



INSTITUTIONS, CULTURAL BELIEFS AND THE MAINTENANCE OF GENDER INEQUALITY IN ENTREPRENEURSHIP ACROSS INDUSTRIALIZED NATIONS

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INSTITUTIONS, CULTURAL BELIEFS AND THE MAINTENANCE OF
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This dissertation addresses the puzzle of why men are approximately two times more likely than women to be business owners in most industrialized nations after accounting for gender differences in relevant start-up resources. Drawing on comparative institutional and social psychological approaches, it develops and evaluates a multilevel theory of gender inequality in entrepreneurship. The author proposes that social policies and cultural beliefs about gender structure both the context in which men and women perceive business ownership as a viable labor market option and the interactions through which they gain legitimacy and support for their business. Specifically, policies which facilitate women's employment may influence the likelihood that women are "pushed" into entrepreneurship. Shared cultural beliefs about gender that prescribe different expectations of competence for women and men and that frame entrepreneurship as a male-typed task may generate gender-biased assessments of entrepreneurial competence and business ideas. As individuals draw on status beliefs to evaluate their own or another's competence at entrepreneurship, such beliefs disadvantage women in the self-assurance and support that is often needed to successfully pursue entrepreneurship. These processes may operate differently, however, when considering innovative rather than repetitive forms of entrepreneurship.

Findings show support for this theory. Analyses of Global Entrepreneurship Monitor (GEM) data across 24 countries suggest that state childcare provision is associated with larger gender gaps in the odds of business ownership, but smaller gender gaps in opportunity-driven entrepreneurship. Laboratory experiments conducted in the United States and the United Kingdom reveal evidence of status-based gender bias in entrepreneurship. However, this evidence is stronger among United Kingdom participants, those in the context where gender inequality in the labor market is more prevalent. In both contexts, bias is mitigated when participants evaluate innovative instead of non-innovative business ideas. Further analyses of GEM data suggest that in many of the 24 countries, women are less likely than men to pursue entrepreneurship partially because they are less likely than men with similar resources to perceive that they have the ability to be an entrepreneur; findings also suggest that women may hold themselves to a stricter standard of entrepreneurial competence than their male-counterparts.

BIOGRAPHICAL SKETCH

Sarah Elizabeth Thébaud was born near Los Angeles, California in July, 1980. She earned a Bachelor of Arts in Economics and Sociology in 2002 from California Lutheran University, where she graduated Magna Cum Laude. Before entering graduate school, she studied at the Université Paris Sorbonne. She received a Master of Arts in Sociology from Cornell University in 2007. The title of her master's thesis is "Masculinity, Bargaining and Breadwinning: A Study of Men's Household Labor in 22 Countries."

To Sydney Amelia Wood

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PREFACE

Who are entrepreneurs? Are they business owners? Innovators? Leaders? In some ways, their role in job creation and in the expansion of new markets could make them key drivers of economic growth and progress. In other ways, they could merely be individuals who have no better alternatives for employment, who crave more autonomy in their work lives or who just enjoy risk-taking. In this sense, entrepreneurship can range from being a non-traditional strategy of earning income to a non-traditional strategy for changing the world. After all, entrepreneurs may not only create new businesses, but they may also create new products, services, methods of doing business, or organizational forms; thus, entrepreneurs are in a unique position to shape not only the economy, but also the social world. Entrepreneurship is also a form of work that crosses the spectrum of ages, education levels, and occupational backgrounds. In short, it is a complex, multidimensional social phenomenon that involves a myriad of people, motives and behaviors.

Perhaps not surprisingly, gender is a core organizing principle that structures entrepreneurship. Research suggests that men are approximately two times more likely than women to be business owners in most industrialized nations after accounting for gender differences in relevant start-up resources (Arum and Muller 2004; Kim, Aldrich and Keister 2006; Reynolds and White 1997). The gender gap in entrepreneurship is particularly notable when compared to gender inequality in traditional employment or other types of leadership positions (Aldrich 2005; OECD 1998). For example, women account for about 30 percent of the entrepreneurs in OECD (Organisation for Economic Cooperation and Development) countries, whereas more than 40 percent of traditional employees are women (OECD 1998). In the US in 2005, women comprised 56 percent of professional and technical workers and 42

percent of legislators, senior officials and managers (UNDP 2005). By contrast, women were majority owners of only 30 percent of all privately held US firms during the same period (Center for Women's Business Research 2004).

Although both the gender gap in entrepreneurship and cross-national differences in the size of this gap are well-known, sociological explanations for these gaps are few and far between. This state of affairs is curious, not only because of sociologists' fascination with gender inequality in other kinds of labor market outcomes, but because of the importance of entrepreneurship for economic processes. Because entrepreneurs are not just non-traditional workers but are also potential economic leaders, this is a particularly significant area of study if a broader goal is to uncover the underlying processes which lead to women's persistent underrepresentation in the most highly valued leadership positions of society.

In this dissertation, I address this important puzzle by developing and evaluating a multilevel theory of gender inequality in entrepreneurship. I draw on comparative institutional and social psychological approaches to argue that institutional arrangements and cultural beliefs about gender combine to structure both the context in which men and women perceive business ownership as a viable labor market option and the interactions through which they gain legitimacy and support for their business enterprise. Specifically, institutional arrangements and shared cultural beliefs about gender at the macro-level shape the opportunities and incentives to become entrepreneurs that men and women experience at the micro-level. For instance, social policies which seek to reconcile work and family life can influence the likelihood that women may be "pushed" out of the traditional labor force and into entrepreneurship. Shared cultural beliefs about gender that prescribe different expectations of competence for women and men and that frame entrepreneurship as a male-typed task may generate gender-biased assessments of entrepreneurial

competence and business ideas. As individuals draw on gender status beliefs to evaluate their own or another's competence at the task of entrepreneurship, such beliefs disadvantage women in their self-confidence and the support from others that may be needed to successfully pursue a business idea.

Throughout my investigation, I focus on how these multi-level processes may operate differently when considering innovative forms of entrepreneurship, which challenge market and organizational norms, rather than repetitive forms of entrepreneurship. In doing so, I evaluate how the gendered structure of entrepreneurial activity intersects with this particularly dynamic, creative and theoretically distinct type of entrepreneurship.

I use two methodological approaches to evaluate my theory: quantitative analysis of survey data from 24 industrialized countries and laboratory studies conducted at large research universities in the United States (US) and the United Kingdom (UK). In Chapter 1, I begin by discussing existing research and theoretical perspectives on the topic of gender inequality in entrepreneurship. I then lay out a multilevel theoretical framework by which sociologists can understand this phenomenon and how it varies across national contexts. Next, Chapter 2 introduces the survey dataset and uses it to offer a picture of entrepreneurship across 24 industrialized countries. It also investigates the impact that standard indicators of human, financial and social capital can have on the gender gap in the odds of being an entrepreneur.

I then derive and evaluate specific hypotheses in Chapters 3-5. Chapter 3 introduces formal institutional arrangements as factors that can potentially explain cross-national variability in gender inequality in entrepreneurship. Specifically, I ask: does the gender gap in the odds of being an entrepreneur vary by institutional context? And, are women and men entrepreneurs more similar to one another in some

institutional contexts than in others? I focus my investigation on three key institutional arrangements that have been shown to be particularly relevant for women's participation in the labor market—the availability of paid leave for mothers, public childcare and part-time work. I examine how these arrangements affect both the net gender gap in the odds of becoming an entrepreneur, as well as gender gaps among entrepreneurs in terms of opportunity-driven entrepreneurship, educational attainment, business size and innovativeness. Here, I use multilevel modeling techniques to evaluate my hypotheses.

Next, in Chapters 4 and 5, I shift my analytical focus from formal institutions to cultural beliefs about gender. In Chapter 4, I present results from the laboratory studies that were conducted in the US and UK. These studies investigate the extent to which an entrepreneur's gender and the innovativeness of his or her business idea impacts the extent to which he or she is evaluated as competent and worthy of investment. In Chapter 5, I extend this investigation to assess how gender-differentiated self-assessments of entrepreneurial ability can contribute to the gender gap in entrepreneurship. Here, I again draw on cross-national survey data. Finally, I conclude with a discussion of the substantive import of my findings and directions for future research.

CHAPTER 1

GENDER, INSTITUTIONS AND ENTREPRENEURSHIP: A MULTILEVEL THEORETICAL FRAMEWORK

Is the gender gap in entrepreneurship simply a function of differences in the resources that men and women bring to bear? Certainly the empirical evidence suggests that women's relative lack of the resources relevant for entrepreneurship contributes to the gender gap in entrepreneurship (e.g. Kim, Aldrich and Keister 2006; Loscocco et. al. 1991). At the same time, resource-based accounts do not seem to tell the whole story. In the following chapter, I first provide an in-depth discussion of existing research on this topic. Then, I draw on comparative institutional and social psychological perspectives to develop a theory of how institutional arrangements and cultural beliefs about gender at the macro-level play a key role in the micro-level process through which individuals come to pursue entrepreneurship as a work strategy.

Entrepreneurship and Gender

In organizational research, entrepreneurship is typically defined as the creation of organizations (Aldrich 2005). By contrast, Joseph Schumpeter argued for a concept centered on innovation, or "the recombining of already existing elements in the economy." In his view, there are three primary motives behind the entrepreneur: 1) "the dream and the will to found a private kingdom"; 2) "the will to conquer"; and 3) "the joy of creating" (Schumpeter [1934] 1961: 93). Knudsen and Swedberg (2009) argue that this vision of entrepreneurship involves the individual agency to break existing economic orders (i.e. normative prescriptions for how to go about making profit) and create new ones. Scholars have also argued that this foundational vision,

which is centered on agency and creativity, is closely tied to notions of hegemonic masculinity in modern capitalist cultures (Bird and Brush 2002; Bruni, Gherardi, and Poggio 2004; Connell 1995; Mirchandani 1999).

This idea of a unique, creative, and active character as initially outlined by Schumpeter spurred many scholars to develop a personality-based model of the entrepreneur. Scholars in this line of research theorized that characteristics such as the need for achievement, internal locus of control, risk taking, and even “masculinity-femininity” could explain the likelihood of a person starting a business, and the gender differences thereof. As such, the “female entrepreneur” became a deviant category that researchers sought to define, given that women were not expected to exhibit the entrepreneurial personality traits that are typically associated with masculinity (Bowen and Hisrich 1986; Brush 1992; Cromie and Hayes 1988; Hisrich and Brush 1984). Personality-based explanations of the gender gap in entrepreneurship were largely unsuccessful, however, in part because women entrepreneurs tended to share with men entrepreneurs many of these supposedly “entrepreneurial” personality traits (Cromie 1987).

By contrast, sociologists have largely understood gender differences in business ownership and success by mapping gendered patterns in the paid (employee) labor market onto the self-employed. So, for example, women tend to have, on average, less workplace and managerial experience, which is often relevant for successful start-ups (Kim, Aldrich and Keister 2006; Loscocco et. al. 1991). Gender segregation by industry and occupation among employed workers (e.g., Chang 2000; Charles 1992; Weeden 2004; Weeden and Sorensen 2004) carry over into entrepreneurship opportunities: women entrepreneurs tend to be concentrated in female-typed industries that are crowded, competitive and non-lucrative, such as retail, food service, and interpersonal care (Brush 1992; Cater and Cannon 1992; Kalleberg

and Leicht 1991; Loscocco et al. 1991; Loscocco and Robinson 1991; Tonoyan and Strohmeyer 2005). Such segregation has been proposed as one of the main reasons why women entrepreneurs in Germany are less likely to be involved in product and process innovations (Tonoyan and Strohmeyer 2005). It may also partially account for why women entrepreneurs have smaller businesses than men on average (Kalleberg and Leicht 1991), though women's tendency to set lower maximum size thresholds for their businesses may also partially account for this gap (Cliff 1998). Self-employed women are also overrepresented in both the high and low wage groups, suggesting that self-employment for women is more bifurcated than it is for men's (Kalleberg 2003).

Paid labor market experiences may also affect entrepreneurship through the mediating effect of network structures. Larger, more heterogeneous business discussion networks have been shown to increase the likelihood of business start-up (Renzulli, Aldrich and Moody 2000). Time spent in paid labor and higher occupational statuses are related to more diverse network structures (Beggs and Hurlburt 1997; Campbell 1988); a high level of education is an additional asset, given that it is positively related to network size (McPherson, Smith-Lovin and Brashears 2006) and the use of cross-sex ties (Aldrich, Reese and Dubini 1989). Compared to men, women tend to have more kin and more homogeneity in their networks (Smith Lovin and McPherson 1993). This suggests that because, on average, women experience more labor market interruptions, have lower occupational status, and are less likely to have managerial experience, they are disadvantaged in their ability to access information and recognize business opportunities. Men entrepreneurs also have quite gender homophilous business discussion networks (Aldrich et al. 1989; Ruef Aldrich and Carter 2003), which may add to women's network disadvantage.

Taken together, this body of research indicates that women's cumulative structural disadvantages regarding human, social network and financial resources in

the overall population contribute to their lower likelihood of starting a business. However, women who have already decided to pursue entrepreneurship tend to have similar levels of network heterogeneity (Renzulli et al. 2000) and similar numbers of network ties to whom they could turn for specialized advice (Loscocco et al. 2009) as their male counterparts. Additionally, most studies suggest that few, if any, gender differences in the success and innovativeness of small businesses persist after adjusting for entrepreneurs' human capital, industry, and business size (Kalleberg and Leicht 1991; Loscocco and Leicht 1993).

Entrepreneurship as an Employment Strategy

Though a relative lack of human, social and financial capital may lower women's likelihood of recognizing business opportunities, some studies have focused on how the mechanisms that lead people toward entrepreneurship may differ for men and women. For example, women's experiences in paid employment may disproportionately push them into self-employment (Buttner and Moore 1997; Heilman and Chen 2003). Specifically, women are much more likely than men to enter entrepreneurship as a result of work/family conflict or discriminatory work environments (Budig 2006; Buttner and Moore 1997; Carr 1996; Hughes 2003; Maniero and Sullivan 2006). Budig (2006), however, finds that, in the US, these push factors vary according to professional status. While non-professional women are likely to enter entrepreneurship for family-related reasons, women in the professions may be more likely to follow a careerist strategy (Budig 2006). Discrimination in the labor market can also have an indirect effect on self-employment outcomes: people who seek refuge from discriminatory experiences via self-employment may also be at a disadvantage in terms of managerial experience and network diversity.

Research in the US further suggests that the trend toward firm restructuring

and increasingly flexible employment systems has pushed more men and women into various forms of self-employment (Kalleberg 2003; Kalleberg, Reskin and Hudson 2000). This push factor however seems to have differentially benefited men: self-employment (vis-à-vis traditional employment) increases the likelihood of being exposed to negative job qualities more for women than for men. For instance, in Kalleberg's (2003) study, most self-employed men were managers of a firm, whereas most women were bookkeepers.

Although these studies suggest that the incentives for becoming an entrepreneur may differ for men and women, they do not systematically address the mechanisms underlying the context of men and women's decision-making. This problem arises for several reasons. First, the design of the analyses is inadequate. Most existing studies look only at people who are already entrepreneurs, and hence cannot tease apart differences between those who express interest in becoming an entrepreneur but do not, those who become entrepreneurs but fail, and those who become entrepreneurs and succeed, because only the latter group is observed (Ruef et al. 2003). This selection bias is particularly problematic for determining sources of entrepreneurship if the incentives embedded in the institutional and cultural environment that lead people toward entrepreneurship operate in different ways for different groups. Furthermore, although business ownership is often reported to be a refuge from gender bias in traditional employment settings, it is imperative to consider its role in non-traditional employment experiences if one accepts the sociological understanding of gender as an interactional accomplishment that permeates all areas of social life (West and Zimmerman 1989).

A second shortcoming of prior efforts to explain the gender gap in entrepreneurship is that they have paid too little attention to institutional and cultural context. Institutional theorists argue that social norms and cultural beliefs affect how

organizations are created and structured, and how they generate legitimacy for entrepreneurial endeavors (Aldrich and Fiol 1994; DiMaggio and Powell 1991; Scott 2001). However, only a few researchers have begun to evaluate how aspects of normative institutional context may be associated with gender inequality in entrepreneurship. For instance, women are more likely to engage in entrepreneurship in countries where there is stronger ideological support for women's entrepreneurship (Baughn et al. 2006). At the same time, institutional approaches to gender inequality in the labor market more broadly suggest that social policies (Gornick and Meyers 2003; Mandel and Semyonov 2006; Petitt and Hook 2009; Soskice 2005) and widely shared cultural beliefs about gender (Correll 2004; Ridgeway 2007; 1997) can also have a dramatic influence on women's labor market opportunities, incentives and experiences.

Data based on interviews with entrepreneurs suggests that institutional arrangements and cultural beliefs about gender may indeed have gendered consequences for the pursuit of entrepreneurship as an employment strategy. For example, women entrepreneurs disproportionately report entering entrepreneurship in order to manage work and family responsibilities (Buttner and Moore 1997; Carr 1996; Hughes 2003), which suggests that the institutional structure of traditional employment may create gender-differentiated incentives for entrepreneurship. Women entrepreneurs also frequently perceive that their gender is related to a lack credibility in the eyes of investors, which disadvantages them in their searches for credit (Moore and Buttner 1997; Heilman and Chen 2003). However, few studies have investigated the extent to which gendered institutional arrangements or cultural beliefs about gender might systematically impact men and women in the initial decision-making process of choosing to start a business in the first place or in the process through which they gain support from others for their endeavor.

In this research, I expand on these insights to develop and evaluate a theory of how formal institutional arrangements and widely shared cultural beliefs about gender work together to generate and sustain observed patterns of gender inequality in entrepreneurship. I emphasize, in particular, the roles of a) social policies that frame the context in which men and women perceive business ownership as a viable labor market option; and b) largely subconscious and context-dependent cultural beliefs that frame the assessments that individuals make of entrepreneurial ability. In the following paragraphs, I provide a brief outline of my theoretical framework. Then, in Chapters 3-5 I discuss the mechanisms in more detail to generate specific hypotheses.

Gender and Social Policies

Over the last two decades, a growing body of research has investigated how family policies and labor market structures can impact women's opportunities in the paid labor market (Gornick and Meyers 2003; Lewis 1992; O'Connor, Orloff and Shaver 1999; Orloff 1993; Mandel and Semyonov 2006; Pettit and Hook 2010; Soskice 2005). I draw on this literature to argue that these institutional arrangements affect gender inequality in entrepreneurship as well. In particular, policy arrangements affect women's likelihood of encountering "push" factors, such as work/family conflict or discrimination, in traditional labor markets. Where national policy arrangements reduce work/family conflict, women should, in the aggregate, be less likely to experience work/family conflict as an incentive to start a business. By contrast, where policies exclude women from the labor market by increasing discriminatory incentives to employers or by not providing institutional support to working mothers, women may experience more of these gender-related, and labor market-linked incentives to become an entrepreneur. This selective process then generates cross-national differences not only in women's versus men's likelihood of

being an entrepreneur, but also in the types of businesses that men and women start. I evaluate this argument in Chapter 3 with a multilevel analysis of Global Entrepreneurship Monitor (GEM) data across 24 countries.

Cultural Beliefs about Gender

Next, I analyze how a second macro-level factor, widely shared cultural beliefs about gender, can also contribute to our knowledge about the gender gap in entrepreneurship. Sociologists increasingly understand gender as a multilevel structure, which includes cultural beliefs and distributions of resources at the macro level, patterns of behavior at the interactional level, and roles and identities at the micro level (Ferree, Lorber and Hess 1999; Ridgeway and Correll 2004; Risman 1998). Because processes at each level simultaneously reinforce each other, the gender structure is an overdetermined system that powerfully reinforces inequality. Here, I focus on shared cultural beliefs about gender that prescribe different expectations of competence for women and men (or gender status beliefs) in the area of entrepreneurship, and analyze the implications of those beliefs for the gender gap in entrepreneurship. I draw on status characteristics theory to formalize a cultural-cognitive institutional approach, focusing on the way that largely subconscious and context-dependent cultural beliefs about gender and entrepreneurial ability enter into evaluative processes. Specifically, I develop and test hypotheses about how gender status beliefs may impact the social interactions through which women they gain legitimacy and support for their ideas, and the process by which women initially choose to pursue entrepreneurship. In doing so, I investigate the extent to which the relative influence of such beliefs may vary by national context.

First, I propose that gender-biased beliefs about entrepreneurial competence generally discourage women from pursuing entrepreneurship and disadvantage them

in their quest for financial and social support. The people with whom an entrepreneur or a potential entrepreneur interacts, such as family members, friends, colleagues, investors, customers, employees or other people in an individual's social network, may hold such beliefs. To the extent that gender status beliefs generate biased evaluations of women entrepreneurs' competence and the perceived viability of their business ideas, these cognitive biases in turn structure the interactions through which entrepreneurs gain legitimacy and support for their business endeavor. Gender beliefs also generate important implications for the extent to which particularly innovative ideas may be perceived as viable and/or worthy of investment. In Chapter 4, I compare relative levels of support for this theory with results from laboratory studies conducted in the US and the UK.

Second, I argue that that men and women draw on gender status beliefs in order to assess their own ability at entrepreneurship. Cultural beliefs that accord men higher competence than women at tasks that "count" and stereotypes that associate entrepreneurship with men and masculinity generate different standards of attributing experience to ability among men and women. This process leads to differences in the assessments that men and women make of their own competence at entrepreneurship, and in turn, the likelihood that they choose entrepreneurship as a labor market strategy. I investigate these propositions in Chapter 5 by analyzing GEM data.

A Multilevel Theoretical Framework

Taken together, I propose that gender inequality in entrepreneurship arises through a multilevel social process. Social policies and shared cultural beliefs about gender at the macro-level set the stage for the entrepreneurial opportunities and incentives that individuals experience at the micro-level. In the aggregate, these micro-level processes generate inequality at the macro-level.

Figure 1.1 depicts this theoretical framework. The black arrows represent the theoretical relationships that are focal points in my study. The gray arrows represent relationships that I theorize, but which are peripheral to my main argument. First, in Chapter 3, I argue that institutional arrangements at the macro-level influence the degree to which individual women are integrated into the labor market (a). This integration (or lack thereof) impacts the relative salience of labor market “push” factors (e.g. work/family conflict) as an incentive to become an entrepreneur (b). In the aggregate, this process influences not only the relative odds that women versus men start a business, but also the extent to which there is gender inequality in various forms of entrepreneurship (e.g. opportunity-driven, innovative, etc.) (c).

Next, gender beliefs at the macro-level influence the expectations that individuals hold of their own and of others’ competence at the task of entrepreneurship (d). Others may draw on gender status beliefs when evaluating the potential success of a new venture; this may disadvantage women relative to men in their ability to gain legitimacy and support for their endeavor (e). In turn, the level of support affects the likelihood that a person will successfully pursue his or her business idea as well as the types of businesses (e.g. innovative versus non-innovative) for which they are able to garner support (g).

Furthermore, I argue that gender-differentiated self-assessments of entrepreneurial ability may decrease the likelihood that women vis-à-vis men perceive entrepreneurship as a practical career choice (f). This process then contributes to the gender gap in entrepreneurship because individuals typically are more willing to pursue a particular career path if they believe they have the requisite ability to do it (c). I suspect that gendered self-assessments of ability may also have implications for the types of businesses that men and women start.

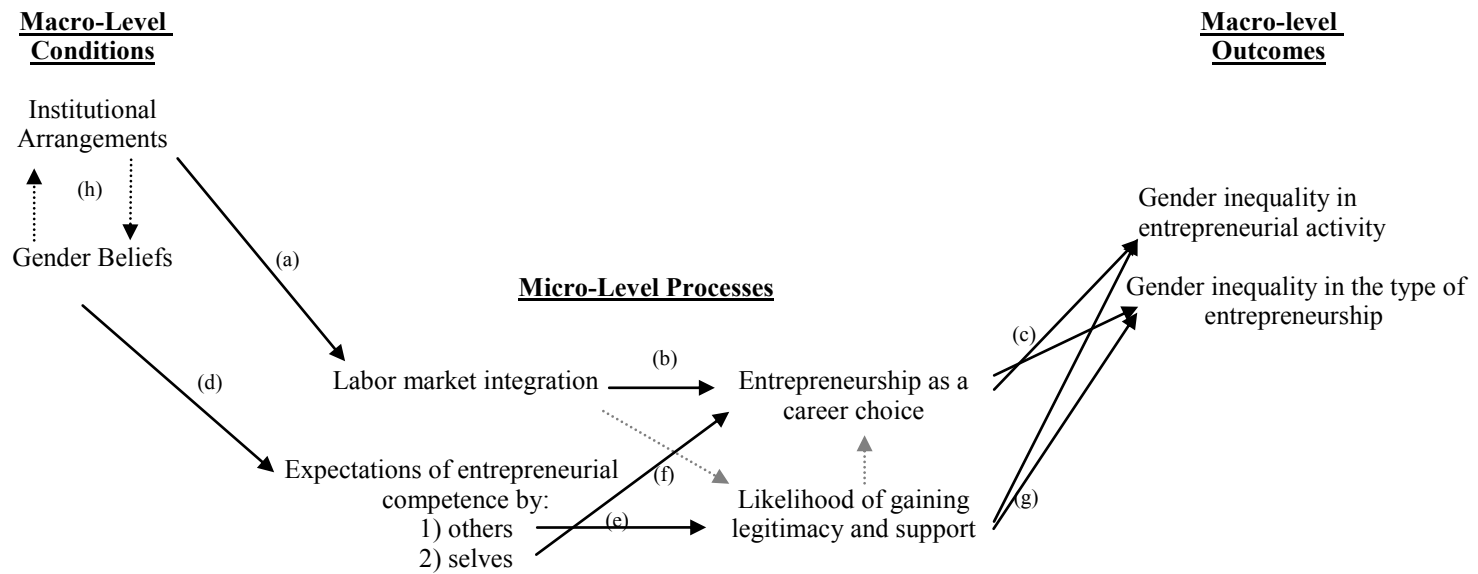


Figure 1.1 A Multilevel Theoretical Framework for Understanding Gender Inequality in Entrepreneurship

I further theorize (but do not test empirically in this study) that the choice to pursue entrepreneurship may be indirectly influenced through one's ability to gain support from others, especially in the early phases of a start-up. For instance, if a woman's friends, family, or colleagues are less likely to think her business idea would be viable than a man's friends are, she may be less likely to continue with her project. In addition, integration into the labor market can impact the likelihood that an entrepreneur will gain legitimacy and support for his or her endeavor because he or she may have higher levels of relevant human and social capital, such as work experience and network ties.

At the macro level, there may also be a reciprocal relationship between institutional arrangements and widely shared gender beliefs (h). As several researchers have noted (e.g. Gornick and Meyers 2009), institutional arrangements, especially family policies, can either reinforce or contest traditional male-breadwinner/female-caregiver norms. To the extent that these arrangements may affect the gender connotation of certain labor market activities such as entrepreneurship, they may mediate the relative salience of gender status beliefs as they pertain to entrepreneurship. I investigate this relationship with my comparative experimental study between the US and the UK (Chapter 4) and by comparing evidence of gender-differentiated self-assessments across 24 countries (Chapter 5).

Finally, it is possible that there could be a diffuse feedback loop between macro-level outcomes and macro-level conditions. Higher levels of gender inequality in entrepreneurial activity may strengthen the extent to which cultural beliefs about gender impact expectations of entrepreneurial competence. This is because entrepreneurship itself may be viewed as a more strongly male-typed task in contexts where entrepreneurship is more male-dominated overall. Though I cannot directly test this proposition with my data, I speak to this theoretical possibility in Chapter 4.

CHAPTER 2

ENTREPRENEURSHIP AND GENDER IN 24 HIGH-INCOME COUNTRIES

Where is entrepreneurship most prevalent? Where is the gender-gap in the odds of being an entrepreneur the highest and where is it the lowest? What happens when we account for relevant individual-level resources? In this chapter, I set the backdrop for my study by introducing the survey data and describing cross-national patterns of entrepreneurial activity.

Data and Variables

I utilize survey data from the Global Entrepreneurship Monitor (GEM), a large cross-national dataset with information on individuals and their propensity for entrepreneurial activity. Babson College and the London Business School initially started the telephone survey in 1998 with a small sample of North American and Western European countries. In each year since, the GEM adult population survey has been conducted in more and more countries. Given that the theoretical focus of this study is on gender inequality in entrepreneurship across industrialized countries, I use a sample of 24 “high income” countries (World Bank 2008), all of which were also deemed to have “High Human Development” in the United Nations Human Development Report (UNDP 2005). These include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Japan, the Netherlands, New Zealand, Norway, Poland, Portugal Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. Data are pooled across surveys conducted from 2001 to 2005. I restrict my sample to those who are in the labor force and over the age of 18.

Entrepreneurship- I define an entrepreneur to be a person who is currently,

alone or with others, either trying to start his or her own new business (a nascent entrepreneur) or is already the owner of a business that he or she helps manage (an established entrepreneur). Entrepreneurs are coded “1,” all others are coded “0.”

I include both nascent entrepreneurs and established entrepreneurs in my definition because I am interested in the factors that give rise to the gender gap in entrepreneurial activity overall, not just in rates of established business ownership. In each country, nascent entrepreneurs (those who are trying to start a new business) comprised between 10% (Sweden) and 25% (US) of all entrepreneurs in the sample. Analyses that disaggregate entrepreneurs into nascent versus established categories produce very similar results to those presented here.

Individual-level Variables—Gender is the independent variable of central importance in my analysis. This is coded as a dummy variable (1=female, 0=male). Other independent variables adjust for factors that prior empirical research has shown to influence likelihood of business ownership. These include human capital, financial capital (i.e., personal financial resources) and a basic measure of relevant network resources.

Human capital is measured by age and education. Although people may be more likely to start a business as they get older and gain more experience, they may be less likely to start one after retirement age, simply because of the time and effort involved. I test for this curvilinear effect of age by including the square of age in the model. However, I keep people over 65 in the sample because many people who are over 65 often own businesses. I measure education with a series of dummy variables corresponding to each ordinal category of education (secondary degree, post-secondary degree and graduate experience); some secondary education is the reference category. Less than 3% of the original sample has missing values on the human capital variables.

Next, I consider financial resources with a basic measure of household income. Because of limitations of the data, household income is measured with a series of dummy variables corresponding to position in that country's income distribution:¹ middle third, or the upper third, with the lowest third serving as the reference category. Nearly sixteen percent (15.5%) of cases are missing information on household income. Here, I present results that utilize imputed data for these missing values. These imputations were estimated separately by country and are based on multiple imputations generated from ordered logistic regression models. The imputation models included age, education, year of survey, entrepreneurship status and, for country surveys where it is available, part time employment status. Alternative analyses that instead omitted missing cases for this variable produced very similar results to those presented here; these results are presented in Appendix A.

Finally, I include a simple measure of network resources, namely a binary variable indicating whether the respondent personally knows someone who has started a business in the past two years (1=yes). It is of course quite possible that this measure is endogenous to the outcome –entrepreneurs may join social or professional organizations of other entrepreneurs. I thus make no claims about the causal direction of the relationship.

In subsequent analyses (Chapter 5), I include a variable that allows me to model gender differences in self-assessments of entrepreneurial ability. Self-assessments of entrepreneurial ability are measured dichotomously with the item: “You have the knowledge, skill and experience required to start a business.” Respondents either agree “Yes” (1), or disagree “No” (0).

Unfortunately, in survey years 2003, 2004 and 2005 the GEM interview design was such that the network and self-assessment items are asked of all entrepreneurs, but

¹ Unfortunately, detailed data on income are not publicly available.

only some non-entrepreneurs. Therefore, the percentage of entrepreneurs in the total sample becomes artificially high when it is restricted to cases with valid responses on these variables. As I demonstrate in both the analysis below and in Chapter 3, results pertaining to the gender gap are very similar when using a sample that does not exclude missing values on these variables (hereafter “unrestricted sample”) versus a sample which does exclude missing values on these variables (hereafter “restricted sample”). The unrestricted sample totals 231,136 respondents and the restricted sample totals 177,276 respondents.

Table 2.1 shows the final restricted sample size by year for each country. Particularly large samples were collected in Germany, Spain, Sweden, the United Kingdom, and the United States. Complete information is available between survey years 2001 and 2005 in Denmark, Finland, Germany, Japan, Sweden, and the United States.

Descriptive statistics for the individual-level variables are listed in Table 2.2. In the unrestricted sample, approximately 18 percent of respondents were entrepreneurs. This number increases to 22 percent in the restricted sample. Means for resource variables are very similar in the unrestricted and restricted samples. Respondents are about 41 years old on average, and about 15 percent are in the highest education category, corresponding to experience in a graduate program. Respondents are also fairly well-off on average: About 40 percent reported their income to be in the top third of the income distribution for their country, and 36 percent in the middle third. This is not surprising given that telephone surveys are typically unable to recruit low-income individuals into the survey (often due to a lack of telephone service, frequent moves, or suspicion). Unfortunately, this means that the sample may not

Table 2.1 Restricted GEM Sample Size by Country and Year

| Country | 2001 | 2002 | 2003 | 2004 | 2005 | Total |
|----------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Australia | n/a | 1,813 | 941 | 845 | 1,069 | 4,668 |
| Austria | n/a | n/a | n/a | n/a | 1,015 | 1,015 |
| Belgium | n/a | 1,782 | 738 | 1,320 | 1,838 | 5,678 |
| Canada | 1,206 | 1,756 | 420 | n/a | n/a | 3,382 |
| Denmark | 1,105 | 1,378 | 832 | 813 | 929 | 5,057 |
| Finland | 950 | 808 | 554 | 557 | 879 | 3,748 |
| France | n/a | 987 | n/a | 1,021 | 714 | 2,722 |
| Germany | 2,966 | 7,913 | 2,666 | 2,439 | 2,708 | 18,692 |
| Greece | n/a | n/a | 824 | 796 | 885 | 2,505 |
| Hungary | 1,127 | 1,089 | n/a | 1,110 | 1,302 | 4,628 |
| Iceland | n/a | 1,434 | 940 | 1,073 | 1,119 | 4,566 |
| Ireland | n/a | n/a | n/a | 748 | n/a | 748 |
| Japan | 829 | 967 | 525 | 586 | 669 | 3,576 |
| Netherlands | n/a | 2,002 | 1,117 | 1,215 | 1,227 | 5,561 |
| New Zealand | 1,294 | n/a | n/a | 858 | 947 | 3,099 |
| Norway | n/a | 1,152 | 680 | 1,050 | 783 | 3,665 |
| Poland | 807 | 827 | n/a | 785 | n/a | 2,419 |
| Portugal | 1,118 | n/a | n/a | 328 | n/a | 1,446 |
| Slovenia | n/a | 1,019 | 632 | 596 | 1,215 | 3,462 |
| Spain | n/a | n/a | 4,527 | 10,879 | 8,905 | 24,311 |
| Sweden | 1,462 | 1,417 | 1,444 | 18,430 | 930 | 23,683 |
| Switzerland | n/a | 1,306 | 800 | n/a | 1,840 | 3,946 |
| United Kingdom | 3,011 | 8,653 | 8,445 | 8,984 | 4,347 | 33,440 |
| United States | 1,842 | 4,198 | 3,634 | 807 | 778 | 11,259 |
| Total | 17,717 | 40,501 | 29,719 | 55,240 | 34,099 | 177,276 |

Table 2.2 Means and Standard Deviations for Individual-Level GEM Variables by Sample Size

| Variable | Unrestricted Sample | | Restricted Sample | |
|--|---------------------|---------|-------------------|---------|
| | Mean | S.D. | Mean | S.D. |
| Entrepreneur | 0.18 | | 0.22 | |
| Female | 0.48 | | 0.47 | |
| Age | 41.22 | 11.89 | 41.17 | 11.96 |
| Age Squared | 1840.93 | 1011.14 | 1837.79 | 1017.81 |
| Education | | | | |
| Less than High School (reference category) | 0.28 | | 0.29 | |
| High School Diploma | 0.33 | | 0.33 | |
| Postsecondary Degree | 0.23 | | 0.24 | |
| Graduate Experience | 0.15 | | 0.14 | |
| Income | | | | |
| Lowest Third (reference category) | 0.23 | | 0.23 | |
| Middle Third | 0.36 | | 0.36 | |
| Highest Third | 0.40 | | 0.42 | |
| Year of survey | | | | |
| 2001 (reference category) | 0.08 | | 0.10 | |
| 2002 | 0.18 | | 0.23 | |
| 2003 | 0.19 | | 0.17 | |
| 2004 | 0.31 | | 0.31 | |
| 2005 | 0.24 | | 0.19 | |
| Know an entrepreneur | | | 0.41 | |
| Self-Assessed Entrepreneurial Ability | | | 0.51 | |
| N | 231,136 | | 177,276 | |

include a representative proportion of particularly low-income entrepreneurs. In the restricted sample, about half of the respondents believe that they indeed have the knowledge, skill and experience required to start a business, though fewer (about 40%) reported that they personally know an entrepreneur.

Descriptive Overview

Entrepreneurship Rates--Table 2.3 shows entrepreneurship rates by country, sample size, and gender. The first column lists the percentage of respondents in the unrestricted sample who are entrepreneurs. By this measure, Belgium has the lowest entrepreneurship rate, whereas Greece has the highest. As previous research suggests (Hall and Soskice 2001), entrepreneurship is generally more prevalent in liberal market economies that have institutions that facilitate entrepreneurship, such as the United States, Australia and New Zealand; by contrast, it tends to be less prevalent in countries that are characterized by long-term employment, bureaucratic labor systems, or large welfare states, such as Japan, the Netherlands and Sweden.

Greece has particularly high rates of entrepreneurship. Though Greece is categorized as a “high-income” country, it has a relatively lower level of economic development compared to other countries in the sample. It also had relatively high rates of inflation and unemployment compared to the other countries in the sample during the period in which the data were collected (UNDP 2005). Research suggests that countries with relatively lower levels of development tend to have higher rates of entrepreneurship because more people start their own businesses due to economic necessity (Acs et al. 2004). Indeed, Greece has the highest percentage of necessity-based entrepreneurship of any country in this sample: a full 38 percent of entrepreneurs in the Greek sample report being an entrepreneur because they “have no better choices for work.” By contrast, this figure is only 12 percent in Belgium.

Figure 2.1 compares these rates with those based on the restricted sample size (shown in column 2 of Table 2.3). As expected, the restricted sample upwardly biases the percentage of entrepreneurs in most of the countries. This is particularly the case for countries in which data is available for just one survey year between 2003 and 2005 (e.g. Austria, Ireland). As I show in the next section, this bias is less apparent when examining gender differences in rates of entrepreneurship.

The Gender Gap

The third through sixth columns of Table 2.3 show rates of entrepreneurship for men and women. These rates are highest in Iceland, Australia, New Zealand and Greece, with percentages of over 30 for men and over 20 for women. Rates are also very low for both groups in Belgium. However, particularly low rates for men are reported in the Netherlands, Japan, Hungary and Austria; by contrast, women's rates of entrepreneurship are lowest in the Scandinavian countries of Denmark and Sweden, as well as Slovenia.

Table 2.3 Entrepreneurship Rates as a Percent of GEM Respondents in the Labor Force by Country and Gender

| Sample Size: | Total Entrepreneurship Rate (% Entrepreneurs of total) | | Male Entrepreneurship Rate (% of Males) | | Female Entrepreneurship Rate (% of Females) | | Gender Gap (Male Rate- Female Rate) | |
|---------------|--|------------|---|------------|---|------------|---|------------|
| | Unrestricted | Restricted | Unrestricted | Restricted | Unrestricted | Restricted | Unrestricted | Restricted |
| Belgium | 13.03 | 18.36 | 15.90 | 21.69 | 9.64 | 14.14 | 6.26 | 7.55 |
| Denmark | 13.46 | 17.69 | 18.31 | 23.05 | 8.32 | 11.48 | 9.99 | 11.57 |
| Netherlands | 13.65 | 19.54 | 16.31 | 22.90 | 10.33 | 15.09 | 5.98 | 7.81 |
| Japan | 13.74 | 18.42 | 15.18 | 20.35 | 11.09 | 14.93 | 4.95 | 6.37 |
| France | 13.84 | 16.10 | 17.25 | 19.52 | 10.19 | 12.25 | 7.06 | 7.27 |
| Hungary | 13.84 | 17.45 | 16.24 | 20.18 | 11.01 | 14.15 | 5.23 | 6.03 |
| Sweden | 14.23 | 14.29 | 19.39 | 19.50 | 8.61 | 8.62 | 10.78 | 10.88 |
| Austria | 14.68 | 24.46 | 16.67 | 26.61 | 12.45 | 21.84 | 1.99 | 1.08 |
| Slovenia | 15.23 | 21.38 | 20.28 | 27.52 | 9.61 | 13.97 | 10.67 | 13.55 |
| Germany | 15.86 | 19.81 | 19.50 | 23.94 | 11.6 | 14.75 | 7.90 | 9.19 |
| United King. | 15.99 | 21.83 | 21.37 | 27.90 | 10.16 | 14.55 | 11.21 | 13.35 |
| Spain | 16.16 | 20.68 | 18.11 | 22.83 | 13.61 | 17.74 | 4.50 | 5.09 |
| Portugal | 17.44 | 21.16 | 20.10 | 24.30 | 13.92 | 16.78 | 6.18 | 7.52 |
| Canada | 18.59 | 20.02 | 22.22 | 24.00 | 14.28 | 15.18 | 7.94 | 8.82 |
| Ireland | 19.47 | 29.25 | 23.78 | 33.64 | 13.81 | 22.71 | 8.47 | 7.37 |
| Finland | 20.94 | 26.61 | 26.54 | 32.79 | 15.24 | 19.82 | 11.30 | 12.97 |
| Norway | 21.33 | 29.34 | 27.21 | 36.08 | 14.20 | 20.55 | 13.01 | 15.53 |
| Poland | 21.70 | 25.03 | 26.02 | 29.40 | 16.31 | 19.34 | 9.71 | 10.06 |
| Switzerland | 22.13 | 30.43 | 24.61 | 33.50 | 18.07 | 25.31 | 6.54 | 8.19 |
| United States | 23.15 | 28.14 | 26.13 | 31.20 | 19.69 | 24.43 | 6.44 | 6.77 |
| Iceland | 27.08 | 34.96 | 33.14 | 41.32 | 20.14 | 26.97 | 13.00 | 14.35 |
| Australia | 27.29 | 33.24 | 31.28 | 37.52 | 22.57 | 27.94 | 8.71 | 9.58 |
| New Zealand | 33.59 | 40.82 | 37.69 | 44.78 | 29.15 | 36.28 | 8.54 | 8.50 |
| Greece | 38.02 | 48.75 | 43.04 | 53.27 | 29.74 | 40.70 | 13.30 | 12.57 |

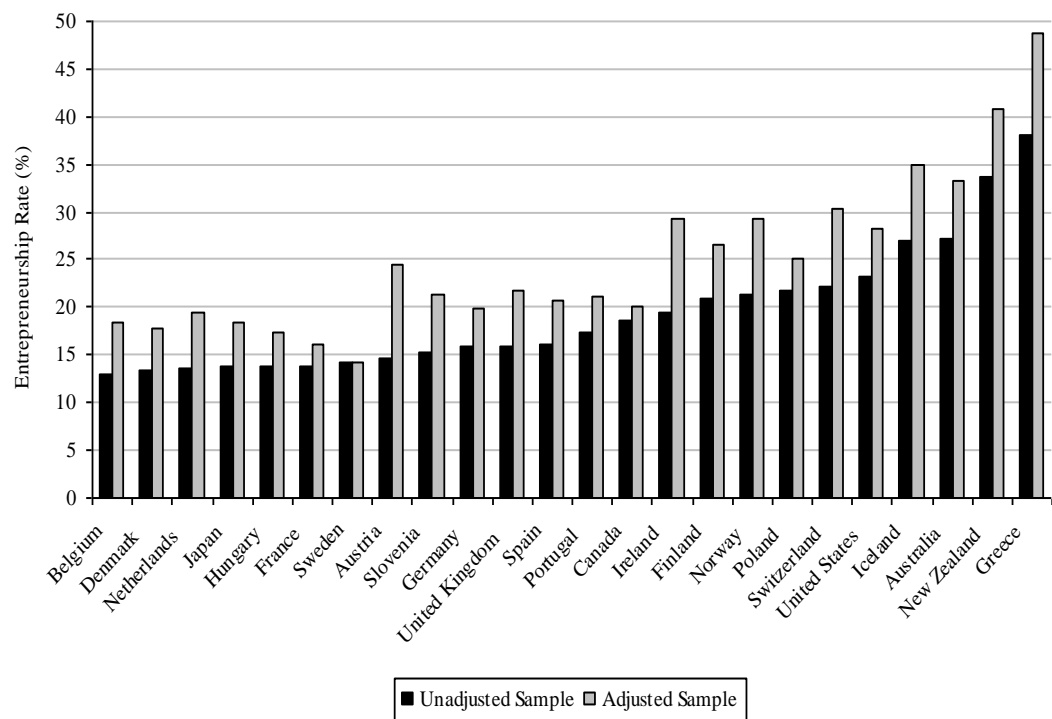


Figure 2.1 Rates of Entrepreneurship by Country and Sample Size

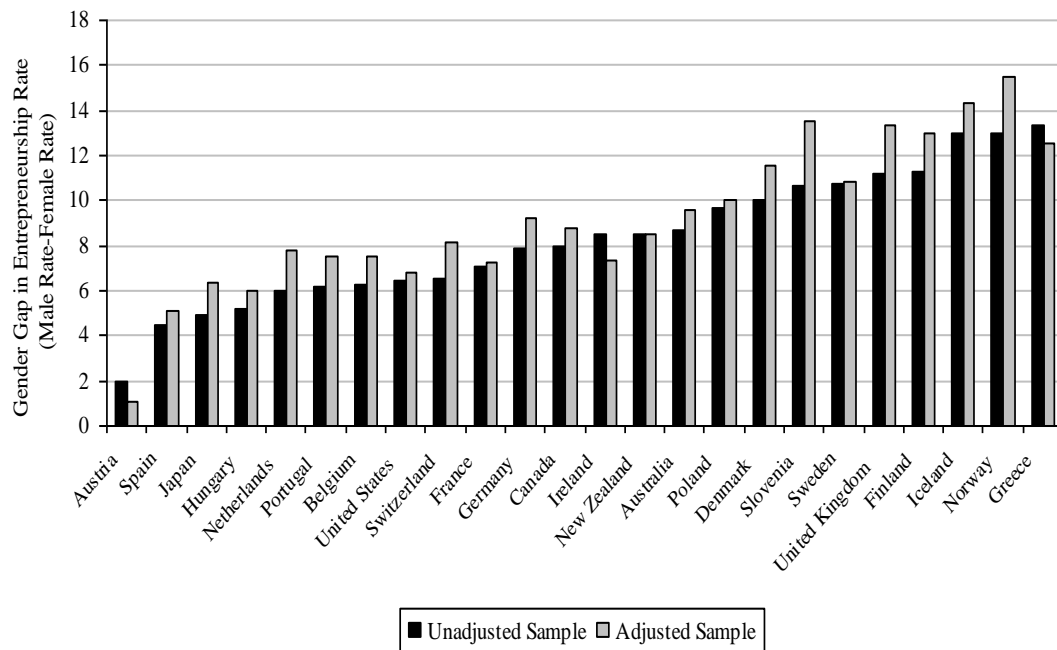


Figure 2.2 Gender Differences in Rates of Entrepreneurship by Country and Sample Size

The gender gap in the rate of entrepreneurship (the male rate minus the female rate) is shown in Figure 2.2 and in the final two columns of Table 2.3. The gender gap in the rate of entrepreneurial activity is the highest in Iceland, Norway and Greece, with approximately 13 percent more men than women engaging in entrepreneurial activity. The gap is the lowest in Austria, Spain, and Japan, where the gender difference is less than five percent. In general, most of the countries in Northern Europe, including those that are characterized by particularly gender-progressive policy orientations, tend to have higher gender gaps, whereas the relatively more traditional countries of Japan, Continental and Southern Europe tend to have lower gender gaps (Greece is a notable exception, which may again reflect the economic climate in Greece in the period in which the data were collected). Most of the liberal, English-speaking countries fall in the middle of the range.

Differences between the estimates of the gender gap based on the restricted sample versus the unrestricted sample are generally smaller than they are for overall rates of entrepreneurship. In most cases, estimates of the gender gap are slightly higher in the restricted sample than in the unrestricted samples; Slovenia is the strongest example of this, where there is a three percent difference in the estimates.

Multivariate Analysis

The entrepreneurship rates I've just discussed provide useful information about the prevalence of entrepreneurship in these countries and the gender differences in entrepreneurial activity. We know, however, that countries differ in the extent to which resources differ across men and women. Do these cross-national patterns obtain after adjusting for resource-based factors? It is possible, for example that the high gender gap in entrepreneurship in Greece is due to a higher gender gap in education in Greece.

In order to investigate the impact of resource-based factors on the likelihood of being an entrepreneur, I first show a series of random intercepts logistic regression models in Table 2.4. Second, I present in Figure 2.3 the conditional odds that a woman is an entrepreneur relative to the odds that a man is an entrepreneur. These odds ratios are calculated from logistic regression models estimated separately by country.

Table 2.4 presents random-intercepts logistic regression models. I use this modeling strategy because it provides more accurate estimations of nested data like this, in which individual-level error terms within countries may be more highly correlated than those between countries. These models assume different error term structures for each country by effectively estimating the dependent variable separately for each country and then treating the coefficients from each country as dependent variables in country-level equations. In the models, each country is allowed to have its

own intercept (i.e. random). The effects of all other variables are constrained to be the same across countries (i.e. fixed). Chapter 3 offers further discussion of this modeling strategy.

Model 1 includes the human capital variables: education, age, and age squared. As expected, middle-aged and more highly educated people are more likely to be entrepreneurs. The net effect for female is still negative, however, indicating that the gender gap in entrepreneurship is not simply a function of gender-specific age and education distributions. The coefficient for the effect of female indicates that the odds of being an entrepreneur for women are only 55 percent of the odds for men (odds ratio= $\exp(-0.59)=0.55$). This means that men are about 1.8 times more likely than women to be an entrepreneur, net of their age and education (odds ratio for males = $1/0.55=1.82$).

Table 2.4 Random-effects Logistic Regression Estimates for the Effect of Gender and Individual-Level Resources on the Odds of Being an Entrepreneur

| Independent Variables | Model 1 | Model 2 | Model 3 |
|--------------------------|--------------------|--------------------|---------------------|
| | Restricted Sample | Restricted Sample | Unrestricted Sample |
| Female | -0.59*** (0.01) | -0.57*** (0.01) | -0.59*** (0.01) |
| <i>Human Capital</i> | | | |
| Age | 0.05*** (0.003) | 0.05*** (0.003) | 0.04*** (0.003) |
| Age Squared | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) |
| Education | | | |
| High School Diploma | 0.09*** (0.02) | 0.05** (0.02) | 0.04* (0.02) |
| Postsecondary Degree | 0.16*** (0.02) | 0.06** (0.02) | 0.07*** (0.02) |
| Graduate Experience | 0.20*** (0.02) | 0.05* (0.02) | 0.02 (0.02) |
| <i>Financial Capital</i> | | | |
| Income | | | |
| Middle Third | | 0.10*** (0.02) | 0.10*** (0.02) |
| Highest Third | | 0.49*** (0.02) | 0.41*** (0.02) |
| <i>Social Capital</i> | | | |
| Know an entrepreneur | | | 0.84*** (0.01) |
| Year of survey | | | |
| 2002 | -0.04+ (0.03) | -0.03 (0.03) | -0.05+ (0.02) |
| 2003 | 0.54*** (0.03) | 0.58*** (0.03) | 0.05+ (0.03) |
| 2004 | 0.36*** (0.03) | 0.44*** (0.03) | -0.001 (0.02) |
| 2005 | 0.53*** (0.03) | 0.61*** (0.03) | -0.02 (0.02) |
| Intercept | -2.82*** (0.11) | -2.86*** (0.11) | -2.79*** (0.10) |
| Log Likelihood | -88831.78 | -88234.70 | -102612.89 |
| N | 177,276 | 177,276 | 231,136 |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; Source: Global Entrepreneurship Monitor 2001-2005

Model 2 adds income categories to capture the influence of financial resources. The coefficients for both the middle third and the highest third of the distribution are positive and significant. Individuals in the highest income bracket are 1.6 times more likely to be an entrepreneur than those in the lowest income bracket ($b=0.49$; $\exp(b)=1.63$). Notably, the gender coefficient is largely unchanged after controlling for financial resources. In the unrestricted sample, the size and significance of the gender and resource variable coefficients are similar (The coefficient pertaining to the year of the survey differs across models, but this is unsurprising given the change in the survey design between 2002 and 2003).

Finally, Model 3 includes the measure for whether or not a respondent personally knows an entrepreneur. This effect is very large: specifically, individuals who know an entrepreneur are about 2.3 times more likely to be an entrepreneur than individuals who do not know an entrepreneur ($b=0.84$; $\exp(b)=2.32$). Moreover, the effect of education in this model, compared to Model 2, is attenuated, suggesting that the relationship between education and entrepreneurship *may* be associated with the network advantages of with higher levels of education, though as noted earlier, I am hesitant to infer the direction of causality between entrepreneurship and knowing another entrepreneur.

Of more interest, however, is the coefficient pertaining to the gender effect. In this final model, this coefficient remains large (and statistically significant). After adjusting for human, financial, and social capital factors, the odds for women are only 61 percent of the odds for men; that is, males are still 1.64 times more likely than females to be an entrepreneur (odds ratio for males= $1/0.61=1.64$).

How does this net effect of gender vary across countries? Figure 2.3 presents the fully adjusted the odds ratio for the gender gap in entrepreneurial activity from Model 3 when that model is applied to data stratified by country.

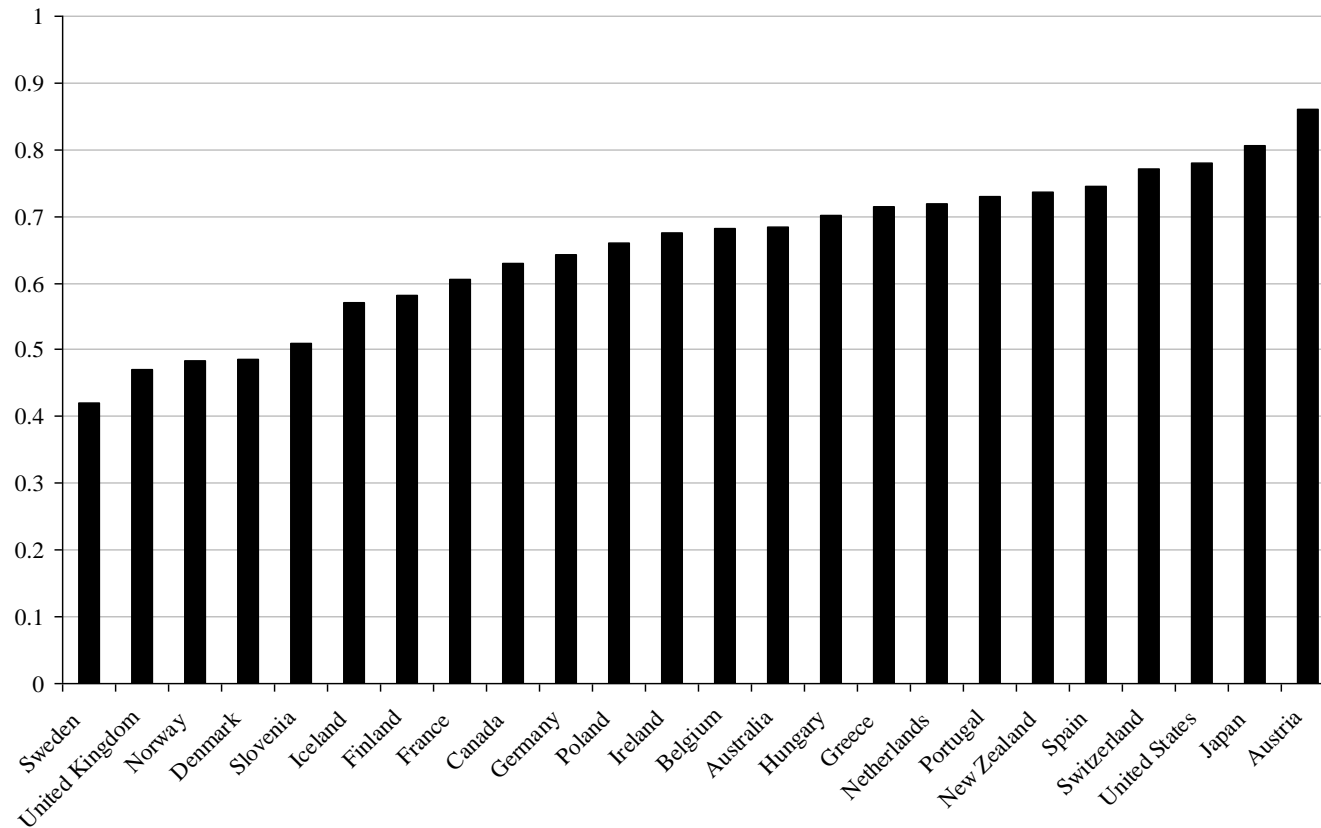


Figure 2.3 Distribution of the Net Odds (Female=1) Of Being an Entrepreneur

In all 24 countries in the data, women are significantly less likely than men to be an entrepreneur; this is consistent with prior comparative research on the gender gap in entrepreneurship (Aldrich 2005; Arum and Muller 2004; Kim, Aldrich and Keister 2006; Reynolds and White 1997). At the same time, countries vary substantially in the size of the net gender effect. For instance, the odds ratio of women's entrepreneurship relative to men's entrepreneurship is much lower in Sweden, the UK, Norway and Denmark than in the Switzerland, the US, Japan and Austria. In Austria, men are only 1.2 times more likely than women to be entrepreneurs (odds ratio for men= $1/0.86=1.16$), whereas in Sweden, men are 2.4 times more likely than women to be entrepreneurs (odds ratio for men= $1/0.42=2.38$). In the following chapter, I introduce a series of country-level factors to investigate the extent to which institutional arrangements may account for this substantial cross-national variation.

CHAPTER 3

GENDERED INSTITUTIONAL ARRANGEMENTS AND OPPORTUNITIES

In recent decades, scholars have become increasingly interested in the extent to which welfare state and labor market arrangements impact women's economic activity. For instance, certain policies have been shown to promote women's economic independence by increasing their attachment to the labor force (e.g. Gornick and Meyers 2003; Orloff 2002); they may also, however, produce the unintended consequence of higher levels of gender inequality in management (e.g. Mandel and Semyonov; 2006; Petitt and Hook 2009). In this chapter, I draw on this literature to investigate how institutional arrangements at the country-level may account for gender inequality in the odds of becoming an entrepreneur as well as gender inequalities among entrepreneurs. Specifically, I am interested in understanding how policy arrangements structure a) the labor market context in which men and women pursue business ownership, and b) the pool of men and women entrepreneurs in a given country. My analytic approach involves a multi-stage process. First, I investigate how macro-level institutional arrangements account for cross-national variance in the gender gap in the odds of being an entrepreneur. I then restrict my focus to comparisons between men and women entrepreneurs. By doing so, I am able to investigate how macro-level institutional arrangements account for cross-national variance in men's versus women's odds of being a) opportunity-driven, b) growth-oriented c) sole owners of their business or d) innovative entrepreneurs. Finally, I investigate whether being highly educated is a stronger predictor of business ownership for men and women in certain policy contexts.

Pushed or Pulled?

As discussed in Chapter I, some evidence suggests that negative experiences in traditional employment “push” women into entrepreneurship. First, studies in the US reveal that women entrepreneurs are disproportionately more likely than men entrepreneurs to report that they pursued business ownership to alleviate work-family conflicts (Catalyst 1998, Green and Cohen 1995; Hughes 2003; Mattis 2004; Moore and Buttner 1997). This interpretation is echoed in the finding that, in both the US and Western Europe, marital status and the presence of children predict women’s self-employment more strongly than men’s (Arum 1997; Boden 1996; Carr 1996; Renzuli, Aldrich and Moody 2000; Taniguchi 2002; Lohmann 2001).

In the aggregate, women are more likely than men to encounter work/family conflict because traditional employment situations are often structured around an “ideal worker” who has no, or very few, family obligations (Acker 1990; Williams 2001). This assumption of an ideal worker conflicts with common cultural norms that assume that women are primarily responsible for housework and caregiving. The relative flexibility and autonomy of self-employment makes it an attractive solution to this problem. Budig’s (2005) research in the US suggests however that work/family conflict may be a stronger factor for non-professional women than for professional women. Specifically, marriage and children are strong predictors of non-professional women’s self-employment, but not professional women’s self-employment. This finding is not surprising in light of research which suggests that there tends to be less scheduling flexibility in lower status occupations (Weeden 2005).

Second, women disproportionately report unfriendly work environments and perceived discrimination in promotion (e.g. “the glass ceiling”) as reasons for entry into entrepreneurship (Carter and Cannon, 1992; Catalyst 1998, Mattis 2004; Maniero and Sullivan, 2006; Moore and Buttner 1997). Budig’s (2006) research suggests that

this push factor may be particularly relevant for professional women, who may be more likely to view entrepreneurship as a non-traditional avenue for career mobility.

Finally, both women and men may be pushed into entrepreneurship as a result of economic necessity. This appears to have arisen more prominently in recent decades as a result of changing labor market conditions, such as job restructuring, decreasing job security and/or increasing unemployment (Baines and Wheelock 1998; Hughes, 2003; Kovalainen 1995; MacDonald 1996). As discussed in Chapter 2, the GDP of a given country can be expected to be a major source of differences between countries in overall rates of entrepreneurship because many more people in poorer countries tend to be pushed into entrepreneurship (Acs et al. 2004). The gender gap in entrepreneurship also appears to be smaller in developing countries than it is in industrialized countries (Minniti and Arenius 2003). This occurs because women are substantially less integrated into the formal labor market in these contexts, and therefore often turn to self-employment out of economic necessity. Because I restrict my analysis to industrialized, high-income countries, GDP is not expected to be a factor that explains cross-national variance in the gender gap in my sample.²

Several factors are also thought to “pull” individuals into entrepreneurship. These include the self-reported desire to be independent, to pursue advantageous opportunities on the market, and to attain career mobility (Budig 2006; Buttner and Moore 1997; Carr 2000; Dennis 1996). Scholars have also argued that people are “pulled” into entrepreneurship if the legal environment is favorable, or the local area is characterized by an “enterprise” culture (Hall and Soskice 2001; Hughes 2003; Sine, Haveman and Tolbert 2005). These “pull” factors offer less purchase on the gender gap in entrepreneurship however because there are no theoretical grounds to expect

² There is also no evidence for this from my data. In models not shown, I tested for an interaction between GDP and the gender effect, but as expected, it was not significant.

that these factors would disproportionately influence one gender or the other: unlike work/family conflict, men and women similarly report becoming entrepreneurs for reasons associated with pull factors (see Moore and Buttner 1997).³

Entrepreneurship and Institutions

As noted above, scholars of entrepreneurship are increasingly interested in the role that institutions can play in pushing or pulling individuals into entrepreneurship (Hwang and Powell 2005). As North (1990) argues, the individual entrepreneur responds to incentives embodied in the institutional framework. Until now however, only a few studies have empirically examined the role of institutions on the gender gap in entrepreneurship in industrialized or high-income countries. Minniti and Arenius (2003) find that countries with a low level of social security as a percentage of GDP, low rates of female long-term unemployment, and a high percentage of women in management are associated with higher rates of entrepreneurship among women in high-income countries. Baughn, Chua and Neupert (2006) suggest that a normative environment, which is favorable both to entrepreneurship and to women specifically as entrepreneurs, is correlated with higher percentages of women in entrepreneurship.

These studies propose that institutional context matters for entrepreneurial activity. However, they suffer from the usual ecological fallacy that plagues aggregate-level analyses of disaggregate phenomenon: they are based on simple correlations between women's rates of entrepreneurial activity and country-level statistics, and thus cannot adjust for important individual-level factors, such as human capital acquisition. They also do not theorize the link between gendered institutions and women's behavior, as many sociologists have done to explain the patterns of

³ My data also provides no evidence that a legal environment which facilitates entrepreneurial activity affects the gender gap in entrepreneurship.

gender and class inequality as found in paid (employee) labor and unpaid domestic work (see McCall and Orloff 2005 for a review). I improve upon this literature by a) theorizing how gendered institutional arrangements may increase or decrease the salience of push factors for women, and b) testing my hypotheses using random effects logistic regression techniques.

Gendered Institutional Arrangements and Push Factors

Research suggests that social policies and labor market structures influence both the extent to which women are integrated into the traditional labor market and their status (vis-à-vis men) within it. For instance, welfare state policies can facilitate women's labor force participation by reconciling work and family to varying degrees (Esping-Anderson 1999; Gornick and Meyers 2003; Lewis 1992; O'Connor, Orloff and Shaver 1999; Orloff 1993). Some states (e.g. Sweden) have policies that encourage women's employment by providing benefits for working parents, such as full-time paid maternal leave and childcare assistance. However, in these contexts occupational segregation is especially high (Charles and Grusky 2004), with a large percentage of women employed by the state, especially in the female-dominated areas of health, education, and social services (Mandel and Semyonov 2006).

By contrast, other states marginalize women's participation in the labor market by providing for long unpaid parental leaves, but not supporting working mothers with childcare. These states also tend to have strong regulations on wage protections, higher costs for firing employees, and laws that restrict the use of temporary or non-standard workers (Estévez-Abe, Iverson and Soskice 2001; Soskice 2005). In these more "rigid" labor markets, job tenure and firm-specific skills are rewarded because the legal environment makes it relatively difficult for employers to hire and fire workers (Allmendinger 1989; DiPrete et al. 2002).

The combined effect of long (particularly unpaid) parental leaves and rigid labor market conditions produce incentives for employers to statistically discriminate against women of childbearing age, given that women are more likely to have interrupted labor force participation (Soskice 2005). Indeed, long parental leaves and rigid labor market conditions are associated with higher levels of occupational sex segregation and fewer women in managerial positions (Chang 2000; Charles and Grusky 2004; Charles et al. 2001; Mandel and Semyonov 2006; Pettit and Hook 2009). Women in countries with rigid labor markets also tend to be more highly represented in the secondary labor market or in supplementary jobs (Rubery, Fagan and Maier 1996). In many countries, public provision of childcare is often coupled with long parental leaves. However, recent research suggests that childcare may be one particularly beneficial policy as compared to other family policies because it promotes equality by minimizing women's labor force interruptions (Pettit and Hook 2009; Stryker, Eliason and Tranby 2007).

Another institutional model for resolving work/family conflict is the widespread availability of part-time jobs. Often referred to as "one and a half breadwinner" models (Crompton 2006; Lewis et. al. 2008), married women, especially mothers, in these contexts are typically employed part-time while their spouses work full-time. The Netherlands and the United Kingdom exemplify this model, where 60 percent and 40 percent (respectively) of the part-time labor force in 2005 was comprised of women (OECD 2010). Though it promotes women's labor force participation, this strategy marginalizes women's employment status since part-time work is often concentrated in non-lucrative, low authority, female-dominated areas (Charles and Grusky 2004; Fagan and O'Reilly 1998; Pettit and Hook 2009).

Finally, most liberal market economies (e.g. the US), neither promote women's labor force participation nor do they provide exclusionary incentives: there is very

little state intervention to promote work/family reconciliation, but their relatively flexible labor markets provide a range of employment options for women. The lower availability and low quality of part-time work also means that women who are employed are more likely to be employed full-time (and by extension, to achieve managerial positions).

Empirical Predictions

Macro-level policy configurations thus disproportionately affect women's attachment to traditional employment, regardless of whether or not they promote gender equality in the labor market. This is because women are more likely to encounter conflicting expectations about their responsibilities at work and in the family. To the extent that the state promotes work/family reconciliation, conflict between work and family should be a substantially weaker force "pushing" women into entrepreneurship. Therefore, I hypothesize that *the gender gap in entrepreneurship will be larger in countries with longer paid leave for mothers, more public provision of early childhood education and care, and a larger part-time labor force*. In countries with these features, women who might otherwise be inclined to start a business in order to accommodate a flexible schedule are instead integrated into the formal labor market.

Work/family policies may also promote a specific process by which the entrepreneurs in a given country are selected. As discussed in Chapter 1, women entrepreneurs differ from men entrepreneurs on a number of dimensions, such as their reasons for starting a business and the size of their businesses. However, if social policies provide an alternative to entrepreneurship as a way to mitigate work/family conflict, women entrepreneurs who do start businesses will primarily do so for reasons *other* than work/family conflict. This leads me to hypothesize that *gender-based*

differences between entrepreneurs within a given country will be smaller in institutional contexts that offer the greatest policy-based support for the reconciliation of reconcile work and family life. In short, women entrepreneurs will “look” much more like their male counterparts in these countries.

This relative similarity between men and women entrepreneurs in countries with “family friendly” public policies should be observed for a number of reasons. First, in the US, a context that lacks “family friendly” public policies, marriage and motherhood is a stronger push factor for non-professional than professional women (Budig 2005). This suggests that national policies which reconcile work and family life may disproportionately reduce non-professional women’s odds of being an entrepreneur. This may lead to a selection process whereby more opportunistic, independent, growth-oriented, or innovative women are more likely to remain in the population of entrepreneurs in a given country. Second, women who make the transition from traditional employment to self-employment during childbearing years may also be younger and therefore have less work experience and relevant network ties than their male counterparts, resources which may be particularly crucial for more opportunistic forms of entrepreneurship. Third, women who are “pushed” into entrepreneurship are less likely to have growth-oriented businesses (Morris et al. 2006). As a result, in contexts where work/family push factors are less salient, a more select group of women entrepreneurs may arise, such that gender differences in opportunity-driven entrepreneurship, business size, and the propensity to innovate may be smaller than in contexts where push factors are more salient.

I also conduct an exploratory analysis of whether women’s versus men’s odds of being a sole proprietor vary by policy context. On one hand, women entrepreneurs often go into business with their spouses or another family member (e.g. Budig 2006), which indicates that they may be less likely than men to be sole proprietors. This

means that in a policy context with a more select group of women entrepreneurs, gender differences in the odds of being a sole proprietor may be smaller than in other contexts. On the other hand, women may be more likely to be sole proprietors because they often have fewer non-kin network connections with whom they might collaborate. This suggests that in a policy context with a more select group of women entrepreneurs, gender differences in the odds of being a sole proprietor may be larger than in other contexts.

Finally, I explore the possibility that if policy generates a selection process for the types of businesses women start, the remaining population of established women business owners may be more highly educated than their counterparts in other countries.

Analytic Approach

I investigate my hypotheses with hierarchical linear models (Raudenbush and Bryk 2002). In these models, the level one equation is an individual-level model of an entrepreneurship outcome, and the level two equation identifies country-level effects on both the level one intercept and the level one gender coefficient. My analysis follows a three-stage approach. First, I examine how institutional arrangements impact the gender gap in the odds of entrepreneurial activity across the 24 countries in my sample. Second, I restrict my sample to the population of established entrepreneurs to ascertain whether there are different levels of gender inequality in various types of entrepreneurship in certain policy contexts. Third, I analyze separate models for men and women to investigate whether being highly educated is a stronger predictor of business ownership in certain policy contexts.

Analyzing the Gender Gap in Entrepreneurial Activity

Country-Level Variables—Three key independent variables at the country level capture institutional arrangements that reconcile work and family: (1) weeks of full-time equivalent paid parental leave for mothers (Ray, Gornick and Schmitt 2009); (2) the percentage of a country's GDP spent on childcare and early education (preschool) services in 2005 (OECD 2009); and (3) the percentage of the labor force employed part time in 2005 (OECD 2009). Importantly, I use a measure of *paid* weeks of leave (rather than unpaid leave) because paid leave has been argued to strengthen women's attachment to the traditional labor market rather than weaken it (Gornick and Meyers 2003; Mandel and Semyonov 2006; Petitt and Hook 2009).

The country-level equations include several control variables. First, I include two variables that adjust for macro-level institutional and cultural conditions that are thought to “pull” individuals into entrepreneurship and thereby affect the overall rate of entrepreneurial activity (Carr 2000, North 1990). The “legal barriers to start-up index” is a composite measure of legal arrangements that make starting a business difficult: the number of procedures required, the time it takes to complete a procedure, and the cost of official fees for legal services required by law (World Bank 2009).⁴ The index was constructed using the first principal component of a factor analysis.⁵ I adjust for the overall cultural status of the activity of entrepreneurship in a given country with the mean country-level agreement with the GEM survey statement: “In your country, those successful at starting a new business have a high level of status and respect.”

⁴ The number of procedures is defined as any interaction of the company founder with external parties (for example, government agencies, lawyers, auditors, or notaries). The number of days indicates the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimum follow up with government agencies and no extra payments. Cost is recorded as the percentage of country's income per capita of official fees for legal services required by law.

⁵ All three indicators are positively correlated and load on the same factor: legal barriers index = $[0.7832 * \text{number of procedures}] + [0.7645 * \text{number of days}] + [0.7370 * \text{cost of services}]$.

Next, I include standard controls for GDP, unemployment rate and gender egalitarianism. GDP is a scaled index calculated by the United Nations Development Programme (UNDP 2008). The unemployment rate reflects the percentage of the labor force unemployed in 2005 as calculated by the OECD (OECD 2009). Following Pettit and Hook (2009), I adjust for gender egalitarianism (or general approval of women in leadership positions) with a measure of the percentage of the seats in the lower house of parliament held by women (UNDP 2005). These data are based on the most recently available data (1991-2003), and thus coincide with the time frame of the GEM survey.

In models not shown, I included an alternative country-level control for gender egalitarianism. This was calculated from the 2002 International Social Survey Programme (ISSP) dataset and reflected the country-level mean disagreement with the statement: “A man’s job is to earn the money; a woman’s job is to look after the home and family.” This measure was not significant and did not affect the coefficients of the key variables of interest in a data set comprised of 19 (of 24) countries for which it is available; in order to retain the five countries in which the measure is not available, I exclude it from the models presented here. I also investigated various other measures of gender inequality, including the percentage of women managers, the percentage of women professionals, gender wage inequity (UNDP 2008), and gender segregation in the education system (Charles and Bradley 2008) but none of these factors were associated with the gender gap in entrepreneurship nor did they affect the coefficients of the key variables of interest.

Method—In the model predicting the odds of being an entrepreneur, I account for country level heterogeneity by allowing each country to have their own mean rate of entrepreneurship, instead of imposing the same grand mean on all countries. I also allow the effect of gender on the outcome variable to differ across countries, reflecting

the varying impact of institutional arrangements.

The individual level (level-1 predictors) model is:

$$\log \left(\frac{\text{entrepreneur}_{ij}}{1 - \text{entrepreneur}_{ij}} \right) = \beta_{0j} + \beta_{1j}(\text{female})_{ij} + \beta X + \varepsilon. \quad (1)$$

where the log odds of individual i in country j of being an entrepreneur is a function of an intercept (β_{0j}), gender (1=female, 0=male), and a vector, X , of individual level controls (i.e., education, age, age squared, income, knowing another entrepreneur and year of survey). The coefficient β_{1j} estimates the average gap between males and females in the odds of being an entrepreneur in country j . β represents the coefficients of the individual level control variables, and ε_{ij} is the error term. In this equation, both the intercept and the female coefficients (β_{0j} and β_{1j} , respectively) are allowed to vary across countries (i.e., to be random), whereas the effects of control variables are constrained to be the same across countries (i.e., to be fixed). I explain these between-country variations with the country-level variables, as presented in Equations 2 and 3:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{paid leave}) + \gamma_{02} (\text{childcare}) + \gamma_{03} (\text{part-time}) + \dots + v_{0j}, \quad (2)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} (\text{paid leave}) + \gamma_{12} (\text{childcare}) + \gamma_{13} (\text{part-time}) + \dots + v_{1j}. \quad (3)$$

In Equation 2, the average rate of entrepreneurship in country j (β_{0j}) is explained by country-level variables (paid leave provision, state spending on childcare, the size of the part time labor force and other control variables) and their effects (γ_{01} , γ_{02} , γ_{03}), whereas v_{0j} is the error term. My main interest is in Equation 3, which implies cross-level interaction terms between gender and institutional variables in explaining cross-

national variations in the net gender gap in entrepreneurship. In this equation, the average gender gap in entrepreneurship in country j (β_{1j}) is explained by leave, childcare and the part time labor force and their effects ($\gamma_{11}, \gamma_{12}, \gamma_{13}$), whereas u_{1j} is the error term. For example, a negative sign for the coefficient indicating leave (γ_{11}) would imply that among the 24 countries, the gender gap in entrepreneurship tends to be larger where more paid leave is available.

I then estimate separate logistic regression equations for each country predicting the odds of being an entrepreneur as a function of individual-level control variables. The exponent of the coefficient for female in each equation represents the relative odds of women (versus men) to be an entrepreneur, net of all other variables in the equation. I then plot the correlation between these odds ratios and institutional variables.

Analyzing Gender Gaps among Established Entrepreneurs

Next, I shift my focus to investigate how these institutional-level factors are related to gender gaps in various types of entrepreneurship. In doing so, I can test my hypothesis that institutional context may affect gender differences in various forms of entrepreneurship.

Individual-level entrepreneurship variables—To address hypotheses about contextual effects on the size of gender differences *among* entrepreneurs, I fit four additional hierarchical linear models to the subsample of entrepreneurs. The first examines entrepreneurs' stated reasons for becoming an entrepreneur: market opportunity versus reasons that are labor market-linked. Responses are coded from the survey item: "Are you involved in this [start-up/firm] to take advantage of a business opportunity or because you have no better choices for work?" People who respond "Opportunity" are coded "1". People who respond, "No better choices for

work”, “Combination of both” or “Have a job but seek better opportunities” are coded “0”.

Second, I investigate the odds that an entrepreneur is a sole proprietor. Here, I use a dichotomous measure: 1=sole owner, 0=not sole owner.

The third model predicts business size. Business size is measured by the log of the number of full time employees. Following Loscocco et al. (1991), employee size was increased by 1 for each business to permit the log-transformation and to account for the owner’s labor.

The fourth model predicts whether the business involves innovation or not. An “innovative” business was defined as one where the entrepreneur either thought that all of his or her potential customers will “consider this product or service new and unfamiliar” and/or responded that there are “no other businesses offering the same products or services to potential customers” (1=yes, 0=no).⁶

Method—When comparing established entrepreneurs, I use hierarchical linear models that are very similar to those outlined above. The individual-level equations in these four models include the same predictors as in previous models, but with the addition of a control variable for whether the entrepreneur is a sole owner of his or her business (1=sole owner, 0=not sole owner). The country-level equations are identical. I again fit cross-level interactions between gender and the three institutional variables of interest: paid leave provision, state spending on childcare and the size of the part time labor force. The intercept and the female coefficients are allowed to be random, whereas the effects of control variables are fixed. I use logistic HLM models to estimate the effect of gender on a) the odds of being an opportunity-driven

⁶ “Innovation” is often more complex than these measures suggest, as they are limited to measuring the newness of a product/service. Thus, other aspects of innovation, such as a new production or delivery processes, are not included. Unfortunately, these are the only measures available in the dataset; therefore, my analysis must be restricted to these particular aspects of “innovation.” This measure is also only available for years 2002-2005.

entrepreneur, b) being highly educated, and c) being innovative. I use a linear mixed effects model to estimate the size of one's business.

Investigating Educational Heterogeneity among Established Business Owners

Finally, I investigate whether being highly educated is a stronger predictor of business ownership in certain policy contexts. Here, I again use hierarchical linear models, but this time I estimate the odds of being a business owner separately for men and women. I dichotomize the education variable to capture those who are highly educated (postsecondary degree or above=1) versus those who are not (secondary degree or below=0). In order to capture how educational heterogeneity among business owners may vary by policy context, I include cross-level interaction effects between highly educated and social policies (i.e. leave, childcare and the size of the part-time labor force). In these models, both the intercept and the education coefficients are allowed to vary across countries (i.e., to be random), whereas the effects of control variables are constrained to be the same across countries (i.e., to be fixed).

Results

Descriptive Overview—Table 3.1 shows descriptive statistics for country-level variables. The first three columns list the institutional arrangements that promote work/family reconciliation. Germany and Sweden offer the longest period of paid leave for mothers (42 and 40 weeks, respectively), whereas Australia and the US offer no paid leave at all. Not surprisingly, the Nordic states of Denmark, Sweden and Finland, as well as France, spend the most on early childhood education and care (1% or more of their GDP), whereas Greece, Canada, and Switzerland spend the least. The UK falls right around the average, with 0.58 percent of GDP spent on childcare. The

UK also has a relatively large part-time labor force (23.4%), similar to Australia (24%) and Switzerland (25%). The Netherlands however has the largest part time labor force by a substantial margin (35.7 %). Slovenia, Hungary and Greece all have very small part-time labor forces (below six percent).

The distributions of other control variables are consistent with previous studies (e.g. Hall and Soskice 2001). For instance, legal barriers to business start-ups tend to be lowest in the archetypal liberal market economies of Australia, Canada and the United States. Subjective social status associated with entrepreneurship, however, is highest in the small countries of Finland and Ireland, where over 80% of respondents deemed entrepreneurship to be a high status activity; it is lowest in post-socialist Hungary, where fewer than half of respondents felt that way. Not surprisingly, the US, Norway and Ireland are the wealthiest countries per capita in the sample, whereas Poland has the lowest GDP. Poland has the highest unemployment rate, whereas Iceland has the lowest. In addition to Poland, France, Germany, Greece and Spain have relatively high unemployment rates (over 9%).

Table 3.2 shows descriptive statistics for the subset of respondents who are established entrepreneurs. Approximately 65 percent of the sample cited market opportunity as their primary reason for becoming an entrepreneur. This indicates that fewer than half of the respondents were pushed into entrepreneurship as a result of labor-market linked factors. A sizeable proportion is highly educated (41%). Innovation is relatively uncommon, with only 15 percent of entrepreneurs reporting that they are introducing a new product or service to the market. The majority of entrepreneurs are sole owners of their businesses (61%) and each entrepreneur has, on average, approximately one employee.

Table 3.1 Work/Family Reconciliation Indicators and Control Variables at the Country-Level

| | Work/family reconciliation indicators | | | Country-Level Control Variables | | | | |
|----------------|---------------------------------------|------------|----------------------|---------------------------------|-------------------|----------------------|-----------------------------------|----------------------------------|
| | Paid leave | Child-care | Part-time employment | GDP | Unemployment Rate | Legal barriers index | Social status of entrepreneurship | Women's political representation |
| | (a) | (b) | (c) | | | | | (d) |
| Australia | 0 | 0.39 | 24 | 0.95 | 5.0 | 4.57 | 0.68 | 28.3 |
| Austria | 16 | 0.3 | 13.3 | 0.95 | 5.2 | 32.17 | 0.71 | 32.2 |
| Belgium | 15 | 0.79 | 18.5 | 0.94 | 8.4 | 56.47 | 0.67 | 35.7 |
| Canada | 29 | 0.16 | 18.3 | 0.96 | 6.8 | 4.60 | 0.66 | 24.7 |
| Denmark | 19 | 1.17 | 17.6 | 0.96 | 5.0 | 9.27 | 0.73 | 36.9 |
| Finland | 29 | 0.94 | 11.2 | 0.94 | 8.4 | 26.86 | 0.84 | 37.5 |
| France | 20 | 0.99 | 13.4 | 0.94 | 8.9 | 38.57 | 0.60 | 13.9 |
| Germany | 42 | 0.38 | 21.8 | 0.94 | 11.2 | 45.80 | 0.73 | 31.3 |
| Greece | 34 | 0.13 | 6.1 | 0.88 | 9.6 | 64.09 | 0.72 | 14 |
| Hungary | 25 | 0.69 | 3.2 | 0.83 | 7.3 | 74.23 | 0.47 | 9.1 |
| Iceland | 9.6 | 1.18 | 16.4 | 0.96 | 2.6 | 10.02 | 0.69 | 30.2 |
| Ireland | 22 | 0.26 | 19.6 | 0.99 | 4.3 | 24.56 | 0.81 | 14.2 |
| Japan | 26 | 0.32 | 18.3 | 0.94 | 4.4 | 40.20 | 0.53 | 9.3 |
| Netherlands | 16 | 0.47 | 35.7 | 0.95 | 4.7 | 23.69 | 0.67 | 34.2 |
| New Zealand | 14 | 0.67 | 21.7 | 0.90 | 3.7 | 10.89 | 0.70 | 28.3 |
| Norway | 38 | 0.77 | 20.8 | 0.99 | 4.6 | 20.26 | 0.64 | 38.2 |
| Poland | 16 | 0.29 | 11.7 | 0.79 | 17.7 | 47.16 | 0.59 | 20.7 |
| Portugal | 17 | 0.4 | 9.8 | 0.87 | 7.7 | 77.10 | 0.61 | 20 |
| Slovenia | 15 | 0.48 | 6.1 | | 6.5 | | | |
| Spain | 16 | 0.44 | 11.4 | 0.90 | 9.2 | 107.37 | 0.56 | 30.5 |
| Sweden | 40 | 0.98 | 13.5 | 0.93 | 7.8 | 14.33 | 0.62 | 45.3 |
| Switzerland | 11 | 0.23 | 25.1 | 0.96 | 4.3 | 26.33 | 0.71 | 24.8 |
| United Kingdom | 12 | 0.58 | 23.4 | 0.94 | 4.7 | 15.37 | 0.72 | 17.9 |
| United States | 0 | 0.35 | 12.6 | 0.99 | 5.1 | 9.8 | 0.64 | 14.8 |
| Mean | 20.48 | 0.58 | 17.72 | 0.93 | 6.88 | 37.43 | 0.66 | 26.77 |
| S.D. | 12.59 | 0.26 | 6.70 | 0.04 | 2.68 | 32.78 | 0.07 | 10.28 |
| Range | 0-42 | 0.13-1.18 | 3.2-35.7 | 0.79-0.99 | 2.6-17.7 | 4.57-107.37 | 0.47-0.84 | 9.1-45.3 |

- a. Weeks of full-time paid leave for mothers
- b. Percent of GDP spent on early childhood education and care
- c. Percent of labor force in part time work
- d. Percent women in parliament

Table 3.2 Means and Standard Deviations for Characteristics of Established Entrepreneurs

| Variable | Mean | S.D. |
|---|------|------|
| Market opportunity cited as reason for start-up (1=yes) | 0.65 | |
| Highly educated | 0.41 | |
| Business Size | 1.11 | 1.17 |
| Innovative (1=yes) | 0.15 | |
| Sole owner of business (1=yes) | 0.61 | |

Multilevel Analysis

Table 3.3 presents results from logistic HLM models predicting the odds of being an entrepreneur. Model 1 includes individual-level and country-level control variables but does not allow for cross-level interactions. The coefficient for childcare is negative and significant, indicating that entrepreneurship is less prevalent overall in countries in which there is more spending on early childhood education and care. More specifically, the odds of being an entrepreneur are about 1.6 times higher in the country that spends the least on childcare (Greece) than in the country that spends the most (Iceland) ($b=-0.49$, $\exp b=0.62$, $1/0.62=1.64$), all else being equal. Additionally, entrepreneurship is much more common in countries where respondents agree that it is a socially valued activity: respondents are about 7.5 times more likely to be an entrepreneur in the country whose respondents place the highest social value on entrepreneurship (Finland) than in the country where entrepreneurship is not socially valued (Iceland) ($b=2.01$, $\exp b=7.46$). As previous research suggests (e.g. Acs et al. 2004) entrepreneurship is also slightly less common in countries with higher GDPs.

Table 3.3 Mixed Effects Logistic Regression Estimates of the Effect of Gender and Social Policy on the Log-Odds of Entrepreneurship

| Independent Variables | Model 1 | Model 2 | Model 3 |
|--|----------------------|----------------------|------------------------|
| | Restricted Sample | Restricted Sample | Unrestricted Sample |
| Female | -0.46*** (0.04) | -0.19+ (0.11) | -0.27* (0.11) |
| <i>Policy effects on the intercept</i> | | | |
| Paid leave for mothers | -0.003 (0.01) | -0.003 (0.01) | -0.003 (0.01) |
| Childcare | -0.55* (0.23) | -0.51* (0.23) | -0.40+ (0.23) |
| Part-time employment | -0.01 (0.01) | -0.01 (0.01) | -0.02 (0.01) |
| <i>Policy effects on the gender odds gap</i> | | | |
| Paid leave*Female | | -0.01* (0.002) | -0.005+ (0.003) |
| Childcare*Female | | -0.31** (0.09) | -0.32** (0.10) |
| Part-time employment*Female | | -0.0002 (0.004) | -0.001 (0.004) |
| <i>Individual-level control variables</i> | | | |
| Age | 0.05*** (0.003) | 0.05*** (0.003) | 0.05*** (0.003) |
| Age Squared | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) |
| Education | | | |
| High School Diploma | 0.02 (0.02) | 0.02 (0.02) | 0.04* (0.02) |
| Postsecondary Degree | -0.02 (0.02) | -0.02 (0.02) | 0.07*** (0.02) |
| Graduate Experience | -0.04* (0.02) | -0.04* (0.02) | 0.02 (0.02) |
| Income | | | |
| Middle Third | 0.06*** (0.02) | 0.06** (0.02) | 0.10*** (0.02) |
| Highest Third | 0.41*** (0.02) | 0.41*** (0.02) | 0.49*** (0.02) |
| Year of survey | | | |
| 2002 | 0.001 (0.03) | 0.001 (0.03) | -0.05+ (0.02) |
| 2003 | 0.57*** (0.03) | 0.57*** (0.03) | 0.05* (0.02) |
| 2004 | 0.44*** (0.03) | 0.44*** (0.03) | 0.004 (0.02) |
| 2005 | 0.60*** (0.03) | 0.60*** (0.03) | -0.02 (0.03) |
| Know an entrepreneur | 0.83*** (0.01) | 0.83*** (0.01) | |

Table 3.3 Continued

| | | | |
|---|-------------------|-------------------|------------------|
| <i>Country-level control variables</i> | | | |
| GDP | -3.41+ (1.92) | -3.37+ (1.95) | -3.37+ (1.97) |
| Unemployment Rate | -0.03 (0.03) | -0.03 (0.03) | -0.03 (0.03) |
| Legal barriers to start-up index | -0.004 (0.003) | -0.004 (0.003) | -0.01+ 0.003 |
| Social status of entrepreneurship | 2.10* (0.82) | 2.08* (0.83) | 1.86* (0.84) |
| Women's political representation | -0.000 (0.01) | -0.002 (0.01) | 0.01 (0.01) |
| Intercept | -0.80 (1.81) | -0.86 (1.83) | -0.16 (1.85) |
| Log Likelihood | -85857.21 | -85851.02 | -102475.97 |
| N, Individual Level | 177,276 | 177,276 | 231,136 |
| <i>Note: +$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$</i> | | | |

Model 2 evaluates my central hypothesis by adding in cross-level interaction effects between gender and the measures of institutional arrangements that reconcile work and family: paid leave for mothers, childcare, and part-time employment. In support of my hypothesis, longer full-time paid leave and more widespread availability of public childcare are significantly associated with larger gender gaps in the odds of being an entrepreneur, net of individual and country-level control variables. However, the coefficient estimating the effect of childcare on the gender gap in entrepreneurship is much larger than it is for paid leave. Specifically, though public spending on childcare is associated with reduced odds of being an entrepreneur for both women and men, the effect is much larger for women (odds ratio for men = $\exp(-0.46)=0.63$; odds ratio for women = $\exp(-0.46-0.31)=0.46$). In countries that spend the most on childcare, the net odds of women (relative to men) of being an entrepreneur are only 73 percent of those in countries that spend a low percentage of their GDP on childcare ($\exp(-0.31)=0.73$). The estimated effect of paid leave, by contrast, is very small: countries that provide the most paid leave for mothers have virtually the same gender gap in the odds of entrepreneurship as countries that provide virtually no paid leave, net of other effects.

In Model 3, I present this same analysis using the unrestricted sample. Predictably, the intercept of the level one equation is smaller, reflecting the smaller proportion of respondents in the unrestricted sample who are entrepreneurs. The size and significance of the cross-level interaction effects, and in particular the country level effects on the gender slopes, are very similar to one another. This is comforting, in that it suggests that the contextual effects on the gender gaps in entrepreneurship are not being driven by the greater number of entrepreneurs in the restricted sample.

Figure 3.1 depicts the correlation between the net gender gap in entrepreneurship in each country (as estimated by separate logistic regressions by

country) and the level of state childcare spending. Women's relative odds of being an entrepreneur are relatively low in the social democratic states of Norway, Sweden, Denmark, Iceland and Finland. They are also low in France, which provides generous state support for childcare. By contrast, women's odds of being an entrepreneur relative to men are much higher in countries with low investments in public childcare, such as Austria, Japan, the US and Ireland.

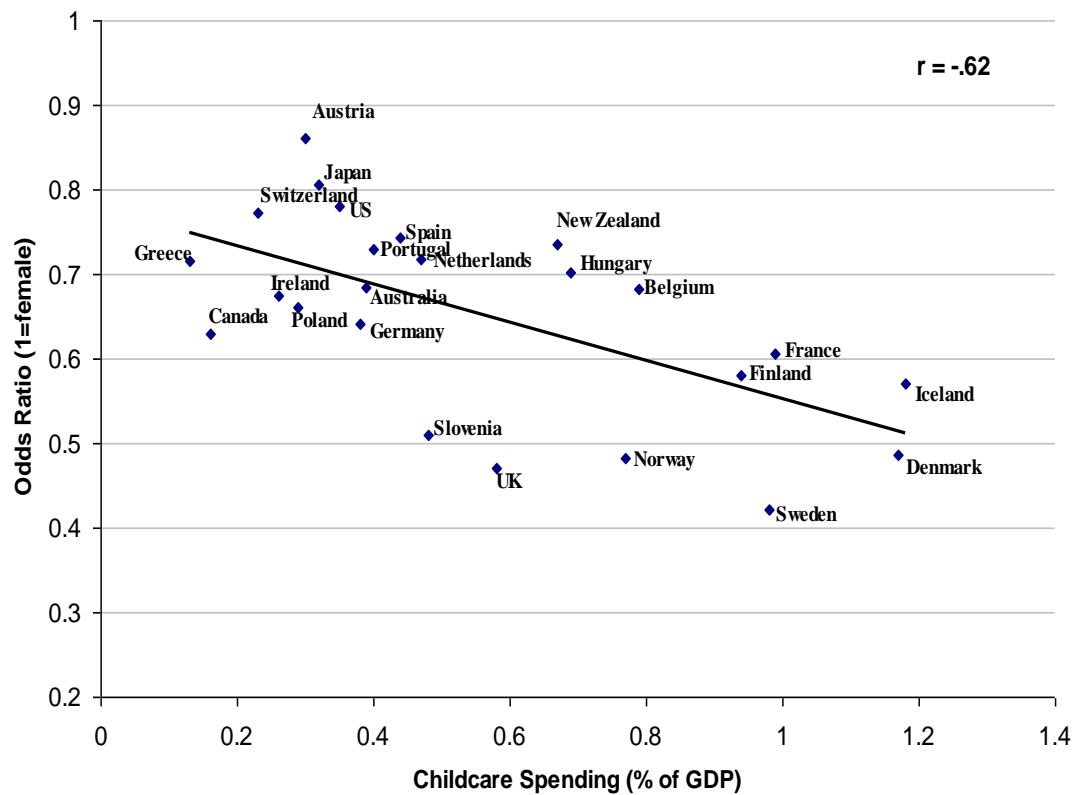


Figure 3.1 Net Odds (1=Female) of Being an Entrepreneur by State Childcare Spending

In sum, these results suggest that countries that alleviate work family conflict tend to have larger gender gaps in the odds of being an entrepreneur. Conversely, countries such as the US, which lack public policies to alleviate work-family conflict, show lower levels of gender inequality. It is perhaps unsurprising that the policy with the strongest effect is state-sponsored childcare. This policy, which enables women to maintain their employment without long-term interruptions, is often singled out for its successful reconciliation of work/family conflicts (e.g. Pettit and Hook 2010). To the extent that state-sponsored childcare gives women the strongest incentives to maintain their attachment to the traditional labor market (compared to paid leave and part-time work), it is not surprising that it has the strongest effect on gender differences in rates of entrepreneurship.

Comparing men and women entrepreneurs

The preceding results suggest that country-level policies are, as predicted, one source of the gender gap in entrepreneurial activity. If it is indeed the case that these effects stem from differences in labor market “push” factors for women, do policies also affect the *type* of entrepreneurship that men and women pursue? As argued above, countries with different policies will offer different pressures that may “select” certain kinds of women into entrepreneurship, and in so doing, impact various forms of gender inequality among the population of entrepreneurs.

In Table 3.4, I present results from mixed effects models predicting various characteristics of entrepreneurs. Model 4 estimates the odds that an entrepreneur reported that he or she became an entrepreneur in order to pursue a market opportunity. The estimated effects of the control variables in this model indicate that opportunity-driven entrepreneurship is more likely for respondents who have high education, high income, and know another entrepreneur, and less likely for

respondents who are sole proprietors. The country-level model shows that, not surprisingly, opportunity-driven entrepreneurship is also slightly less common in countries with higher unemployment rates.

Of greater interest for my purposes are the main effect of gender and the cross-level interactions between gender and social policies. The negative coefficient associated with female respondents indicates that on average, women entrepreneurs are slightly less likely than their male counterparts to start a business purely for market opportunity: their odds of doing so are only 77 percent of the odds for men ($b=-0.26$; $\exp b=0.77$). This effect is significant at the $p < .10$ level. More interestingly however, the interaction effect between female and childcare indicates that this gender gap disappears in countries that spend relatively high percentages of their GDP on childcare. In such countries, women entrepreneurs are as likely as their male counterparts to be opportunity-driven. This lends further support to the hypothesis that part of what contributes to higher gender gaps in the odds of being an entrepreneur in institutional contexts that reconcile work and family is that fewer women are being “pushed” into entrepreneurship there. Models that were run separately for men and women lend additional support to this idea: state childcare provision is associated with an increase in the odds of being an opportunity-driven entrepreneur for women, whereas it is not associated with an increase for men.⁷

Next, if women entrepreneurs are more likely to be opportunity-driven vis-à-vis their male counterparts in policy contexts that provide childcare, might their businesses also be of a more similar size to men’s? Model 5 suggests that this is not the case. After controlling for human, financial and social capital, women’s businesses are generally the same size as men’s businesses.

⁷ Country-level coefficients from separate models were not statistically significant however.

Table 3.4 Mixed-Effects Regression Estimates of the Effect of Gender and Social Policy on Characteristics of Established Entrepreneurs

| Independent Variables | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|--------------------------|---------------|--------------------|---------------|------------------------|---------------|-------------------------|---------------|
| | Opportunity entrepreneur | | Establishment size | | Sole Owner of Business | | Innovative entrepreneur | |
| | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. |
| Female | -0.26+ | 0.14 | -0.11 | 0.07 | -0.07 | 0.17 | -0.08 | 0.14 |
| <i>Policy effects on the intercept</i> | | | | | | | | |
| Paid leave for mothers | -0.002 | 0.01 | 0.001 | 0.004 | 0.001 | 0.005 | -0.001 | 0.004 |
| Childcare | -0.21 | 0.30 | -0.20 | 0.18 | -0.59** | 0.23 | -0.24 | 0.18 |
| Part-time employment | -0.02 | 0.01 | 0.01 | 0.01 | -0.0004 | 0.01 | -0.005 | 0.01 |
| <i>Policy effects on the gender gap</i> | | | | | | | | |
| Paid leave*Female | -0.003 | 0.003 | -0.0001 | 0.002 | 0.001 | 0.004 | 0.001 | 0.003 |
| Childcare*Female | 0.25* | 0.12 | 0.01 | 0.07 | -0.14 | 0.15 | 0.20 | 0.13 |
| Part-time employment*Female | 0.008 | 0.01 | -0.01* | 0.003 | -0.02** | 0.01 | 0.003 | 0.005 |
| <i>Individual-level control variables</i> | | | | | | | | |
| Age | -0.03** | 0.01 | 0.002 | 0.004 | 0.04 | 0.01 | -0.03** | 0.01 |
| Age Squared | 0.00* | 0.00 | -0.00 | 0.000 | -0.00 | 0.00 | 0.00** | 0.00 |
| Education | | | | | | | | |
| High School Diploma | 0.14*** | 0.04 | 0.03 | 0.02 | -0.05 | 0.04 | 0.0003 | 0.05 |
| Postsecondary Degree | 0.25*** | 0.04 | 0.04* | 0.02 | -0.10** | 0.04 | 0.06 | 0.05 |
| Graduate Experience | 0.48*** | 0.04 | 0.02 | 0.02 | 0.16*** | 0.04 | 0.20*** | 0.06 |
| Income | | | | | | | | |
| Middle Third | 0.29*** | 0.04 | 0.13*** | 0.02 | -0.18*** | 0.04 | -0.04 | 0.05 |
| Highest Third | 0.55*** | 0.04 | 0.41*** | 0.02 | -0.39*** | 0.04 | -0.02 | 0.05 |
| Year of survey | | | | | | | | |
| 2002 | 0.12* | 0.06 | 0.07* | 0.03 | 0.03 | 0.06 | -0.03 | 0.06 |
| 2003 | 0.04 | 0.06 | 0.08* | 0.03 | 0.08 | 0.06 | -0.04 | 0.06 |
| 2004 | 0.12* | 0.06 | 0.06+ | 0.03 | 0.20*** | 0.06 | 0.03 | 0.06 |
| 2005 | -0.05 | 0.06 | 0.07* | 0.03 | 0.20** | 0.06 | | n/a |
| Know an entrepreneur | 0.20*** | 0.03 | 0.17*** | 0.01 | -0.08** | 0.03 | 0.11** | 0.04 |
| Sole owner of business (1=yes) | -0.09** | 0.03 | -0.60*** | 0.01 | | n/a | 0.14*** | 0.04 |

Table 3.4 Continued*Country-level control variables*

| | | | | | | | | |
|-----------------------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| GDP | 1.81 | 2.55 | 0.48 | 1.53 | 0.20 | 1.88 | 0.36 | 1.45 |
| Unemployment Rate | -0.06+ | 0.04 | 0.02 | 0.02 | 0.02 | 0.03 | -0.02 | 0.02 |
| Legal barriers to start-up index | -0.003 | 0.004 | 0.0001 | 0.002 | -0.0001 | 0.003 | -0.003 | 0.002 |
| Social status of entrepreneurship | -0.33 | 1.08 | -0.12 | 0.65 | -0.001 | 0.80 | 0.25 | 0.61 |
| Women's political representation | 0.02* | 0.01 | -0.005 | 0.01 | -0.01 | 0.01 | 0.01 | 0.01 |
| Intercept | -0.54 | 2.41 | 0.62 | 1.44 | 0.03 | 1.79 | -1.26 | 1.42 |
| Log Likelihood | -17516.63 | | -42860.73 | | -18314.33 | | -11103.30 | |
| N, Individual Level | 28263 | | 28263 | | 28263 | | 26117 | |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

However, a small gender gap in business size emerges in countries that have large part-time labor forces, such that men's business are slightly larger on average. As previous research has shown, the *method* by which institutions facilitate women's attachment to the labor force appears to be important. Part-time work, which tends to marginalize women's status in the labor market (e.g. Petitt and Hook 2009), also marginalizes women entrepreneurs' participation in job creation vis-à-vis their male counterparts.

Third, I investigate the extent to which institutional context may be associated with the odds that an entrepreneur is a sole owner or his or her business. In Model 6, the non-significant female effect indicates that women entrepreneurs on average are not any less likely than men entrepreneurs to sole owners. However, in contexts where there is a large part time labor force, they are slightly less likely to be sole owners than their male counterparts. In light of the findings from Model 5, this finding may suggest that in contexts where women are integrated into the labor force through part-time work, women are also integrated into "part-time" entrepreneurship as co-owners (rather than sole-owners) of businesses. The main effect for childcare in Model 6 also shows that, interestingly, entrepreneurs in countries with more public provision of childcare are on average about half as less likely to be sole owners than are entrepreneurs in countries with less childcare.

Fourth, Model 7 estimates the effect of gender and social policies on the likelihood that an entrepreneur owns an innovative business. Not surprisingly, entrepreneurs with graduate experience and who personally know another entrepreneur were more likely to introduce a new product or service.⁸ Curiously, the results suggest that sole proprietors are more likely to be innovative. However, no

⁸ Alternative models which also controlled for business size indicated that larger businesses were more likely to be innovative.

gender differences in innovation emerge after adjusting for resources,⁹ and this null finding does not vary by policy context. These results did not change with various sensitivity analyses.¹⁰

Social Policy and Educational Heterogeneity among Established Business Owners

Finally, Table 3.5 shows separate models for men and women predicting the odds of being an established business owner. The cross-level interaction effects between social policies and education capture the extent to which there may be educational heterogeneity among established business owners. As expected, there are no policy effects for men. By contrast, the results for women suggest that where there is more paid leave available for mothers, women business owners are very slightly more likely to be highly educated than they are in other countries. Importantly however, this very small effect is insignificant in the unrestricted sample. Therefore, although women entrepreneurs are more opportunity-driven versus their male counterparts in contexts that reconcile work and family, these policies are not strongly associated with a more highly educated population of women entrepreneurs.

⁹ A more conservative definition of innovation produces a gender effect after controlling for resources. Specifically, this occurs when an entrepreneur is defined as one who responded that he or she is offering a new and unfamiliar product/service to all customers AND that there are no other businesses offering this product/service. Unfortunately, this analysis is only feasible for the few countries in my sample with very large sample sizes (e.g. UK, Germany).

¹⁰ Sensitivity analyses also confirmed that these results did not change when I dropped countries which have lower sample sizes, and for which gender by innovation cell sizes are relatively small (Austria, Ireland, Portugal). Including the size of the business in the model also does not change results.

Table 3.5 Mixed-Effects Logistic Regression Estimates of the Association between Social Policies and the effect of Education on the Log-Odds of being an Established Business Owner for Women and Men

| Independent Variables | Model 8 | | | | | | | |
|---|-------------------|---------------|---------------------|---------------|-------------------|---------------|---------------------|---------------|
| | Women | | | | Men | | | |
| | Restricted Sample | | Unrestricted Sample | | Restricted Sample | | Unrestricted Sample | |
| | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. |
| Highly educated | -0.23 | 0.15 | -0.23 | 0.17 | 0.01 | 0.18 | 0.14 | 0.18 |
| <i>Policy effects on the intercept</i> | | | | | | | | |
| Paid leave for mothers | -0.01 | 0.01 | -0.01 | 0.01 | -0.003 | 0.01 | -0.002 | 0.01 |
| Childcare | -0.76** | 0.30 | -0.75* | 0.30 | -0.49* | 0.24 | -0.41+ | 0.24 |
| Part-time employment | -0.01 | 0.01 | -0.02 | 0.01 | -0.01 | 0.01 | -0.02 | 0.01 |
| <i>Policy effects on education</i> | | | | | | | | |
| Paid leave*Highly Educated | 0.01+ | 0.003 | 0.004 | 0.003 | 0.004 | 0.004 | 0.002 | 0.004 |
| Childcare*Highly Educated | -0.07 | 0.14 | 0.02 | 0.15 | -0.10 | 0.15 | -0.12 | 0.16 |
| Part-time employment*Highly Educated | 0.003 | 0.01 | 0.01 | 0.01 | -0.01 | 0.01 | -0.004 | 0.01 |
| <i>Individual-level control variables</i> | | | | | | | | |
| Age | 0.09*** | 0.01 | 0.08*** | 0.01 | 0.07*** | 0.004 | 0.06*** | 0.004 |
| Age Squared | -0.001*** | 0.00 | -0.00*** | 0.00 | -0.0004*** | 0.000 | -0.00*** | 0.00 |
| Income | | | | | | | | |
| Middle Third | 0.17*** | 0.03 | 0.21*** | 0.03 | 0.05* | 0.03 | 0.09*** | 0.02 |
| Highest Third | 0.59*** | 0.03 | 0.63*** | 0.03 | 0.48*** | 0.02 | 0.58*** | 0.02 |
| Year of survey | | | | | | | | |
| 2002 | 0.10* | 0.05 | 0.04 | 0.04 | 0.15*** | 0.03 | 0.12** | 0.03 |
| 2003 | 0.67*** | 0.05 | 0.12** | 0.04 | 0.66*** | 0.04 | 0.21*** | 0.03 |
| 2004 | 0.58*** | 0.05 | 0.09* | 0.04 | 0.54*** | 0.04 | 0.16*** | 0.03 |
| 2005 | 0.73*** | 0.05 | 0.09* | 0.04 | 0.68*** | 0.04 | 0.11** | 0.04 |
| Know an entrepreneur | 0.75*** | 0.02 | | | 0.75*** | 0.02 | | |

Table 3.5 Continued

| <i>Country-level control variables</i> | | | | | | | | |
|--|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| GDP | -4.00 | 2.50 | -4.02 | 2.57 | -5.51** | 2.03 | -5.61** | 2.02 |
| Unemployment Rate | -0.04 | 0.03 | -0.04 | 0.04 | -0.05+ | 0.03 | -0.05+ | 0.03 |
| Legal barriers to start-up index | -0.001 | 0.004 | -0.003 | 0.004 | -0.003 | 0.003 | -0.005 | 0.003 |
| Social status of entrepreneurship | 2.30* | 1.07 | 1.69 | 1.10 | 2.66** | 0.87 | 2.51** | 0.86 |
| Women's political representation | 0.004 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Intercept | -2.07 | 2.36 | -1.09 | 2.42 | -0.25 | 1.91 | 0.49 | 1.91 |
| Log Likelihood | -30921.47 | | -36477.58 | | -45677.88 | | -53484.81 | |
| N, Individual Level | 82,927 | | 111,544 | | 94,349 | | 119,592 | |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

These analyses indicate that gendered institutional arrangements can help us understand cross-national variability in gender inequality in entrepreneurship. Public childcare provision, in particular, is associated with a larger gender gap in entrepreneurship but smaller gender gaps in the odds of being an opportunity-driven entrepreneur. I argue that this arises because women are less likely to be “pushed” into entrepreneurship as a result of work/family conflict: even though fewer women become entrepreneurs, they are more similar to their male counterparts in their reasons for entering entrepreneurship. Notably, this particular policy has been shown to provide work/family reconciliation *without* marginalizing women’s status in the labor market.

The widespread availability of part-time work was moderately associated with greater levels of gender inequality in business size and sole business ownership. In contrast to childcare, part-time work is an institutional structure that may reconcile work and family, but also does so in a way that stigmatizes part-time workers, even in otherwise high-prestige occupations (see, e.g., Epstein et al 1999). As such, in contexts where there is a large part-time labor force, women’s status in the labor market is much more bifurcated, with women concentrated in either high status or low status occupations (Pettit and Hook 2010). This research suggests that in contexts where part-time work is a prevalent strategy for reconciling work and family, women’s businesses are less growth-oriented vis-à-vis men’s. This may occur because in these contexts, women entrepreneurs may have less full-time work experience than their male counterparts, and a norm of part-time work for women may prompt women to regard their entrepreneurial endeavors as small, “part-time” enterprises. Moreover, in these contexts, women are slightly less likely to be sole owners of their businesses. As women are often more likely than men to start businesses with spouses or family

members, this lends further support to the idea that women may be more likely to pursue entrepreneurship part-time in these contexts.

There was no support for the hypothesis that gendered institutional context impacts gender differences in the likelihood of being an innovative entrepreneur; indeed, no gender differences in innovativeness emerged after adjusting for the entrepreneur's personal and business characteristics. There was also not strong evidence for the hypothesis that the population of women entrepreneurs in these countries is more highly educated than women entrepreneurs are in other countries.

The GEM data on which these results are based are advantageous in that they allow for comparisons of gendered patterns in entrepreneurship across a large number of institutional contexts. However, they are also limited in that they do not provide a particularly long menu of demographic information that would allow me to tease apart the observed effects in detail. In particular, information on marital status, parenthood and care-giving responsibilities would presumably mediate the impact of institutional context on women's likelihood of becoming entrepreneurs. Similarly, it is possible that the effects are strongest in particular occupations or industries.

Despite these limitations, this analysis identifies key policy factors that can help us understand the gender gap in entrepreneurial activity, as well as gender gaps among established entrepreneurs. It provides support for institutional perspectives on gender inequality in this area: gendered institutional arrangements, not simply gender-based differences in resources, contribute to women's ongoing under-representation among entrepreneurs.

CHAPTER 4

COGNITIVE BIAS AND INNOVATION: ARE WOMEN ENTREPRENEURS PENALIZED?

While much research on the influence of institutions on organizations has focused on the importance of regulative legal frameworks (North 1990) or normative rules about what is "appropriate" (March and Olsen 1989), scholars have increasingly turned their attention to the importance of cognitive frames and cultural beliefs (Meyer and Rowan 1977; DiMaggio and Powell 1983; 1991; Scott 2001). Specifically, they examine how shared cultural frameworks that are typically "taken for granted" shape internal interpretive processes (Scott 2001). These cultural frameworks, in addition to formal rules and norms, are critical in generating legitimacy for new and novel organizations (Aldrich and Fiol 1994; Scott 2001; Sine, Haveman, and Tolbert 2005). While some researchers have examined how normative aspects of institutions influence women's rates of entrepreneurship (Baughn, Chua, and Neupert 2006), little attention has been paid to how cultural beliefs about gender influence cognitive processes in the evaluation of new organizations, or how such processes may be embedded in broader normative contexts.

In the previous chapter, I investigated how legal and policy environments impact gender inequalities in entrepreneurship. In this chapter, I turn my focus toward normative environments to investigate the potential impact of status-based gender bias. Research based on interviews suggests that women entrepreneurs often believe that they lack credibility because of their gender (Buttner and Moore 1997; Carter and Cannon 1992; Maniero and Sullivan 2006), but there has not been a systematic investigation of whether these perceptions may be based on an accurate assessment of

evaluators' gender biases.

As discussed in Chapter 1, research on entrepreneurship has also long focused on the relationship between entrepreneurship and innovation. For example, does “entrepreneurship” entail creating a new organization (Aldrich 2005), or does it also involve presenting a “new combination of existing materials and forces in the economy,” as Schumpeter would argue (Swedberg 2000)? It is with this theoretical link between entrepreneurship and innovation, as well as cultural-cognitive institutional approaches in mind that I theoretically formalize how cognitive processes link beliefs about gender with taken-for-granted assumptions about what kinds of people and what kinds of ideas make for productive new organizations. I do so by investigating how gender status beliefs influence receptivity to non-innovative versus innovative ideas and how this micro-level phenomenon may differ according to gendered labor market norms and distributions of resources at the macro-level.

The goals of this chapter, then, are to 1) investigate how shared cultural beliefs about gender influence evaluations of entrepreneurial ideas and to 2) compare evidence of bias between two cultural contexts: the United States (US) and the United Kingdom (UK). Specifically, I propose that gender-biased beliefs about entrepreneurial competence generally discourage women from pursuing entrepreneurship and disadvantage them in their quest for financial support for their entrepreneurial endeavors. The people with whom an entrepreneur or a potential entrepreneur interacts, such as family members, friends, colleagues, investors, customers, employees or other people in an individual's social network, may hold such beliefs. To the extent that gender beliefs generate biased evaluations of women entrepreneurs' competence and the perceived viability of their business ideas, these cognitive biases in turn structure the interactions through which entrepreneurs gain legitimacy and support for their business endeavor. These assumptions about women's

competence at the task of entrepreneurship provide important implications for the extent to which particularly innovative and risky ideas may be perceived as viable and/or worthy of investment.

Furthermore, by comparing evidence for the cognitive bias mechanism between two cultural contexts, I am able to link this important micro-level explanation to the macro-level context in which it is embedded. The US/UK comparison is advantageous because it provides analytic variation on the dimension of cultural beliefs about gender, a central component of the theoretical premises. Although the two countries have legal frameworks that are relatively similar in their support of the pursuit of entrepreneurship, they differ regarding women's position in the labor market and the cultural acceptance of mothers' full time employment (Mandel and Semyonov 2006; O'Connor, Orloff, and Shaver 1999; Treas and Widmer 2000). By evaluating the bias mechanism with the same method in each context, I am able to parsimoniously shed light on the interplay between macro and micro levels of analysis. I also contribute to the growing literature in the sociology of entrepreneurship by engaging a multilevel framework to understand an important aspect of the social environment of entrepreneurship (Ruef and Lounsbury 2007).

In the following paragraphs, I develop my argument by drawing on status characteristics theory, multilevel gender theory and theory in the sociology of entrepreneurship. I then describe the laboratory studies and summarize evidence for gender bias in each context, focusing on how innovativeness mediates such bias.

Gender Beliefs

Sociologists increasingly understand gender as a multilevel structure, which includes cultural beliefs and distributions of resources at the macro level, patterns of behavior at the interactional level, and roles and identities at the micro level (Ferree, Lorber,

and Hess 1999; Ridgeway and Correll 2004; Risman 1998). In this analysis, I focus specifically on shared cultural beliefs about gender at the macro-level that prescribe different expectations of competence for women and men, and analyze the implications of those beliefs for women entrepreneurs' social interactions.

Gender Beliefs and Entrepreneurship

Studies suggest that men are widely thought to be more capable (Williams and Best 1990:334) and more competent (Fiske et al. 2002:892) than women. For example, Fiske et al. (2002) found that diverse samples of respondents from different regions of the United States consistently rated the category "men" higher than the category "women" on a multidimensional scale of competence, regardless of their age. Specifically, participants were asked: "As viewed by society, how [competent, confident, capable, efficient, intelligent, skillful] are the members of this group?" (891). Experimental research corroborates this finding: people tend to expect more competent task performances from men than from women, except in cases where the task being performed is particularly "feminine", such as a nurturing task (Ridgeway 2009; Ridgeway and Correll 2004; Wagner and Berger 1997). Importantly, scholars have noted that it is particularly in contexts where the task in question is male-typed when gender beliefs about competence become linked to performance evaluations and ability assessments (Ridgeway 2009; Ridgeway and Correll 2004).

Research widely confirms that entrepreneurship is one such male-typed activity. In a study of business students in the US, India and Turkey, Gupta et al. (2009) demonstrated that respondents in all three contexts strongly associate entrepreneurship with stereotypically masculine characteristics. Buttner and Rosen (1988) similarly found that American loan officers rated women as significantly less like "successful" entrepreneurs on the dimensions of leadership, autonomy, risk taking, readiness for change, endurance, lack of emotionalism and low need for

support when compared to equivalent men. More generally, scholars have argued that entrepreneurship is a normatively masculine activity that involves a sense of dominance tied to notions of masculinity within modern capitalist cultures (Bruni, Gherardi, and Poggio 2004; Connell 1995; Mirchandani 1999).

The financial risk-taking that is often associated with entrepreneurship also adds a prescriptive edge to the stereotype that entrepreneurship is a male-typed activity. Indeed, studies in the fields of economics and psychology have shown that women are, on average, more financially risk averse than men (see Croson and Gneezy 2009 for a review). Some explanations for this finding include men's lower emotional reactions to uncertain situations, men's overconfidence in the likelihood of positive outcomes, and men's greater tendency to view risky situations as challenges rather than threats. However, the willingness to take risks has also been documented as an important component of prescriptive stereotypes about agentic, masculine behavior (Prentice and Carranza, 2002). Prescriptive stereotypes also suggest that men (but not women) should be dominant (Rudman et al. 2009). When women leaders display agentic traits, such as self-promotion, arrogance, or intimidation, they are penalized for violating this stereotype (Heilman 2001; Rudman and Glick 2001; Rudman et al. 2009). Therefore, when men become entrepreneurs, they fulfill the prescriptive stereotype that they should be agentic risk takers.

Notably, this masculine stereotype of entrepreneurship has been shown to have a strong impact on women's intentions and experiences. For example, when women are exposed to the masculine stereotype about entrepreneurs, they are much less likely to demonstrate entrepreneurial intentions (Gupta and Bhawe 2007). Women entrepreneurs in the US and Europe also report that they often perceive that they lack credibility because of their gender when they seek funding (Carter and Cannon 1992; Moore and Buttner 1997; Smallbone, et.al. 2000).

Evaluating Non-innovative Entrepreneurs

Because most businesses follow relatively non-innovative business models (Aldrich and Ruef 2006), I first establish the theoretical implications of gender beliefs about competence for typical entrepreneurs, and then move on to address them for the case of innovative entrepreneurship. I rely primarily on status characteristics theory to develop hypotheses about the biasing effect of gender beliefs on evaluations of non-innovative entrepreneurs. An outgrowth of expectation states theory, status characteristics theory examines the development of power and prestige hierarchies in task groups and identifies valued attributes that imply task competence (Berger et al. 1977). A status characteristic can be a categorical distinction based on either a personal attribute (e.g. gender, race) or a role (e.g. manager).

Gender has been shown to operate as a “diffuse status characteristic” in that it is a cue for general expectations of competence: People tend to expect more competent task performances from people with the more valued state of the characteristic (men) compared to those with the less valued state (women). This has been shown to be the case not just for male-typed tasks, but also for most *general* tasks. Thus, gender beliefs about competence at the macro level become linked to gender-salient social relational contexts at the micro level as soon as people classify others as male or female (i.e. “sex-categorize”) (Ridgeway and Correll 2004). Importantly for this study, such contexts are gender-salient when the traits and abilities of one gender or the other are linked to the central activity being performed. Because they are expected to be more competent, high status actors (men) are given more opportunities to participate, have more influence over others in a group, and have their performances evaluated more positively (Correll and Ridgeway 2003; Wagner and Berger 1997).

Because entrepreneurship is typically characterized as a male-typed task, the theory suggests that when gender as a “status characteristic” is salient, it will result in

gender-differentiated evaluations of the competence and abilities of an entrepreneur, and the perceived viability of an entrepreneur's business idea. Furthermore, the situation of nascent entrepreneurship is inherently fraught with a high degree of uncertainty because there is no information about the past performance of the business to draw upon. Research has shown that stereotyping effects become especially strong in situations where there is little other information available (Wagner and Berger 1997). In this sense, one would expect that cognitive bias may play an even a larger role in the financial investment market for venture start-ups than it does in the traditional labor market, where past job histories provide better information about future job performance. Furthermore, Ridgeway (1997) argues that gender status beliefs are sufficient to create gender hierarchies in arenas where the organizational structures that typically reinforce gender inequality in employment, such as internal labor markets and job evaluation systems, are absent.

Therefore, I expect that (1) women entrepreneurs presenting a non-innovative idea will be rated as less competent, capable and skilled than men entrepreneurs, and (2) a non-innovative business idea will be perceived as less profitable and deserving of investment when it is presented by a woman than by a man, all else being equal. I also expect that ratings of competence will mediate the gender differences in the business evaluation variables. In other words, I predict that evaluators will offer less investment to women *because* they rate women entrepreneurs to be less competent entrepreneurs than men, indicating that that gender is indeed a salient status characteristic in the setting.

What about Innovation?

The second part of my analysis investigates how these evaluations, and the gender differences thereof, may vary if the idea being presented is particularly innovative. If entrepreneurship involves activities that are creative and innovative rather than

repetitive and mechanical, they may trigger resistance to change in the social environment; in this context, the entrepreneur must craftily “sell” his or her idea to skeptical groups, to potential customers, and to those who may work in partnership with it (such as investors) (Aldrich and Ruef 2006; Schumpeter 2000). Organizational scholars have also increasingly emphasized the importance of establishing social legitimacy for the survival of new organizations, especially if they are proposing something novel (Aldrich and Fiol 1994; Deephouse and Suchman 2008; Sine et al. 2005). Because legitimacy must come from external audiences in early phases of organizational creation, achieving legitimacy takes a considerable amount of effort on the part of the entrepreneur or entrepreneurial team (Ruef and Scott 1998). Moreover, investors in businesses that challenge accepted organizational forms carry a larger burden of risk on their investments. This suggests that evaluators will be generally skeptical of innovative plans and more resistant to investing in them than they are of non-innovative plans. I expect that this will indeed be the case for men.

The influence of innovation on the evaluations of women’s business ideas is more complex. This is because, in the context of an entrepreneur presenting a business plan, the innovation could be perceived as a property of the task (in which case it signals a higher level of difficulty) or a property of the individual (in which case it signals a higher level of competence). This leads to competing predictions about women’s relative advantage or disadvantage when presenting an innovative idea instead of a non-innovative idea.

First, the increased difficulty and risk associated with the task of starting an innovative business suggests that it may be even more difficult for women than for men to garner support for an innovative idea. In the case of a single entrepreneur in the nascent phases of the enterprise, the process of gaining legitimacy for new business models is strongly tied to the individual and his or her particular attributes

because there is no existing organization from which to draw inferences about performance. Thus, the inferred “legitimacy” of the individual serves as a proxy for his or her ability to successfully complete the task of developing a legitimate enterprise. Widespread evidence suggests that women often lack legitimacy. For instance, assertive women in leadership positions have a limited ability to be influential through directive behavior, in part because they violate gender status arrangements when they are in a position of authority (Butler and Geis 1990; Eagly, Makhijani, and Klonsky 1992; Ridgeway 2001). Women also tend to benefit most from a network centered around a strong tie to a man who has many weak ties, rather than a network centered on their own weak ties (Burt 1998). Because innovative ideas have increased risk associated with them, evaluators may be less likely to support them if they believe a person lacks the competence or legitimacy to carry it out.

Alternatively, an innovative idea may reflect something about the competence of the individual who developed it. A central principle of status characteristics theory maintains that information that is inconsistent with other status information will be accorded more weight than it would have if it were the only piece of status information present (Berger et al. 1977; Correll and Ridgeway 2003). For instance, if a person is evaluating someone who is an African American woman, the fact that she is also a Harvard-trained lawyer will carry more weight than it would in the absence of status information about her ethnicity and gender. This occurs as an unconscious process: evidence of competence for someone who is not expected to be competent stands out as being unique. This “wow” effect among stereotype-inconsistent targets (e.g. “She’s really competent compared to most women.”) is typically detected in subjective ratings (Biernat and Kobrynowicz 1997). In similar fashion, the cognitive ability to come up with an innovative idea may be a signal for competence, much in the same way that a high level of education is. Thus, the theory suggests that when this

information is inconsistent with expectations of competence (as is the case for women), innovative ideas may be more positively evaluated than they are when the information is consistent (as is the case for men).

Additionally, whereas discrimination due to expectations of incompetence is based on descriptive stereotypes (i.e. what women supposedly are), prescriptive stereotypes refer to how people perceive that women *should* be and have been found to play an important role in interaction (Heilman 2001; Rudman and Glick 2001). For instance, women who display agentic traits that elicit dominance and authority are often penalized. In traditional employment situations, a "backlash effect" occurs: Agentic women are viewed as more competent than non-agentic women, but they are deemed less likeable and are less likely to be recommended for management positions. More recent research suggests that this backlash effect may be more strongly related to the proscription that women *ought not* to be dominant or intimidating, rather than to the prescription that they *ought* to be communal (e.g. supportive and friendly) (Rudman et al. 2009).

Innovativeness may similarly provoke backlash because it involves an increased display of agentic traits, such as risk-taking, competitiveness, self-promotion and aggressiveness. Thus, it is possible that the agency associated with innovation could translate into higher competence ratings, but potentially lower likeability ratings for women when they are innovative than when they are not innovative. However, innovative women entrepreneurs in small business do not violate the prescription for male dominance because innovativeness does not necessarily increase an entrepreneur's level of status or authority over others. Thus, a backlash effect may not in fact occur for innovative entrepreneurs, even though they display more agency.

Comparing Contexts: The US and the UK

Although theory suggests much about the relevance of gender status beliefs to entrepreneurship, it is important to contextualize the phenomenon within a broader institutional context if a goal is to link micro and macro level phenomena. For this reason, I compare evidence for my hypotheses between studies conducted in the US and the UK. By doing so, I am able to gain variation on the dimension of cultural beliefs about gender at the macro-level, a central component of the theoretical premises.

The UK presents a theoretically appropriate comparison to the US because it allows me to “hold constant” some basic attributes of economic systems that crucially influence entrepreneurship, while providing variance on gendered patterns of work and cultural beliefs. First, the UK is relatively similar to the US in its level of economic development and its reliance on a “liberal” welfare capitalist model that provides relatively little market regulation and prefers individualized market solutions to welfare problems (Esping-Anderson 1990; see also O’Connor et al. 1999; Soskice 2005). The US and the UK consistently rank high on the World Bank’s *Ease of Doing Business* indicators, an index of laws relevant to business start-up and ownership (World Bank 2008). For example, the labor market structure is quite flexible in these countries, making it comparatively easy for employers to hire and fire workers. In both countries, then, the institutional environment is designed to facilitate entrepreneurship activity.

The two countries differ, however, in the institutional and cultural context pertaining to gender. For instance, women in the US are much more likely to work full-time than women in the UK (Crompton 2006; O’Connor et al. 1999), and are more likely to be in professional and managerial positions (Mandel and Semyonov 2006; UNDP 2008). In the US, 42 percent of legislators, senior officials and managers

are women, as compared to 34 percent in the UK (UNDP 2008); only 18 percent of women in the labor force in the UK are professionals, compared to 26 percent in the US (Pettit and Hook 2009). Married women with children also take more time off from work, and are more likely to work part-time in the UK than they are in the US (Crompton 2006; Gornick and Meyers 2005; Mandel and Semyonov 2006). This may be due in some measure to the fact that the long availability of unpaid leave and the large part-time labor force in the UK encourage mothers to interrupt their full-time labor force participation (Dex and Shaw 1986; Gornick and Meyers 2005; O'Connor et al. 1999). In part because many processes in the traditional labor market tend to map onto self-employment, women in the UK are also less likely to be entrepreneurs than in the US (see Chapter 3, but also Baughn et al. 2006; Minniti and Arenius 2003).

Studies further suggest that people have been generally more supportive of married women's full-time employment, especially mothers' full-time employment, in the US than in the UK (Alwin, Braun, and Scott 1992; Scott and Duncombe 1991; Treas and Widmer 2000). Specifically, respondents in the US are more likely to approve of women being employed full-time when their children are in preschool and returning to full-time work after their children go to primary school. Dex and Shaw (1986) argue that historically, women workers in the US have a higher social status than those in the UK in part because Equal Opportunity lawsuits have been more frequent and more widely publicized in the US than in the UK.

In sum, the two contexts share similar institutional frameworks supporting the activity of entrepreneurship, but may differ in their common assumptions about women's labor market abilities. Thus, I expect to find stronger support for my hypotheses in the UK study than in the US study. Importantly, because these data are *not* generalizable to the populations of the US and the UK, I cannot (and do not attempt to) evaluate the degree to which any differences in bias I detect might account

for differences in actual gender gaps in entrepreneurship in these countries. Instead, the goal of the research is to provide insight into why I may find different levels of support for the theoretical mechanism of status-based gender bias in each context.

The Laboratory Experiment

The goal of the experiment is to evaluate the effects of the gender of an entrepreneur and an entrepreneur's innovativeness on a range of evaluation measures. The advantage of the experiment is that it provides a highly controlled setting in which I can obtain a diverse set of outcome measures. This method allows me to systematically evaluate status-based gender bias in entrepreneurship because factors that might otherwise interfere with hypotheses testing are absorbed through randomization.

It is not feasible to convince actual small business investors to visit the laboratory, so by necessity I rely on a sample of university students to test the bias mechanism. Understanding the bias mechanism is important if a goal is to reduce disadvantages women entrepreneurs face. Although university students do not represent a random sample from the population, the sample provides an adequate test of the bias mechanism as it pertains to labor market abilities for a number of reasons. First, research comparing university students' ratings of workers to those of actual managers have found them to be very similar (Cleveland and Berman 1987; Olian and Schwab 1988; Correll, Benard, and Paik 2007). The majority of financial supporters of new enterprises are similarly likely to hold a university degree. Moreover, this sample provides a conservative test of the theoretical propositions about gender bias because in both contexts, younger, university educated people typically hold more progressive gender ideologies (Bolzendahl and Meyers 2004; Knudsen and Waerness 2001). Third, the theory presented here implies that to the extent that supporters of

small businesses, such as bank employees, “angel” investors, friends, or family members of entrepreneurs, share the cultural belief that women are less competent and prepared for entrepreneurship, they will subtly discriminate against women entrepreneurs and may influence the career decisions of potential women entrepreneurs. To the extent that undergraduates draw on similar cultural beliefs about gender as others in the population do, undergraduates themselves, in their role as friends and family members of potential entrepreneurs, may similarly influence the social support that a nascent entrepreneur may be able to garner for an idea.

One disadvantage of relying on undergraduate participants may be that they are less knowledgeable about business and business investment than real investors are. As a result, they may be more likely to rely on stereotypes due to their higher degree of uncertainty about the subject matter. As I discuss in the conclusion, in future research I will test these hypotheses with different samples from the population which could better address the potential caveats of relying on undergraduate participants.

Both of the studies were conducted at large research universities, each of which is ranked in the top tier of universities for its country. Paid student volunteers between the ages of 18 and 24 rated a pair of fictitious entrepreneurs, presented as real, of the same gender, same level of qualifications (i.e., the same age, education, occupation and managerial experience), and whose business ideas were in the same gender-neutral industry. This design generates two conditions in which participants rate one non-innovative entrepreneur and one innovative entrepreneur who are either men or women. Male and female participants were randomly assigned to one of these two conditions. Thus, gender of the entrepreneur is the between subject factor (man or woman) and innovativeness (non-innovative or innovative) is the within subject factor.

This design generates a valuable test of my theoretical hypotheses for a number of reasons. First, estimating gender effects between subjects minimizes

suspicion about the study's hypotheses and produces unbiased comparisons of ratings of the exact same business plans across gender (Correll, Benard and Paik 2007). Moreover, because a focal purpose of this project is to assess the effect of innovativeness on the ratings and evaluations of entrepreneurs, it is important that innovativeness be measured as a within-subjects comparison because it is more efficient than between-pair comparisons (Cohen 1988).

For the purposes of isolating the US/UK comparison in this analysis, results presented here include only respondents who were citizens of either the US or the UK.¹¹ Three US participants and one UK participant were eliminated due to failed manipulation checks (4.5%). Rejection rules were conservative and established beforehand. Analyses were also conducted with all available data and no substantive differences were found. Final analyses include 85 participants altogether (48 in the US study, 37 in the UK study), with 15-24 participants per condition.¹²

Procedure

Participants came into the lab individually and read descriptions of two entrepreneurs and their business ideas. These ideas differed on innovativeness, but were otherwise similar. The participants examined each description one at a time; I counterbalanced which business description, innovative or non-innovative, they viewed first. After reading about each entrepreneur, participants immediately completed a survey with a range of evaluation measures about the entrepreneur and the business idea (see “dependent measures” below). Then participants were asked to allocate investment points to each business and to write a short paragraph explaining

¹¹ There were several international students who participated in the studies, both in the US and the UK. Due to the especially high number of international students at the UK University, about 40% of the original sample were citizens of other countries, versus only 2% in the US sample. Including these cases in the analyses however does not change the findings; in the case of the UK, it merely strengthens the significance of the coefficients.

¹² The number of final participants per condition was lower on average in the UK study than the US study because there were more non-citizens who were omitted from the UK sample than the US sample.

their reasoning behind their decision. Before leaving the lab, participants were briefly interviewed to assess whether the experimental manipulation was successful and to determine if they had any suspicions about some aspect of the study. Then they were debriefed and paid.

Cover Story

Participants were told that the researchers were interested in how young university students evaluate new business plans and make decisions about investing in them because university educated people are investing their money and starting their own businesses at younger and younger ages. They were informed that the paragraphs they were about to read were summaries of submissions to a small business investment competition for young entrepreneurs that occurred in March of 2004. In order to encourage participants to put themselves in the role of what others would do, they were told that the researchers have data about each of these businesses' rates of profit and loss in the time since they opened, and that they have allocated each participant 100 points (equivalent to 100 USD or 100 GBP) to invest in each company as one sees fit. Therefore, each participant was told they could potentially earn a maximum of \$5\ £5 in returns above the \$5\ £5 participation payment already promised, depending on their investment accuracy. By emphasizing that the quality of their investment decisions would be compared to existing performance data and that they would have to justify why they chose to invest the money the way they did, I urged participants to make thoughtful investment decisions.

The Descriptions

Each participant read two descriptions of entrepreneurs. The descriptions were identical across condition, except for varying first names to manipulate gender (see below). Both entrepreneurs proposed to start a small business in “the wine industry,” described as an upper middle class, gender-neutral industry. This was conveyed to the

participants with the statement, “Approximately 90% of owners in the industry hold at least a bachelor’s degree and about 50% are women.” Both entrepreneurs were described as graduates from large, upper tier universities for the country they lived in (though a different university than where the study was conducted), were the same age, had been working in the same industry for five years prior to entrepreneurship, and had a credit rating that met the minimum requirements for a business start-up loan from a major bank in their country. They were also both self described as confident and goal-oriented.

Gender Manipulation.—The gender of the entrepreneur was manipulated by altering the first names of the entrepreneurs. The following names were used: Laura and Julie (women), and David and Jason (men).

Innovation Manipulation.—The innovation manipulation is designed to capture the comparison between a repetitive business model versus a creative one. The “non-innovative” business summary described a typical small wine store with a “common business plan” that has been “shown to work in the past”. The “innovative” business summary described a new business plan that has been recognized as “especially innovative”. The business described is a small store that provides customers the ingredients, tools, and guidance to make and bottle their own wine.¹³ I tested the effectiveness of this manipulation by pre-testing the descriptions in both settings. The pretests did not provide names of the entrepreneurs in order to ascertain the perceived innovativeness of the ideas independent of gender. These tests established that the “innovative” description was indeed perceived as such in both studies. Manipulation checks during the study itself also confirmed that respondents indeed perceived the “innovative” business summary to be more innovative than the

¹³ The “innovative” business idea is based on an actual small business in Southern California that has won awards for innovative business practices from its local chamber of commerce.

“non-innovative” summary.

I manipulate innovation as creativity in the business model (rather than a technological invention, for instance) for two important reasons. First, the purpose of the manipulation is to capture the theoretical dichotomy between entrepreneurship as repetition versus creativity, a dichotomy frequently discussed in the sociology of entrepreneurship (Aldrich and Ruef 2006). Second, the goal of the study is to discern how being a creative instead of repetitive entrepreneur generates different advantages or disadvantages in ratings of men and women. This requires that I conduct a conservative test of my hypotheses by maintaining a gender-neutral task frame. By separating creativity from technological know-how, I can be confident that findings about creativity are not confounded by the strongly male-typed task of technological innovation.

Dependent Measures

After reading the descriptions of the entrepreneurs and their businesses, participants rated them on a series of measures. To evaluate my argument that women entrepreneurs will be rated as having less entrepreneurial ability and less viable businesses due to their status on the basis of gender, I examined seven key dependent variables.

Personal Characteristics.—First, each participant rated the entrepreneurs on items related both to their entrepreneurial ability and their overall likeability. Items designed to capture entrepreneurial ability included how competent they thought the person was as an entrepreneur, how capable they were of turning the business into a successful venture in the long-term, and how skilled they were as an entrepreneur.¹⁴

¹⁴ Some researchers collapse ratings related to competence into one index (e.g. Correll, Benard, and Paik 2007). This was not feasible in the context of this comparative study because the concepts did not meaningfully hold together to the same extent in each study. For instance, in the US study, Cronbach’s Alpha for the measures of competence, capability and skill was 0.63, whereas in the UK study it was only 0.57.

They also rated how likeable they were overall. Each item was measured on a five-point scale, ranging from 1 (“not at all”) to 5 (“extremely”).

Business Evaluation Measures.—Participants also rated the viability of each business. First, they were asked how profitable they thought the enterprise would be. They were then asked, “If you had some of your own money available to invest in a new business, how likely do you think it is that you would invest it in [entrepreneur’s] business?” These items were both measured on a five-point scale, ranging from 1 (“not at all”) to 5 (“extremely”). After reading both business summaries, participants divided 100 investment points (equivalent to 100 USD or 100 GBP) between the two businesses. I use this additional measure of investment because it provides a ranked measure of the worthiness of each business in comparison with the alternative business plan, as well as a behavioral measure of investment decision since each participant was told that their payment was dependent upon their investment decisions.

Results

I first examine mean differences in the US and UK studies to highlight the central question of how being innovative rather than non-innovative influences ratings of men and women entrepreneurs differently. Then, using regression analysis, I evaluate the extent to which evaluations of the ability of non-innovative entrepreneurs and the viability of their ideas are gender biased, and analyze how innovativeness alters such biases. Table 4.1 provides means of the participants’ ratings of the applicants, along with corresponding paired *t*-tests to compare means.

Ratings of men entrepreneurs- The first four columns of Table 4.1 compare the ratings of men entrepreneurs who are innovative and non-innovative in the US and UK studies. In the US study, men are rated equally competent, capable, skilled and

likeable when they are innovative versus when they are not innovative. However, their businesses are rated significantly less profitable and are granted slightly fewer investment points on average when they are innovative.

UK participants penalized men even more strongly for innovativeness than US participants did. Here, innovative businesses presented by men were rated significantly less profitable, less worthy of investment, and earned significantly fewer investment points than were non-innovative businesses presented by men. The profitability ratings are about 15 percent and 33 percent lower in the US and UK, respectively, for innovative versus non-innovative business ideas. In the US, innovative men entrepreneurs receive about 18 percent fewer investment points than non-innovative men entrepreneurs; in the UK study, they received 46 percent fewer points. These results are consistent with the notion that the increased risk associated with innovativeness makes it harder to earn investment.

Interestingly, UK participants also rated men to be less competent and capable when they were innovative. Although I did not expect to find this result, one possible interpretation may be that UK participants are more risk averse and thus more likely to see risky behavior on the part of men as imprudent. By contrast, when women present an innovative idea, it may still be seen as risky, though sensitivity to risk may be mitigated by the unexpected level of competence that innovativeness signals for women.

Table 4.1 Means and Standard Deviations of Personal Characteristics and Business Evaluation Variables by Gender of Entrepreneur, Study Setting and Entrepreneur Type

| | Men | | | | Women | | | |
|--------------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|------------------|
| | US | | UK | | US | | UK | |
| | Non-Innovative | Innovative | Non-Innovative | Innovative | Non-Innovative | Innovative | Non-Innovative | Innovative |
| Competence | 3.75 (0.68) | 3.96 (0.75) | 3.93 (0.59) | 3.33** (0.72) | 3.71 (0.55) | 4.08* (0.65) | 3.18 (0.66) | 3.55* (0.51) |
| Capability | 3.54 (0.72) | 3.42 (0.83) | 3.67 (0.62) | 2.93** (0.80) | 3.54 (0.77) | 3.29 (0.81) | 3.14 (0.77) | 3.14 (0.71) |
| Skill | 3.63 (0.71) | 3.71 (0.46) | 3.27 (0.46) | 3.27 (0.88) | 3.17 (0.56) | 3.79*** (0.67) | 3.09 (0.87) | 3.09 (0.75) |
| Likeability | 3.75 (0.53) | 3.75 (0.68) | 3.40 (0.63) | 3.27 (0.96) | 3.46 (0.72) | 3.92* (0.65) | 3.36 (0.66) | 3.54 (0.74) |
| Profitability | 3.25 (0.61) | 2.83* (0.87) | 3.60 (0.67) | 2.40*** (0.51) | 3.08 (0.78) | 2.79 (0.78) | 2.86 (0.64) | 2.91 (0.75) |
| Likelihood of investment | 2.58 (0.88) | 2.67 (0.96) | 2.73 (1.10) | 2.13+ (0.92) | 2.46 (0.98) | 2.50 (0.98) | 2.09 (0.75) | 2.41 (1.10) |
| Investment Points | 55.08 (25.12) | 44.92+ (25.12) | 65.00 (23.39) | 35.00*** (23.39) | 49.17 (26.97) | 50.83 (26.97) | 48.64 (26.33) | 51.36 (26.33) |

Note: Standard deviations are in parentheses. + $P < .10$, * $P < .05$, ** $P < .01$, *** $P < .001$ test for difference in means between non-innovative and innovative entrepreneur

Ratings of women entrepreneurs-The last four columns of Table 4.1 compare the ratings of women entrepreneurs who are non-innovative and innovative in the US and UK studies. Overall, the patterns for women are very different than those for men. In both the US and UK studies, when women present an innovative idea instead of a non-innovative idea, they are perceived to be significantly more competent. The competence ratings are about 10% higher for innovators than for non-innovators in the US study, and about 12% higher in the UK study. In the US study, women are also perceived to be significantly more skilled: the skill ratings are about 20% higher for innovators. This suggests that innovation may indeed signal an unanticipated level of competence and experience for a group of lower status (in this case women).

US participants also rated women to be significantly more likeable when they presented an innovative business idea. This suggests that innovative women entrepreneurs do not experience a backlash effect for displaying more agentic qualities.¹⁵ This is consistent with Rudman et al.'s (2009) finding that backlash effects against agentic women are rooted in the proscription that they ought not to be dominant over others, rather than in prescriptions for feminine niceness.

In contrast to the results for men, women do not seem to be financially penalized for innovation: they are rated to be approximately equally profitable and worthy of investment regardless of the type of idea they put forward. This is the case in both the US and UK settings.

Multivariate Analysis

I now turn to regression models to evaluate cognitive bias against women entrepreneurs by estimating the effects of gender of entrepreneur, innovativeness, and

¹⁵ Results (not shown) indicated that both men and women innovative entrepreneurs were rated to be significantly more aggressive (typically categorized by researchers as an “agentic” trait) than their non-innovative counterparts. There were no gender differences in perceived aggressiveness across condition.

the interaction of gender of entrepreneur with innovativeness on each of the seven dependent variables. I use random intercepts regression models to take into account the nonindependence of observations that results from asking participants to evaluate entrepreneurs in pairs. Specifically, the model accounts for variability between participants by estimating a mean for each participant, instead of imposing the same grand mean across all observations. Recent research suggests that, even with a small sample, random effects standard errors are more efficient and less biased than standard OLS regression with robust standard errors clustered by participant ID (Wooldridge 2003). However, analyses using the clustered OLS strategy produced very similar standard errors to the ones I present here. In addition, I test for significant differences between the coefficients in the US and UK with a pooled model that includes a UK dummy variable, as well as the two-way and three-way interactions between the UK, innovativeness and gender of entrepreneur.

The estimated regression coefficients are presented in Tables 4.2 and 4.3. For most of the models, the gender coefficient and the interaction between gender and innovativeness are in the opposite direction. Overall, women tend to be penalized when they present a non-innovative business idea, but this penalty is typically reduced (and in some cases eliminated altogether) when they are innovative. These patterns are generally stronger and more consistent in the UK study than they are in the US study. I now describe more specifically the effects of gender and innovativeness on each of the dependent variables.

Entrepreneurial Ability and Likeability.—Table 4.2 contains coefficients and standard errors for the effect of the independent variables on entrepreneurial ability (as measured by competence, capability, and skill) and likeability. Although there is no evidence that US respondents bias against non-innovative women's competence or entrepreneurial capability vis-à-vis non-innovative men, they do rate non-innovative

women to be significantly less skilled than their male counterparts. This bias in perceived entrepreneurial skill disappears however when women present an innovative idea, as demonstrated by the positive and significant interaction effect.

In the UK study, the woman entrepreneur variable is negative and significant for ratings of competence and capability but not for skill, implying that non-innovative women entrepreneurs are rated as significantly less competent and capable than their non-innovative male counterparts, but not any less skilled. The innovative*woman interaction is also significant and positive, indicating that being innovative increases perceived competence and capability more for women entrepreneurs than men entrepreneurs. In other words, gender bias against women entrepreneurs' competence and capability is mitigated when women are innovative. Importantly though, innovative women are still viewed as less competent and capable than men who present a non-innovative business plan.

These results support the theoretical premise that inconsistent status information may be accorded more weight than it would if it were the only piece of status information present. That is, by being innovative, women may be able to partially compensate for assumptions of lower ability that people may have about women entrepreneurs. Additionally, a significant bias against women's entrepreneurial ability is indeed detected in both the US and the UK studies, though, surprisingly, it is detected with different measures. While "competence" and "capability" are general measures of status and one's ability to be an entrepreneur, it is possible that "skill" may differ because it implies a level of technical know-how that has been learned. This suggests that UK respondents may be more likely to view women as implicitly less able to be entrepreneurs, whereas US respondents may be more likely to view

Table 4.2 Random-Effects Regression Coefficients for the Effects of Gender and Innovativeness on Evaluations of Entrepreneurs' Personal Characteristics

| | Competence | | Entrepreneurial Capability | | Entrepreneurial Skill | | Likeability | |
|-------------------------------|-------------------|---------------------|----------------------------|-------------------|-----------------------|-------------------|-------------------|-------------------|
| | US | UK | US | UK | US | UK | US | UK |
| Innovative Entrepreneur | 0.21 (0.16) | -0.60**†† (0.20) | -0.13 (0.22) | -0.73** (0.23) | 0.08 (0.15) | 0.00 (0.24) | 0.00 (0.17) | -0.13 (0.24) |
| Woman Entrepreneur | -0.04 (0.19) | -0.75***† (0.21) | 0.00 (0.23) | -0.53* (0.24) | -0.46** (0.18) | -0.18 (0.26) | -0.29 (0.19) | -0.04 (0.25) |
| Innovative*Woman Entrepreneur | 0.17 (0.22) | 0.96***† (0.26) | -0.13 (0.31) | 0.73*† (0.30) | 0.54* (0.21) | 0.00 (0.32) | 0.46* (0.24) | 0.32 (0.32) |
| Intercept | 3.75*** (0.13) | 3.93*** (0.16) | 3.54*** (0.16) | 0.37*** (0.19) | 3.63*** (0.12) | 3.27*** (0.19) | 3.75*** (0.13) | 3.40*** (0.19) |
| Number of Groups | 96 | 74 | 96 | 74 | 96 | 74 | 96 | 74 |
| Number of Observations | 48 | 37 | 48 | 37 | 48 | 37 | 48 | 37 |

Note: * $p \leq .05$; ** $p < .01$, *** $p < .001$; Standard errors are in parentheses

†Coefficients for US and UK participants differ at $p < .05$

††Coefficients for US and UK participants differ at $p < .01$

women as less technically prepared for entrepreneurship. Moreover, tests for differences in the size of the coefficients across the two countries further suggest that the gender effects on ratings of competence were significantly stronger among UK participants than US participants.

It is also possible that participants rated innovative women higher in terms of entrepreneurial ability (competence, capability and skill) than non-innovative women in order to compensate for biasing against non-innovative women. Some research has shown, for example, that individuals are more likely to express prejudiced viewpoints when they have the opportunity to also demonstrate non-prejudicial attitudes (Monin and Miller 2001). By making this compensation, individuals are able to retain their “moral credentials.” Because participants rated non-innovative and innovative women entrepreneurs simultaneously and were forced to compare them, they may have unconsciously tried to embellish their ratings of the innovative entrepreneur to make up for their low ratings of the non-innovative entrepreneur. I am not able to tease apart this possibility with my data, but it is something which could be investigated in future research.

Unlike UK respondents, US respondents also viewed innovative women to be more likeable than their male or non-innovative female counterparts. As noted earlier, this suggests that innovative women entrepreneurs may be able to demonstrate agentic characteristics without being penalized for violating gender status arrangements.

Business Evaluations.—Respondents also rated the viability of each entrepreneur’s business idea. Table 4.3 presents regression coefficients for the effects of gender and innovativeness on ratings of the profitability of the business, the likelihood that the respondent would invest in it if he/she had money of his/her own, and the investment points allocated to the business at the end of the questionnaire.

Table 4.3 Random-Effects Regression Coefficients for the Effects of Gender and Innovativeness on Business Evaluation Variables

| | Profitability | | Likelihood of Investment | | Investment Points | |
|-------------------------------|-------------------|--------------------|--------------------------|-------------------|--------------------|--------------------|
| | US | UK | US | UK | US | UK |
| Innovative Entrepreneur | -0.42* (0.22) | -0.80*** (0.24) | 0.08 (0.27) | -0.60+ (0.34) | -10.17 (7.52) | -30.00** (9.19) |
| Woman Entrepreneur | -0.17 (0.22) | -0.34 (0.22) | -0.13 (0.27) | -0.64* (0.33) | -5.92 (7.52) | -16.36* (8.43) |
| Innovative Woman Entrepreneur | 0.13 (0.31) | 0.85** (0.31) | -0.04 (0.39) | 0.92* (0.45) | 11.83 (10.64) | 32.72** (11.93) |
| Intercept | 3.25*** (0.16) | 3.20*** (0.17) | 2.58*** (0.19) | 2.73*** (0.25) | 55.08*** (5.32) | 65.00*** (6.51) |
| Number of Groups | 96 | 74 | 96 | 74 | 96 | 74 |
| Number of Observations | 48 | 37 | 48 | 37 | 48 | 37 |

Note: + $p < .10$ * $p \leq .05$; ** $p < .01$, *** $p < .001$; Standard errors are in parentheses

In the UK study, women were rated significantly less likely to receive investment, and were allocated fewer investment points. This penalty however, was partially reduced when innovative business ideas were considered. The interaction effect between woman entrepreneur and innovativeness is significant and positive, indicating that women were rated significantly more profitable, worthy of investment, and deserving of investment points when they presented an innovative idea. In the US study, there are no significant effects of gender on business viability, though the point estimates for profit and investment points trend in the same direction as the effects in the UK study. Taken together, biased evaluations of competence and capability translate into lower business viability ratings in the UK study, whereas the biased evaluations of women's skills in the US study do not translate into significantly lower ratings of business viability.

Notably, both US and UK participants rated men to be significantly less profitable when they presented an innovative idea instead of a repetitive one. Moreover, UK participants demonstrated considerable risk aversion when evaluating men. For instance, they were less likely to say they would invest and allocated significantly fewer investment points when men were innovative. This risk aversion is consistent with the logic of Schumpeter and researchers in the sociology of entrepreneurship, which suggests that it is more difficult to gain legitimacy and support for innovative ideas precisely *because* they involve a great deal of risk and uncertainty. Indeed, the majority of men and women respondents in the both the US and UK explicitly referred to the innovative business plan as a riskier endeavor when explaining why they chose to invest the money the way they did. For example, when respondents favored investing in the non-innovative business plan over the innovative business plan, it was often because the innovative idea was perceived to be too risky, whereas when they preferred the innovative plan, they often reported that it was

because they liked to take risks, or it was “worth the risk.”

The finding that innovativeness works in the opposite direction for women suggests that any propensity toward risk aversion may have been counteracted by the unexpected level of competence that innovativeness signals for women. Importantly however, among UK respondents, innovative women are still predicted to be less profitable, are less likely to be invested in, and earn fewer investment points than a man who presents a non-innovative business plan.

Do Competence Ratings Mediate Business Evaluations?

At this point, my results have suggested that gender bias disadvantages evaluations of women entrepreneurs, and that these disadvantages are typically reduced when women present an innovative business idea. Consistent with my cross-cultural hypothesis, bias against women’s competence at entrepreneurship is stronger in the UK study than in the US study. To complete my argument however, I need to give evidence that being a woman disadvantages the evaluation of a business idea in the UK *because* gender is a salient status characteristic. To evaluate this argument, I add the competence measure as an independent variable to the models predicting business evaluations in Table 4.4. According to the theory, people have lower expectations for women’s competence. It is these lower expectations that lead them to be less likely to support women’s non-innovative businesses than men’s non-innovative businesses, and also to rate women more positively when innovative ideas are considered. If the theory is correct, then evaluations of competence should mediate these gender effects.

Table 4.4 Random-Effects Regression Coefficients for the Mediation of Competence on the Effects of Gender and Innovativeness on Business Evaluations

| | Profitability | | Likelihood of Investment | | Investment Points | |
|-------------------------------|-------------------|-------------------|--------------------------|-----------------|---------------------|--------------------|
| | US | UK | US | UK | US | UK |
| Competence | 0.26* (0.12) | 0.40*** (0.12) | 0.26+ (0.15) | 0.33+ (0.18) | 0.62 (3.21) | 3.11 (4.86) |
| Innovative Entrepreneur | -0.47* (0.22) | -0.56* (0.24) | 0.03 (0.27) | -0.40 (0.37) | -10.30 (10.35) | -28.13** (9.69) |
| Woman Entrepreneur | -0.16 (0.22) | -0.03 (0.22) | -0.11 (0.27) | -0.40 (0.35) | -5.89 (7.62) | -14.02 (9.23) |
| Innovative Woman Entrepreneur | 0.08 (0.31) | 0.46 (0.31) | -0.08 (0.38) | 0.60 (0.49) | 11.73 (15.31) | 29.73* (12.87) |
| Intercept | 2.29*** (0.47) | 1.62*** (0.49) | 1.62** (0.58) | 1.45* (0.76) | 52.76*** (13.37) | 52.75** (20.24) |
| Number of Groups | 96 | 74 | 96 | 74 | 96 | 74 |
| Number of Observations | 48 | 37 | 48 | 37 | 48 | 37 |

Note: + $p < .10$, * $p < .05$; ** $p < .01$, *** $p < .001$; Standard errors are in parentheses

In both studies, higher competence ratings lead to significantly higher ratings of profitability and investment worthiness. Simply including ratings of competence in the models significantly reduces the gendered effects found in the UK ratings of profitability, investment worthiness, and investment points. Specifically, the magnitude of the effect for woman entrepreneur was reduced by 38 percent for investment worthiness and 15 percent for investment points. The magnitude of the interaction effect between gender and innovativeness was also reduced by 46 percent for profitability, 35 percent for investment worthiness, and 9 percent for investment points. By contrast however, competence ratings reduced, but did not fully mediate the gender effects on investment points. Nonetheless, these models suggest that in the UK study, participants largely rated women's businesses differently from men's largely *because* women entrepreneurs were believed to be less competent than men entrepreneurs.

Does Participant Gender Impact Evaluations of Women and Men Entrepreneurs?

Does the participant's gender affect the degree to which ratings are gender biased? In supplementary analyses (not shown), I included the gender of the respondent in the models, as well as tested the two-way interaction of participant gender and entrepreneur gender and the three way interaction of participant gender, entrepreneur gender, and innovativeness to each of the models in Tables 4.2, 4.3 and 4.4. Consistent with status characteristics theory, there were no significant effects of gender of respondent on the gender of entrepreneur effects in either the US or the UK studies. In the UK, however, I did find an effect of gender of respondent for ratings of entrepreneurial profitability. That is, UK women, on average, rated entrepreneurs higher on this measure. These higher ratings however, were equally high among men and women entrepreneurs, and therefore do not impact the main findings of this study.

One limitation of this analysis is that although there were approximately equal numbers of men and women in each condition, the sample size is too low to robustly test for a gender-of-rater effect. This is something that could be pursued in future research.

Discussion

In sum, this study provides experimental support for the theory that gender status beliefs disadvantage women entrepreneurs. The fact that real life circumstances are typically complicated and full of varying factors makes it difficult to use observational techniques to assess this possibility. By testing the theory in a controlled laboratory setting, I was able to better evaluate the phenomenon.

First, there was stronger evidence of status-based gender bias in the UK sample than in the US sample. One interpretation of this is that in the UK context, entrepreneurship may be viewed as a more strongly male-typed task, and indeed survey data show that women are less likely to be entrepreneurs and managers in the UK than in the US. As a result, women entrepreneurs in the UK may be more vulnerable to stereotyping processes than they are in the US. Regardless of its source, country-level differences in gender biases provide evidence in support of a multilevel concept of gender: cultural beliefs and distributions of resources at the macro-level (in this case, gender inequality in the labor market and business ownership) may indeed inform patterns of behavior at the interactional level. More specifically, evidence of micro-level bias processes is stronger where macro-level inequality is more pronounced.

Second, the novelty of a business idea can strongly influence the degree to which gender-based assumptions of competence disadvantage women. The findings support the theory that innovativeness signals a level of competence on the part of the

entrepreneur that is unexpected for people with lower status characteristics (e.g. women). Thus, even though innovativeness may involve a level of agency which is inconsistent with stereotypes about how “feminine” women should behave, it counteracts to a certain extent gender status beliefs that assume that men are more competent than women at most tasks. This dynamic implies that the perception of risk typically associated with new organizational forms may be strongly influenced by gender status beliefs and should be considered when evaluating the role of cultural beliefs in generating legitimacy for novel business ideas.

Interestingly, these studies do not provide evidence of a prescriptive “backlash” effect, which has been detected in the context of traditional managerial employment. This suggests that, unlike managers, women who are innovative small-business entrepreneurs may not be penalized for violating gender status arrangements. Rather, by being innovative, women entrepreneurs may demonstrate agency without threatening the status order and may actually reap certain rewards for doing so, such as being perceived to be more likeable than if they were not innovative (as in the US findings) or receiving more investment for their innovative ideas than their male counterparts (as in the UK findings).

One limitation of this research is that it cannot address the direct impact that the biases examined here may have on the actual gender gap in entrepreneurship. Thus, an important avenue of future research would be to investigate how the mechanism of bias may or may not be prevalent among people who actually evaluate the ideas of potential or nascent entrepreneurs in the US and the UK, such as colleagues or investors. Considering businesses that are in an explicitly male or female-typed industry rather than a gender-neutral one may also significantly influence the patterns found here. Theory suggests that bias would be more prevalent in male-dominated industries, such as the high-tech sector. Moreover, the gendered

effects of innovation may change if innovation were manipulated as technological advancement rather than creativity. For example, it is possible that the social status, association with masculinity and potentially high returns associated with technological innovation in particular could increase the odds that innovative women entrepreneurs experience status-based gender bias or decrease the degree of risk aversion detected toward male innovators.

Furthermore, research suggests that gender stereotypes may prompt lower minimum standards but higher confirmatory standards for women than for men (Biernat and Fuegen 2001; Biernat and Kobrynowicz 1997; Fochi, Lai, and Sigerson 1994). If this is the case for entrepreneurship, it may imply that although innovative women entrepreneurs are perceived to be more competent than other women entrepreneurs, they may be held to a stricter standard than a comparably innovative man to prove their ability. So for example, women who are innovative may be likely to make a short list of candidates for investment (because they seem unexpectedly competent compared to other women), but may be less likely to actually earn that investment when compared to men presenting similarly innovative ideas. Because these studies examined subjective rather than objective ratings, and investment dollars were allocated in comparison to another entrepreneur of the same gender, they cannot evaluate the possibility of stricter ability standards for innovative women entrepreneurs. Future research could address this question.

Nonetheless, the findings indicate that gender status beliefs likely disadvantage most women entrepreneurs, given that most entrepreneurs (especially women entrepreneurs) do not start businesses that are particularly innovative (Aldrich and Ruef 2006; Tonoyan and Strohmeier 2005). They also underscore the importance of cognitive-cultural aspects of institutions in understanding the linkages between organizational creation and gender inequality. Taken-for-granted assumptions about

what kind of person an entrepreneur is are reinforced through subconscious processes.

This study suggests two important factors that could mitigate the extent to which such reinforcement occurs. First, women could, by strategically being innovative, mitigate their vulnerability to stereotyping processes. This strategy however, would not address the underlying root of status-based stereotypes themselves. If a goal is to reduce inequality, taken-for-granted assumptions about gender and entrepreneurship would have to be re-evaluated. As this study suggests, cultural context is a central factor shaping the salience of such assumptions. Solutions would therefore have to come from changes in the interrelated institutions that lend support to stereotyping processes. As such, the problem of gender inequality in entrepreneurship should be understood as a problem of how the cognitive frameworks through which people think about the activity of entrepreneurship are embedded in a larger system of gender inequality in the labor market and in other areas of society.

CHAPTER 5

GENDERED SELF-ASSESSMENTS OF ENTREPRENEURIAL ABILITY

How do men and women initially come to recognize that starting a business might be a viable option for work? In Chapter 3, I provided evidence that gendered institutional environments offer greater or lesser incentives for men and women to become entrepreneurs. Findings from Chapter 4 suggest that the social interactions through which a person gains support and legitimacy for a potential business venture are also gender-based. In this chapter, I shift my focus to the role of gender beliefs in the development of individuals' own assessments of their entrepreneurial ability. I argue that gender-differentiated self-assessments of entrepreneurial competence at the task of entrepreneurship, which stem from and are supported by shared cultural beliefs about gender, constrain choices to pursue entrepreneurship in gender-specific ways.

First, men and women draw on gender status beliefs in order to assess their own abilities. Cultural beliefs that accord men higher competence than women at tasks that "count" and stereotypes that associate entrepreneurship with men and masculinity generate different standards of attributing experience to ability among men and women. This process leads to differences in the assessments that men and women make of their own competence at entrepreneurship. Second, self-assessments of entrepreneurial ability shape men's and women's interest in and pursuit of business ownership as a work strategy, thereby accounting for a considerable proportion of the gender gap in start-up rates. Third, I investigate whether women's self-perceived lack of competence at entrepreneurship continues even after they have become an entrepreneur. Importantly, by influencing self-assessments of ability, it is possible that cultural beliefs about gender can play a critical role in constraining women's

involvement in economic development and more broadly, their position as leaders in society.

In the following paragraphs, I again draw on status characteristics theory to generate my hypotheses, now with a focus on gender-based double standards for assessing competence. I analyze GEM survey data to investigate a) the extent to which there are gender-differences in self-assessments of entrepreneurial ability after accounting for relevant human, financial and social resources, and b) how this gender gap contributes to men's higher likelihood of being entrepreneurs. I next explore the extent to which gendered assessments of ability persist among established business owners. I primarily focus this analysis on the U.S. in order to demonstrate how this individual-level process may operate within a given society; in the last section of the chapter, I investigate whether patterns in the US obtain across other industrialized countries.

Status Characteristics Theory and Double Standards

In the United States, men are widely thought to be more capable (Williams and Best 1990) and more competent (Fiske et al. 2002) than women, especially when the task in question is male-typed (Wagner and Berger 1997). Entrepreneurship in particular tends to be stereotyped as a masculine activity (e.g. Gupta et al. 2009). As Chapter 4 established, individuals are particularly likely to rely on gender status beliefs when assessing another person's competence at this male-typed task.

Status characteristics theory suggests that when high-status individuals are expected to be more competent, they are given more opportunities to participate, have more influence over others in a group, and have their performances evaluated more positively (Correll and Ridgeway, 2003; Ridgeway 1993; Wagner and Berger, 1997).

However, because diffuse status characteristics inform expectations of competence for particular individuals in a given setting, they can also inform the standards that are used to determine the extent to which a task performance indicates ability (Foschi 1989). As higher status group members, men tend to have their performances judged by a more lenient standard than women, who are lower status group members (Foschi 1996; 2008; Foschi, Lai and Sigerson 1994). When women perform well, their performances are inconsistent with status-based expectations; when men perform equally well, their performances are consistent with expectations, and are, as a result, less scrutinized. This creates a double standard for the level of performance needed to generate a positive assessment of competence at a gendered task.

Experimental research demonstrates that double standards emerge when the assessor is a third, non-performing party (Foschi, Lai and Sigerson 1994) or one of two performers (Foschi 1996; 2008). For example, when opposite sex partners performed a task that was defined as masculine and had received information that their scores were highly comparable to their partner's, women imposed a higher standard of ability on themselves; they also believed that they had less ability relative to their partners than men did (Foschi 1996). Conversely, men held themselves to lower standards vis-à-vis women. When women received feedback that they clearly scored higher than their partners, they imposed a stricter standard on themselves than men did when they outperformed their partner to the same degree (Foschi 2008). Moreover, even in the absence of any feedback about ability, men reported believing that they had more ability at the task relative to their partner than women reported (Foschi 2008).

Gender Differentiated Self-Assessments and Career Outcomes

While status characteristics theory has mostly restricted its scope to collectively oriented task groups, recent research has established that status generalization can occur in individual evaluative settings (Correll 2004; Lovaglia et al. 1998). Correll (2004) argues that even when self-evaluations do not occur in collectively oriented group settings, individuals still feel pressure to assess their task competence relative to others because evaluative tasks often have the explicit purpose of ranking performances of actors. However, standards for a competent performance are rarely clearly defined. Therefore, status characteristics play a role such that those with the more valued state of the characteristic (e.g. men) hold higher expectations for their performance and see their performances as more competent versus those occupying the less valued state (e.g. women), regardless of any “objective” measures of performance. Importantly, gender must be salient as a status characteristic in the setting for this to occur. This is the case when men are believed to be generally better at the task, for example.

Indeed, several studies have shown that status beliefs impact task performance in individual task settings (Lovaglia et. al. 1998; Shih, Pittinsky and Ambady 1999; Steele and Aronson 1995). Particularly important for the current research however, gender status beliefs have also been shown to inform individuals’ self-assessments of their own competence at career-relevant tasks (Correll 2001; 2004). Gender-differentiated self-assessments significantly impact career choices because both men and women must adopt to a certain extent a perception of themselves as competent at the tasks necessary for a specific career if they are to pragmatically choose that career. For instance, Correll (2001) found that male high school students made higher assessments of their competence at math than female students did, despite having the

same actual math ability. These gendered assessments partially accounted for why women were less likely than men to enroll in a calculus course or choose a college major in science, math or engineering. Experimental evidence further shows that when participants are told that men have higher ability on average at a particular task, women assess their ability at the task to be lower than men do (despite receiving equivalent performance feedback) (Correll 2004). They are then less likely to aspire to careers that are described as requiring competence at the task.

Self-Assessments and Entrepreneurial Activity

As discussed earlier, entrepreneurship is viewed as a particularly male-typed task. The fact that there are far fewer women than men entrepreneurs overall may reinforce stereotypes about men's higher levels of ability at entrepreneurship.

Women's gender homophilous and relatively homogeneous social networks (e.g. with a high proportion of kin) may also restrict their opportunities to personally know an entrepreneur, and thus to be aware of the skills and knowledge it involves. Women may therefore be especially less likely to know someone of the same sex who is an entrepreneur, a person who might challenge widely held beliefs about women's competence at entrepreneurship.

Gender status beliefs are also likely to be salient in entrepreneurship assessments because there are no collectively agreed upon criteria that necessarily deem a person to be competent at the task. Under these conditions, gender status beliefs are readily available to impact self-assessments of entrepreneurial ability. Because higher performance expectations lead to more lenient performance standards for men in settings where the activity is believed to be male-typed, I propose that *men's self-assessments of their entrepreneurial competence will be higher than*

women's, despite having the same measurable levels of human capital, financial capital and network resources.

Next, as long as individuals use a rubric to determine their competence, it is likely that women will hold themselves to a stricter standard. I suspect that one such rubric may be education level¹⁶. Therefore, I expect that *women will require a higher level of education on average than men do before they consider themselves competent at entrepreneurship.*

Furthermore, because self-assessments of ability lead to career interests and aspirations, a certain level of entrepreneurial competence is likely seen as a prerequisite for the pursuit of entrepreneurial opportunities, at least where entrepreneurship is not being considered purely out of economic necessity. Therefore, I expect that *positive self-assessments of ability will have a strong positive effect on the likelihood that a person is an entrepreneur, thereby accounting for a considerable amount of the observed gender gap in entrepreneurial activity.*

Next, I investigate whether women's relatively low self-assessments of their abilities continue even after they become an entrepreneur. That is, while positive assessments of ability may indeed increase both men's and women's likelihood of being an entrepreneur, I suspect that *women business owners will be less likely to view themselves as competent at the task when compared to men business owners.* There are several reasons for this. First, women entrepreneurs may be particularly apt to question their abilities at entrepreneurship because other entrepreneurs, those to whom a comparison is implicitly being made, are predominantly men who possess the

¹⁶ Another may be work experience, though unfortunately this dataset does not include work history, and thus does not allow me to investigate this factor. Additionally, the most ideal dataset for conducting a comprehensive evaluation of the double standards theory would further include the level of education that each respondent believes is required to indicate entrepreneurial ability in a person of the opposite sex. Thus, it is important to note that my analysis of double standards is based solely on the standards individuals set for themselves.

advantaged status characteristic when it comes to entrepreneurial competence. Second, when the decision to start a business is not solely based on perceived market opportunities but rather involves responses to labor market constraints, an individual may continue to doubt his or her ability to be successful in entrepreneurship. This is especially the case for women because, as discussed earlier, more women than men are “pushed” into entrepreneurship as a result of negative experiences in the traditional labor market, such as discrimination or lack of flexibility. This often results in women having less managerial experience and fewer network ties upon becoming a business owner, which could contribute to self-doubts about ability. Third, research suggests that when one group is numerically underrepresented, stereotypic beliefs that advantage the majority group can prompt individuals who are disadvantaged by the stereotype to be more cognitively vigilant of their surroundings (Murphy, Steele and Gross 2007). This indicates that women entrepreneurs may be more likely to keep re-assessing their ability, whereas men may develop a stable belief in their ability.

In the final portion of the chapter, I conduct an exploratory analysis of the extent to which there may be evidence for these gendered patterns in the other countries in my sample. Research has suggested that status characteristics operate in many cultures (e.g. Cohen and Sharan 1980) and that the content of gender-related stereotypes about competence, capability, dominance, warmth, and the like are also largely invariant across countries (Best 2001; Glick et. al. 2000; Sidanius et al. 2000; Williams and Best 1990). Chapter 4 demonstrates, however, that there is cross-cultural variation in the extent to which individuals rely on stereotypes about women’s competence at the particular task of entrepreneurship to assess others’ likely success as an entrepreneur. Therefore, there may be a consistent pattern of findings across countries, though the magnitude of the effects may slightly vary cross-nationally.

Data and Method

Dependent Variables—In the following analysis, I first examine gender differences in self-assessments of entrepreneurial ability, and then consider how such assessments influence the gender gap in entrepreneurial activity using logistic regression. Self-assessments of entrepreneurial ability are measured dichotomously with the item: “You have the knowledge, skill and experience required to start a business.” Respondents either agree “Yes” (1), or disagree “No”(0). I define an entrepreneur as a person who currently, alone or with others, is either trying to start his or her own new business or is already a business owner. Entrepreneurs are coded “1,” all others are coded “0.”¹⁷

Independent Variables—Gender is the independent variable of central importance. This is coded as a dummy variable (1=female, 0=male). The other independent variables are the same as those presented in Chapter 3: age, education, income, and a dummy variable for whether or not the respondent personally knows someone who has started a business in the past two years.

Here, I also investigate the gender gap in self-assessments among established business owners. These models include characteristics of businesses that could have an important impact on self-assessments of entrepreneurial ability. First, I adjust for whether or not a person is the sole owner of his or her business. This is a dichotomous variable (1=sole owner, 0=not sole owner). Second, I include the size of the business, as measured by the log of the number of full time employees. Following Loscocco et al. (1991), employee size was increased by 1 for each business to permit the log transformation and to account for the owner’s labor.¹⁸

¹⁷ Separate analyses confirm that results do not differ when the “entrepreneur” variable is disaggregated into those who are currently starting a business versus those who are established business owners.

¹⁸ In models not shown, I also included dummy variables to adjust for ten major industry categories, but this did not change the outcome. Unfortunately, this variable is missing for a large percentage of entrepreneurs in my sample (25%), so I do not include it in my final models.

All analyses use standard logistic regression modeling techniques. The first two models predict the odds that a respondent agrees that he or she has the ability to be an entrepreneur. Covariates include the respondent's sex, education level and the other measures of resources discussed above. Model 2 includes an interaction effect between sex and education level to investigate the possibility that women hold themselves to a stricter standard of entrepreneurial ability than men do. Models 3-5 then estimate the odds of being an entrepreneur. These models allow me to investigate the degree to which resource measures and self-assessments of ability account for the gender gap in the odds of being an entrepreneur. Finally, only respondents who are established business owners are analyzed in Model 6. The model employs respondent's sex and resource, and business characteristics as covariates to predict the odds that an entrepreneur believes that he or she has entrepreneurial ability. I then estimated each of these models separately for the other countries in the sample.

All models include standard population-sampling weights that were calculated by the survey firm. These weights help render the sample to be nationally representative. They are based on age, gender, geographic region, and educational attainment.

Results

Gender and Self-Assessments of Ability

Table 5.1 presents logistic regression estimates for the effect of gender on self-assessments of entrepreneurial ability. Model 1 shows support for the claim that men will report higher self-assessments of entrepreneurial ability than women.

Table 5.1 Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender on Self-Assessments of Entrepreneurial Ability in the United States

| Independent Variables | Model 1 | | Model 2 | |
|-----------------------------|-----------------------|------------|------------------------|------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Female | -0.75*** (0.05) | 0.47 | -1.32*** (0.22) | 0.27 |
| Age | 0.07*** (0.01) | 1.07 | 0.07*** (0.01) | 1.07 |
| Age Squared | -0.0007*** (0.001) | 1.00 | -0.0007*** (0.0001) | 1.00 |
| Education | | | | |
| High School Diploma | 0.08 (0.11) | 1.08 | -0.11 (0.14) | 0.89 |
| Postsecondary Degree | 0.28** (0.11) | 1.33 | -0.02 (0.14) | 1.02 |
| Graduate Experience | 0.16 (0.12) | 1.17 | -0.11 (0.16) | 0.90 |
| Income | | | | |
| Middle Third | 0.19** (0.07) | 1.21 | 0.19** (0.07) | 1.21 |
| Highest Third | 0.27*** (0.07) | 1.30 | 0.26*** (0.07) | 1.30 |
| Year of survey | | | | |
| 2002 | -0.09 (0.07) | 0.91 | -0.09 (0.07) | 0.91 |
| 2003 | -0.09 (0.07) | 0.91 | -0.09 (0.07) | 0.91 |
| 2004 | -0.03 (0.11) | 0.96 | -0.05 (0.11) | 0.96 |
| 2005 | -0.14 (0.11) | 0.87 | -0.14 (0.11) | 0.87 |
| Know an entrepreneur | 0.93*** (0.05) | 2.53 | 0.93*** (0.07) | 2.53 |
| Entrepreneur | 1.61*** (0.07) | 5.01 | 1.62*** (0.07) | 5.03 |
| Female*High School Degree | | | 0.53* (0.23) | 1.71 |
| Female*Postsecondary Degree | | | 0.66** (0.23) | 1.93 |
| Female*Graduate Experience | | | 0.69** (0.25) | 1.98 |
| Intercept | -1.67*** (0.24) | | -1.46*** (0.25) | |
| Log Likelihood | -6623.02 | | -6614.07 | |
| N | | 11,259 | | |

*Notes: The data are weighted using population weights calculated by GEM researchers. Standard Errors are in parentheses. * $p \leq .05$; ** $p < .01$, *** $p < .001$*

More specifically, despite having approximately equal amounts of human, social and financial capital, women are about half as likely as men to think they have the ability to be an entrepreneur. This means that men are more than two times *more* likely than women to agree that they have entrepreneurial ability (odds ratio for men = $1/0.47=2.13$). This supports the premise that status beliefs about who is better at the task (e.g. men) are particularly apt to creep into self-evaluations of this form of work.

The other variables indicate that the middle-aged, those with a postsecondary degree or higher and those with higher levels of income are more likely to believe they have the knowledge, skill, and experience to start a business. Importantly, knowing another entrepreneur is also a strong indicator of a positive assessment of one's abilities, underscoring the important role that gaining information about entrepreneurship from network ties can play in shaping self-evaluations.

Do status beliefs lead women to judge their ability by a harsher standard? Model 2 includes interaction effects between female and education levels to investigate this claim by assessing whether education influences men and women's self-assessments differently. The interaction effects between gender and each level of education are positive and significant, indicating that the odds of assessing oneself to be competent at entrepreneurship are significantly greater for women than for men with higher levels of education. A woman who has a high school diploma is 1.52 times more likely than a less educated woman to believe that she to has entrepreneurial ability (odds ratio = $\exp(-0.11+0.53)=1.52$), but this education makes no difference for men (odds ratio = $\exp(-0.11)=0.90$). Similarly, women who have a postsecondary degree or graduate experience are 1.73 and 1.79 times more likely, respectively, to assess themselves as competent at entrepreneurship than women who do not have a

high school diploma. Again, these levels of education are not associated with higher self-assessments for men.

This finding can be seen more clearly in Figure 5.1, which shows the predicted probabilities from Model 2 by gender and education. Although women on average have a lower probability than men do of believing they have entrepreneurial ability, women who have a postsecondary degree or above are much more likely to positively assess their ability than less educated women. For instance, the predicted probability for a woman with less than a high school education to believe that she has entrepreneurial ability is only 0.43, whereas this probability is 0.60 for a woman with a postsecondary degree when all other effects are held at their mean. This supports my hypothesis that women may require a higher level of education on average before they are willing to consider themselves able to be an entrepreneur, providing support for the theory that women may judge their own competence at entrepreneurship by a harsher standard than men do. It also implies that, in theory, women with especially high levels of education might eventually make higher self-assessments of their entrepreneurial ability than men do.

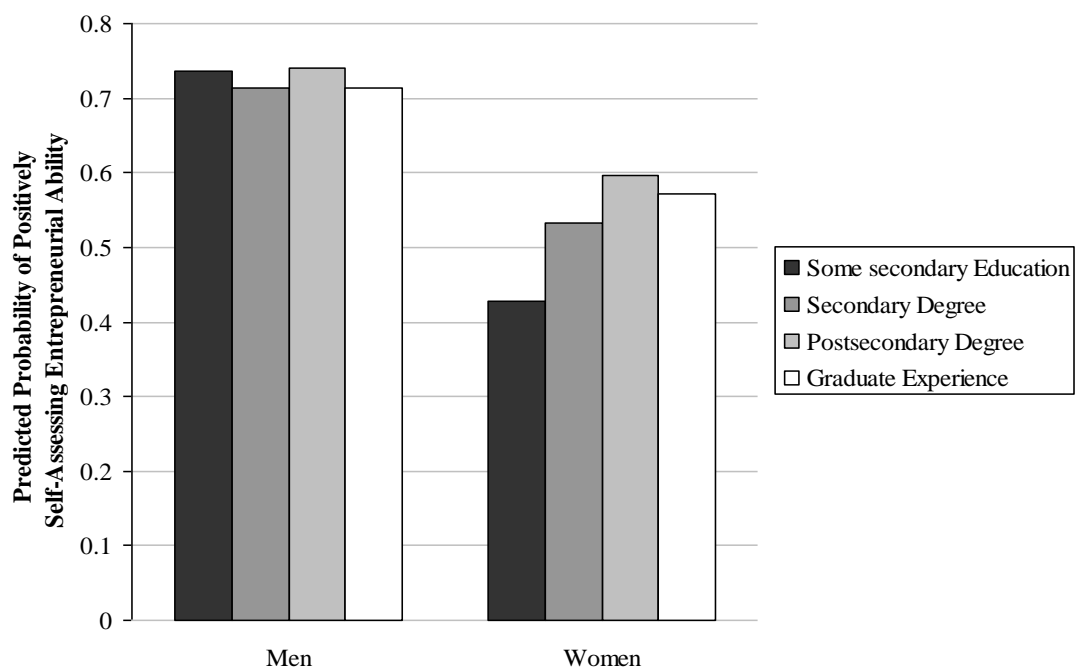


Figure 5.1 Predicted Probabilities of Positively Self-Assessing Entrepreneurial Ability by Gender and Education

Self-Assessments and Entrepreneurial Career Choices

Given that there are prominent gender differences in self-assessments of entrepreneurial ability, to what extent do these assessments actually contribute to gender differences in rates of entrepreneurship? Table 5.2 shows that, consistent with previous studies, the gender gap in rates of entrepreneurship is particularly high when compared to women's overall labor force participation. The odds ratio for the effect of female in Model 3 shows men are 1.41 times more likely than women to be an entrepreneur (odds ratio for men = $1/0.71=1.41$). Another useful way to interpret this is to calculate the predicted probability of entrepreneurship for men and women. The predicted probability of being an entrepreneur is greater for men than women by 0.07 (men=0.31, women=0.24).

Model 4 includes measures of human, financial and social capital. After accounting for gender differences in these resources, men are still about 1.3 times more likely than women to be entrepreneurs (odds ratio for men= $1/0.78=1.28$). The gender difference in the predicted probability of being an entrepreneur is also smaller than in the previous model: here, the predicted probability for a respondent with average characteristics on other variables is greater for men than women by 0.05 (men=0.29, women=0.24). In Model 5, I evaluate my hypothesis that gender differentiated self-assessments of entrepreneurial activity will be strongly associated with the likelihood of being an entrepreneur, thereby accounting for a large portion of the gender gap in entrepreneurship. The effect of self-assessed entrepreneurial ability is indeed positive and significant, indicating that respondents who believe that they have the ability to be an entrepreneur are about five times more likely to actually be one. Like many empirical relationships in the social world, the association between assessments of entrepreneurial ability and entrepreneurship appears to have a reciprocal dimension: as noted in Table 5.1, entrepreneurs are more likely to believe

Table 5.2 Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender and Self-Assessments of Entrepreneurial Ability on the Likelihood of Being an Entrepreneur in the United States

| Independent Variables | Model 3 | | Model 4 | | Model 5 | |
|---------------------------------------|--------------------|------------|----------------------|------------|--------------------|------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Female | -0.34*** (0.05) | 0.71 | -0.25*** (0.05) | 0.78 | -0.02** (0.05) | 0.98 |
| Age | | | 0.02+ (0.01) | 1.02 | -0.0002 (0.01) | 1.00 |
| Age Squared | | | -0.00005 (0.0001) | 1.00 | 0.0002 (0.0001) | 1.00 |
| Education | | | | | | |
| High School Diploma | | | -0.16 (0.11) | 0.85 | -0.19 (0.12) | 0.83 |
| Postsecondary Degree | | | -0.15 (0.11) | 0.86 | -0.23* (0.11) | 0.79 |
| Graduate Experience | | | -0.19 (0.12) | 0.83 | -0.25+ (0.13) | 0.78 |
| Income | | | | | | |
| Middle Third | | | 0.21** (0.07) | 1.23 | 0.14+ (0.08) | 1.15 |
| Highest Third | | | 0.16* (0.08) | 1.18 | 0.08 (0.08) | 1.08 |
| Year of survey | | | | | | |
| 2002 | | | -0.08 (0.08) | 0.93 | -0.05 (0.08) | 0.95 |
| 2003 | | | 0.51*** (0.08) | 1.66 | 0.53*** (0.08) | 1.70 |
| 2004 | | | 0.62*** (0.11) | 1.85 | 0.63*** (0.11) | 1.87 |
| 2005 | | | 0.51*** (0.11) | 1.66 | 0.53*** (0.11) | 1.71 |
| Know an entrepreneur | | | 1.12*** (0.05) | 3.08 | 0.85*** (0.05) | 2.35 |
| Self-Assessed Entrepreneurial Ability | | | | | 1.61*** (0.07) | 4.98 |
| Intercept | -0.79*** (0.03) | | -2.33*** (0.24) | | -2.93*** (0.26) | |
| Log Likelihood | -6943.5 | | -6467.6 | | -6014.15 | |
| N | | | | 11,259 | | |

Notes: The data are weighted using population weights calculated by GEM researchers. Standard Errors are in parentheses.

p < .05, **p < .01, *p < .001*

that they have the ability to be an entrepreneur. This is not surprising because success at entrepreneurship (which is defined by not having failed out of the observed population of entrepreneurs) likely contributes to more positive self-assessments of ability.

Nonetheless, the female coefficient indicates that men are only 1.02 times more likely than women to be entrepreneurs (odds ratio for men=1/0.98). Adjusting for self-assessments in the model virtually eliminates the gender difference in the predicted probability of being an entrepreneur from the previous models: the predicted probability is now not any greater for men than women (men=0.24, women=0.24).

Figure 5.2 shows the predicted probabilities of being an entrepreneur for men and women from Models 3-5. It shows that the gender gap in the predicted probability of being an entrepreneur narrows between models 3 and 4 to a similar extent as it does between models 2 and 3. This suggests that an important reason why women are less likely to start businesses than men arises from their self-perceived relative lack of competence at the task of entrepreneurship, a difference that emerges even when controlling for relevant resources. Certainly, resources not captured by the variables in this analysis, such as work histories or detailed aspects of network structure, may contribute further to the lower assessments of ability among women. However, even considering this limitation, the analyses demonstrate that self-assessments of ability are strongly gendered and that they are key factors in the decision-making process that lead a person to pursue business ownership or not.

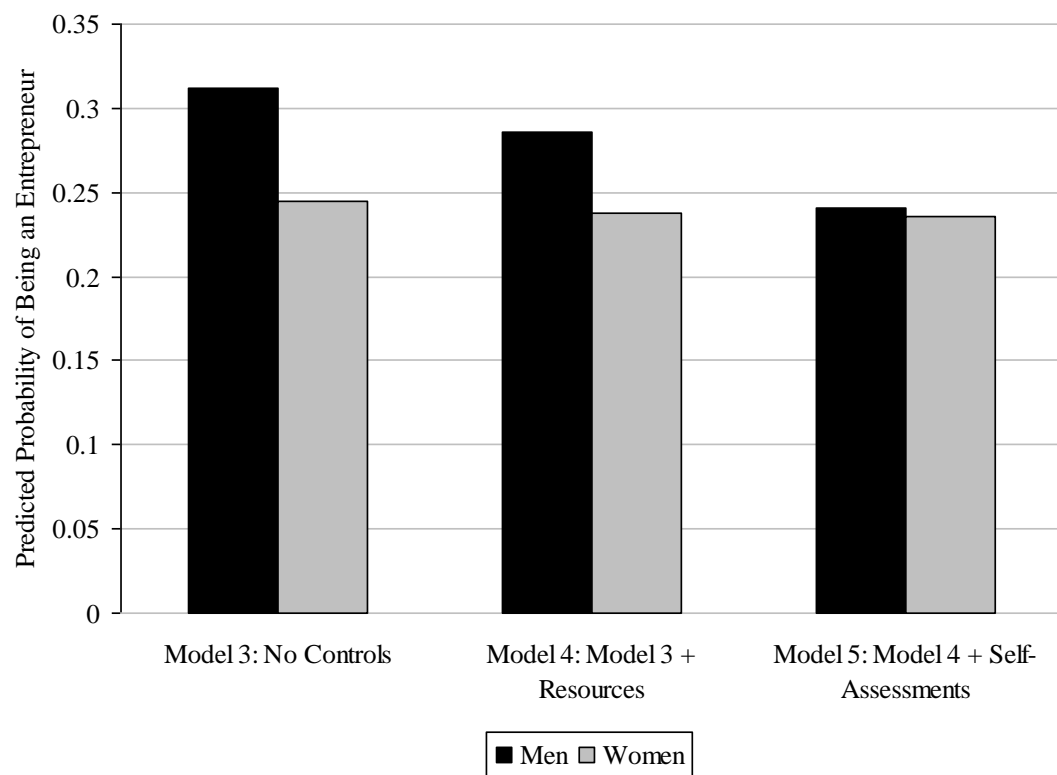


Figure 5.2 Predicted Probabilities of Being an Entrepreneur by Gender

Self-Assessed Ability among Established Entrepreneurs

Finally, I evaluate whether gender-differentiated perceptions of entrepreneurial ability persist after individuals become established business owners. I do so to investigate whether there is evidence that status processes inform self-assessments of ability under circumstances where men and women are already performing the task at highly comparable levels.

As Table 5.3 shows, even among established business owners who have similar resources and whose businesses have similar characteristics, women are still significantly less likely than men to agree that they have the ability to be an entrepreneur. The odds ratio for the effect of female in Model 6 shows that women entrepreneurs are less than half as likely as similar men entrepreneurs to believe that they have the ability to be an entrepreneur. In other words, men entrepreneurs are more than twice as likely as women entrepreneurs to believe that they have the knowledge, skills, and experience to be an entrepreneur (odds ratio for men= $1/0.37=2.70$).

This is a larger gap in self-assessed competence than was observed even among the general population. As suggested earlier, when assessing their abilities, women entrepreneurs may be more likely to compare themselves to men (whose status characteristic advantages them in terms of entrepreneurial competence) simply because so many more entrepreneurs are men. Moreover, women are more likely than men to start businesses as a result of gender-related constraints in the traditional labor market. Such individuals may have less work and managerial experience as well as fewer network resources, which could contribute to their lower self-assessments of ability. Indeed, logistic regression analyses (not shown but available on request) revealed that men entrepreneurs are about 1.45 times more likely to know another

Table 5.3 Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender on Self-Assessments of Entrepreneurial Ability among Established Business Owners

| Independent Variables | Model 6 | | |
|--------------------------------|----------------|---------|------------|
| | Coefficient | SE | Odds Ratio |
| Female | -0.99*** | 0.18 | 0.37 |
| Age | 0.01 | 0.03 | 1.01 |
| Age Squared | -0.0002 | 0.0003 | 1.00 |
| Education | | | |
| High School Diploma | 0.64+ | 0.35 | 1.90 |
| Postsecondary Degree | 0.43 | 0.34 | 1.53 |
| Graduate Experience | 0.48 | 0.39 | 1.61 |
| Income | | | |
| Middle Third | 0.64** | 0.23 | 1.89 |
| Highest Third | 0.71** | 0.23 | 2.04 |
| Year of survey | | | |
| 2002 | -0.33 | 0.35 | 0.72 |
| 2003 | -0.22 | 0.32 | 0.80 |
| 2004 | 0.16 | 0.40 | 1.17 |
| 2005 | 0.07 | 0.40 | 1.07 |
| Know an entrepreneur | 1.11*** | 0.18 | 3.03 |
| Sole Owner of Business (1=yes) | 0.66*** | 0.17 | 1.94 |
| Business Size | 0.04 | 0.08 | 1.04 |
| Intercept | 0.85 (0.86) | | |
| Log Likelihood | | -614.35 | |
| N | | 2049 | |

*Notes: The data are weighted using population weights calculated by GEM researchers. *p < .05, **p < .01, ***p < .001*

entrepreneur than women entrepreneurs are. This suggests that a better, more comprehensive measure of network resources might shed light on this persistent gap in self-assessments of ability among entrepreneurs.

In addition, I conducted analyses (not shown) to investigate whether self-assessments are associated with various forms of entrepreneurship. Self-assessments of ability are positively associated with the odds of being an opportunity-driven and an innovative entrepreneur: individuals who believe they have the ability to be an entrepreneur are 1.76 and 1.66 times more likely to be an opportunity-driven or innovative entrepreneur, respectively, than individuals who do not believe they have

the ability.

Do These Patterns Hold Cross-Nationally?

Although there is much support for this individual-level mechanism in the US, there is fairly consistent evidence that this pattern holds in across other industrialized countries. The black bars in Figure 5.3 shows odds ratios for the gender effect from separate regressions by country. The first bar represents the effect of female from Model 1. There is remarkable consistency across countries in the size of this effect: in most of the countries studied, women are around half as likely as men to believe that they have the ability to be an entrepreneur than men do. Particularly large gender gaps are found in Sweden and the Netherlands, where men are around 2.5 times more likely to believe they have this ability ($1/0.4=2.5$). In this analysis, Spain is an unusual outlier in that there is no evidence of a gender gap in self-assessments of entrepreneurial ability.

In analyses not shown, I also investigated cross-national support for the interaction effect between gender and education (Model 2). In each country, the interaction is positive: education generally is a stronger indicator of positive self-assessments of ability among women than it is among men. This effect was statistically significant in the Australian, Danish, German, Icelandic, Slovenian, Spanish, Swiss and UK samples (in addition to the US).

Next, the gray bars in Figure 5.3 represent the gender gap in self-assessments among entrepreneurs as measured by the odds ratio of the female coefficient in Model 6. Here, the size of the effect varies more across countries, but in each case women entrepreneurs are significantly less likely than their male counterparts to believe they have the requisite ability to be an entrepreneur.

Also in analyses not shown, I investigated cross-national differences in the extent to which self-assessments of ability influence the likelihood of being an

entrepreneur (as discussed in Model 5). This effect is very large and significant in each country studied. It is largest in Spain and Hungary, where individuals who positively assess their ability are about 12 times more likely to be an entrepreneur; it is lowest in Greece, Ireland and Iceland, where individuals who positively assess their ability are about 3 times more likely to be an entrepreneur. This further suggests that gender-differentiated self-assessments of ability contribute to the gender gap in entrepreneurship in each country studied.

In analyses not shown, I also investigated various country-level factors that might explain cross-national variation in the gender gap in self-assessments. These included numerous gender inequality measures (% women in management, % women professionals, educational segregation by gender, the gender wage gap, gender attitudes) as well as the policy measures discussed in Chapter 3. None of these factors emerged as an explanatory variable in logistic HLM models. This is likely due to the fact that there is relatively little variation in the effect size across countries. Additionally, I estimated the HLM models from Chapter 3 while including the self-assessments variable. As expected, the effect of self-assessments is very strong and significant; however, the findings from Chapter 3 about the relationships between gender and institutional variables were unaffected.

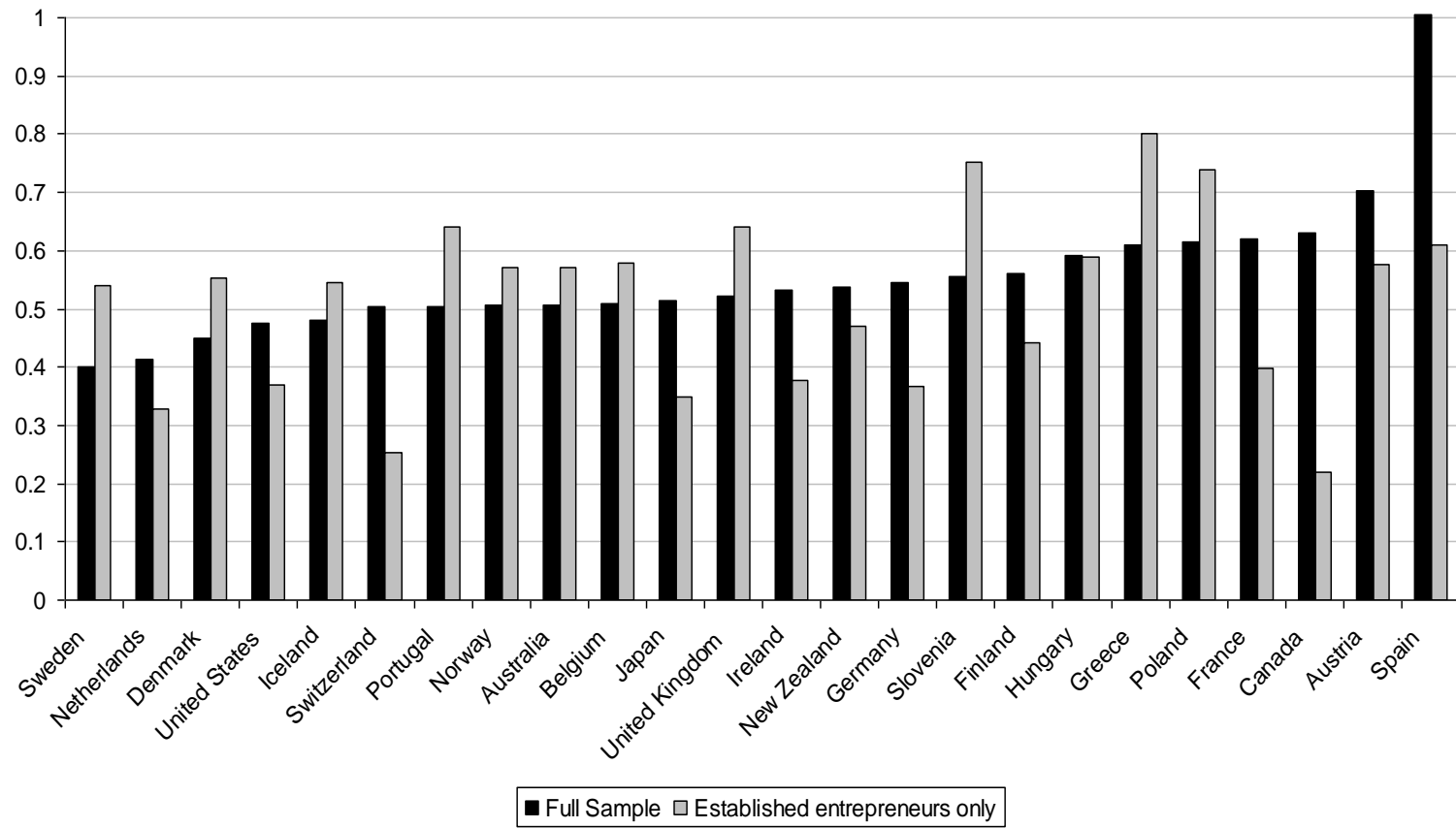


Figure 5.3 Net Odds (Female=1) of Positively Assessing One's Own Entrepreneurial Ability

In sum, these comparative analyses suggest that gender differentiated self-assessments of entrepreneurial ability are fairly widespread, but that this finding does not vary significantly across institutional contexts. This is fairly surprising in light of the finding from Chapter 4 that the impact of cultural beliefs about gender on entrepreneurship may vary by institutional context. For example, in the US/UK experimental comparison, the direction of the effects were similar (i.e. the hypotheses are supported) but the size of the effects were significantly different in the two contexts. By contrast, this GEM analysis suggests that in both the US and the UK, women are about half as likely as men are to believe they have the ability to be an entrepreneur (see Figure 5.3). One possible reason for this homogeneity across contexts may be that the self-assessments measure is less detailed than the experimental measures, and therefore cannot capture the cross-cultural gradations in the phenomenon. As such, a more nuanced measure of self-assessments of entrepreneurial ability might be able to better capture the potential interplay between the institutional context and the extent to which cultural beliefs influence the gender gap in entrepreneurship.

Interestingly however, there is much more cross-national variation when examining the gender gap in self-assessments among established entrepreneurs. The US and UK in particular provide a valuable comparison: in the UK, men entrepreneurs are only 1.5 times more likely than women entrepreneurs to believe they have entrepreneurial ability, whereas in the US, men entrepreneurs are 2.7 times more likely than women entrepreneurs to do so (see Figure 5.3). This finding is fairly consistent with what one might expect in light of the findings from Chapters 3 and 4. First, Chapter 3 suggests that women are less likely to be entrepreneurs in the UK than in the US, possibly in part because more women in the UK, who may have otherwise

been pushed into entrepreneurship, may seek to reconcile work and family life through leave-taking and part-time work. Second, Chapter 4 suggests that women entrepreneurs in the UK may have had to overcome more negative bias and/or skepticism by people in their social networks in order to start their businesses. Taken together, these findings indicate that the population of women who succeed in becoming established entrepreneurs may be more likely to positively assess their abilities vis-à-vis their male counterparts in a place like the UK than in a place like the US because they are a smaller, potentially more select group of women. Future research however could better investigate this possibility.

Discussion

This research builds on resource-based approaches to investigate the impact that cultural beliefs about gender and the task of entrepreneurship have on the gender gap in entrepreneurship. The results suggest that women are much less likely than similar men to perceive that they have the ability to be an entrepreneur. According to status characteristics theory, this gendered pattern emerges because women hold themselves to a stricter standard when evaluating their competence at the male-typed task of entrepreneurship. The finding that women on average must have a higher level of education than men in order to perceive themselves as competent at entrepreneurship lends support to this claim. Furthermore, self-assessments of entrepreneurial ability strongly inform both men's and women's decisions to pursue entrepreneurship. This means that women's lower assessments of their ability are a major factor contributing to their lower rates of business ownership. However, even after women pursue entrepreneurship as a work strategy, they are still much less likely than men to believe they are competent as an entrepreneur.

Importantly, there are no objective, collectively agreed upon criteria that deem

a person “able” to be an entrepreneur, such as level of education, work experience, or number of social contacts. This provides ample room for gender status beliefs to provide a basis for self-evaluations. It also makes it impossible to establish whether a person is overestimating, underestimating, or accurately estimating their ability. Nonetheless, a main limitation of this study is that it does not include detailed work history or network data. Such information could allow for comparisons of the self-assessments of men and women in even more similar structural positions, and better assess the degree to which individuals rely on gender status beliefs to attribute their own performance to ability. Women’s segregation in education and in labor market skills and work experience could also contribute to the observed gender gap in self-assessed ability if women perceive that there are more business opportunities in male-dominated fields, or that managerial experience is a requirement for entrepreneurship. However, while gendered workforce experience likely matters, the finding that the gender gap in self-assessments is especially large even among established business owners who operate businesses of the same size in the same industry suggests that it is not likely to be a key factor.

One important avenue of future research would be to investigate the conditions under which gender beliefs are more or less likely to constrain women’s self-assessed ability and career choices. For instance, network structure may not only influence the information about business opportunities that a person is exposed to, but also the extent to which individuals draw on gender status beliefs to assess their ability and interest in entrepreneurship.

Notwithstanding these considerations, the findings support the theory that cultural beliefs about gender and entrepreneurship play a key role in determining who becomes an entrepreneur and who does not, and that this is pervasive across industrialized countries. This is substantial given that entrepreneurship, unlike any one

specific job or occupation, is an entire form of work. That is, entrepreneurs encompass a wide range of occupational skills and educational backgrounds, not just those that are particularly male-dominated. Thus, the mere fact cultural beliefs advantage men at the task of business creation constrains the choices of otherwise qualified, creative women. Furthermore, entrepreneurship involves creating jobs and contributing to economic development and innovation. If widely held cultural beliefs about gender constrain women's involvement in that process, then their role as leaders in society, and in economic production more specifically, is also constrained.

CHAPTER 6

CONCLUSION

In recent years, sociologists have made new strides toward theorizing entrepreneurship as a social phenomenon. For instance, Knudsen and Swedberg (2009) combine economic and sociological perspectives to put forth a theory of entrepreneurship as it relates to the making of economic orders (i.e. normative prescriptions for how to go about making profit). They define entrepreneurship as “the act of creating a new combination that ends one economic order and clears the way for a new one” (p. 16). Ruef and Lounsbury (2007) incorporate several existing theories of entrepreneurship to offer a broad, multilevel perspective which addresses the transition to entrepreneurship, the process of entrepreneurship, and the effects of entrepreneurship (p. 19). They advocate for the importance of material-resource *and* cognitive-institutional perspectives for understanding the question of who becomes an entrepreneur and why.

This dissertation research built on these perspectives by demonstrating how gender as a multilevel social structure is inscribed into the context and process of entrepreneurship. My findings provide evidence to support the theory that gendered institutional arrangements and cultural beliefs at the macro-level structure the micro-level processes that produce gender inequality in both a) the odds of engaging in entrepreneurial activity and b) various forms of entrepreneurship. This means that gender structures not only the material resources that individuals bring to entrepreneurial activity, but also the cognitive-institutional context and the social psychological processes involved in business creation. In this way, the very process by which entrepreneurs unmake and remake economic orders is constrained by the gender

structure in which it occurs; the gender structure shapes who becomes an entrepreneur, and how such individuals are able to gain legitimacy for innovative endeavors.

The findings also revealed some unexpected patterns. Specifically, findings from Chapters 3 and 4 provided empirical support for the theory that social policies and cultural beliefs at the macro-level may be partially responsible for the cross-national variation in gender inequality in entrepreneurship observed in Chapter 2. By contrast, the findings from Chapter 5 suggested that when considering self-assessments of ability, cultural beliefs are a strong, but fairly consistent factor affecting this inequality across cultural contexts. As discussed in Chapter 5, this may be due to differences in measurement between the survey and the experiment; insofar as cultural beliefs about gender impact evaluations of entrepreneurs, the experiment may have been able to better capture nuanced differences in evaluations that the dichotomous self-assessment survey measure could not. The fact that there is much more cross-national variation in the gender gap in self-assessments of ability among established business owners however, does suggest that the impact of gender status-influenced self-assessments may vary across cultures. Future research however could better investigate this possibility.

Nevertheless, the integration of a multilevel perspective on gender with entrepreneurship pushes forward theory not only in the sociology of entrepreneurship, but also in the area of gender inequality in the labor market. Though scholars have produced a large body of knowledge about how gendered processes at both the institutional and interactional levels generate gender inequality in traditional forms of paid employment, they have less often turned their analysis toward the multifaceted social phenomenon of entrepreneurship. By extending the gender-as-structure perspective to this section of the labor market, I was able to theorize and show evidence for the ways that gendered processes partially account for the gender

inequality we observe in organizational creation, innovation, and economic growth.

This multilevel theoretical framework developed here can also be applied to a variety of future research efforts related to inequality and entrepreneurship more broadly. For instance, how do these institutional arrangements and gender beliefs impact gender inequality in the process of patenting of scientific research? Do they structure gender inequality in the process by which high-tech companies, especially those in emerging markets, are created? It is also possible that institutional arrangements and cultural beliefs at the macro-level could structure the racial or social class structure of entrepreneurs in similar ways. Furthermore, a multilevel perspective on entrepreneurship and inequality provides implications for economic outcomes as well. For example, to the extent that entrepreneurs contribute to economic growth by creating jobs and creating new markets, a considerable amount of potential growth may be lost when large segments of the population do not have the resources, structural opportunities and incentives, or social and financial support that would be needed to generate or pursue business ideas.

Finally, what do these findings suggest more broadly about the persistence of gender inequality in entrepreneurship? First, it is possible that the adoption of social policies which reconcile work and family life *without* marginalizing women's employment status could lead to higher levels of women's representation among leaders of opportunity-driven, larger, or more lucrative businesses (and lessen women's representation among non-lucrative or necessity-driven forms of entrepreneurship). Second, this study suggests that cultural beliefs about gender are a prevalent factor that constrains women's involvement in entrepreneurship. Thus, in order to incorporate more women into this potentially lucrative and high status activity, widely shared cultural beliefs that advantage men's competence over women's at the task of entrepreneurship would need to be slowly eroded. However, as

Risman (1998) and others have argued, the multilevel gender structure appears to be overdetermined because processes at multiple levels of analysis simultaneously reinforce each other. This means that such a transformation could only occur through a combination of changes at the institutional-level as well as in everyday social interactions. These could involve, for example, policies which specifically support women's involvement in entrepreneurship, that facilitate women's ability to acquire the networks and human capital necessary for a successful start-up, or that promote transparency and accountability in investors' decision-making processes.

APPENDIX A.

RESULTS USING NON-IMPUTED DATA FOR INCOME

Table A1. Random-Effects Logistic Regression Estimates for the Effect of Gender and Individual-Level Resources on the Odds of Being an Entrepreneur

| Independent Variables | Model 1 | Model 2 | | Model 3 |
|--------------------------|--------------------|--------------------|---------------------|--------------------|
| | Restricted Sample | Restricted Sample | Unrestricted Sample | Restricted Sample |
| Female | -0.61*** (0.01) | -0.58*** (0.01) | -0.61*** (0.01) | -0.51*** (0.01) |
| <i>Human Capital</i> | | | | |
| Age | 0.05*** (0.004) | 0.04*** (0.004) | 0.04*** (0.003) | 0.05*** (0.003) |
| Age Squared | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) |
| Education | | | | |
| High School Diploma | 0.09*** (0.02) | 0.06** (0.02) | 0.05** (0.02) | 0.03+ (0.02) |
| Postsecondary Degree | 0.16*** (0.02) | 0.06** (0.02) | 0.07*** (0.02) | -0.01 (0.02) |
| Graduate Experience | 0.20*** (0.02) | 0.06** (0.02) | 0.04+ (0.02) | -0.02 (0.02) |
| <i>Financial Capital</i> | | | | |
| Income | | | | |
| Middle Third | | 0.07*** (0.02) | 0.07*** (0.02) | 0.02 (0.02) |
| Highest Third | | 0.42*** (0.02) | 0.43*** (0.02) | 0.33*** (0.02) |
| <i>Social Capital</i> | | | | |
| Know an entrepreneur | | | | 0.83*** (0.01) |
| <i>Year of survey</i> | | | | |
| 2002 | -0.03 (0.03) | -0.05 (0.03) | -0.06* (0.03) | -0.02 (0.03) |
| 2003 | 0.56*** (0.03) | 0.57*** (0.03) | 0.04 (0.03) | 0.55*** (0.03) |
| 2004 | 0.37*** (0.03) | 0.40*** (0.03) | -0.03 (0.02) | 0.39*** (0.03) |
| 2005 | 0.56*** (0.03) | 0.59*** (0.03) | -0.03 (0.03) | 0.58*** (0.03) |
| Intercept | -2.72*** (0.12) | -2.68*** (0.12) | -2.59*** (0.11) | -3.23*** (0.12) |
| Log Likelihood | -72429.79 | -72071.72 | -83650.09 | -70223.78 |
| N | 146,172 | 146,172 | 191,617 | 146,172 |

* $p < .05$, ** $p < .01$, *** $p < .001$

Table A2. Mixed Effects Logistic Regression Estimates of the Effect of Gender and Social Policy on the Log-Odds of Entrepreneurship

| Independent Variables | Model 1 | Model 2 | Model 3 |
|--|--------------------|--------------------|---------------------|
| | Restricted Sample | Restricted Sample | Unrestricted Sample |
| Female | -0.49*** (0.04) | -0.20+ (0.11) | -0.28* (0.11) |
| <i>Policy effects on the intercept</i> | | | |
| Paid leave for mothers | -0.003 (0.01) | -0.002 (0.01) | -0.003 (0.01) |
| Childcare | -0.64** (0.23) | -0.60** (0.23) | -0.45+ (0.24) |
| Part-time employment | -0.01 (0.01) | -0.01 (0.01) | -0.02 (0.01) |
| <i>Policy effects on the gender odds gap</i> | | | |
| Paid leave*Female | | -0.005+ (0.002) | -0.005+ (0.003) |
| Childcare*Female | | -0.35*** (0.09) | -0.36*** (0.10) |
| Part-time employment*Female | | 0.0004 (0.004) | -0.0003 (0.004) |
| <i>Individual-level control variables</i> | | | |
| Age | 0.05*** (0.004) | 0.05*** (0.004) | 0.04*** (0.003) |
| Age Squared | -0.00*** (0.00) | -0.00*** (0.00) | -0.00*** (0.00) |
| Education | | | |
| High School Diploma | 0.03+ (0.02) | 0.03+ (0.02) | 0.05** (0.02) |
| Postsecondary Degree | -0.01 (0.02) | -0.01 (0.02) | 0.07*** (0.02) |
| Graduate Experience | -0.02* (0.02) | -0.02 (0.02) | 0.04+ (0.02) |
| Income | | | |
| Middle Third | 0.02 (0.02) | 0.02 (0.02) | 0.07*** (0.02) |
| Highest Third | 0.32*** (0.02) | 0.32*** (0.02) | 0.43*** (0.02) |
| Year of survey | | | |
| 2002 | -0.03 (0.02) | -0.03 (0.03) | -0.07*** (0.03) |
| 2003 | 0.55*** (0.03) | 0.55*** (0.03) | 0.04 (0.03) |
| 2004 | 0.39*** (0.03) | 0.39*** (0.03) | -0.03 (0.03) |
| 2005 | 0.58*** (0.03) | 0.58*** (0.03) | -0.03 (0.03) |
| Know an entrepreneur | 0.83*** (0.01) | 0.83*** (0.01) | |

Table A2. Continued

| | | | |
|--|--------------------|-------------------|-----------------|
| <i>Country-level control variables</i> | | | |
| GDP | -3.18+ (1.93) | -3.10 (1.94) | -3.17 (2.03) |
| Unemployment Rate | -0.03 (0.03) | -0.03 (0.03) | -0.02 (0.03) |
| Legal barriers to start-up index | -0.005+ (0.003) | -0.005 (0.003) | -0.01+ 0.003 |
| Social status of entrepreneurship | 2.46** (0.83) | 2.45** (0.83) | 2.13* (0.87) |
| Women's political representation | -0.000 (0.01) | -0.001 (0.08) | 0.01 (0.01) |
| Intercept | -0.99 (1.82) | -1.10 (1.83) | -0.26 (1.92) |
| Log Likelihood | -70143.49 | -70136.68 | -83537.76 |
| N, Individual Level | 146,172 | 146,172 | 191,617 |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table A3. Mixed-Effects Regression Estimates of the Effect of Gender and Social Policy on Characteristics of Established Entrepreneurs

| Independent Variables | Model 4 | | Model 5 | | Model 6 | | Model 7 | |
|---|--------------------------|---------------|--------------------|---------------|------------------------|---------------|-------------------------|---------------|
| | Opportunity entrepreneur | | Establishment size | | Sole Owner of Business | | Innovative entrepreneur | |
| | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. |
| Female | -0.27+ | 0.14 | -0.14 | 0.09 | -0.04 | 0.17 | -0.12 | 0.15 |
| <i>Policy effects on the intercept</i> | | | | | | | | |
| Paid leave for mothers | -0.004 | 0.01 | 0.001 | 0.004 | 0.000 | 0.005 | -0.001 | 0.004 |
| Childcare | -0.26 | 0.30 | -0.20 | 0.18 | -0.56* | 0.22 | -0.39+ | 0.22 |
| Part-time employment | -0.02 | 0.01 | 0.01 | 0.01 | 0.002 | 0.004 | -0.01 | 0.01 |
| <i>Policy effects on the gender gap</i> | | | | | | | | |
| Paid leave*Female | -0.004 | 0.003 | -0.0005 | 0.002 | 0.001 | 0.004 | 0.001 | 0.003 |
| Childcare*Female | 0.25+ | 0.13 | 0.03 | 0.08 | -0.16 | 0.15 | 0.29+ | 0.15 |
| Part-time employment*Female | 0.01+ | 0.005 | -0.01+ | 0.003 | -0.02** | 0.01 | 0.003 | 0.01 |
| <i>Individual-level control variables</i> | | | | | | | | |
| Age | -0.03** | 0.01 | -0.003 | 0.004 | 0.05 | 0.01 | -0.04** | 0.01 |
| Age Squared | 0.00+ | 0.00 | 0.00 | 0.000 | -0.00 | 0.00 | 0.00** | 0.00 |
| Education | | | | | | | | |
| High School Diploma | 0.13** | 0.04 | 0.04* | 0.02 | -0.01 | 0.04 | -0.02 | 0.06 |
| Postsecondary Degree | 0.21*** | 0.04 | 0.02 | 0.02 | -0.04 | 0.04 | 0.03 | 0.06 |
| Graduate Experience | 0.42*** | 0.05 | -0.01 | 0.02 | -0.07 | 0.05 | 0.17** | 0.06 |
| Income | | | | | | | | |
| Middle Third | 0.31*** | 0.04 | 0.13*** | 0.02 | -0.19*** | 0.04 | -0.07 | 0.06 |
| Highest Third | 0.64*** | 0.04 | 0.51*** | 0.02 | -0.46*** | 0.04 | -0.02 | 0.05 |
| Year of survey | | | | | | | | |
| 2002 | 0.07 | 0.07 | 0.11** | 0.04 | 0.04 | 0.07 | -0.01 | 0.06 |
| 2003 | -0.003 | 0.07 | 0.11** | 0.04 | 0.09 | 0.07 | -0.06 | 0.06 |
| 2004 | 0.10 | 0.07 | 0.09* | 0.04 | 0.18** | 0.07 | 0.03 | 0.06 |
| 2005 | -0.10 | 0.07 | 0.09* | 0.03 | 0.21** | 0.07 | n/a | |
| Know an entrepreneur | 0.19*** | 0.03 | 0.14*** | 0.02 | -0.06* | 0.03 | 0.13** | 0.04 |
| Sole owner of business (1=yes) | -0.11*** | 0.03 | -0.61*** | 0.02 | n/a | | 0.15*** | 0.04 |

Table A3. Continued

| | | | | | | | | |
|--|-----------|-------|-----------|-------|----------|-------|----------|-------|
| <i>Country-level control variables</i> | | | | | | | | |
| GDP | 1.80 | 2.49 | 0.69 | 1.48 | 0.40 | 1.84 | -0.70 | 1.78 |
| Unemployment Rate | -0.06+ | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | -0.04 | 0.03 |
| Legal barriers to start-up index | -0.003 | 0.004 | 0.0005 | 0.002 | 0.0001 | 0.003 | -0.005+ | 0.003 |
| Social status of entrepreneurship | -0.38 | 1.06 | 0.21 | 0.63 | -0.06 | 0.79 | 0.21 | 0.76 |
| Women's political representation | 0.03** | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 | 0.01 | 0.01 |
| Intercept | -0.38 | 2.36 | 0.36 | 1.40 | -0.37 | 1.77 | -0.03 | 1.75 |
| Log Likelihood | -13998.26 | | -34742.83 | | -14759.1 | | -9090.72 | |
| N, Individual Level | 22757 | | 22757 | | 22757 | | 21389 | |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table A4. Mixed-Effects Logistic Regression Estimates of the Association between Social Policies and the effect of Education on the Log-Odds of being an Established Business Owner for Women and Men

| Independent Variables | Model 8 | | | | | | | |
|---|-------------------|---------------|---------------------|---------------|-------------------|---------------|---------------------|---------------|
| | Women | | | | Men | | | |
| | Restricted Sample | | Unrestricted Sample | | Restricted Sample | | Unrestricted Sample | |
| | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. | Coefficient | Standard Err. |
| Highly educated | -0.21 | 0.16 | -0.21 | 0.17 | 0.03 | 0.17 | 0.18 | 0.19 |
| <i>Policy effects on the intercept</i> | | | | | | | | |
| Paid leave for mothers | -0.01 | 0.01 | -0.01 | 0.01 | -0.003 | 0.01 | -0.002 | 0.01 |
| Childcare | -0.91** | 0.29 | -0.88** | 0.31 | -0.65** | 0.24 | -0.53* | 0.25 |
| Part-time employment | -0.01 | 0.01 | -0.02 | 0.01 | -0.01 | 0.01 | -0.02 | 0.01 |
| <i>Policy effects on education</i> | | | | | | | | |
| Paid leave*Highly Educated | 0.01* | 0.003 | 0.005 | 0.004 | 0.004 | 0.004 | 0.002 | 0.004 |
| Childcare*Highly Educated | -0.09 | 0.14 | 0.03 | 0.15 | -0.10 | 0.15 | -0.10 | 0.17 |
| Part-time employment*Highly Educated | 0.003 | 0.01 | 0.01 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 |
| <i>Individual-level control variables</i> | | | | | | | | |
| Age | 0.09*** | 0.01 | 0.08*** | 0.01 | 0.06*** | 0.01 | 0.05*** | 0.005 |
| Age Squared | -0.001*** | 0.00 | -0.00*** | 0.00 | -0.00*** | 0.00 | -0.00*** | 0.00 |
| Income | | | | | | | | |
| Middle Third | 0.13*** | 0.03 | 0.17*** | 0.03 | 0.01 | 0.03 | 0.06*** | 0.02 |
| Highest Third | 0.50*** | 0.03 | 0.56*** | 0.03 | 0.41*** | 0.03 | 0.54*** | 0.02 |
| Year of survey | | | | | | | | |
| 2002 | 0.09 | 0.06 | 0.03 | 0.05 | 0.11* | 0.04 | 0.09* | 0.04 |
| 2003 | 0.67*** | 0.06 | 0.11* | 0.06 | 0.64*** | 0.04 | 0.20*** | 0.04 |
| 2004 | 0.54*** | 0.06 | 0.05 | 0.05 | 0.48*** | 0.04 | 0.11** | 0.04 |
| 2005 | 0.71*** | 0.06 | 0.07 | 0.05 | 0.65*** | 0.04 | 0.10* | 0.04 |
| Know an entrepreneur | 0.76*** | 0.02 | | | 0.74*** | 0.02 | | |

Table A4. Continued

| | | | | | | | | |
|--|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| <i>Country-level control variables</i> | | | | | | | | |
| GDP | -3.25 | 2.44 | -3.38 | 2.64 | -5.35** | 2.05 | -5.40* | 2.11 |
| Unemployment Rate | -0.05 | 0.03 | -0.05 | 0.04 | -0.06* | 0.03 | -0.06* | 0.03 |
| Legal barriers to start-up index | -0.002 | 0.004 | -0.004 | 0.004 | -0.004 | 0.003 | -0.005 | 0.003 |
| Social status of entrepreneurship | 2.78** | 1.05 | 2.01+ | 1.13 | 3.03** | 0.88 | 2.88** | 0.91 |
| Women's political representation | 0.002 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Intercept | -2.89 | 2.31 | -1.67 | 2.49 | -0.28 | 1.94 | 0.39 | 2.00 |
| Log Likelihood | -24495.38 | | -28795.72 | | -37749.92 | | -44130.95 | |
| N, Individual Level | 67,692 | | 91,548 | | 78,480 | | 100,069 | |

Note: + $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table A5. Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender on Self-Assessments of Entrepreneurial Ability in the United States

| Independent Variables | Model 1 | | Model 2 | |
|-----------------------------|-----------------------|------------|------------------------|------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Female | -0.74*** (0.05) | 0.48 | -1.34*** (0.23) | 0.26 |
| Age | 0.07*** (0.01) | 1.07 | 0.07*** (0.01) | 1.07 |
| Age Squared | -0.0007*** (0.001) | 1.00 | -0.0007*** (0.0001) | 1.00 |
| Education | | | | |
| High School Diploma | 0.09 (0.11) | 1.09 | -0.12 (0.15) | 0.89 |
| Postsecondary Degree | 0.25* (0.11) | 1.28 | -0.02 (0.15) | 0.98 |
| Graduate Experience | 0.19 (0.13) | 1.22 | -0.13 (0.17) | 0.88 |
| Income | | | | |
| Middle Third | 0.20** (0.07) | 1.22 | 0.20** (0.07) | 1.22 |
| Highest Third | 0.25** (0.07) | 1.29 | 0.25** (0.07) | 1.28 |
| Year of survey | | | | |
| 2002 | -0.13+ (0.08) | 0.88 | -0.13+ (0.08) | 0.88 |
| 2003 | -0.14+ (0.08) | 0.87 | -0.14+ (0.06) | 0.87 |
| 2004 | -0.08 (0.12) | 0.92 | -0.09 (0.12) | 0.90 |
| 2005 | -0.16 (0.12) | 0.85 | -0.15 (0.12) | 0.86 |
| Know an entrepreneur | 0.92*** (0.05) | 2.51 | 0.92*** (0.05) | 2.50 |
| Entrepreneur | 1.60*** (0.07) | 4.98 | 1.61*** (0.07) | 5.00 |
| Female*High School Degree | | | 0.56* (0.25) | 1.75 |
| Female*Postsecondary Degree | | | 0.68** (0.24) | 1.97 |
| Female*Graduate Experience | | | 0.78** (0.26) | 2.19 |
| Intercept | -1.59*** (0.26) | | -1.35*** (0.27) | |
| Log Likelihood | -5931.16 | | -5921.76 | |
| N | | 10,047 | | |

*Notes: The data are weighted using population weights calculated by GEM researchers. Standard Errors are in parentheses. *p ≤ .05; **p < .01, ***p < .001*

Table A6. Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender and Self-Assessments of Entrepreneurial Ability on the Likelihood of Being an Entrepreneur in the United States

| Independent Variables | Model 3 | | Model 4 | | Model 5 | |
|---------------------------------------|--------------------|---------------|----------------------|---------------|--------------------|------------|
| | Coefficient t | Odds Ratio | Coefficient t | Odds Ratio | Coefficient | Odds Ratio |
| Female | -0.34*** (0.05) | 0.71 | -0.26*** (0.05) | 0.77 | -0.04** (0.05) | 0.96 |
| Age | | | 0.02 (0.01) | 1.02 | -0.001 (0.0001) | 1.00 |
| Age Squared | | | -0.00002 (0.0001) | 1.00 | 0.0002 (0.0001) | 1.00 |
| Education | | | | | | |
| High School Diploma | | | -0.13 (0.11) | 0.88 | -0.16 (0.12) | 0.85 |
| Postsecondary Degree | | | -0.17 (0.12) | 0.85 | -0.24* (0.12) | 0.79 |
| Graduate Experience | | | -0.21 (0.13) | 0.81 | -0.28* (0.13) | 0.76 |
| Income | | | | | | |
| Middle Third | | | 0.18* (0.08) | 1.19 | 0.11 (0.08) | 1.12 |
| Highest Third | | | 0.15** (0.08) | 1.17 | 0.07 (0.08) | 1.08 |
| Year of survey | | | | | | |
| 2002 | | | -0.11 (0.08) | 0.90 | -0.07 (0.09) | 0.93 |
| 2003 | | | 0.50*** (0.08) | 1.65 | 0.54*** (0.08) | 1.71 |
| 2004 | | | 0.64*** (0.11) | 1.89 | 0.66*** (0.12) | 1.93 |
| 2005 | | | 0.57*** (0.11) | 1.77 | 0.60*** (0.12) | 1.81 |
| Know an entrepreneur | | | 1.14*** (0.05) | 3.13 | 0.87*** (0.06) | 2.40 |
| Self-Assessed Entrepreneurial Ability | | | | | 1.60*** (0.07) | 4.95 |
| Intercept | -0.81*** (0.03) | | -2.30*** (0.26) | | -2.92*** (0.27) | |
| Log Likelihood | -6146.27 | | -5711.17 | | -5313.92 | |
| N | | | 10,047 | | | |

*Notes: The data are weighted using population weights calculated by GEM researchers. Standard Errors are in parentheses. *p < .05, **p < .01, ***p < .001*

Table A7. Logistic Regression Coefficients, Standard Errors and Odds Ratios for the Effect of Gender on Self-Assessments of Entrepreneurial Ability among Established Business Owners

| Independent Variables | Model 6 | | |
|--------------------------------|----------------|---------|------------|
| | Coefficient | SE | Odds Ratio |
| Female | -0.96*** | 0.18 | 0.38 |
| Age | 0.002 | 0.03 | 1.00 |
| Age Squared | -0.0002 | 0.0003 | 1.00 |
| Education | | | |
| High School Diploma | 0.72 | 0.35 | 2.06 |
| Postsecondary Degree | 0.46 | 0.34 | 1.59 |
| Graduate Experience | 0.66 | 0.38 | 1.94 |
| Income | | | |
| Middle Third | 0.60 | 0.23 | 1.81 |
| Highest Third | 0.67 | 0.22 | 1.96 |
| Year of survey | | | |
| 2002 | -0.22 | 0.36 | 0.80 |
| 2003 | -0.11 | 0.32 | 0.89 |
| 2004 | 0.22 | 0.41 | 1.24 |
| 2005 | 0.33 | 0.42 | 1.39 |
| Know an entrepreneur | 1.14*** | 0.18 | 3.12 |
| Sole Owner of Business (1=yes) | 0.62** | 0.18 | 1.86 |
| Business Size | 0.06 | 0.09 | 1.06 |
| Intercept | 0.90 (0.89) | | |
| Log Likelihood | | -552.19 | |
| N | | 1830 | |

*Notes: The data are weighted using population weights calculated by GEM researchers. *p < .05, **p < .01, ***p < .001*

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