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Diana: a symbol of women entrepreneurs' hunt for knowledge, money, and the rewards of entrepreneurship

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Abstract This article discusses the questions and issues that prompted the founding of the Diana Project, a multi-university research program aimed at identifying factors that support and enable high growth in women-led ventures. Despite the fact that women business owners comprise a significant portion of the economy, women face challenges in acquiring the resources needed to expand their businesses. This article details both the myths and realities associated with women's entrepreneurship in their quest for growth. In particular, we examine the strategies that women entrepreneurs use to position their firms for growth, especially those strategies related to growth capital. Our results show that women seeking venture capital (VC) have degrees, graduate degrees, and experience that should not preclude them from obtaining financing. We also found that even though women-led businesses are frequently clustered in industries less attractive to financiers, women seeking equity funding are in the appropriate industries. Further, women spend a considerable amount of time using both formal and informal networks in their search for capital and in seeking capital. Because of the importance of the VC industry as a provider of growth capital and its reliance on its network for investment referrals, we also examined the participation and role of women as decision-makers in industry. Women's participation in the VC industry has not kept pace with industry growth, and women have exited the industry at a faster rate than men, thus creating a significant barrier for women entrepreneurs in that it is less likely that their networks will overlap with the financial supplier networks, despite any effort they may expend networking and seeking capital.

Keywords Equity funding · Female entrepreneurship · Growth resources · Venture capital

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1 Introduction

When we received notification that we had received the FSF–NUTEK (Swedish Foundation for Small Business Research–Swedish Agency for Economic and Regional Growth) award for 2007, we were deeply honored and excited, not only because our work had been recognized by this prestigious award but also because this recognition signaled that research on female entrepreneurship was valued. It is particularly meaningful to us because, in spite of the fact that we began our work in the USA in 1997 and focused most of our earliest research on the entrepreneurial issues in our home country, we have received great support from our colleagues in Sweden. We came here to lecture and discuss ideas, then to share our findings with scholars, policy-makers, and the greater entrepreneurial community of Sweden and, finally, to broaden our scope and engage additional researchers from around the world to form the Diana International project.

2 The start-up team

Our group consists of five professors who have spent our professional careers investigating the phenomenon of entrepreneurship. Each of us brings a different focus to the investigation of entrepreneurship. Dr. Greene is a sociologist whose research has examined entrepreneurship in minority communities. Dr. Brush has had a long history of researching women entrepreneurship going back more than two decades. Dr. Hart is an academic with practitioner roots. She was part of a starting team for a venture and participated in raising venture capital (VC). Dr. Carter has significant experience studying nascent entrepreneurs and is considered to be an expert in database construction and statistical methods. I served as an executive director of a network of business centers that provided consulting and training services to entrepreneurs, and I have designed special programs for women entrepreneurs. I am interested in motivations, attributions, and other aspects of entrepreneurial behavior.[1]

[1] Although Elizabeth Gatewood wrote this article, the entire Diana team made the presentation during the FSF–NUTEK Award Ceremony.

Although we are different in many ways, we are quite similar on several important dimensions. We are all or have been chaired professors of entrepreneurship at our universities. We share an insatiable curiosity about the development of entrepreneurship worldwide. We are also all female and have, over the years, become increasingly interested in the phenomenon of female entrepreneurship. We have known each other professionally and personally for many years. In 1997, we decided to forge a collaboration that would pour considerable energy and attention into a new investigation of female entrepreneurship. A collaboration of this many researchers, although not unique to medical and other scientific researchers, was new to the field of entrepreneurship.

Our initial interest had been piqued because we saw a statement about how women received only a minute percentage of the VC funding in the USA despite being a force in the U.S. economy. When we gathered around the breakfast table in a small bed and breakfast in Galisteo, New Mexico, we had many questions—some of them already formalized and framed in academic terms, but others were just forming. The most fundamental issues that concerned us were:

- Are women key players in the entrepreneurial revolution?
- If so, what is the nature of their participation?
- What is their participation in the equity funding market?
- If their participation in the equity funding market is as low as predicted, what are the possible explanations for the gap between women and men?
- How do women entrepreneurs improve their chances of receiving equity funding?
- What important changes would enhance the performance, rewards, and contributions of women entrepreneurs to the economy?

We knew the field was ripe for investigation. After 3 days of intensive work, we committed to a multi-year collaborative study that would draw on our individual talents and create a new and more powerful voice for women entrepreneurs. We planned to identify and define key issues, provide analysis of important relationships, and develop new insights that would support female entrepreneurship at every level, but particularly in the highest growth categories. At the time, each of us was working at a different university and was deeply involved in other

projects, including teaching, research, and administration, but the Diana Project became a shared priority.

3 Why the "Diana Project?"

We quickly recognized that using the Brush, Carter, Gatewood, Greene, and Hart[2] set of names, titles, and university affiliations would be cumbersome at best. We decided to create a symbolic new entity that would comprehend the work of the group rather than identifying individual contributors and lead authorship on a one-by-one basis. After much discussion, we decided to use the name "The Diana Group," taking our inspiration from the Roman goddess of the hunt. Diana symbolizes women's hunt for the knowledge, money, and other rewards that entrepreneurship is all about. Thus began the Diana Project: *A multi-university research program to identify factors that support and enable high growth in women-led ventures.*

We have not been alone in our interest in the topic. We have had many sponsors that have made this research program possible, among the most important are the Kauffman Foundation, U.S. Small Business Administration, National Women's Business Council, and the Swedish Institute for Small Business Research (ESBRI).

This collaboration of five researchers over a 10-year period and the support of sponsors has resulted in a number of outcomes. We started with an extensive annotated bibliography on women's entrepreneurship and the VC industry (Gatewood et al. 2003). Our result was only one article about women and equity capital financing, so we knew the area was fertile for research (Greene 2001). One of our early interests was why women received so little VC in the USA. We soon discovered that women face certain myths about their capabilities, aspirations, and strategies; this led to an *Insight Report* published by the Kauffman Foundation, which was an initial exploration of the myths and the facts about women entrepreneurs (Brush et al. 2001). We then designed a number of research projects concerning women business owners who had an interest in expanding their firms and sought financing to fuel that growth (Brush et al. 2002, 2006c; Carter et al. 2003a, b).

When we first started our investigation of the myths, we found that one of reasons offered for why women face barriers in seeking capital was the nature of the VC industry itself, an industry that has been characterized as small, male-dominated, geographically concentrated, and difficult to access (Smart et al. 2000; Bygrave 1992). Some of the hypothesized women entrepreneurs faced barriers because they were no women venture capitalists in the industry to facilitate a connection (Brush et al. 2002). This realization led us to design a research project that would identify women's participation in the industry, their career paths, and the impact they had or did not have in financing women-led ventures, which subsequently led to the publication of the second Kauffman Foundation *Insight Report* (Brush et al. 2004a).

Because our interest in the topic was not only just a scholarly interest, but also a desire to assist women in accessing the resources they needed for growth, we published a book called *Clearing the Hurdles: Women Building High-growth Businesses* (2004b) to explore the nature of the misconceptions, stereotypes, and challenges women encounter in growing businesses, provide facts and information for women seeking resources, and offer advice for how women can succeed in business relative to their personal goals and aims (Brush et al. 2004b). We are delighted to say that it has an international life of its own and has been published in Chinese and Korean as well as English.

Finally, because the phenomenon of women entrepreneurship is a global one, we sought to collaborate with research teams from around the world and formed a consortium, the Diana International Group (Brush et al. 2006a). The Diana Group is dedicated to the continuing examination of both the myths and realities about women entrepreneurs in the USA. The international research currently being conducted by members of Diana International promises to yield many more illuminating and useful results on a global basis.

4 Research findings

Our first question about whether women are important players in the entrepreneurial revolution

[2] The majority of our research projects and publications have been the result of a true partnership and, as such, we have listed our names alphabetically and noted our equal participation.

was previously addressed by the Center for Women's Business Research (http://www.nfwbo.org). In 2006 there were 7.7 million businesses that were majority-owned by women; this represented 29% of all privately held businesses in the USA. Even more importantly, there were 10.4 million firms in the USA in which women held at least a 50% co-ownership. The result is that women are significant owners of 40.1% of all privately held U.S. businesses. Additionally, for the past two decades, the number of women-owned firms has grown at twice the rate of all firms in the USA. (CWBR 2007).

The Center for Women's Business Research (originally named the National Foundation for Women Business Owners) first parsed the publicly available census data in 1991 to raise awareness of the impact of female entrepreneurship on the U.S. economy. At the time, policy-makers and members of the business community were stunned to learn that women business owners employ more people than all the Fortune 500 companies combined.

That was just one of many surprises about the power and importance of female entrepreneurship to the U.S. economy. In the USA, as in many other regions of the world, women are making substantial contributions to all sectors of the economy (as entrepreneurs and employees) (Brush et al. 2006d). There is much to celebrate about female entrepreneurs: women-owned businesses are growing more rapidly than any other entrepreneurial segment in the USA, and we are pleased to note that many of their enterprises are growing to a substantial size. In 2006, women-owned businesses (WOB) generated US$1.1 trillion revenues and employed 7.1 million people. From 1997 to 2000, the number of WOB with US$1 million in annual revenues grew by 32% as compared to 19% growth for the total population of privately held firms; the number of WOB with US$10 million in annual revenues grew by 37% compared to 13% growth for all firms (CWBR 2007). Statistics for 2006 also reveal that more than 50% of management and professional jobs in the USA are held by women.

These numbers make a powerful statement about the growth and power of entrepreneurship, but it is important to recognize that the vast majority of entrepreneurial ventures (male- or female-owned) are very small in size. Approximately 75% of all privately held businesses in the USA have no employees other than the owner (SBA 2005) and, of course, these businesses are largely unnoticed beyond their local service areas. We are much more familiar with the names and faces of entrepreneurs who have built large empires (Oprah Winfrey, Debbie Fields, Martha Stewart, Jenny Craig, Meg Whitman), but only a small percentage of private enterprises generate revenues in excess of US$100 thousand. Those that top one million dollars per year are notable and breaking the US$10 million revenue mark is truly remarkable. And less than 1% (approximately 5000–6000) of all new ventures receive VC annually (http://www.nvca.org).

Although the vast majority of new enterprises start small and intentionally remain so, the most frequently studied and most interesting businesses are those that have high potential in terms of growth of revenue, employment, and impact (Timmons and Bygrave 1997). We therefore were determined to develop a better understanding of what role women entrepreneurs played in the development of the most productive businesses in the economy.

The growth in female entrepreneurship over the past two decades is very encouraging, but a *disproportionate* share of the businesses founded by women is clustered in the "smallest" category of businesses. In the USA, approximately 81% of female entrepreneurs have no employees as compared to 75% of all privately owned businesses. Of the 19% that have employees, the vast majority are operating moderately sized businesses. And very few women have made it to the top tiers of the value creation pyramid. Less than 1% of all female-led businesses actually receive VC investment dollars as compared to approximately 1% of businesses founded by men (Greene et al. 2001).

The following graph (see Fig. 1) provides a representational graphic of the distribution of businesses led by women and by men according to size, value, and growth rate. Both the averages and medians for women-led ventures are lower than for those headed by men.

To understand why this is so, it is important to understand that the size and the impact of women-led businesses lags behind those of their male counterparts at every step of development. Although the rate of women starting and running business continues to grow substantially, there is a marked gap between

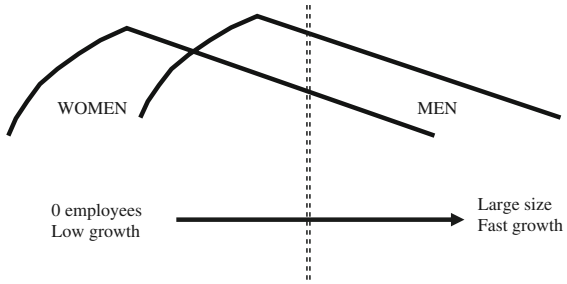

Fig. 1 Distribution of men- and women-owned firms by size and growth

men and women in high-growth businesses. And this is exactly what we found troubling.

As individual researchers, we are deeply engaged in research on all aspects of female entrepreneurship, but the Diana Group has focused its attention on the largest and potentially most rewarding segment of the entrepreneurial pyramid. We are concerned with that 1% of the population that has high-growth intentions, high capital needs, and the possibility of generating billions of dollars in revenues and profits as well as creating innovative and useful goods and services for distribution worldwide. We chose to use a top–down approach to gain a better understanding of what keeps women clustered at the bottom of the pyramid (Brush et al. 2004b).

The first question we had to answer was just exactly how wide was the gap between women- and men-led ventures that are potential top tier players? We knew that most of the top performing companies are fueled by external investment and that sufficient capital enables the ownership team to develop a product, enter and expand market presence, and leverage the firm nationally and internationally more quickly and effectively.

One approach that can be used to identify high-growth potential businesses is to look at those that do receive VC investments. Such enterprises have been carefully scrutinized by expert investors and deemed credible. They have passed the first hurdle of access to capital when they were selected by VC investors. Knowing what percentage of women-led ventures received formal equity investment would be a proxy measure of their representation among the highest growth businesses. During the years when we were beginning our research (the late 1990s), the VC industry was very hot, and nowhere was it hotter than in the USA (see Table 1).

Table 1 Venture capital investments in U.S. businesses

Venture capital investments	1999	2000	2001
Number of deals	3.844	8.378	3.711
Average VC investment	$9.2 M	$12.9 M	$8.6 M
Total VC investment	$54.5 B	$102.3 B	$37.7 B

All values are given in U.S. dollars

VC, Venture capital; M, million; B, billion

However, when we looked at the VC investment data we were unable to find an answer to our seemingly simple question of how wide was the gap between women and men leaders of the companies at the top. The question proved difficult to answer because the data were not readily available. There are extensive records kept on businesses that receive equity investments in the USA, including characteristics of the management team and the size and stage of investments, but historically there has been no industry record kept of the gender of the owners. Consequently, except by careful analysis of each deal, we could not determine how many of the investments had been in "women-led" businesses.

We examined over 21,000 investments recorded by the national Venture Capital Association between 1957 and 1998 to determine the representation of women entrepreneurs in key leadership roles during the first 30 years of the industry (Greene et al. 2001). We examined the first names of individuals on the top management team and coded them for gender. To put this study in context, it is important to remember that few women had taken leadership roles in the business and professional workforce prior to the 1970s. We found so very few investments in entrepreneurial women in the early years of the industry that we turned our attention to only the most recent 10 years—1988–1998. In Table 2 we show the results for the decade and for the three most recent

Table 2 Venture capital money for women-led businesses

Percentage received VC capital in a given period	Number of women-owned businesses receiving VC capital
3.5% 1988–1998	$n = 290$ (of 8298 total investments)
3.8% in 1996	$n = 43$
3.5% in 1997	$n = 52$
4.1% in 1998	$n = 54$

Table 3 Stage of investment by VC funds 1988–1998

Stage (%)	Women	Men
Seed/early stage	62	55
Buyout	8	14

years. This table clearly shows that even in the decade and years of great VC investment, which also corresponded with a period that saw a rapid growth in the number of women-owned businesses, very few investments were made in women-led firms.

When we examined these investments more closely, we found VC investment were more likely to be made to women-led technology firms. We also found some regional differences. For example, whether male or female-led, the preponderance of venture-funded businesses was found on the East and West Coast. Relatively little investment was made in the Midwest, central, or southern states, and what money was invested in these regions was far more likely to be invested in men-owned businesses.

Proportionally, women were more likely to receive early-stage funding (see Table 3), whereas men received funding at both the early and late stages (Brush et al. 2002). This finding suggests that even those women who received initial VC investment did not expand their businesses as aggressively or possibly as successfully as their male colleagues to receive later funding, or the women leaders left the ventures before the later rounds of financing occurred. Although we have only the aggregate numbers to use, we can hypothesize that women-led businesses may not thrive at an equal rate, may not want or need additional capital, or may not fare as well in long-term relationships with their investors.

5 Some explanations

Why have women been sidelined when it comes to the VC game? Why—during a period when the VC industry was very hot—were women so underrepresented in gaining access to the funding that was fueling the U.S. economy? At the time the Diana project began in 1999, conventional wisdom offered ready answers for the differences. If you asked five smart people why, each could provide ready (and reasonably plausible) answers. Some of the reasons we heard, which we later called "the myths" that women entrepreneurs face are (Brush et al. 2001)

- Women do not want to own high-growth businesses
- Women do not have the right educational backgrounds to build large ventures
- Women do not have the right types of experiences to build large ventures
- Women are not in the right networks and lack the social contacts to build credible ventures
- Women do not have the financial savvy or resources to start high-growth businesses
- Women do not submit business plans
- Women-owned ventures are in industries unattractive to venture capitalists
- Women are not a force in the VC industry

Even a cursory examination showed that some women, like some men, aspire to build high-growth businesses with outside funding. Women have been leveling the field for participation in degree programs in business and biology. Although women's participation in engineering programs is at 20% of the student body, it continues to grow. The number of women joining the corporate ranks continues to increase. We therefore became even more intrigued by the puzzle.

We chose not to rely on conventional wisdom, but began an extensive review of the literature. We searched seven primary entrepreneurship journals from their founding dates to the present, at that time 2001. The journals included *International Small Business Journal, Entrepreneurship Theory & Practice, Journal of Business Venturing, Journal of Small Business Management, Entrepreneurship and Regional Development, Journal of Development Entrepreneurship* , and the *Journal of Business Ethics*. The review also included the *Frontiers of Entrepreneurship Research*—the refereed proceedings from the major entrepreneurship research conference from conference inception to 2001. Additionally, we used a snowball technique reviewing bibliographies and frequent citations to identify other articles of interest not included in these primary journals. In total, we reviewed more than 45 journals searching for studies reporting on women entrepreneurs.

The search yielded over 300 articles, which we annotated and ESBRI—The Entrepreneurship & Small Business Research Institute—in Sweden published (Gatewood et al. 2003). We used the literature review

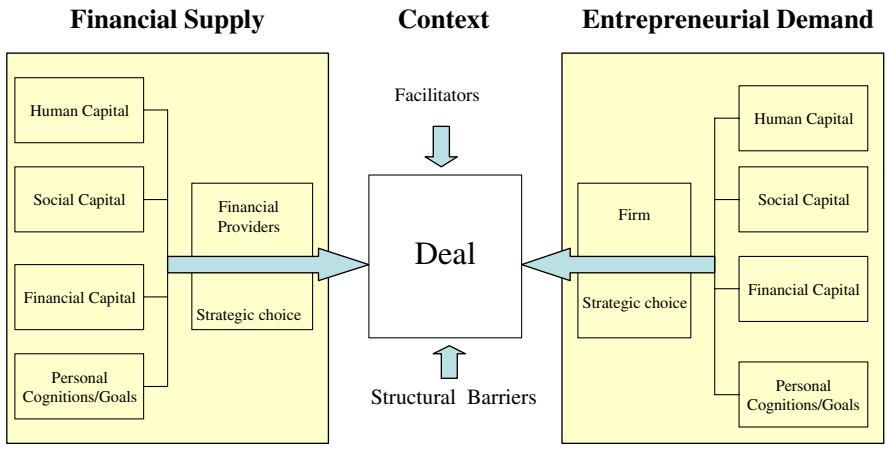

Fig. 2 Factors affecting women's access to equity capital

in two ways. One use was to identify a collection of published articles that provided an overview of women's entrepreneurship. These select articles were published as a book to guide future researchers who seek to understand the outstanding questions—those not yet asked and those not yet answered (Brush et al. 2006b). The chosen articles reflected major theoretical approaches, identified driving questions of interest, provided examples of a variety of methodologies that had been used in researching women entrepreneurs, and offered important findings.

We also used insights we developed from the literature review to create a theoretical model that would guide our research into the differences between women- and men-led ventures. The model we developed represents the different inputs and interactions that occur in the entrepreneurial funding process (see Fig. 2).

On the left hand side, we arrayed the providers of financial capital. The right hand side of the model—the demand side—focuses on characteristics of the entrepreneur and the entrepreneurial team as they relate to the creation of the business and the strategic choices the entrepreneurial team makes in the course of identifying and engaging resources—especially financial resources.

6 Demand side of the model: the entrepreneur

We began our study with the right hand side of the model. Our primary focus was on the financial resources required to fuel growth, but we quickly found that the availability of financial resources is highly dependent on the quality of human, social, and technical resources within the entrepreneurial organization.

We used several different techniques to identify women seeking equity capital. The first was a set of phone interviews of women who were in VC preferred industries and locations. We selected only those women who had already established their organizations and were achieving substantial revenue growth on their own. Many of these women self-identified as being growth-oriented.

Our phone survey of women-owned businesses yielded 235 interviews with women who were currently or who had recently sought equity investment in their businesses. Using Dun and Bradstreet data, we chose women-led businesses that

- operated in industries associated with high VC investment;
- were located in areas with high VC activity (California, Massachusetts, Pennsylvania, Texas, Washington D.C.);
- had at least 15% revenue growth over the past three years.

Using this data base, we then compared those firms within the sample that had successfully raised equity funding (17%) with those not yet reporting any VC investment. We found, not surprisingly, that financial and human capital matter!

6.1 Financial capital

Those companies that had already demonstrated some success (had built a team of greater size and a

business with greater product or service development) were more likely to get funding. Interestingly enough, those firms that were able to get a head start often did so because the founders had their own financial capital to invest—to get products developed, to identify and commit key customers, and to build a management team.

6.2 Human capital

Experience and education matter. Women who had start-up/ownership experience were more likely to gain access to equity sources of funding. Women without such experience had to rely on credit and retained earnings to finance their businesses—a much slower and more constrained approach.

Graduate level education was also related to success in raising equity investments. We found that education, regardless of specific discipline, proved to be more valuable for women seeking equity funding than was previously believed. The degrees may provide greater credibility of competence with potential investors.

6.3 Social capital

We did not find evidence that network diversity or network tie strength was positively related to the success of the women who raised equity capital.

6.4 Strategic choice

Companies operating in information technology and manufacturing were more likely to get funding than those in biomedicine or telecommunications. This may have been a function of the primary focus of VC investors in the time period in which we conducted this research.

The most powerful finding from this survey was that using personal sources of financing, experience (especially startup and ownership), and graduate education and choosing the appropriate industries predicted the likelihood of subsequent equity financing (Carter et al. 2003a; Brush et al. 2007).

In addition to conducting these initial phone interviews of women in key SIC codes and geographic locations, we also chose to interview and follow women entrepreneurs who were aggressively seeking VC. We were able to identify a substantial number of them through the Springboard Forums. Springboard Enterprises is a non-profit venture catalyst organization that recruits, coaches, showcases, and supports emerging growth companies led by women. Our initial sample was 939 applicants who applied to be presenters at the Springboard Forums in 2000 in San Francisco, Boston, and Washington D.C.

The women-led businesses were predominantly in information technology, life sciences, communications, and software and internet sectors of the economy. The women were also experienced entrepreneurs. Most were seeking second-round funding, and 60% of their ventures had already established revenues. These were not businesses at the conceptual stage of development. On average, the applicants had 25 employees with a management team of four or more. In the aggregate, the team members had a total of 39 years of industry experience, and 40% of the teams had some start-up experience.

We found that almost all the Springboard applicants were women of high aspiration. More than 80% of them planned to use the funds to support the rapid growth of their enterprises. As a group, the women applicants were seeking a total of US$1.02 billion with a range of less than US$200 thousand to US$10 million dollars (average amount sought was US$2.5 million dollars). From the applicant pool, only 84 women were selected by the Forum to present. One interesting difference between the applicant group and the more exclusive presenter group was that those chosen to present were asking for an average investment of US$10 million (Brush et al. 2001).

In total, 360 female-led entrepreneurial teams have presented at the Springboard forums between 2000 and spring 2007. According to Amy Millman, founder and executive director of Springboard since 1999, approximately 75% of these businesses were actually launched (not surprising, since the majority was already up and running when the women presented their business plans at the Springboard event). In spring 2007, Millman reported that 55% of the women were still with their enterprises, 20% were working in a corporate environment, 15% were in transition, possibly founding another enterprise, and in only 10% of the cases was the career status of the women unknown.

We have seen that the strategic goals of the entrepreneurial team as well as the human and social capital they comprise have an impact on their ability to gain equity investments. Furthermore, our research indicates that the financial capital the entrepreneurial team brings to the growth venture can affect the probability of success in securing additional investment.

When we think of financial capital in an entrepreneurial venture, we often think of personal savings or loans the start-up team contributes to the business. But financial capital comprises the entire financing strategy of the venture. We dug deeper to determine the answers to the following questions:

How do women develop sufficient resources to:

- prove the business concept?
- meet early stage milestones?
- demonstrate to external investors the value and potential of their businesses?

In addition:

- What are the overall financing strategies of these high potential businesses that propel them from start-up to high growth status and make them attractive to potential investors?

To find answers to these questions we invited 466 of the applicants to Springboard 2000 to participate in a phone interview (Carter et al. 2003a; Brush et al. 2007). Like many busy entrepreneurs, some were unable or unwilling to take the interview and ultimately we were only able to conduct in-depth surveys with 90 of the women. As we mentioned earlier, the amount of capital sought varied from US$500,000 to US$10 million dollars. The average amount sought was US$2.5 million dollars, which was on the low end of first-round funding at the time. Because we had already observed that women who were chosen from the Springboard applicant pool to present at the forum had businesses that were already generating revenues, we were interested in whether *women-led businesses that used creative techniques to finance their businesses were more likely to secure outside equity funding than women-led businesses that didn't use creative financing techniques?*

High-growth entrepreneurs, whose appetites for large amounts of capital require external investors of one sort or another, face enormous challenges to raise necessary capital and have to evaluate a wide array of potential sources, other than VC. Cash and other financial resources can come from the entrepreneur's personal savings, family and friends, banks, angels, and customers and suppliers. Some of these sources provide hard currency to support business growth, while others offer cash equivalents or cash reductions that minimize the need for near-term cash outlay.

We completed interviews with 90 female entrepreneurs, 41 of whom were successful in securing equity financing and 49 who were not. Our data indicate that the women who succeeded in getting equity funding were more than twice as likely to use creative financing options. Entrepreneurs who exhibited "capital raising ingenuity" were most likely to acquire the essential resources needed for growth. Their creative financing strategies or "bootstrapping" techniques served to position the ventures for rapid growth and made them attractive to potential investors. We found that entrepreneurial approaches to bootstrapping fell into four types of activities: bootstrapping product development, bootstrapping business development, minimizing the need for cash, and meeting the short-term need for growth capital (Carter et al. 2003a; Brush et al. 2007).

Entrepreneurs often used customers and suppliers to *bootstrap product development* through the use of prepaid expenses, royalties, and special agreements for access to product hardware. We found that women in our sample who received an equity investment were more likely to have prepaid licenses, royalties, or advances from their customers or had customers that funded their Research & Development than women who had not received an equity investment (see Table 4).

Table 4 Bootstrapping product development

Tactics for bootstrapping product development	No equity (%) $n = 49$	Got equity (%) $n = 41$	Total (%) $n = 90$
Prepaid licenses, royalties, or advances from customers	16	35*	24
Customer-funded Research and Development	14	33*	22

* $p < 0.03$

To *bootstrap business development*, owners used their own cash resources to sustain the business. They drew on their personal savings or found creative ways to avoid spending. For example, they worked from home, charged business expenses on personal credit cards, or delayed paying themselves and key employees' compensation. They were very good at negotiating deals for short-term results and stretching the time when pay backs were due.

We found that most of the business development options were used extensively by entrepreneurs to position for growth. Those who succeeded in getting capital were slightly more likely to delay compensation for the startup team, and they relied less on personal savings (Table 5).

The more successful entrepreneurial women were also characterized by trying to *minimize the need for cash*—reducing cash outflows for the purchase of inventory and equipment (e.g., borrowing equipment, employing used equipment) and using unique employee agreements to finance operations (including service providers and temporary employees).

Prior research (Van Osnabrugge and Robinson 2000) indicates that small businesses in the USA have increased their reliance on leases and credit lines in preference to traditional bank loans. These researchers also found that trade credit was used by 61% of small businesses. Although, our findings are fairly similar to those of Van Osnabrugge and Robinson (2000), one difference is that only 30% of the women in our sample reported using trade credit.

Leasing equipment can be an effective financing strategy and is a credit option that is an alternative to formal bank loans. This approach has been widely used by the Springboard women who have succeeded in securing equity investments. More than 60% used leasing rather than purchasing strategies. Outsourcing key labor needs was another way to conserve cash. Though often more expensive on a per hour basis, entrepreneurs can purchase human resources on an "as needed" basis without paying for slack time or benefits, which reduces startup costs (Table 6).

Another form of bootstrapping is the use of personal credit cards and/or loans from family and friends to *meet short-term capital needs*. Even more common is extending the payment cycle for suppliers and vendors.

Van Osnabrugge and Robinson (2000) indicated that the percentage of small businesses reporting the use of credit cards to finance business has increased dramatically from 1995 to 2000—from 16 to 47%. Our research suggests that women use credit cards even more heavily than their male counterparts: in general, more than 50% of the women used credit

Table 5 Bootstrapping business development

Tactics for bootstrapping business development	No equity (%) $n = 49$	Got equity (%) $n = 41$	Total (%) $n = 90$
Delayed compensation to founding team	61	88*	72
Personal savings	94	80**	88
Deals with service providers (e.g., lawyers) at below competitive rates	52	58	55
Personal credit cards	57	60	58
Personal bank loans	16	20	18

* $p < 0.01$; ** $p < 0.04$

Table 6 Minimizing the need for cash

Tactics for minimizing need for cash	No equity (%) $n = 49$	Got equity (%) $n = 41$	Total (%) $n = 90$
Leasing equipment	16	60*	36
Interest on overdue payments from customers	4	8	6
Temporary personnel	57	60	59
Credit from vendors	12	53*	30
Using retained earnings	26	18	23

* $p < 0.000$

Table 7 Tactics adopted for meeting short-term need for capital

Tactics adopted for obtaining short-term capital	No equity (%) $n = 49$	Got equity (%) $n = 41$	Total (%) $n = 90$
Business credit cards	47	55	51
Loans from family and friends	39	38	39
Loans from partners, families, and friends	20	18	19
Loans from previous employers	2	5	3
Selling or pledging accounts receivables (factoring)	4	5	4
Paying employees with company stock	33	75*	52

* $p < 0.000$

cards for financing their business, and among those who succeeded in obtaining equity funding, personal credit was used to an even greater extent (55%).

Tightening of bank lending policies has encouraged entrepreneurs to consider non-traditional sources of capital. Our findings indicate that nearly 40% of the women in our sample are doing this. Table 7 summarizes some of the tactics used to meed the short-term need for capital.

We also found that the types of bootstrapping options used varied depending on the growth stage of the firm. Start-ups were more likely to use bootstrapping techniques that reduced labor costs rather than focusing on using customers and suppliers to finance product development or using owner controlled cash resources for business development. Early and adolescent growth firms put more emphasis on bootstrapping product development, while adolescent growth firms minimized cash needed for operating costs. Interestingly, we found that the intensity of bootstrapping was constant across all growth stages. On average, firms used 5.6 different types of bootstrapping; however, the intensity of bootstrapping increased in businesses that succeeded in gaining equity funding (6.7 types for those who received funding in comparison to 4.8 types for those who did not).

7 The supply side of the model: the VC industry

We next turned our attention to the other side of the conceptual model to understand the supply side. Prior research has shown that *whom* you know is as important as *what* you know when it comes to getting scarce resources. Equity funding appears to be no exception to the rule. The VC industry is tightly connected and geographically concentrated. Decision-makers in the industry have homogenous educational backgrounds and similar corporate management and venture start-up experience (Alimansky 2000; BenDaniel et al. 2000; Smart et al. 2000; Carter et al. 2003a, b).

Research in network theory shows that people tend to associate with others like themselves: Caucasian with Caucasian; men with men; women with women (Aldrich 1989). If securing equity capital is done within a network, it would be important that there be women in key decision-making positions in the VC marketplace in order for women business owners to find their way into the funding networks. Some of the key questions we asked as we focused on financial suppliers were:

- What is the participation (numbers, roles, and level of responsibility) of women in the VC Industry?
- Do highly visible and experienced women venture capitalists increase the flow of women-led deals to their partnerships?
- Do highly visible and experienced women venture capitalists influence the decision-making models, processes, norms, and outcomes within their firms?

To answer these questions, we designed and implemented a research methodology that identified women on managerial tracks in the VC industry. We selected *Pratt's Guide to the Venture Capital Industry* as the standard of industry membership because it is the most comprehensive and consistent source of information on the industry. We chose the 1995 and 2000 editions of *Pratt's Guide* to provide us a snapshot of the industry at two distinct points in time and in the midst of a VC boom. This enabled us to track the progress of women in the industry over that particular time. We were particularly interested in

tracking the career paths of women in the industry and identifying those women who held senior decision-making responsibility in their firms in both years.

We identified managing directors, directors, general partners, partners, principals, associates, and analysts (all positions in the decision-making hierarchy) who were female. We did not include women in administrative and legal roles. We also collected a random sample of 100 men from firms that did not have women in decision-making roles in both years in order to compare career progression and turnover rates. Finally, we conducted field interviews with senior-ranking women with 5 or more years of experience in the same partnership with early-stage funds of more than US$100 million under management (See Brush et al. 2004a).

Not surprisingly, we found relatively few women in decision-making roles in the VC industry. Not only were the numbers of women in the industry small in 1995, but also the growth rate of women in the VC industry did not keep pace with the rapid expansion of the industry that occurred between 1995 and 2000. In 1995, only 9.8% of the decision-makers were women. Surprisingly, women's representation dropped to 8.8% in 2000, despite the fact that the total number of decision-makers had increased 62% over that time period (see Table 8).

Managerial women in the industry often find themselves somewhat isolated in their practice. Many are the only decision-making women in their firm. In 1995, only 27% of the VC firms had a woman in a decision-making role, while in 2000 that percentage actually dropped to 25%.

One explanation for the change in women's presence in the industry over the 5-year period from 1995 to 2000 is the fact that women entered the industry at a lower rate than did men. The number of women in the industry as associates and analysts, frequently the entering point for the industry, actually decreased by 8% between 1995 and 2000, while the number of men entering the industry in these positions during this same period increased by 250% (see Table 9). We also found that women were far more likely than men to exit the industry, and in this same period, women left the industry at almost twice the rate of men, 64 versus 33% (see Table 10).

In summary, although we identified women in decision-making roles in the VC industry, their numbers were small because of decreasing representation as a percentage of the industry and high exit rates. Their power and influence may be limited by the women in the industry having less longevity and thus less voice in the affairs of their firms.

Table 10 Career migration in VC industry 1995–2000

Career migration	Women (%)	Men (%)
At same company	32	59
Changed companies	4	8
Left industry	64	33

Table 8 Gender composition of the VC industry at the decision-making level

Gender composition of decision-making venture capitalists	1995	2000	Increase (%)
Total number of decision-makers in VC industry	3647	5903	62
Percentage of women decision-makers in VC industry	9.8%	8.8%	−10
Total number of women in decision-making roles as venture capitalist	346	510	47
Number of VC firms	965	1355	40
Firms with decision-making women venture capitalists	27%	25%	−9

Table 9 Presence of women and men in key decision-making roles in the VC industry

Decision-making position	Women 1995–2000 Increase (%)	Male sample 1995–2000 Increase (%)
Partners, Directors, President	64	120
Vice-presidents, Chief Financial officers, Treasurers	46	100
Associates, Analysts	−8	250

We used the information that we collected from our review of the *Pratt's Guide* to identify women who were at the highest level of decision-making (partners or managing directors) in both 1995 and 2000. Our interest in these women was that we hypothesized that these women would have been in leadership positions long enough to have become very influential within their partnerships, and they would also be highly visible and well-recognized by the entrepreneurs seeking capital. They were likely to be in a position to attract entrepreneurs to the partnership and to be persuasive in making a case for investment when discussing deal options with their partners (Brush et al. 2004a).

We focused on high-level women decision-makers in partnerships managing funds of US$100 million or more, a subset that included only 34 women who had longevity, seniority, and firms with significant funds under management. We interviewed 20 such women extensively. The majority were involved in early-stage investment, but several were engaged in later-stage investing (37% were associated with mezzanine and buyout funds.). None of the women were from firms that specifically targeted women entrepreneurs, and none expressed a preference for women-led deals (Brush 2004a).

As part of the interview process, the women discussed their roles at their firms. Not surprisingly, the work they did was very much in line with what all venture capitalists do—find deals, qualify prospects, and make commitments. They did this by prospecting, developing a strong referral network, actively participating in entrepreneurial networks, and joining appropriate professional associations.

Their firms made relatively few investments each year, but the women indicated that they reviewed as many as 100 possibilities for every deal completed. It was very important for them to be actively engaged in sourcing and qualifying potential investments. Each of the women mentioned that she worked with professional associations, other VC investors, and other entrepreneurs to locate new opportunities, but none indicated that she had ever invested in a plan that was presented "cold," i.e. without a referral from entrepreneurs in their networks or from other venture capitalists in the industry. A few believed they knew more women entrepreneurs than did their male colleagues, which expanded the firm's network.

Because the women were of one voice in assuring us that they did not take cold calls or accept unsolicited business plans, there was no particular advantage for a woman entrepreneur who was unknown and not "sponsored" to gain access to capital simply by attempting a "woman-to-woman" contact.

Most of the women said that they had not behaved differently from their male colleagues. They considered themselves to be very savvy deal-finders and deal-makers who dug deeply into the details and drove a hard (but fair) bargain. Upon reflection, the women VC partners indicated that they often brought a different point of view to the partnership discussions and that this new perspective encouraged more thoughtful reflection. A few mentioned that their male colleagues referred women-led deals to them because it was thought they might understand the deal better or better connect to the entrepreneur.

Though none of these women would relax her investment standards simply because the team was led by a woman, each one noted that her firm had made deals with women-led enterprises. The fact that slightly more than 70% of the women we interviewed said that their firms had made investments in woman-led venture indicates a much greater likelihood than would be predicted from the industry norm. Most of the women believed that gender did not influence investment decisions in the industry. The majority of the women venture capitalists reported that the performances of the women-led firms were on par with overall portfolio performance. In general, they felt that the explanation for the gap in investing in women-led firms was due to a lack of high-quality, women-led businesses to invest in, a problem they attributed to human capital issues of management expertise and technical training.

8 Conclusion

Although not all women (or men) entrepreneurs are seeking high growth, there is a substantial pool of women who are eagerly pursuing growth strategies for their firms. Many of these women, like their male counterparts, require outside funding to fuel that growth. We know that VC is very difficult to secure and that less than 1% of all the businesses started by

men receive such funding. What we learned is that less than one-tenth of 1% of women-led businesses receive VC investments. We discovered that women entrepreneurs face certain commonly held beliefs or myths that may make growing and financing their businesses more difficult. The myths raise questions about women's abilities and capabilities, the composition and use they make of their networks, and the attractiveness of the industries their businesses occupy. Our investigation explored to what degree the myths about women entrepreneurs are supported.

We found that women are leveling the field for participation in degree programs and managerial and technical experience but may still have some way yet to go. The key factor is that women seeking VC do have degrees, graduate degrees, and experience that should not preclude them from financing. We also found that women-led businesses are frequently clustered in industries less attractive to financiers but, again, women who seek equity funding are in the appropriate industries. Finally, women seeking capital spent considerable time using both formal and informal networks, and seeking capital.

We know from the literature that the VC industry is male dominated (our research confirmed this) and relies on referrals, which creates a significant barrier for women entrepreneurs in that it is less likely that their networks will overlap with the financial supplier network, despite any effort they may expend networking and seeking capital.

There is another layer of equity capital that we have not discussed. That is angel capital. For any of you unfamiliar with the term, it refers to equity investment made by individuals who are not members of the family and friends group—usually other entrepreneurs and business investors—in the informal financial markets. Although there is some research being conducted on angel investing, there is no single source of information about the size and processes involved and, therefore, little knowledge on the role of angel investing in women-led high-growth firms. In the USA, it is estimated that angel investments are equal to or greater (some estimate possibly tenfold greater) than the more formal institutional VC investments made each year. The lack of knowledge about this financial market and its importance to women is a large knowledge gap.

What are the important implications of our research? There is a serious cost in wealth creation in denying an important segment of the population their ability to access the resources needed to achieve their entrepreneurial dreams. The lack of investment in women-led ventures diminishes the opportunity for women to create and grow their own wealth. We know that women who are seeking capital and are unable to identify providers or seal a deal feel the loss very powerfully and directly. For them, the loss of personal wealth, power, and influence is substantial. So is the sense of frustration at being unable to realize the full potential of the goods and services they produce to create wealth that flows back to the economy.

Furthermore, this lack of investment may limit women's ability to contribute to the diffusion of innovation affecting the economy in lost opportunities for job creation and the resulting economic contributions. And, finally, investors may be missing out on a chance to fund and receive returns from good investments, thereby limiting their wealth creation (Brush et al. 2001).

What can be done to improve the situation? To encourage and facilitate investment in *all* businesses, not just male-led ventures, we suggest

- encouraging women to set ambitious goals for their businesses and educating women to participate in the investment process;
- encouraging investors to seek out and consider investment in women-led firms;
- funding programs to educate and prepare women to lead;
- sponsoring forums, like Springboard, to link women entrepreneurs with potential investors;
- insisting on the tracking of business formation, investment, and performance by gender to provide a reliable data source;
- sponsoring and disseminating the results of research on women's entrepreneurship and comparative research on growth and financing of women and men-led ventures.

In line with our last recommendation, 5 years ago we decided to share our findings and recommendations with a broader community of scholars. We knew that there were academics around the world, particularly in the Nordic countries, who were doing excellent research on entrepreneurship in general and female entrepreneurship more specifically. With the help of a generous sponsor, ESBRI, we held the first Diana International conference in Stockholm. For the

first and second Diana International Conferences, we invited scholars that we had identified as interested and active in research on women entrepreneurs or entrepreneurship gender comparisons. We asked each invited scholar to bring a sample of his/her work to present to the group and to commit to at least one new piece of research that would be complementary to the work being done by others.

Although we did not provide hard research dollars, we hosted the conferences and facilitated the discussions. We shared our research agenda and methodologies. We worked together to identify issues that were common to women in developed economies and issues important in emerging economies.

As a group, we set an aggressive agenda and made commitments to produce informative and useful new research about female entrepreneurs around the world. The Diana International team has now formally convened three times (with many more informal meetings of subsets of the group in between). Scholars and policy-makers from these countries have consistently participated in the work of Diana International: Australia, Bulgaria, Canada, Chile, China, Denmark, Finland, Germany, Hungary, Ireland, Korea, the Netherlands, New Zealand, Northern Ireland, Norway, Scotland, Slovenia, Spain, Sweden, United Kingdom, and the United States (Brush et al. 2006a).

This project is very different from the GEM studies—The Global Entrepreneurship Monitor—in that the scholars are not all pursuing an identical research agenda. The work is very much tailored to the individual country, its economy, the stage of development of female entrepreneurship within that country, and the discipline and interests of the individual researcher. We have unifying themes but very individual approaches and outcomes.

Some of the important issues that are currently under investigation by members of Diana International:

- What are the important drivers of growth?
- What are the variations in motivation for entrepreneurship?
- Are the experiences similar or different for men or women?
- What country, venture, and personal factors influence the growth experiences of women-led businesses in ways that are unique?

The first step in the collaborative effort was to document the status of women entrepreneurship and business growth in the home countries of the participants. In addition a number of research teams provided empirical research on factors influencing the growth of women-owned businesses. These included demand side issues related to external funding in Australia; the effects of human, social, and financial capital on startup and growth in non-traditional industries in Bulgaria; the role of banks, support agencies, and venture capitalists in funding growth in the Republic of Ireland; in-depth interviews and story-telling methodology to explore the experiences of women seeking VC in New Zealand; interviews with senior representatives from banks and VC firms in Northern Ireland; growth aspirations of women entrepreneurs in Slovenia; the effects of gender on the availability of resources in young and small firms in Spain; the influence of gender in the bank lending process in the UK. These research papers were presented at the Diana International III Conference, which was published in a book (Brush et al. 2006a)

We anticipate that there will be many productive streams of research that have their genesis in Diana International. We hope that some of these will be represented among future FSF Nutek award winners.

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