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**Access to Capital by High-Growth Women-Owned Businesses**

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## **Introduction**

This report examines factors affecting access to capital for high growth women-owned or women-led firms. Prior research suggests that significant gender differences in firm employment, size, and growth rates persist (Bitler et al., 2001; Fairlie & Robb, 2009; Coleman & Robb, 2009). Data from the United States Census Bureau indicate that less than 30% of businesses are owned by women and only 12% of those firms employ anyone other than the business owner are herself. Only 2 percent have 10 or more employees. Census data indicate women-owned employer firms make up just 16% of employer firms and that only 2 percent of women-owned firms in the United States have revenues in excess of \$1 million. (*2007 Survey of Business*).

Some researchers attribute women's lower levels of participation in growth-oriented entrepreneurship to gender differences in key resource inputs in the areas of human, social, and financial capital (Carter et al., 1997; Coleman, 2007; Fairlie & Robb, 2009; Menzies et al., 2004; Orser et al., 2006; Robb & Wolken, 2002). Recent studies indicate that women-owned entrepreneurs raise small amounts of capital to finance their firms and are more reliant on personal rather than external sources of financing (Coleman & Robb, 2009; Coleman & Robb, 2010). Within the context of growth-oriented entrepreneurship, this distinction is important, because growth-oriented firms typically require substantial amounts of external capital in the form of both debt and equity. If women entrepreneurs do not seek, or if they are not able to obtain, external capital, their prospects for growing their firms are diminished considerably.

This report provides an overview on issues relating to access to capital for women-owned firms with a particular focus on growth-oriented firms. To date, comparatively few studies have examined the financing issues and strategies of growth-oriented women-owned firms due to a

lack of data. More recently, however, the Kauffman Firm Survey (KFS) has furnished a large data set on more than 4,000 U.S. firms launched in 2004. Data on these firms are collected annually to create a panel data set covering the years 2004-2011. This data set allows us to examine the financing behavior and patterns of growth-oriented women-owned firms over an eight-year timeframe. The KFS provides data on both owner and firm characteristics in addition to motivations, attitudes, perceived barriers, and sources of financing. This level of detail allows us to overcome some of the data limitations of earlier studies that have attempted to explore the theme of access to capital in women-owned firms. This study expands upon our understanding of this topic and should help government officials develop policies directed toward supporting women entrepreneurs in their efforts to grow their firms.

## **Background**

Women-owned firms represent an important segment of the business sector. According to estimates using the latest available data from the U.S. Census Bureau, there were nearly 9 million privately-held women-owned firms in the United States in 2012 (U.S. Census Bureau 2012). As shown in Table 1, these firms generated an estimated \$1.4 trillion in sales and employed 7.8 million people. Women-owned firms continue to comprise a minority of all firms (30%) and they continue to generate much smaller shares of revenues (3.8%), employment (6.2%), and payroll (4.3%). While their share in the number of businesses continues to grow over time, the shares of employer firms, revenues, employment, and payroll have stagnated or even declined over the last two decades.

Table 1: Women-Owned Businesses

	1997	2002	2007	2012
<b>Women</b>				
Firms (Number)	5,417,034	6,489,483	7,793,425	8,943,038
Receipts (Millions of dollars)	\$818,669	\$940,775	\$1,192,781	\$1,358,187
Employer Firms (number)	846,780	916,768	911,285	956,116
Receipts (millions of dollars)	\$717,764	\$804,097	\$1,010,470	\$1,136,816
Employees (number)	7,076,081	7,146,229	7,587,020	7,780,716
Annual payroll (millions of dollars)	\$149,116	\$173,709	\$218,136	\$249,340
<b>All</b>				
Firms (Number)	20,821,934	22,974,685	27,110,362	29,924,088
Receipts (Millions of dollars)	\$18,553,243	\$22,627,167	\$30,181,461	\$35,415,508
Employer Firms (number)	5,295,151	5,524,813	5,752,975	5,982,137
Receipts (millions of dollars)	\$17,907,940	\$21,859,758	\$29,208,766	\$34,292,981
Employees (number)	103,359,815	110,786,416	118,668,699	126,247,194
Annual payroll (millions of dollars)	\$2,936,493	\$3,813,488	\$4,886,977	\$5,829,470
<b>Women as a Percentage of All</b>				
Firms	26.0%	28.2%	28.7%	29.9%
Receipts	4.4%	4.2%	4.0%	3.8%
Employer Firms	16.0%	16.6%	15.8%	16.0%
Receipts of Employer Firms	4.0%	3.7%	3.5%	3.3%
Employees	6.8%	6.5%	6.4%	6.2%
Annual Payroll	5.1%	4.6%	4.5%	4.3%

Source: 1997, 2002, and 2007 Surveys of Business Owners and Author Calculations.

An increasing number of studies have examined access to capital as a possible impediment to the growth of women-owned firms (Brush et al., 2001; Brush et al., 2004; Coleman & Robb, 2009). This study seeks to extend this line of inquiry by using data from the Kauffman Firm Survey. To our knowledge, this is the first study to explore issues relating to access to capital with a specific focus on growth-oriented women-owned firms using a large, longitudinal data set of U.S. firms.

### Previous Research

Prior research has fairly consistently indicated that women-owned small businesses underperform businesses owned by men in measures of size and growth. Coleman (1999) used data on U.S. firms from the 1993 National Survey of Small Business Finances to find that women-owned firms were smaller than men-owned firms, were more likely to be organized as sole proprietorships, and were more likely to be in service lines of business. Bitler et al. (2001) had similar findings using data from the 1998 Survey of Small Business Finances. Coleman (2007) also used data from the 1998 SSBF to find that financial capital was a significant predictor of growth in women-owned firms.

Using data from the Census Bureau's Characteristics of Business Owners Survey, Fairlie and Robb (2009) found that women-owned firms were substantially smaller and less likely to hire employees than those owned by men. Coleman and Robb (2009) had similar findings using four years of data from the Kauffman Firm Survey. A relatively small percentage of women-owned firms are in rapid growth or high technology lines of business (Menziez et al., 2004; Morris et al., 2006). Recent studies suggest that women entrepreneurs are making gains in fields previously dominated by men (*National Women's Business Council 2012 Annual Report*), but there is still a significant gap in fields such as information technology, manufacturing, construction, and transportation (Hackler et al., 2008; *Developments in Women-owned Business, 1997-2007*, 2011). These gaps are important to understand because these industries provide fertile ground for both revenue generation and employment opportunities.

Qualities typically associated with innovation and high growth entrepreneurship include self-confidence and a willingness to assume risks that may accompany failure. Prior research attests to gender differences in both of these dimensions (Koellinger et al., 2008; Minniti, 2010). In terms of self-confidence, women are often seen, or even describe themselves, as less confident

in their own abilities than men (Allen et al., 2008; Catalyst, 2000). Similarly, prior research has often found that women lag men in the area of *self efficacy* or “the self-confidence that one has the necessary skills to succeed in creating a business” (Wilson et. al, 2007: 388). From the standpoint of risk aversion, a number of studies have similarly identified the fear of failure as a major impediment to the launch and growth of women-owned firms (Allen et al., 2008; Canizares & Garcia, 2010; Cliff, 1998; Sexton & Bowman-Upton, 1990; Watson & Newby, 2005).

A 2010 innovation survey in the United States sponsored by UNCTAD focused on gender differences. One interesting finding from the data was that women business owners had fewer failure experiences than men, which may suggest, women are more likely to take *calculated risks* and develop contingency plans if events do not transpire as anticipated (Coleman & Robb, 2012; Coleman & Robb 2014). Women and men business owners in the sample also exhibited different responses to failure experiences. Whereas both women and men responded that their own hard work was the major factor in recovering from a failure (43.9 per cent and 37.9 per cent), men were much more likely to attribute their recovery to self-confidence than women (33.3 per cent vs. 17.5 per cent). Consistent with prior research, women appear to rely more heavily on family support than men (7.9 per cent vs. 1.5 per cent). Women were also more willing to turn to external advisors (7.9 per cent vs. 4.5 per cent) to help them recover from a failure experience.

Taken together, much of this previous literature suggests that women are less likely to be involved in highly risky and innovative types of industries and activities. However, a new and growing stream of research contends that our definitions of innovation tend to be *gendered* and biased towards the types of industries (such as information technology and manufacturing)

typically dominated by men (Blake & Hanson, 2005; Eriksson & Aromaa, 2012; Ranga & Etzkowitz, 2010; Sjogren & Lindberg, 2012). This contention is consistent with observations regarding the *gendered* nature of entrepreneurship in general. In reviewing a sample of 81 research articles, Ahl (2006: 595) found “a tendency to recreate the idea of women as being secondary to men and of women’s businesses being of less significance.” Similarly, Brush et al. (2009: 19) argued that, for women, context affects the ways in which the entrepreneurial process unfolds as well as on “growth prospects or even novelty of the venture.”

In terms of financing firms, regardless of whether they are high growth or lifestyle firms, previous studies reveal that women start their businesses with smaller amounts of capital and are less likely to raise capital from external sources (Coleman, 2000; Coleman & Robb, 2009; Constantinidis et al., 2006; Hadary, 2010; Orser et al., 2006; Fairlie & Robb, 2009; Robb & Wolken, 2002). In particular, women employ a much lower percentage of external equity capital to finance their firms (Coleman & Robb, 2009; Ibid, 2012). Some researchers attribute this discrepancy to lower levels of demand prompted by women entrepreneurs’ preference for less, or at least slower, rates of growth (Cliff, 1998; Morris et al., 2006; Orser & Hogarth-Scott, 2002). Others, however, find evidence of supply problems pointing out that networks providing access to external equity tend to be closely knit and male dominated (Brush et al., 2004). Taken together, these results from prior research indicate gender differences in financial strategies and structures persist, and there is a lower predilection for growth among women entrepreneurs. In light of that, one of our tasks in this study will be to identify the strategies and structures, or “best practices” that do, in fact, contribute to and enhance growth in entrepreneurial firms.

From a public policy perspective, nurturing high growth firms is important, because growth-oriented firms generate a larger number of jobs and create a greater economic impact

(Tracy, 2011). A recent survey in the first quarter of 2014 of Inc. 500|5000 firms showed just how different financing strategies are for female founders and male founders of these high growth firms. Male founders were more than three times as likely as female founders to access equity financing through angels or VCs (14.4% versus 3.6%). Men were also more likely than women to tap networks of close friends (9.2% versus 1.8%) and business acquaintances (13.5% versus 5.4%). More than half of each (51.3% of men and 55.4% of women) used bank financing as a source of capital for their Inc. 5000 firm (Coleman and Robb, forthcoming).

## **DATA AND RESEARCH METHODOLOGY**

The sample for this study is the pooled cross-sectional time series of more than 4,0000 businesses in the Kauffman Firm Survey, a nationally representative survey of the cohort of businesses that started operations in 2004, followed over the 2004 to 2011 period. Detailed information on the sample and its construction is available at <http://sites.kauffman.org/kfs/>.

We are able to exploit rich information regarding the owner and firm characteristics, as well as detailed data on financing, motivation, and performance. The baseline survey of new businesses has been followed up with seven subsequent annual surveys to date in an ongoing effort to track new business trajectories (Ballou, Barton, Desroches, Potter, Reedy, Robb, Shane and Zhao 2008; Reedy and Robb 2009). Importantly, the most recent surveys spanned the financial shocks of 2008-2010, which began in the fourth year of operations for the firms in this survey. Thus, we are able to examine access to capital, financial strategies, and structures in women-owned firms in a relatively benign economy as well as in a much more challenging economy.

The method for assigning owner demographics at the firm level was to first define a



primary owner. For firms with multiple owners (35 percent of the sample), the primary owner was designated by the largest equity share. In cases where two or more owners owned equal shares, hours worked and a series of other variables were used to create a rank ordering of owners in order to define a primary owner. (For more information on this methodology, see Robb et al., 2009). Firms with a female primary owner are classified as women-owned firms. All empirical analyses used sample weights provided that adjust for non-response and over-sampling of high-tech firms.

We first provide an overview of the firms in the KFS at the baseline year of 2004, comparing firms owned by men and women, and then comparing high growth potential firms owned by women with women-owned firms overall. In this analysis, high growth potential firms are those that have at least five employees by the end of the period. While this may seem relatively small, remember that out of around 25 million tax returns filed each year, only about 6 million businesses have any employees other than the owners themselves. A very small percentage of firms have more than five employees. As such, this was used to proxy for high growth potential.

We also take the largest firms owned by women and by men as measured by employment in 2011, the end year of the survey. This group is called “Top 25”. There are some interesting differences by gender in terms of the top ranking firms owned by men versus women. For example, by 2011, 40% of the top female ranked firms were solo-owners, compared with about 15% of top male ranked firms. That is, 85% of the top ranked firms owned by men had team ownership, compared with just 60% of female owned firms. And the sizes were dramatically different as well. The employment threshold that the top women-owned firms met was just 9 employees, compared with more than 40 employees for firms owned by men. In fact, about half

the top ranked female owned firms had less than 15 employees, while non of the top male ranked firms had less than 40 employees. In fact, half of the firms owned by men employed more than 65 people each.

We considered another measure of high growth potential by using growth aspirations for the 2008-2011 period that respondents were asked about in a follow up survey. However, we see different realized growth rates, compared with expected, which is interesting in it's own right, but makes using it as a proxy for high growth potential problematic. Yet, when we examine how expectations and motivations regarding growth differ between female and male entrepreneurs, the comparison yields some suggestive evidence about both the demand and the supply of growth capital, particularly external equity financing, for women-owned firms.

First, in terms of expectations for growth, respondents were asked in 2009 how fast, if at all, they expected their firms to grow over the 2008-2011 period. In 2012, the growth over the period could actually be measured from the employment numbers provided for 2008 through 2011. While we only have growth expectations for firms that survived through 2008, we can still see some striking gender differences in terms of expectations of growth over the period. While nearly one quarter of males said they expected their firms to grow by at least 30% over the period, only 16% of women expected this rate of growth. About 38% of females expected to grow by less than 5% at most or even decrease over the period. This compares with 35% of men. More than 46% of women expected their firms to grow by 5% to 29% over the period, compared with 41% of men.

Table 2: Growth Expectations and Actual Growth (2008-2011)

	2008-2011 Growth expectations		Actual growth for 2008-2011	
	Male	Female	Male	Female
Decrease	15.8%	13.5%	23.3%	22.4%
Not change or increase by less than 5%	19.4%	24.4%	22.1%	18.5%

Increase between 5-29%	40.7%	46.2%		1.8%	0.9%
Increase by 30% or more	24.1%	16.0%		52.9%	58.2%
	100%	100%		100%	100%

	Number of employees - Growth expectations			Number of employees - Actual growth	
	Male	Female		Male	Female
2004					
Decrease	1.9	1.7		1.9	1.3
Not change or increase by less than 5%	1.3	0.7		2.3	1.8
Increase between 5-29%	2.3	1.7		2.1	1.5
Increase by 30% or more	1.9	1.6		2.2	1.3
Total	2.0	1.4		2.2	1.3
2008					
Decrease	4.0	1.9		3.7	2.6
Not change or increase by less than 5%	2.2	2.2		6.8	2.8
Increase between 5-29%	4.6	2.6		6.9	2.6
Increase by 30% or more	6.1	3.9		3.6	2.6
Total	4.5	2.6		4.4	2.6
2011					
Decrease	5.1	2.4		3.0	1.9
Not change or increase by less than 5%	1.9	1.6		9.1	3.2
Increase between 5-29%	5.4	2.7		8.8	8.8
Increase by 30% or more	7.5	4.9		5.5	2.9
Total	5.3	2.8		5.9	2.8

Source: KFS microdata

When we compare actual employment growth rates over the 2008- 2011 period, we see more than 58% of women-owned firms grew by 30% or more, compared with 53% of firms owned by men. About 23% of males and 22% of females experienced a decrease in employment over the 2008-2011 period, while about 24% of men and 20% of women saw an increase in employment of 30% or less. Yet regardless of expectations of growth or realized growth, female-owned firms were smaller than male-owned firms in terms of starting year employment, 2008 employment, or end year employment (2011).

Consistent with previous research, women-owned firms are smaller than those owned by men, as measured by revenues, employment, or assets. We see this gap even those that were the largest measured by employment.

Looking at just the high growth potential firms in the middle columns, women were of similar age as men, and very well educated. However, they had fewer years of previous industry experience and were much less likely to have previous startup experience. In terms of firm characteristics, women-owned firms that were high growth potential had fewer employees, less likely to be in high tech fields, and less likely to have intellectual property than firms owned by men. They were also much less likely to have product offerings and much more likely to be home based. Finally, they were slightly less likely to be incorporated or to be owned by teams and had lower credit scores.

In terms of how high growth potential firms compared with firms overall, there were also some interesting differences. They were more likely to be owned by teams, to be in high tech industries, to be located outside of the home, to have higher credit scores, and to be incorporated. In addition, high growth firm owners had higher levels of education than owners of firms on average. The highest ranked firms in terms of employment were much more likely to have owners with previous startup experience and more years of industry experience.

Table 3: Baseline Characteristics (2004)

Firm Characteristics	All	All		High Growth Potential		Top 25	
		Female	Male	Female	Male	Female	Male
Employment	1.74	1.13	2.06	3.76	6.28	5.29	19.96
High Tech	5.5%	2.6%	6.9%	5.1%	9.0%	4.9%	8.6%
Any Intellectual Property	19.5%	18.2%	19.9%	17.3%	27.1%	9.2%	44.5%
Product Offered	51.8%	54.8%	50.5%	37.1%	60.0%	46.6%	44.3%
Home Based	49.8%	50.9%	49.4%	32.7%	16.8%	16.0%	10.6%

Incorporated	57.8%	48.5%	62.0%	83.5%	87.1%	88.0%	97.0%
Team Ownership	30.1%	28.5%	30.8%	52.9%	57.8%	56.4%	58.5%
High Credit Score	8.5%	7.8%	8.8%	12.9%	20.1%	17.0%	7.0%
Medium Credit Score	49.0%	47.1%	50.0%	47.9%	57.0%	42.0%	76.0%
Low Credit Score	42.5%	45.2%	41.2%	39.3%	23.0%	41.0%	16.9%
Primary Owner Characteristics							
Hours Worked	42.2	40.2	43.1	42.3	56.1	39.8	48.1
Owner Age	44.9	44.8	44.9	42.7	44.1	45.7	46.3
Prev. Industry Exp.	11.7	8.9	12.9	10.4	14.5	11.9	16.8
Prev. Startup Exp.	42.7%	35.7%	45.9%	33.0%	48.2%	53.3%	63.5%
Some High School	2.0%	0.8%	2.6%	0.0%	0.5%	0.0%	0.0%
High School Grad or Less	13.6%	10.6%	15.3%	5.0%	7.6%	5.1%	0.7%
Some College	36.6%	42.7%	34.8%	30.3%	25.6%	31.8%	33.4%
College Grad	30.2%	28.1%	31.8%	45.1%	42.1%	53.8%	28.0%
Graduate Degree+	17.5%	18.1%	17.7%	19.7%	24.8%	9.3%	37.9%

Source: KFS microdata

We next examine the types of startup financial capital, both internal and external, that are employed by women-owned firms and how the amounts and sources of capital used differ from those of firms owned by men. In addition, we examine how the sources of capital used by growth-oriented firms differ from those that are smaller, lifestyle businesses.

We follow Robb and Robinson (2013) and group financial capital into six main categories: 1) Owner Equity: Equity invested by the owner(s) of the firm; 2) Insider Equity: Equity invested by spouse(s) or parent(s) of the owner(s); 3) External Equity: Equity invested by informal investors, venture capitalists, other businesses, government, or other individuals, such as angel investors; 4) Owner Debt: Owner loan to the business, personal credit cards in the name of the owner(s) used for business financing; 5) Insider Debt: Personal credit for the business provided to the owner from family, employees, and others & business credit provided by family of the owners, employees of the businesses; 6) External Debt: Business credit cards, personal bank loans, business bank loans, business credit lines, other business loans, business loans from

the government, business loans from nonbank sources, other business loans from individuals and others. Thus, Total Financial Capital is the sum of all financing from the six categories: owner debt, owner equity, insider debt, insider equity, external debt, and external equity.

As shown in Table 4, women started their firms with about \$75,000 on average, compared with nearly \$135,000 for men. Women were slightly more reliant on owner equity and insider and outsider debt. The biggest difference was with regard to outside equity. Only 2 percent of the funding came from outside equity for women-owned firms, compared with 18 percent for men. This gap also occurred in both the high growth potential firms and the top ranked firms by employment. For women-owned firms the percentages were 6% and 9% respectively, while for men the percentages were 18% and 48%.

Overall, high growth potential firms started their businesses with about twice the capital as non-growth businesses. They were also more likely to rely out outsider financing, both debt and equity. Firms owned by men, growth or non growth, used far more capital than their female-owned business counterparts. While male-owned firms used nearly twice the amount of capital that female-owned firms did in the non-growth cases, they used more than twice the amount of capital that females did in the high growth potential cases. And for the top employer firms, the gap was even larger. Thus, women are relatively less capitalized than men, and even more so in high growth potential businesses, and especially so in the top employer firms. Recall from the pervious section that the top employer firms that were male-owned, were much larger than the top employer firms owned by women.

Table 4: Startup Capital (2004)

All	All		High Growth Potential		Top 25	
	Female	Male	Female	Male	Female	Male

Owner Equity	\$33,153	\$24,087	\$37,087	\$46,764	\$79,356	\$47,076	\$170,472
Insider Equity	\$2,106	\$1,901	\$2,022	\$930	\$4,808	\$1,835	\$-
Outsider Equity	\$16,619	\$1,450	\$23,794	\$8,868	\$56,037	\$19,664	\$611,814
Owner Debt	\$4,810	\$3,750	\$5,327	\$6,152	\$18,188	\$7,282	\$45,058
Insider Debt	\$6,699	\$5,994	\$7,160	\$12,169	\$16,199	\$19,130	\$45,408
Outsider Debt	\$51,847	\$37,871	\$59,010	\$73,379	\$144,731	\$116,077	\$407,121
Total Fin. Cap.	\$115,233	\$75,053	\$134,399	\$148,262	\$319,320	\$211,064	\$1,279,873
Outside Debt Ratio	19%	18%	19%	21%	28%	23%	16%

Source: KFS microdata

What we observe are financing patterns, which reflect outcomes but not credit experiences. The KFS does ask about outside equity applications for three years: 2009 through 2011. Respondents are asked if they didn't apply for outside equity at some point when they wanted it because they felt they'd be turned down. Between 4 and 5% of respondents, both women and men, indicated that was the case in each of the years.

While we cannot delve into the demand of outside equity, we can look at the demand for credit. We have credit market experiences for the years 2007 through 2011. As we see from Table 5, in terms of new loan applications, about 10% of women-owned firms sought out new credit in the years from 2007-2009, compared with about 13% for men. The rates fell slightly for each in the 2010-2011 period. For high growth potential firms, about 30% of male and female-owned firms sought out new credit in the early years of observation, but those numbers dropped quite a lot for women in 2010 and 2011 and only slightly for men. Due to small samples sizes, we won't spend too much time discussing the top 25, but it's interesting to note that women were more likely to apply for new loans in 2007 and 2008.

It appears women were more likely to be discouraged from applying for loans for fear of having their loan application denied, especially in the height of the financial crisis of 2008-2010.

Fear was higher among the high growth potential firms for women, but not for men. It does appear that the fear was somewhat justified for women. In terms of loan approvals, they were much less likely to have their loans approved, especially for the larger, high growth potential firms. Approval levels dropped for both men and women during the crisis years, but more so for women-owned firms. Overall, high growth potential firms were much more likely to seek credit than non-growth companies.

Remember from the previous section that women had lower credit scores than men. We next examine credit market experiences in a multivariate setting so that we can control for differences in factors that might influence those experiences.

Table 5: Credit Market Experiences (2007-2011)

	All	All		High Growth Potential		Top 25	
		Female	Male	Female	Male	Female	Male
<b>New Loan Apps</b>							
2007	12.3%	9.8%	13.3%	30.9%	29.5%	44.9%	25.8%
2008	12.6%	10.4%	13.6%	27.3%	28.1%	32.3%	24.8%
2009	12.0%	10.2%	12.5%	29.0%	29.2%	19.4%	40.4%
2010	11.2%	8.3%	11.9%	15.2%	26.1%	19.1%	36.0%
2011	10.5%	9.9%	10.8%	17.5%	23.6%	10.3%	48.2%
<b>Did not Apply for Fear of Denial</b>							
2007	15.9%	16.8%	15.6%	14.5%	15.6%	24.4%	0.8%
2008	19.2%	21.1%	18.2%	29.2%	19.2%	27.8%	25.9%
2009	20.5%	22.7%	19.4%	39.2%	18.7%	47.7%	8.6%
2010	18.6%	19.8%	17.3%	31.5%	15.0%	37.5%	18.6%
2011	18.0%	20.0%	17.1%	31.3%	17.6%	37.3%	0.7%
<b>Always Approved</b>							
2007	71.3%	74.0%	70.3%	68.4%	84.4%	51.0%	95.4%
2008	65.2%	56.7%	67.6%	47.6%	69.9%	59.8%	82.3%
2009	60.9%	54.9%	63.0%	37.1%	71.0%	*	81.8%
2010	61.3%	56.3%	64.4%	45.6%	74.3%	*	78.0%
2011	68.4%	58.6%	73.2%	56.3%	82.7%	*	92.7%

\* Sample size too small

Source: KFS microdata



## Multivariate Analysis

We next use multivariate regressions to examine the determinants of financing patterns (outsider equity, outsider debt ratio) and credit market experiences (not applying for fear of denial, loan application outcome) to look at gender differences controlling for other factors. For example, the model for outside debt ratio can be expressed as a function of the following characteristics:

$$\text{Outside Debt Ratio } (t)_i = \alpha + \beta_1 \text{Gender}_i + \beta_2 \text{Firm}_i + \beta_3 \text{Owner}_i + \text{CredRisk}(t)_i + e_i$$

where:

*Firm* is the vector of firm characteristics such as baseline employment, legal form, industry, product offering, and industry (2 digit NAICS level controls);

*Owner* is the vector of the entrepreneur's personal characteristics such as age, education, industry experience, startup experience, and team ownership;

*Gender* is a dummy variable equal to 1 if the primary owner is female; and

*CreditRisk* is a measure of the firm's creditworthiness, which also provides an indication of the firm's ability to raise external capital.

The dependent variables we examine are the following: log of total financial capital, the ratio of outside debt to total financial capital, the log of outsider equity, not applying for a loan when credit was needed due to a fear of having the loan application denied, and loan application(s) always approved. We run the multivariate regressions pooled with a gender dummy for each of these models for the whole sample. Results are presented in Tables 6-10.

The first multivariate regression looked at the log of total financial capital injected in each year. As shown in Table 6, the coefficient on female was negative in each of the eight years examined and was statistically significant in the years after startup and before the financial crisis. So, even after controlling for industry and other factors, women were still likely to use less financial capital in several years. The coefficient on high growth potential was also generally positive and was statistically significant in the last four years covered in the survey (2008-2011). Other important factors were previous startup experience (positively related), good credit scores (positive), incorporation (positive), product offerings (positive), home based (negative), employment (positive), and team ownership (positive).

In terms of outsider equity (venture capitalists, angel investors, business investors), women-owned firms were less likely to rely on this source, even after controlling for industry, high growth potential, and a myriad of other factors. The coefficient on female ownership was negative and statistically significant in five of the eight years of observation. Higher education was generally positive and statistically significant, while startup experience was positively related and statistically significant in three of the eight years of observation. Incorporation and intellectual property were positive and statistically significant in the early years of observation (the first three years for incorporation and the first five years for intellectual property). Employment and team ownership were also positively related and statistically significant in many of the years, while the coefficient on high growth potential was mixed and only statistically significant in two of the years.

Table 6: Regressions by year of Log of Total Financial Capital

	2004	2005	2006	2007	2008	2009	2010	2011
Female	-0.0380 (0.128)	-0.739*** (0.208)	-0.665*** (0.234)	-0.726*** (0.270)	-0.0734 (0.271)	-0.444 (0.288)	-0.0886 (0.312)	-0.0950 (0.314)
Some College	-0.0266 (0.182)	-0.0433 (0.306)	0.0252 (0.339)	0.223 (0.400)	0.246 (0.403)	0.833* (0.430)	0.553 (0.453)	0.698 (0.473)
Coll. Degree	-0.135 (0.200)	0.0614 (0.326)	-0.328 (0.358)	0.175 (0.420)	0.307 (0.424)	1.017** (0.443)	-0.0155 (0.474)	0.276 (0.502)
Grad Degree	0.0508 (0.224)	0.326 (0.360)	-0.0267 (0.394)	0.333 (0.459)	-0.228 (0.474)	1.178** (0.485)	-0.461 (0.522)	0.315 (0.546)
Startup Exp.	0.0961 (0.121)	0.402** (0.188)	0.530** (0.209)	0.394* (0.238)	0.560** (0.242)	0.160 (0.257)	0.458* (0.272)	0.407 (0.277)
Ind.Experience	-0.0320*** (0.00636)	-0.0221** (0.00927)	-0.0243** (0.0107)	-0.0127 (0.0122)	0.000483 (0.0123)	-0.0126 (0.0130)	-0.0151 (0.0140)	-0.0207 (0.0140)
Owner Age	0.0778** (0.0382)	0.0624 (0.0542)	0.0333 (0.0606)	-0.0678 (0.0727)	-0.104 (0.0737)	0.0570 (0.0797)	0.0722 (0.0868)	0.139* (0.0844)
Aqe squared	-0.000660 (0.000419)	-0.000623 (0.000576)	-0.000314 (0.000642)	0.000850 (0.000767)	0.00110 (0.000774)	-0.000435 (0.000839)	-0.000437 (0.000922)	-0.00124 (0.000900)
Hours worked	0.0305*** (0.00282)	0.0283*** (0.00411)	0.0271*** (0.00475)	0.0291*** (0.00519)	0.0264*** (0.00536)	0.0221*** (0.00561)	0.0202*** (0.00594)	0.0269*** (0.00585)
High Credit Score	0.722*** (0.254)	0.970*** (0.346)	0.541 (0.395)	0.783* (0.449)	0.904* (0.469)	0.371 (0.495)	0.390 (0.540)	0.428 (0.520)
Med. Credit Score	0.632*** (0.127)	0.666*** (0.195)	0.410* (0.218)	0.109 (0.250)	0.176 (0.258)	-0.00131 (0.266)	0.0822 (0.283)	0.176 (0.290)
Incorporated	0.642*** (0.131)	0.562*** (0.205)	0.690*** (0.230)	0.257 (0.269)	0.207 (0.267)	0.717** (0.282)	0.556* (0.299)	0.558* (0.302)
Intel. Property	0.0529 (0.145)	0.574*** (0.219)	0.224 (0.258)	0.430 (0.290)	0.285 (0.305)	0.178 (0.307)	0.430 (0.330)	0.336 (0.340)
Product	0.347** (0.139)	0.675*** (0.209)	0.775*** (0.229)	0.717*** (0.268)	0.548** (0.275)	0.827*** (0.289)	0.610** (0.296)	0.511* (0.307)
Home Based	-0.781*** (0.137)	-0.518** (0.206)	-0.453** (0.225)	-0.513** (0.262)	-0.631** (0.270)	-0.511* (0.279)	-0.237 (0.301)	0.242 (0.295)
Employment	0.0665*** (0.0188)	0.0691*** (0.0227)	0.0580*** (0.0213)	0.0276 (0.0336)	0.0541* (0.0284)	0.0866*** (0.0300)	0.0343 (0.0345)	0.0288 (0.0341)
Team Ownership	0.408*** (0.145)	0.511** (0.217)	0.188 (0.249)	0.280 (0.290)	0.0797 (0.293)	0.521* (0.306)	0.372 (0.333)	-0.0943 (0.328)
High Growth Pot.	0.344 (0.255)	0.540 (0.342)	-0.127 (0.393)	0.457 (0.419)	0.786* (0.428)	0.963** (0.417)	1.943*** (0.457)	1.960*** (0.443)
Constant	4.985*** (0.908)	3.800*** (1.299)	4.882*** (1.454)	6.600*** (1.764)	7.993*** (1.795)	2.085 (1.949)	0.732 (2.105)	-0.555 (2.063)
Observations	3,971	3,458	3,031	2,540	2,415	2,209	2,034	1,893
R-squared	0.173	0.123	0.087	0.083	0.082	0.100	0.087	0.091

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 7: Regressions by year of Log of Outsider Equity

	2004	2005	2006	2007	2008	2009	2010	2011
Female	-0.230*** (0.0817)	-0.192** (0.0776)	-0.0798 (0.0788)	-0.140*** (0.0530)	-0.122** (0.0502)	0.0879 (0.0806)	-0.0979* (0.0569)	0.00994 (0.0897)
Some College	0.194* (0.102)	0.173** (0.0725)	0.171* (0.0972)	-0.0253 (0.0671)	0.0898 (0.0606)	0.0623 (0.0596)	-0.000299 (0.0690)	0.0768 (0.0513)
Coll. Degree	0.0539 (0.115)	0.221** (0.0933)	0.150 (0.103)	0.127 (0.0785)	0.0316 (0.0593)	0.0892 (0.0675)	0.0347 (0.0946)	0.151** (0.0765)
Grad Degree	0.280* (0.154)	0.344*** (0.123)	0.418*** (0.153)	0.403*** (0.144)	0.231** (0.108)	0.0382 (0.0777)	0.0432 (0.122)	-0.0260 (0.0476)
Startup Exp.	0.125 (0.0870)	0.112 (0.0783)	0.0942 (0.0804)	0.0157 (0.0713)	0.132** (0.0596)	0.0956 (0.0745)	0.116* (0.0649)	0.183*** (0.0697)
Ind.Experience	-0.00877* (0.00459)	0.00303 (0.00443)	0.000715 (0.00438)	-0.000444 (0.00412)	-0.00118 (0.00383)	-0.00125 (0.00427)	-0.00555 (0.00345)	-0.00874** (0.00444)
Owner Age	0.0567*** (0.0207)	-0.00713 (0.0253)	-0.00393 (0.0202)	-0.0137 (0.0283)	0.00244 (0.0196)	0.0171 (0.0180)	0.00622 (0.0173)	0.000320 (0.0133)
Aqe squared	-0.00534** (0.000214)	8.30e-05 (0.000267)	6.93e-05 (0.000219)	0.000200 (0.000322)	-1.86e-05 (0.000202)	-0.000158 (0.000204)	-1.24e-05 (0.000168)	8.07e-05 (0.000156)
Hours worked	0.00145 (0.00178)	0.00455*** (0.00175)	0.000410 (0.00174)	0.00483** (0.00221)	-0.000994 (0.00136)	0.00167 (0.00252)	0.000777 (0.00135)	0.00250 (0.00236)
High Credit Score	-0.00116 (0.184)	-0.0197 (0.182)	0.0606 (0.181)	-0.273** (0.118)	-0.0363 (0.143)	-0.270*** (0.0794)	-0.264** (0.126)	-0.0945 (0.106)
Med Credit Score	0.00857 (0.0867)	-0.0196 (0.0800)	0.0284 (0.0819)	-0.0754 (0.0687)	-0.0210 (0.0606)	-0.0153 (0.0714)	-0.112 (0.0699)	0.0259 (0.0684)
Incorporated	0.450*** (0.0816)	0.200*** (0.0704)	0.219*** (0.0802)	0.0784 (0.0556)	0.0419 (0.0408)	0.0884 (0.0744)	0.0474 (0.0669)	0.0992 (0.0644)
Intel. Property	0.277** (0.118)	0.411*** (0.123)	0.283** (0.120)	0.173* (0.0997)	0.365*** (0.123)	0.184 (0.113)	0.123 (0.133)	0.00255 (0.0931)
Product	0.0195 (0.0971)	-0.0178 (0.0858)	0.0831 (0.0985)	0.146* (0.0853)	0.142* (0.0854)	-0.0306 (0.0723)	-0.0195 (0.0891)	-0.00360 (0.0824)
Home Based	-0.192** (0.0853)	-0.148* (0.0865)	-0.0468 (0.0784)	0.00600 (0.0787)	-0.0519 (0.0648)	-0.0673 (0.103)	-0.173*** (0.0592)	-0.0105 (0.0929)
Employment	0.0610*** (0.0167)	0.0428** (0.0214)	0.0293* (0.0171)	0.0180** (0.00917)	0.0271 (0.0202)	0.0449* (0.0237)	0.00288 (0.00848)	0.0120 (0.0109)
Team Ownership	0.226* (0.117)	0.236** (0.111)	0.242** (0.115)	0.222** (0.0960)	0.162* (0.0956)	-0.0840 (0.0935)	-0.0248 (0.0981)	-0.0440 (0.0916)
High Growth Pot.	0.345 (0.246)	-0.0635 (0.225)	-0.305* (0.169)	-0.0478 (0.153)	0.0894 (0.183)	-0.0573 (0.182)	0.505** (0.198)	0.193 (0.150)
Constant	-1.558*** (0.486)	-0.358 (0.593)	-0.167 (0.469)	-0.247 (0.555)	-0.104 (0.447)	-0.550 (0.489)	-0.129 (0.417)	-0.197 (0.356)
Observations	3,971	3,458	3,031	2,540	2,415	2,209	2,034	1,893
R-squared	0.074	0.059	0.039	0.055	0.056	0.051	0.053	0.037

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

The next regression examined the ratio of outsider debt to total financial capital injected in each year. Again, controlling for other factors, the coefficient on female ownership was negative in all years and statistically significant in the early years after startup (2005, 2006, and 2007). High growth potential firms were also more likely to rely on outsider debt. The coefficient on this variable was positive in all years and statistically significant in six of the eight years observed. Industry experience was generally negatively related, while owner age was positively related. Hours worked, good credit scores, and incorporation, employment, and product offerings were positively related with greater reliance on outsider debt. Intellectual property and being home based were negatively related to the reliance on outsider debt.

We next look at experiences in the credit market. While we did see some indication that women were less likely to apply for loans in the univariate comparisons, we found that after controlling for other factors, women were not significantly different than men in terms of loan applications (with the one exception being in 2011 for high growth potential firms only). Yet, when we look at discouraged borrowers, we do see some indication that women are more likely to not apply for credit when they need it because they fear their loan applications will be denied. As shown in Table 9, the coefficient on female ownership was positive in all five years that we have this data (2007-2011) and the difference was statistically significant in two of the five years (2009 and 2011). Previous startup experience was also positively related to having the fear of denial. Unfortunately, we do not know the outcomes of the previous startups. It could be the case that these businesses owners had previous failures and that signal was driving their fears. The number of hours worked was positively related, which could indicate owners were putting in more hours because of trouble with their firms. Better credit scores were negatively associated with having the fear of denial, as would be expected.

Table 8: Regressions by year of Outside Debt Ratio

	2004	2005	2006	2007	2008	2009	2010	2011
Female	-0.000426 (0.0131)	-0.0343** (0.0171)	-0.0447** (0.0201)	-0.0459** (0.0225)	-0.00379 (0.0223)	-0.0311 (0.0235)	-0.0188 (0.0254)	-0.0120 (0.0249)
Some College	-0.0167 (0.0184)	0.00826 (0.0234)	0.00660 (0.0289)	0.0534* (0.0311)	0.0638** (0.0315)	0.0359 (0.0357)	0.0151 (0.0370)	0.0531 (0.0369)
Coll. Degree	-0.0365* (0.0196)	0.00646 (0.0255)	-0.00239 (0.0304)	0.0205 (0.0325)	0.0707** (0.0327)	0.0246 (0.0367)	-0.00922 (0.0385)	0.0235 (0.0379)
Grad Degree	-0.0147 (0.0221)	-0.00571 (0.0277)	-0.0247 (0.0328)	0.00717 (0.0361)	-0.00610 (0.0361)	0.0211 (0.0401)	-0.0368 (0.0418)	-0.00115 (0.0408)
Startup Exp.	-0.00324 (0.0117)	0.00158 (0.0158)	-0.00291 (0.0182)	0.0243 (0.0202)	0.00552 (0.0208)	0.00448 (0.0218)	0.0237 (0.0223)	-0.0107 (0.0221)
Ind.Experience	-0.00147** (0.000604)	-0.00178** (0.000762)	-0.00190** (0.000921)	-0.00230** (0.00100)	0.000544 (0.00103)	-0.00128 (0.00107)	-0.000762 (0.00109)	0.000246 (0.00112)
Owner Age	0.00831*** (0.00301)	0.00885** (0.00434)	0.00977** (0.00493)	0.0105 (0.00560)	-0.000122 (0.00598)	0.0175*** (0.00575)	0.0120* (0.00663)	0.0167*** (0.00604)
Hours worked	0.000600** (0.000235)	0.00156*** (0.000338)	0.00181*** (0.000368)	0.00155*** (0.000417)	0.00169*** (0.000421)	0.00129*** (0.000442)	0.000904* (0.000463)	0.00153*** (0.000462)
High Credit Score	0.0809*** (0.0242)	0.0972*** (0.0310)	0.0103 (0.0331)	0.105*** (0.0393)	0.121*** (0.0413)	0.0839** (0.0410)	0.0672 (0.0455)	0.0703 (0.0434)
Med Credit Score	0.0460*** (0.0120)	0.0436*** (0.0161)	0.0156 (0.0188)	0.0248 (0.0210)	0.00923 (0.0216)	0.0248 (0.0220)	0.00693 (0.0231)	0.0370 (0.0230)
Incorporated	0.0340*** (0.0127)	0.0783*** (0.0167)	0.0671*** (0.0195)	0.0799*** (0.0222)	0.0782*** (0.0225)	0.0867*** (0.0230)	0.0781*** (0.0244)	0.0791*** (0.0250)
Intel. Property	-0.0243* (0.0136)	-0.0205 (0.0187)	-0.0363* (0.0215)	-0.0424* (0.0243)	-0.0168 (0.0252)	-0.0361 (0.0265)	0.00341 (0.0278)	-0.0241 (0.0267)
Product	0.0226* (0.0128)	0.0218 (0.0172)	0.0279 (0.0195)	0.00633 (0.0218)	-0.00134 (0.0227)	0.0638*** (0.0237)	-0.0298 (0.0242)	0.0132 (0.0243)
Home Based	-0.0256** (0.0121)	0.00359 (0.0169)	-0.0360* (0.0194)	-0.0195 (0.0214)	-0.0282 (0.0218)	-0.0280 (0.0230)	-0.0134 (0.0238)	0.00873 (0.0245)
Employment	0.00631*** (0.00137)	0.00441** (0.00210)	0.00535*** (0.00199)	0.00282 (0.00258)	0.00324 (0.00220)	0.00165 (0.00222)	-0.000682 (0.00231)	-0.000956 (0.00236)
Team Ownership	0.0114 (0.0136)	0.0241 (0.0183)	-0.00363 (0.0208)	-0.00541 (0.0237)	0.0196 (0.0248)	0.0412 (0.0258)	0.0178 (0.0271)	-0.0224 (0.0263)
High Growth Pot.	0.0321 (0.0235)	0.0778** (0.0307)	0.0390 (0.0322)	0.0633* (0.0350)	0.0966*** (0.0368)	0.127*** (0.0364)	0.201*** (0.0370)	0.207*** (0.0355)
Constant	-0.0613 (0.0715)	-0.0167 (0.106)	0.0933 (0.121)	0.235* (0.142)	0.218 (0.147)	-0.195 (0.144)	-0.0595 (0.165)	-0.255* (0.150)
Observations	3,971	3,458	3,031	2,540	2,415	2,209	2,034	1,893
R-squared	0.067	0.076	0.066	0.070	0.086	0.092	0.086	0.109

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 9:

Logistic Regression: Did not apply for credit when needed for fear of denial

	2007	2008	2009	2010	2011
Female	0.142 (0.165)	0.244 (0.161)	0.279* (0.165)	0.194 (0.179)	0.379** (0.176)
Some College	0.142 (0.240)	0.266 (0.237)	0.0416 (0.239)	0.454* (0.272)	0.201 (0.264)
Coll. Degree	-0.245 (0.256)	-0.138 (0.253)	-0.219 (0.253)	0.0312 (0.287)	-0.155 (0.279)
Grad Degree	-0.122 (0.288)	0.0929 (0.293)	-0.183 (0.282)	-0.0766 (0.317)	-0.445 (0.323)
Startup Exp.	0.339** (0.141)	0.303** (0.146)	0.173 (0.143)	0.262* (0.157)	0.584*** (0.156)
Ind.Experience	-0.00904 (0.00805)	0.00140 (0.00787)	-0.0166** (0.00750)	-0.0108 (0.00843)	-0.00561 (0.00880)
Owner Age	-0.0828* (0.0436)	-0.0348 (0.0460)	-0.00934 (0.0461)	0.113* (0.0600)	0.0337 (0.0574)
Aqe squared	0.000697 (0.000471)	0.000177 (0.000500)	7.13e-05 (0.000494)	-0.00135** (0.000661)	-0.000605 (0.000634)
Hours worked	0.0152*** (0.00342)	0.0130*** (0.00310)	0.0159*** (0.00316)	0.0105*** (0.00325)	0.00843** (0.00343)
High Credit Score	-0.160 (0.278)	-0.509* (0.292)	-0.585** (0.281)	-0.315 (0.309)	-0.279 (0.295)
Med Credit Score	-0.0682 (0.147)	-0.150 (0.148)	-0.00285 (0.150)	-0.111 (0.164)	-0.0570 (0.163)
Incorporated	0.0936 (0.151)	0.130 (0.155)	0.162 (0.161)	0.354** (0.180)	0.298 (0.183)
Intel. Property	0.0390 (0.174)	0.106 (0.177)	0.145 (0.172)	0.0242 (0.195)	-0.0883 (0.194)
Product	0.0329 (0.165)	0.202 (0.160)	0.118 (0.161)	0.0432 (0.178)	0.0590 (0.173)
Home Based	-0.179 (0.158)	0.000231 (0.157)	-0.00581 (0.157)	-0.205 (0.174)	0.0549 (0.178)
Employment	0.00337 (0.0139)	0.00283 (0.0118)	0.00537 (0.0127)	-0.00638 (0.0145)	0.00253 (0.0176)
Team Ownership	-0.273 (0.166)	-0.415** (0.173)	-0.105 (0.166)	-0.274 (0.193)	-0.174 (0.190)
High Growth Pot.	-0.208 (0.256)	0.147 (0.230)	0.0779 (0.226)	-0.104 (0.259)	0.126 (0.229)
Constant	-0.136 (1.048)	-1.390 (1.094)	-1.783 (1.099)	-4.449*** (1.421)	-2.392* (1.321)
Observations	2,443	2,223	2,060	1,879	1,886

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

In terms of actual loan application outcomes, we see that the coefficient on female ownership was negative in four of the five years of observation, but only statistically significant in 2008. Industry experience was positively related to loan approval in four of the five years, but only statistically significant in the last two years of observation. Higher credit scores were generally associated with higher loan approvals, as was high growth potential, although the relationship was not statistically significant in all of the years observed. Due to small sample sizes in the loan application outcome regressions, statistical power is more limited. This set of regressions is conditional on the firms actually applying for credit, which not all firms did. The earlier set of regressions on not applying for fear of denial shown in Table 9 included all firms in the sample.



Table 10  
Logistic Regression: Loan Application(s) Always Approved

	2007	2008	2009	2010	2011
Female	0.0347 (0.480)	-0.925** (0.417)	-0.156 (0.450)	-0.612 (0.649)	-0.586 (0.492)
Some College	0.529 (0.581)	1.173* (0.676)	-0.183 (0.763)	-0.0237 (0.760)	-0.152 (0.835)
Coll. Degree	0.547 (0.569)	0.772 (0.629)	-0.512 (0.762)	-0.200 (0.715)	-1.092 (0.723)
Grad Degree	0.339 (0.656)	0.162 (0.693)	0.160 (0.803)	0.0706 (0.784)	-0.181 (0.956)
Startup Exp.	-0.299 (0.368)	-0.280 (0.361)	0.563 (0.365)	-0.614 (0.421)	-0.314 (0.487)
Ind.Experience	-0.0154 (0.0202)	0.0195 (0.0211)	0.0120 (0.0167)	0.0669*** (0.0245)	0.0608*** (0.0226)
Owner Age	0.0910 (0.129)	0.0956 (0.141)	0.185 (0.135)	-0.295 (0.216)	-0.0186 (0.192)
Aqe squared	-0.000538 (0.00143)	-0.000580 (0.00157)	-0.00181 (0.00145)	0.00343 (0.00251)	0.000216 (0.00214)
Hours worked	-0.00704 (0.00835)	-0.0202** (0.00882)	-0.000732 (0.00811)	-0.00619 (0.00997)	-0.0183* (0.0106)
High Credit Score	0.827 (0.630)	1.895*** (0.572)	0.646 (0.553)	0.844 (0.660)	0.0864 (0.768)
Med Credit Score	-0.491 (0.376)	0.308 (0.407)	0.0988 (0.394)	0.840* (0.437)	0.0191 (0.459)
Incorporated	-0.317 (0.415)	0.156 (0.467)	0.690 (0.441)	-0.429 (0.541)	-0.353 (0.529)
Intel. Property	-0.232 (0.419)	-0.342 (0.413)	-0.620 (0.409)	0.136 (0.488)	-0.0617 (0.500)
Product	0.0299 (0.344)	0.157 (0.375)	-0.202 (0.363)	-0.0388 (0.451)	0.0804 (0.445)
Home Based	0.00241 (0.376)	0.463 (0.391)	-0.933** (0.417)	-1.136** (0.459)	-0.168 (0.478)
Employment	-0.0111 (0.0175)	0.0232 (0.0369)	-0.0562** (0.0262)	-0.0355* (0.0181)	0.106 (0.0776)
Team Ownership	-0.0185 (0.420)	0.0537 (0.376)	-0.316 (0.372)	0.175 (0.465)	0.961* (0.531)
High Growth Pot.	0.974** (0.494)	-0.128 (0.469)	0.369 (0.420)	0.516 (0.488)	0.427 (0.481)
Constant	-1.245 (2.902)	-2.458 (3.097)	-3.785 (3.279)	6.889 (4.666)	2.084 (4.376)
Observations	306	289	262	207	205

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## CONCLUSIONS

Growth-oriented firms generate jobs and economic impact, and female entrepreneurs are markedly unrepresented in this subset of firms. Data for the United States as a whole indicate that women's representation in business ownership has plateaued. In 2012, it is estimated that women owned just 30% of businesses in the United States and just 16% of firms that had any employees other than the owner(s). Women-owned firms generated only about 4% of receipts and payroll, and employed just 6.2% of the workforce. It is estimated that only about 2% of women-owned firms generate more than a million dollars and there are less than one million women-owned firms in the entire country that have any employees other than the owners themselves. These are striking statistics that indicate our country has a very large untapped resource for generating jobs and high growth businesses.

Prior research suggests that access to financial capital, a key resource input for growth-oriented firms, may be more of a challenge for women-owned firms than for men. Our study examined gender differences in firm growth, as well as financing patterns and credit market experiences, for a large sample of U.S. companies that began operations in 2004 and were tracked over the period 2004 through 2011. Our analysis of this data sheds some light on factors related to the lower employment growth of women-owned firms. While women are on par with men in terms of education levels, we know from previous research they are less likely to have degrees in the STEM fields, which are more likely to be industries that experience more growth opportunities. Other factors associated with higher growth include previous industry experience, previous startup experience, team ownership, and hours worked. Women have lower levels of all of these. Businesses that are in high tech industries and that have intellectual property are also more likely to be higher growth businesses. Women are less likely to own businesses with these

characteristics. Being home based is negatively related to growth prospects and women have much higher rates than men in owning businesses that are home based.

In terms of financial capital, we see large gender gaps in the amounts of financing across all firms, high growth potential firms, and even the top ranking firms by employment. Men start firms overall with nearly twice the capital that women do. Of high growth potential firms, men use more than double what women do. Of the top ranked firms by employment and gender, men use six times the amount of financing that women do. This clearly has implications for the growth trajectories of firms and appears to be one driver of the relatively smaller sizes of women-owned firms. Multivariate analyses revealed that women were injecting significantly lower levels of financial capital in their firms in multiple years, even after controlling for credit risk, industry, and a variety of other factors that influence the demand (and supply) of credit.

In terms of the distribution of that startup capital, women were more reliant on owner equity and insider financing than men. A very small fraction of funds come from outsider equity for firms owned by women, regardless of where they were on the size spectrum. In the multivariate analysis, women were using significantly lower levels of outsider equity, even after controlling for owner education and experience, credit scores, firm characteristics such as industry, incorporation status, and size. The same held true for the ratio of outside debt to total financial capital injected. Women used less in all years and the difference was statistically significant in several of the years of observation.

In terms of credit market experiences, women had similar loan application rates as men, once other factors were controlled for. Yet, the evidence from the KFS suggests there is more unmet credit need among women, because women were more likely than men to not apply for credit when they needed it for fear of having their loan application denied. While the univariate

statistics indicated lower rates of loan approval for women than for men for those that did apply, we see that the difference was statistically significant in only one of the five years we observed them. Other drivers of lower approval rates were industry experience, credit scores, both of which women ranked lower on than men, and being home based, which women were more likely to be.

When we compare the top ranking female businesses by employment and those that had high growth potential with women-owned firms overall, we see some striking differences: they had more employees from the startup year onwards, they were more likely to be in high tech industries, they more likely to offer services (over products), and they were less likely to be home based. They were also much more likely to be incorporated, have team ownership, to have higher credit scores. In terms of owner characteristics, they had more years of industry experience and for the highest ranking, they were much more likely to have previous startup experience and more likely to have a college degree than a graduate degree. In terms of financing, the largest and growth potential firms started with much more capital (even more than male firms overall, but clearly less than the largest and growth potential firms owned by men). They also used more outside equity, but again, much less than their male owned counterparts.

The financing gap is clearly related to the size gap between men- and women-owned businesses. Building the financial capabilities of women and ensuring access to bank financing and equity financing by venture capitalists and angel investors is paramount to having more high growth entrepreneurship by women. Encouraging greater participation by women on the financing and investing side might also be an avenue worth pursuing. A growing number of angel groups, such as Golden Seeds, Astia Angels, and the Pipeline Fellowship, are targeting

women to be investors in this space. More is needed to overcome the gender imbalance on the funding side.

Other steps can be taken to support high growth women's entrepreneurship so that we tap this greatly underutilized resource. There is a need to tackle a number of fronts: offering more opportunities in industry that will give them the experience needed to pursue entrepreneurship, more opportunities to learn about starting and growing businesses, exposure to successful female entrepreneurs who can share their stories and insights from their successes (and challenges). Family friendly policies that allow women the flexibility to work outside of their homes and schedule activities around family commitments might also encourage women to tackle higher growth opportunities.

Encouraging and facilitating team startups (men, women, and mixed) is another avenue to pursue. There are an increasing number of organizations and events such as Startup Weekend Women's edition, Startup Grind, Founder Fridays, and Co-Founder speed dating that are encouraging signs of meeting this need.

Programs that target high growth potential women-owned firms have also had some successes: Astia and Springboard Enterprises are two programs that have built successful track records in helping scale women-owned companies by providing them access to equity financing, as well as business mentorship and training. Clearly more of these types of programs are needed if we are going to truly move the needle on high growth women's entrepreneurship.

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