business performance, I run the same models with a different dependent variable, using liquidity instead of ROA as the indicator of firm performance.

**Hypothesis 1:**  
\[ COH_i = \beta_0 + \beta_1Recession + \beta_2Race + \beta_3(Recession \times Race) + X_i + \epsilon_i \]

**Hypothesis 2:**  
\[ COH_i = \beta_0 + \beta_1Recession + \beta_2Gender + \beta_3(Recession \times Gender) + X_i + \epsilon_i \]
I use cash-on-hand (COH), adjusted for inflation and reported in constant dollars, as a proxy for liquidity levels, since liquidity is a measure of firm performance that focuses on the cash-on-hand available to a business. A business that intends to remain a viable business entity must have enough case on hand to pay its bills as they come due, which is why liquidity can also be a measure of firm success. If a business does not have enough cash on hand, then they are likely to shutdown. Following the same logic I used when ROA was the firm performance indicator, I would expect non-minority-owned and men-owned small businesses to be more liquid, and to have more cash-on-hand than minority-owned and women-owned small businesses. A positive coefficient on the interaction terms ($\beta_3$) would indicate that that men-owned and non-minority-owned small businesses have relatively more cash on hand during and after the Recession, compared to women-owned and minority-owned small businesses.

**REGRESSION RESULTS**

Table 5 presents the regression and secondary analysis results for my first hypothesis, if non-minority-owned small businesses had a relatively higher ROA and relatively higher amounts of cash-on-hand than minority-owned small businesses. Table 6 presents the regression and secondary analysis results for my second hypothesis, if men-owned small businesses had a relatively higher ROA and relatively higher amounts of cash-on-hand than women-owned small businesses. While all the coefficients have been detailed in the tables, the parameter of interest in each equation is the coefficient on the interaction term, $\beta_3$, for Recession*Race and Recession*Gender.

**Hypothesis 1: Race**

The DID estimate of the sample shows that during and after the Recession, the
ROA of small businesses owned by a non-minority increased by 2 percentage points more between the pre and post-Recession periods compared with the change during the same period for small businesses owned by a minority, and the estimate is statistically significant.

For the secondary analysis, I used liquidity instead of ROA as the dependent variable to assess firm performance (with cash-on-hand as the proxy for liquidity). The DID estimate for the secondary analysis shows that during and after the recession, the cash-on-hand of small businesses owned by a non-minority increased by $21,955.57 more between the pre and post-Recession periods compared with the change during the same period for small businesses owned by a minority, and the estimate is statistically significant (as noted earlier, the cash-on-hand estimates are inflation-adjusted and are represented in constant dollars).

**Hypothesis 2: Gender**

The DID estimate of the sample shows that during and after the Recession, the ROA of small businesses owned by a man increased by 0.6 percentage points more between the pre and post-Recession periods compared with the change during the same period for small businesses owned by a woman, and the estimate is statistically significant.

For the secondary analysis, I used liquidity instead of ROA as the dependent variable to assess firm performance (with cash-on-hand as the proxy for liquidity). The DID estimate for the secondary analysis shows that during and after the recession, the cash-on-hand of small businesses owned by a man increased by $15,928.15 more between the pre and post-Recession periods compared with the change during the same
period for small businesses owned by a woman, and the estimate is statistically significant (as noted earlier, the cash-on-hand estimates are inflation-adjusted and are represented in constant dollars).

LIMITATIONS

While the estimates reported are statistically significant, there are potential limitations to the model used in this research. The first, and most likely limitation of the model is the number of assumptions needed for a DID model to work. In creating a baseline mean model for the pre-period and post-period, I assumed that the groups of business owners I was examining were trending similarly prior to the Great Recession. If any of the assumptions I made, especially the common trend assumption that the two groups being compared were trending similarly prior to the Recession, do not hold, then there is no guarantee the DID estimator is unbiased.

The second limitation is that data for the post-recession data was limited, since there are only two years of post-Recession data- 2010 and 2011. As a result, my analysis can only look at differences in firm performance post-Recession for the very short-term. If there were differences in how businesses rebounded in the longer-term related to firm owner characteristics, my analysis was not able to capture it.

The third limitation is external validity: results will be specific to the cohort of firms that started-up in 2004, because this is when this study started its baseline survey. Since it is the only dataset of its kind, there is no other data to compare it to.
CONCLUSION AND POLICY IMPLICATIONS

The results reported in this paper regarding the relationship between firm owner characteristics, such as race and gender, and small business performance have potential policy implications, but are really just a first step. My findings show that there is a difference in firm performance for women and minority small business owners, and that they did worse compared to their men and non-minority counterparts. What this paper does not address, however, is why women and minority small business owners experienced worse firm performance during and after the Great Recession.

Past research on minority and women business owners in general offers some potential reasons as to why there is a difference in performance, such as a lack of access to capital; different networks and life experiences; and concentration in specific sectors, such as retail and service, but the existing body of research does not use small businesses specifically. An avenue for future research to explore could be to expand or disaggregate current research to focus on minority and women small business owners to directly test if issues like access to capital are the reason why there was a difference in firm performance for minorities and women during the Recession.

In addition, future research should also consider disaggregating the data I used for this paper even further. When I examined the relationship between race of a small business owner and firm performance, I pooled African-Americans and Hispanics into one “minority” category, but there are potentially differences between groups of minority business owners.

Once more research has been conducted to examine the root causes for differences in small business performance for women and minorities, there will be the
potential for policymakers to target resources in an efficient and effective manner toward sub-groups of small business owners.

What my research does do, however, is point to the importance and need to disaggregate data to see how different sub-groups are faring. Small business owners are not a monolithic entity, and especially as women and minorities grow in terms of their numbers, influence and impact on the economy, it becomes more and more important to focus on how different groups of small business owners are faring. If each group is experiencing different problems, then each group will require different solutions. In the case of women and minority small business owners, they may require specific types of loans, targeted set-asides, and technical assistance from federal, state and local policymakers to help overcome barriers they have experienced, but more research is required to determine what the specific barriers are that minority and women small business owners have faced.
Figure 1: Conceptual Model

Race & Gender

Bank Lending Practices & Bank Loans

Personal Wealth, Friends & Family

Market Conditions (e.g. Great Recession)

Amount of Capital

Business Sector

Human Capital

Level of Education

Prior Experience & Networks

FIRM PERFORMANCE
<table>
<thead>
<tr>
<th>Firm Characteristics</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Credit Score</td>
<td>13.7%</td>
<td>7.2%</td>
<td>12.1%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Medium Credit Score</td>
<td>56.1%</td>
<td>52.8%</td>
<td>55.0%</td>
<td>55.2%</td>
</tr>
<tr>
<td>Low Credit Score</td>
<td>30.1%</td>
<td>39.5%</td>
<td>32.6%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Incorporated</td>
<td>57.1%</td>
<td>51.1%</td>
<td>47.1%</td>
<td>60.9%</td>
</tr>
<tr>
<td>Intellectual Property</td>
<td>19.9%</td>
<td>19.8%</td>
<td>18.7%</td>
<td>20.6%</td>
</tr>
<tr>
<td>Offers Products</td>
<td>51.2%</td>
<td>52.1%</td>
<td>50.7%</td>
<td>51.1%</td>
</tr>
<tr>
<td>Owned by a Team</td>
<td>31.6%</td>
<td>26.8%</td>
<td>29.4%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Based at Home</td>
<td>50.9%</td>
<td>51.6%</td>
<td>51.7%</td>
<td>49.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner Characteristics</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Wealth of $250K+</td>
<td>45.4%</td>
<td>20.6%</td>
<td>41.1%</td>
<td>42.2%</td>
</tr>
<tr>
<td>Average Hours Worked Per Week</td>
<td>42.7</td>
<td>43.5</td>
<td>40.1</td>
<td>44.3</td>
</tr>
<tr>
<td>Previous Years of Industry Experience</td>
<td>12.8</td>
<td>11.6</td>
<td>9.5</td>
<td>13.7</td>
</tr>
<tr>
<td>Owner Age</td>
<td>45.8</td>
<td>42.8</td>
<td>45.1</td>
<td>45.3</td>
</tr>
<tr>
<td>Some College</td>
<td>36.3%</td>
<td>43.2%</td>
<td>40.8%</td>
<td>34.6%</td>
</tr>
<tr>
<td>College Degree</td>
<td>32.7%</td>
<td>27.7%</td>
<td>29.4%</td>
<td>33.5%</td>
</tr>
<tr>
<td>Graduate Degree or Higher</td>
<td>18.2%</td>
<td>15.7%</td>
<td>19.7%</td>
<td>18.3%</td>
</tr>
<tr>
<td>Previous Startup Experience</td>
<td>44.3%</td>
<td>38.1%</td>
<td>37.0%</td>
<td>45.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>5.6%</td>
<td>9.0%</td>
<td>6.1%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Wholesale</td>
<td>4.9%</td>
<td>6.3%</td>
<td>5.5%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Retail</td>
<td>14.0%</td>
<td>12.9%</td>
<td>16.8%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>2.6%</td>
<td>4.9%</td>
<td>2.3%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Finance, Insurance, Real Estate</td>
<td>14.0%</td>
<td>12.9%</td>
<td>16.8%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Professional Services</td>
<td>19.4%</td>
<td>17.9%</td>
<td>16.9%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Admin and Support, Health Care</td>
<td>12.7%</td>
<td>13.4%</td>
<td>16.8%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Arts, Entertainment &amp; Recreation</td>
<td>4.8%</td>
<td>1.4%</td>
<td>4.5%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Other Services</td>
<td>11.2%</td>
<td>8.0%</td>
<td>13.4%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Source: Kauffman Firm Survey Dataset
### Table 2: DID Estimates for Hypothesis 1, Race

<table>
<thead>
<tr>
<th>Variables</th>
<th>ROA</th>
<th>Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>-.0018***</td>
<td>-3827.76**</td>
</tr>
<tr>
<td></td>
<td>(.0007)</td>
<td>(1626.4)</td>
</tr>
<tr>
<td>Recession</td>
<td>-.0019</td>
<td>15659.13</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(8170.78)</td>
</tr>
<tr>
<td>Race X Recession</td>
<td>.02**</td>
<td>21955.57***</td>
</tr>
<tr>
<td>DID Coefficient</td>
<td>(.009)</td>
<td>(8755.68)</td>
</tr>
<tr>
<td>Education</td>
<td>.00045</td>
<td>251.45</td>
</tr>
<tr>
<td></td>
<td>(.0009)</td>
<td>(703.69)</td>
</tr>
<tr>
<td>Gender</td>
<td>-.0083**</td>
<td>-8144.8***</td>
</tr>
<tr>
<td></td>
<td>(.004)</td>
<td>(3351.93)</td>
</tr>
<tr>
<td>Age</td>
<td>-.0007</td>
<td>-2347.9</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(1339.7)</td>
</tr>
</tbody>
</table>

Notes: N=4,386. Age is measured in number of years. Education is measured in number of years of schooling. Gender is a dummy variable, with the control being male, and the treatment being female. * = significant at 10% level [p<0.05]. ** = significant at 5% level [p<0.01]. *** = significant at 1% level [p<0.001].
Table 3: DID Estimates for Hypothesis 2, Gender

<table>
<thead>
<tr>
<th>Variables</th>
<th>ROA</th>
<th>Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.001*</td>
<td>-5150.14</td>
</tr>
<tr>
<td></td>
<td>(.0005)</td>
<td>(4693.29)</td>
</tr>
<tr>
<td>Recession</td>
<td>-.0006</td>
<td>15928.15**</td>
</tr>
<tr>
<td></td>
<td>(-.0008)</td>
<td>(5708.21)</td>
</tr>
<tr>
<td>Gender X Recession</td>
<td>.006**</td>
<td>25614.52***</td>
</tr>
<tr>
<td>DID Coefficient</td>
<td>(.003)</td>
<td>(6635.43)</td>
</tr>
<tr>
<td>Education</td>
<td>.0005</td>
<td>129.95</td>
</tr>
<tr>
<td></td>
<td>(.0009)</td>
<td>(691.07)</td>
</tr>
<tr>
<td>Race</td>
<td>.0059*</td>
<td>445.63**</td>
</tr>
<tr>
<td></td>
<td>(.0027)</td>
<td>(213.12)</td>
</tr>
<tr>
<td>Age</td>
<td>-.0002</td>
<td>-1584.09</td>
</tr>
<tr>
<td></td>
<td>(.0017)</td>
<td>(1323.42)</td>
</tr>
</tbody>
</table>

Notes: N=4,386. Age is measured in number of years. Education is measured in number of years of schooling. Race is a dummy variable, with the control being non-minority, defined as White, and the treatment group considered as minority, defined as African-American or Hispanic. * = significant at 10% level [p<0.05]. ** = significant at 5% level [p<0.01]. *** = significant at 1% level [p<0.001].
BIBLIOGRAPHY


