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# INSTITUTIONAL THEORY AND CONTEXTUAL EMBEDDEDNESS OF WOMEN'S ENTREPRENEURIAL LEADERSHIP: EVIDENCE FROM 92 COUNTRIES

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## ABSTRACT

*Building on GEM research, we develop a multi-level framework that draws on the notion of the contextual embeddedness of entrepreneurship and institutional theory. We examine the mediating role of the vision for women's entrepreneurship (VWE) on the relationship between the regulatory, normative and cognitive pillars of institutional theory and women's entrepreneurial leadership (WEL) in 92 countries. Results suggest that the institutional pillars influence VWE. Regulatory institutions, entrepreneurial cognitions, and entrepreneurial norms have a direct and an indirect effect (through VWE) on WEL.*

**Keywords:** Institutional theory, contextual embeddedness, vision for women's entrepreneurship, women's entrepreneurial leadership, GEM

*There is perhaps no greater initiative a country can take to accelerate its pace of entrepreneurial activity than to encourage more of its women to participate (Reynolds, Camp, Bygrave, Autio, and Hay 2001, p. 5).*

## Introduction

Identified by the World Economic Forum (2012) as the 'way forward', women's entrepreneurship provides a formidable contribution to the economic development, innovation, and wealth creation of many countries (Brush, de Bruin and Welter 2009). On the global scale, women make up a substantial proportion of the entrepreneurial population. According to Global Entrepreneurship Monitor (GEM) report on women's entrepreneurship, in 2012, an estimated 126 million women were starting or running new businesses in 67 economies around the world. In addition, an estimated 98 million were running established businesses (GEM 2012). Nevertheless, the gender-gap in entrepreneurial activity varies widely across countries and in some countries women represent a significant yet hitherto unrecognized source of economic growth (Carter and Marlow 2003; Henry and Kennedy 2003). For example, in Pakistan, women entrepreneurs represent only 1% of this gender's population, while 40% of women in Zambia are engaged in this activity (GEM 2012). In response to this, many governments around the world have started to pay attention to the value that woman entrepreneurs offer to the society and the particular needs that they may have. For example, in Mexico, a Government program called '*Instituto Nacional de las Mujeres*' is orientated towards changing the cultural perceptions to promote equality between men and women and increasing the visibility of women entrepreneurs by helping them develop their networks (GEM 2012).

Although, the topic of women entrepreneurship has garnered much academic interest in recent years, highlighting the value women entrepreneurs offer and the particular needs they may have; the area remains understudied, and the paucity of research on the phenomenon of women's entrepreneurship is well documented (Brush et al., 2009; Gatewood, Carter, Brush, Greene, and Hart 2003). Past research has explored women's motivation for starting businesses (Boden 1999; Brush, Wong-Ming, and Sullivan 1999; Buttner and Moore 1997; Scott 1986; Stevenson 1986), the survival and profitability of women-owned businesses (e.g., Watson

2003; Williams 2004), decisions about business growth (e.g., Brush 1992; Morris et al. 2006; Orser and Hogarth-Scott 2002; Shelton 2006) and work-family balance (Adkins et al., 2013; Caputo and Dolinsky 1998; DeMartino, Barbato and Jacques 2006; Kirkwood and Tootell 2008). Nevertheless, there has been little consideration on the role of contextual embeddedness of female entrepreneurship (Walter and Smallbone 2011).

Furthermore, entrepreneurship literature tends to focus on a direct relationship between the general conditions and arrangements in the overall entrepreneurial environment (for both male and female entrepreneurs) and women's entrepreneurial activity. This approach overlooks the critical mediating role of the specific context of women's entrepreneurship and ignores the research which suggests that women's entrepreneurial activity is contextually embedded in the structural characteristic of a country (i.e., economic, sociocultural, and legal environment) and so needs to be interpreted according to the context in which female entrepreneurs operate (Welter 2011; Welter and Smallbone 2011).

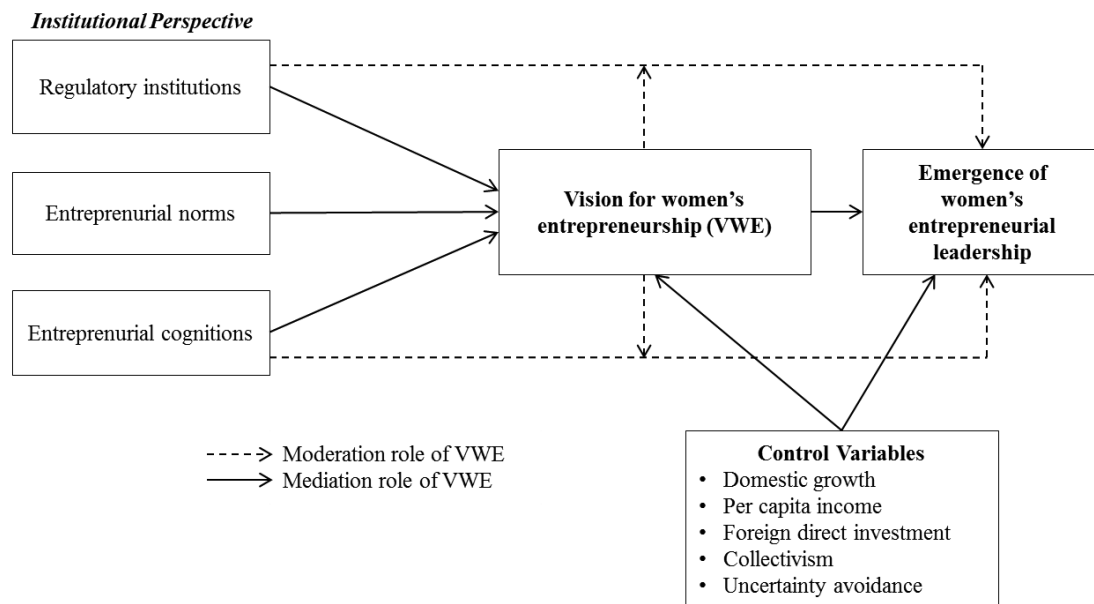
Understanding the specific underlying context of women's entrepreneurial activity is a topic of great significance. Ahl (2006), in her much cited critical commentary on the state of women's entrepreneurship research entitled "Why research on women entrepreneurs needs new directions," asked for future research to focus on the contextual embeddedness of women's entrepreneurship by broadening both the research questions as well as the potential explanatory factors that are investigated (Hughes, Jennings, Brush, Carter, and Welters 2012). Drawing upon the notion of the contextual embeddedness of entrepreneurship and the insights of institutional theory, we propose and test a multi-level model of women's entrepreneurial leadership (WEL) using data collected in 92 countries through the GEM project. Following previous definitions of entrepreneurial leadership (see for example, Gupta, MacMillan, and Surie 2004; Swiercz and Lydon 2002), we define women entrepreneurial leadership (WEL) as '*the ability of women to manage resources strategically in order to emphasize both opportunity-seeking and advantage seeking behaviours in the form of initiating, developing and managing entrepreneurial activity*'. In this study WEL is measured through the 'female total early-stage entrepreneurial activity' using the GEM's data from 2000-2012.

By addressing the phenomenon of women's entrepreneurship from a contextual and institutional perspective, we respond to an overarching critique of entrepreneurship research as having an individualistic focus in which "contextual and historical variables . . . such as legislation, culture, or politics are seldom discussed" (Ahl 2006, p. 605) and for restricting the scope of women's entrepreneurship research in particular (Hughes et al. 2012). Hughes et al. (2012, p.431) quoting Ahl (2006) note that the entrepreneurship literature "by excluding explicit discussion of gendered power structures, the apparent shortcomings of female entrepreneurs...[and thus]...reinforce[ing] the idea that explanations are to be found in the individual rather than on a social or institutional level." As a consequence, the research puts the onus on women and implies that in order to achieve entrepreneurial success women must change themselves by for example, enhancing their education, management style and networking skills.

Our multi-level measure and analysis techniques provide an interactive answer to our research question: how do different institutional arrangements (regulatory, normative and cognitive) interact to create a favorable or unfavorable environment for women entrepreneurship, i.e. vision for women's entrepreneurship, which eventually leads to the emergence of WEL? We define vision for women entrepreneurship (VWE) as "a country mental image or picture of women as viable entrepreneurs and its views on the means to accomplish this mental image". In this study VWE is measured through the GEM's national expert's vision on how the state of the indicators in a country results in a favorable environment

for women entrepreneurship. Specifically, we present a more nuanced understanding of the women’s entrepreneurship phenomenon by examining the mediating role of VWE on the relationship between regulatory institutions, entrepreneurial norms and entrepreneurial cognitions and WEL. In so doing, we propose and test a new framework using a sample of 92 countries in different phases of economic development and cultural contexts as a point of reference for the favourable institutional environment for WEL. We also answer Stenholm, Acs, Wuebker’s (2011) call to extend the research on institutional theory and entrepreneurship to more countries. Figure 1 presents our proposed model.

**Figure 1. Hypothesized conceptual model**



## 2. Theoretical background

All entrepreneurship is contextually embedded in the social, cultural, and political institutions which influence the values, norms, motives and behaviors of individuals (Bruton and Ahlstrom 2003; Davidsson 2003; Martinelli 2004; Minniti 2009; North 1990; Steyaert and Katz 2004). Institutional change can create opportunities for potential entrepreneurs by shaping and determining the prospects as well as removing or lowering barriers to market entry and/or exit and thus can exert a positive impact on entrepreneurial leadership (Gnyawali and Fogel 1994; Hwang and Powell 2005; Smallbone and Welter 2009).

Defying the general consideration of entrepreneurship in either a gender-neutral or a purely masculine context (Marlow 2002), Brush et al. (2009) introduced a gender-aware framework of entrepreneurship which took into account specific contextual factors as important determinants of women’s entrepreneurial activity. This was an important step towards broadening our understanding of women’s entrepreneurial activity as women’s experience added intricate dimensions to the decisions about occupations while trying to balance family and financial responsibilities (Gilbert 1997). Even today, in many societies women are still defined primarily through their domestic roles associated with family obligations (for example, child rearing, caring for the sick and the elderly, and reproductive work) which fall almost exclusively on women, even if they work equal or longer hours than their male partners (Achtenhagen and Welter 2003; Marlow 2002; Welter et al. 2003). Following this line of enquiry, we propose a multi-level framework of WEL that draws on the notion of the contextual embeddedness of entrepreneurship (Bates, Jackson and Johnson 2007; Brush et al. 2009, Welter and Smallbone 2011) and the insights of institutional theory.

Campbell (2004, p. 1) describes institutions as the foundation of social life consisting of ‘formal and informal rules, monitoring and enforcement mechanisms, and systems of meaning that define the context within which individuals, corporations, labor unions, nation-states, and other organizations operate and interact with each other’. Institutional theory is a particularly suitable frame of reference for addressing the external context that shapes women’s entrepreneurial activity. Research has suggested that the institutional environment not only influences the rate of entrepreneurial activity, but also its resulting trajectories (Bruton, Ahlstrom, and Li 2010). The institutional framework of a society encompasses the vital role of regulatory, normative, and cognitive ‘pillars’ that promote successful entrepreneurial activity (Scott 2001, p. 51). Entrepreneurship research spanning the last two decades has drawn on these institutional pillars and supported the contention that institutional differences lead to country-level variations in the structuring and development of entrepreneurial framework conditions (Aldrich 2011; Bruton et al. 2010; Meek, Pacheco, and York 2010; Peng and Zhou, 2005; Tolbert, David, and Sine 2011). In the context of women entrepreneurship, formal regulatory institutions can create entrepreneurial opportunities, influence the extent to which female entrepreneurship can develop and affect the types of enterprises in which women can engage (Welter et al. 2003). Informal normative and cognitive institutions have the potential to exert significant influence on the perceptions of entrepreneurial opportunities (Welter and Smallbone 2003). Building on this established research stream, researchers have started to apply institutional theory to explore the institutions that restrain as well as promote women’s entrepreneurial activity (Brush et al. 2009; Bruton et al. 2010; De Bruin, Brush, and Welter 2007).

### **Regulatory institutions**

Regulatory institutions represent a rational actor model of behaviour. This refers to formal imposition, enforcement, and acceptance of policies, rules, laws, and sanctions that affect individual behavior in organizations and in society (Manolova, Eunni, and Gyoshev 2008; Stenholm et al. 2011). Research has shown that regulatory institutions either at organizational-level (for example, workplace rules, monitoring scripts and incentives) or at country-level (e.g., centers on rules, monitoring and sanctioning activities providing a framework for law enforcing agencies and the courts) can influence the legitimacy and acceptance of entrepreneurship (Webb et al. 2009).

For example, in the Republic of Korea, the government-enacted ‘Law to Support Women Entrepreneurs’ in 1999 led to the formation of the ‘Women Entrepreneurs Support Center’ which provides financial assistance (loans), training, business incubation and other services (GEM 2012). In contrast, potential entrepreneurs can be discouraged by lengthy paper work, procedures and rules and reporting to an array of institutions (De Soto, 2000). Capelleras et al. (2008) showed that heavily regulated countries will have fewer new firms and they will grow more slowly. Similarly, in countries with unstable regulatory institutions, the uncertainty of the regulatory framework (Aidis 2005; Boettke and Coyne 2003), lack of intellectual property rights (Autio and Acs 2010), and extensive corruption and untrustworthy enforcement of regulations (Aidis, Estrin, and Mickiewicz 2008) will increase the opportunity cost for entrepreneurship. In the specific context of women’s entrepreneurship, Jamali (2009) showed that the lack of government support in terms of policy, regulations and legal barriers hindered women’s entrepreneurial activity. Similarly, the World Bank’s report on Women Business and the Law (World Bank 2012) showed that in over 75 percent of the world’s economies, women’s economic opportunities were limited by one or more legal differences between women and men. On the other hand, regulatory initiatives like labor market legislations, formal gender equality recognized by law, tax legislation benefitting dual earners, family and social policies, and an affordable childcare infrastructure can facilitate WEL (Welter et al. 2003). Thus, we

hypothesize that there is a significant relationship between regulatory institutions and WEL in a country:

**Hypothesis 1a:** WEL in a country is positively related to its regulatory institutions.

### **Entrepreneurial norms**

While regulatory institutions are related to the formal compliance with rules and laws, the underlying assumptions of entrepreneurial norms are the informal and invisible ‘rules of the game’, the uncodified values (*what* is preferred or considered proper) and norms (*how* things are to be done, consistent with those values), held by individuals and organizations that influence the relative social desirability of entrepreneurial activity and entrepreneurship as a career option (Busenitz, Gómez, and Spencer 2000; Scott 1995; Welter et al. 2003).

The social acceptability of entrepreneurial career has been shown to vary across different countries; some countries facilitate and promote entrepreneurship, while others discourage it by making it difficult to pursue (Baumol, Litan, and Schramm 2009; De Soto 2000; Luthans, Stajkovic, and Ibrayeva 2000; Mueller and Thomas 2001; Tiessen 1997). Based on the reasoning of the theory of planned behavior (Ajzen 1991), one can expect that the perceived desirability of entrepreneurial activity in a society will influence individuals' entrepreneurial intentions and result in planned behavior of starting entrepreneurial activity (Krueger, Reilly, and Carsrud 2000). Indeed, research has confirmed that the extent of female participation in new venture activities is predicted by the degree of legitimacy, respect and admiration with which women entrepreneurship is held (Baughn, Chua, and Neupert 2006). Thus, we propose that women's entrepreneurial activity will be higher if entrepreneurial norms of a country warrant that women will be admired and rewarded for their efforts in creating entrepreneurial value for society.

**Hypothesis 1b:** WEL in a country is positively related to its entrepreneurial norms.

### **Entrepreneurial cognitions**

Entrepreneurial cognitions reflect the nature of reality and the cognitive frameworks related to individuals' perception of their ability (level of expected performance) and their self-efficacy (that is, the level of confidence in their own skills to start a business) to get involved successfully in an entrepreneurial activity (Bandura 1982; Krueger et al. 2000). According to Busenitz, Gómez, and Spencer (2000) entrepreneurial opportunities may be legitimized through individuals' perceptions of their knowledge and skills required in the creation of a new business. Based on the reasoning of the theory of planned behavior (Ajzen 1991), one can expect that the perceived feasibility (perceived behavioral control: Ajzen 1991) of entrepreneurial activity in a society will influence entrepreneurial intentions of individuals and result in planned behavior of starting entrepreneurial activity (Krueger et al. 2000). Building on these insights, entrepreneurship research has shown that individuals' perception of their to recognize opportunities and their self-efficacy towards entrepreneurial activity are positively related to enhancing the extent of entrepreneurial activity (Arenius and Minniti 2005; Shane 2000).

In addition, social capital and social networks has been identified as important determinants of recognition and exploitation of entrepreneurial opportunities (De Carolis and Saporito 2006; Mitchell et al. 2002; Stenholm et al. 2011). Research has also shown that the presence or lack of entrepreneurial networks and role models and their capability to encourage and maintain a platform for taking part in entrepreneurial activity is more important than regulatory institutions (Mai and Gan 2007; Owen-Smith and Powell 2008). Entrepreneurial women, especially in developing countries, suffer from weak entrepreneurial networks, lack of female entrepreneurial role models, low levels of entrepreneurial and management education,

skills training, career guidance, and have limited access to support services, including business development services and information on business growth (Davis 2012; Drine and Grach 2010; Kitching and Woldie 2004). Furthermore, they face the challenge of gaining access to and control over finances and external sources of capital (Jamali 2009; Minniti 2009) causing them to perceive the environment to be challenging and unsuitable for entrepreneurial activity (Zhao, Seibert, and Hills 2005). As a result, Langowitz and Minniti (2007) found that “women tend to perceive themselves and their business environment in a less favorable light compared to men” (p. 356). Thus, we hypothesize that there is a significant relationship between entrepreneurial cognitions and WEL in a country:

**Hypothesis 1c:** WEL in a country is positively related to its entrepreneurial cognitions.

### **Institutional theory and vision for women’s entrepreneurship (VWE)**

In this study, we argue that the VWE will be higher in countries where general entrepreneurship is highly regarded, entrepreneurial cognitions are strong and where regulatory institutions support entrepreneurial activities. This line of reasoning is based on previous research which has shown that the VWE is embedded in a society’s support for entrepreneurial activity itself (Baughn et al. 2006). Previous research has shown that the lack of entrepreneurial norms and the cultural and religious-based societal attitudes in some countries leads to a lack of support for working women in general and for women’s entrepreneurship in particular (Jamali 2009; Baughn et al. 2006). For example, Henry and Kennedy (2003) showed that the lack of enterprise culture in Ireland coupled with a very conservative view toward women restricted the level of women’s entrepreneurship (Baughn et al. 2006).

Furthermore, the direct-effects argument for the impact of the three institutional pillars on entrepreneurial leadership is well established in entrepreneurship literature (Bruton et al. 2010; Stenholm et al. 2011). However, in the case of women’s entrepreneurship, a consideration of the specific context demonstrates the mediating influence of the VWE. Peng and Heath (1996) suggested that the interaction of the institutional framework with individuals influenced their decision-making by determining the acceptability of norms and behavior in a given society. Following this, we propose that the interaction of individuals in a society with the general institutional framework comprising favourable regulatory institutions, positive entrepreneurial norms and entrepreneurial cognitions will enable the development of a positive VWE. Examples of positive visions include non-discriminatory business practices for entrepreneurial women, religious beliefs and family values that support women’s entrepreneurial activity, a view of entrepreneurship as not solely masculine activity, and a general positive attitude of the society towards women and employment (Welter et al. 2003). This vision will, in turn, perform an important mediating role in shaping the relationship between the three institutional pillars and WEL. Specifically, VWE will ensure the emergence of WEL because the extent to which women’s entrepreneurial activity is recognized to be as legitimate as male entrepreneurial activity will lead to a higher level of women’s entrepreneurship (Achtenhagen and Welter 2003). Legitimacy not only increases the demand and supply of entrepreneurial activity (Lounsbury and Glynn 2001), it also ensures a better access to the resources required to support entrepreneurial start-ups and their continued growth (Etzioni 1987). Implicit in this argument is the notion that VWE channels general institutional support for entrepreneurship to the emergence of WEL. Indeed, it is not the general institutional support per se but rather its integration of this support leading to VWE that ensures WEL. Thus, we propose the following hypotheses:

**Hypothesis 2:** The VWE in a country is positively related to its (a) regulatory institutions, (b) entrepreneurial norms, and (c) entrepreneurial cognitions.

**Hypothesis 3:** WEL in a country is positively related to its VWE.

**Hypothesis 4:** VWE mediates the effects of (a) regulatory institutions, (b) entrepreneurial norms, and (c) entrepreneurial cognitions on WEL.

### Methodology

We developed a unique and distinctive database of internationally comparative country-level panel data on entrepreneurial activity across 92 countries for the years 2000-2012. Our main source of data was the GEM database, which was developed by the Global Entrepreneurship Research Association (GERA). GERA is the largest ongoing research consortium collecting individual- and national-level data on the incidence, determinants, and outcomes of entrepreneurial activity since 1999 (Minniti, Bygrave, and Autio 2006; Reynolds et al. 2005). GEM collects data from two sources: (i) the adult population survey (APS) and (ii) the national expert survey (NES). The NES-questionnaire includes standardized measures of experts' (entrepreneurs, consultants, academics, politicians) perceptions of their country's entrepreneurial framework conditions and the institutional environment for entrepreneurship. The country experts in the NES-survey have a substantial knowledge of entrepreneurship-related issues (Reynolds et al. 2001). In addition, we also consulted the Index of Economic Freedom (IEF) and the Doing Business Report (EDBI) from the World Bank Group. Each indicator's value was normalized to 1 (highest value) and 0 (lowest value). Standardized values were used for the SEM analyses. Study variables and data sources are summarized in Table 1.

**Table 1: Exploratory Factor Analysis, Validity and Reliability**

Construct and Source	Measures	1	2	3	4	Source
<i>Regulatory institutional arrangements</i> AVE(%) = 54.83 CR = 0.83; $\alpha$ = 0.96	<i>Business freedom</i>	0.85				IEF
	* <i>Ease of starting up a business</i>	0.71				EDBI
	* <i>Ease of closing a business.</i>	0.71				EDBI
	* <i>Property rights.</i>	0.68				IEF
<i>Entrepreneurial cognitions</i> AVE(%) = 42.74 CR = 0.80; $\alpha$ = 0.81	* <i>Opportunity perception.</i>		0.82			GEM – APS
	* <i>Knows an entrepreneur.</i>		0.73			GEM – APS
	* <i>Skills.</i>		0.71			GEM – APS
<i>Entrepreneurial norms</i> AVE(%) = 49.64 CR = 0.61; $\alpha$ = 0.66	* <i>High status.</i>			0.67		GEM – APS
	* <i>Media attention.</i>			0.74		GEM – APS
	* <i>Desirable Career Choice.</i>			0.77		GEM – APS
<i>Vision for women entrepreneurship</i> AVE(%) = 42.90 CR = 0.67; $\alpha$ = 0.88	*There are sufficient social services available so that women can continue to work even after they start a family.				0.87	GEM – NES
	*Starting a new business is a socially acceptable career option for women.				0.88	GEM – NES
	*Women are encouraged to become self-employed or start a new business.				0.81	GEM – NES
	*Men and women are equally exposed to good opportunities to start a new business.				0.80	GEM – NES
	*Men and women are equally able to start a new business.				0.60	GEM – NES
% Explained variance		39.69	22.59	10.70	8.08	
% Accumulated variance		39.69	62.28	72.99	81.07	

Notes: AVE = average variance extracted; CR = composite reliability  
IEF=Index of Economic Freedom (Holmes et al. 2008); EBDI=World Bank's Ease of Doing Business Index (The World Bank 2009); GEM=Global Entrepreneurship Monitor; APS = Adult Population Survey; NES= National Expert Survey  
KMO = 0.786, Bartlett's  $p > .001$ . The cut-off point was 0.60.

\*= Normalized



*WEL* was measured using the GEM's APS data from 2000-2012. We calculated a combined measure of female nascent entrepreneurs (trying to start new ventures but have not paid any wages to anyone for last 3 months) and new female entrepreneurial activity (those who have been in existence for more than 3 months but not more than 42 months), known as female Total early-stage Entrepreneurial Activity (TEA) (Levie and Autio 2011). This normative data was available for 92 countries. We compiled an eleven-year panel of GEM countries (2002-2012). For validation analyses and robustness checks, the full 9-year time series was used.

*VWE* was measured through five questions that approximately 446 experts from 92 countries were asked in the 2002 to 2012 administrations of the GEM's NES-questionnaire. The experts were asked to rate their agreement or disagreement on a 5-point Likert scale with the applicability of the following statements to their country: (1) there are sufficient social services available so that women can continue to work even after they start a family; (2) starting a new business is a socially acceptable career option for women; (3) women are encouraged to become self-employed or start a new business; (4) men and women are equally exposed to good opportunities to start a new business; and (5) men and women are equally able to start a new business.

*Regulatory institutions* were measured through four items. *Business freedom* was taken from IEF to indicate the overall burden of government regulations set on entrepreneurial and business activities (Holmes et al. 2008). It assesses the procedures, time and cost involved both in starting and closing a business. The Ease of Doing Business Index (EDBI) was consulted for measuring the ease of starting and closing a business (The World Bank 2009). The *ease of starting up a business* indicates the effect of the regulatory environment on start-ups in a country by identifying the bureaucratic and legal hurdles that an entrepreneur must overcome to incorporate and register a new firm (e.g., regulations on starting a business, dealing with construction permits, employing workers, registering property, obtaining credit, protecting investors, paying taxes, trading across borders and enforcing contracts) (Stenholm et al. 2011). *The ease of closing a business* indicates the effect of the regulatory environment on closing a business through weaknesses in existing bankruptcy law and the main procedural and administrative bottlenecks in the bankruptcy process (Stenholm et al. 2011). The *property rights* measure from IEF assessed the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws (Arora, Fosfuri, and Gambardella 2001).

*Entrepreneurial norms* were measured through three variables from the GEM's APS questionnaire. Following the broad definition of norms from Baughn et al. (2006), we first measured the status of entrepreneurship in a country through the percentage of the adult population who agreed with the statement that in their country people attach a high status to successful entrepreneurs. Second, we measured the level of perceived media attention paid to entrepreneurship through the percentage of the adult population who agreed with the statement that they often see stories in the public media about successful entrepreneurs (Stenholm et al. 2011). Third, we measured the percentage of people who agreed with the statement that in their country, most people consider starting a business as a desirable career choice.

*Entrepreneurial cognitions* were measured through three variables from the GEM's APS questionnaire to capture the perception of perceived business opportunities and the skills necessary for starting a business in the non-entrepreneurial adult population. Following Stenholm et al. (2011), we first measured *opportunity perception* which indicates the percentage of the non-entrepreneurial adult population who see opportunities for starting a business in the area in which they live. Second, the variable *knows an entrepreneur* indicates the percentage of the non-entrepreneurial adult population who personally know an

entrepreneur who started a business in the previous two years. Finally, *skills* measure the percentage of the non-entrepreneurial adult population who believe that they have the required skills and knowledge to start a business.

**Control variables.** In testing our hypotheses, we controlled for the economic development status of a country through its per capita income and domestic growth. Following past studies, we used lagged *per capita income* which is measured by a country's gross national income (GNI) per capita expressed in US dollars at Purchasing Power Party (PPP) exchange rates from the World Bank's World Development Indicators (WDI) database (Wennekers et al. 2005; Bowen and De-Clercq 2008). *Domestic growth* was measured through GDP and to obtain endogeneity we used lagged values from the WDI database. *Foreign direct investment* (FDI) represents the presence of foreign-owned enterprises within a country as a demand-side factor which is likely to influence a country's level of entrepreneurship (Verheul et al. 2002). This variable was measured through the stock of inward FDI relative to a country's GDP, the data for which were taken from the FDI database maintained by the United Nations Conference on Trade and Development. Finally, we expect a country's uncertainty avoidance and degree of collectivism to influence its entrepreneurial activity. The data for which was obtained from the GLOBE study (2004).

### Results - Assessment of measures

Exploratory factor analysis (EFA) with Varimax-rotation and Kaiser Normalization was conducted to understand the factor structure of the variables. It resulted in four-factors with eigenvalues greater than 1, accounting for 68.58% of the total variance (KMO = .786,  $p < .001$ , cut off point 0.60). Table 1 reports the EFA results. This factor structure was confirmed through Confirmatory Factor Analysis (CFA). The parameter estimates from the CFA were statistically significant and the cronbach's alpha reliability measures varied from excellent 0.96 (regulatory institutions) to acceptable 0.65 (entrepreneurial norms). The discriminant validity was assessed by comparing the correlations and the square root of the average variance of each construct. Table 2 suggests good discriminant validity, which indicates that the latent variables in the model are independent constructs. Table 2 presents the correlation matrix and summary statistics.

**Table 2. Correlation matrix and descriptive statistics**

	1	2	3	4	5	6	7	8	9	10
1. Women's entrepreneurial leadership	1									
2. Vision for women's entrepreneurship	.19**	1								
3. Regulatory institutional arrangements	.42**	.3**	1							
4. Entrepreneurial norms	.42**	.38**	.05	1						
5. Entrepreneurial cognitions	.69**	.25**	.24**	.54**	1					
6. Domestic growth	.44**	.05	.40**	.43**	.30**	1				
7. Per capita income	-.52**	.22**	-.76**	-.25**	-.42**	-.54**	1			
8. Foreign direct investment	-.07	.06	-.32**	.02	-.11*	.05	.18**	1		
9. Collectivism	.29**	-.30**	.65**	.04	-.03	.58**	-.68**	-.04	1	
10. Uncertainty avoidance	-.26**	.39**	-.71**	-.04	.02	-.24**	.63**	.23**	-.73**	1
Mean	.18	.72	.76	.76	.53	.30	.33	.15	.81	.79
Standard deviation	.17	.11	.12	.11	.15	.18	.22	.14	.11	.12

\*  $p < 0.05$ , \*\*  $p < 0.01$

## **Convergent validity**

We followed the method by Stenholm et al. (2011) to test the convergent validity of the three institutional pillars and the VWE through correlation analysis with other measures employed in previous work. We compared the regulatory institutions with GEM's NES data on government policies ( $\rho = .648, p < .001$ ), government support for entrepreneurship ( $\rho = .545, p < .001$ ), and the financial environment for entrepreneurial support ( $\rho = .583, p < .001$ ). The significant Spearman correlation supports the regulatory institutions measure.

For entrepreneurial norms, we used GEM's NES questionnaire. Following Stenholm et al. (2011), we took country-level data on the national experts' perception of the entrepreneurial culture measured through perceived degree of motivation and value ( $\rho = .405, p < .001$ ) and cultural norms and societal support ( $\rho = .413, p < .001$ ). Similarly, the Spearman correlations between the entrepreneurial cognitions and the NES's degree of skills and abilities for entrepreneurship and opportunities perception were positive ( $\rho = .199, p < .001$ ;  $\rho = .473, p < .001$  respectively).

We tested the convergent validity of the VWE on the Human Development Report's gender empowerment measure. It consists of three indicators: (1) male and female shares of parliamentary seats; (2) male and female shares of administrative, professional, technical, and managerial positions; and (3) power over economic resources as measured by women's and men's estimated earned income (Purchasing Power parity, PPP US\$) (Schüler 2006). The VWE correlates positively with the gender empowerment measure ( $\rho = .471, p < .001$ ).

## ***Analysis and Results***

### ***Direct Effects***

Regression analysis was performed to test the direct effects of the three institutional pillars on the VWE and WEL. As Table 3 (Model 1) shows, regulatory institutions ( $\beta = .21, p < .05$ ), entrepreneurial cognitions ( $\beta = .34, p < .001$ ), and normative institutions ( $\beta = .14, p < .05$ ) have a positive and significant effect on the VWE. These results support H2a, H2b, and H2c. The results in Model 2 show that regulatory institutions ( $\beta = .32, p < .001$ ), entrepreneurial cognitions ( $\beta = .56, p < .001$ ) and normative institutions ( $\beta = .15, p < .05$ ) have positive and significant effects on WEL. These results support H1a, H1b, and H1c. Among the control variables, domestic growth ( $\beta = .25, p < .001$ ) and per capita income ( $\beta = .40, p < .001$ ) are positively related to the VWE, whereas domestic growth ( $\beta = .12, p < .05$ ) and per capita income ( $\beta = -.18, p < .05$ ) are related to WEL.

### ***Mediating Effect of VWE***

A three-step regression was conducted to examine the mediating role of VWE (Baron and Kenny 1986). The regression results in Table 3 show that regulatory institutions ( $\beta = .32, p < .001$ ), entrepreneurial norms ( $\beta = .15, p < .05$ ) and entrepreneurial cognitions ( $\beta = .56, p < .001$ ) have positive and significant effects on the WEL (Model 2). Furthermore, all dimensions of institutional pillars are positively related to VWE (Model 1). When VWE is entered into Model 3 (Table 3), it shows a positive and significant effect on WEL ( $\beta = .17, p < .001$ ), supporting H3. The inclusion of VWE leads to an increase in the effect sizes of regulatory institutions (from .21 to .25), entrepreneurial cognitions (from .34 to .43) and decrease in entrepreneurial norms (from .14 to .10), but remain significant, suggesting partial mediation and partial support for H4.

**Table 3. Results of Regression Analysis: Standardized Path Coefficients (t-Values)**

Independent Variables	<i>Vision for women's entrepreneurship</i>	<i>Women's entrepreneurial leadership</i>	
	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
<b>Control Variables</b>			
Domestic growth	.25(3.84)***	.12(1.98)*	.10(1.99)*
Per capita income	.40(4.01)***	-.18(-2.08)*	-.15(-2.23)*
Foreign direct investment	.037(.86)	.067(0.79)	.065(0.80)
Collectivism	.037(0.60)	-.11(-1.37)	-.11(-1.38)
Uncertainty avoidance	.14(1.57)	-.04(-0.60)	-.03(-0.58)
<b>Main Effects</b>			
Regulatory institutional arrangements	.21(2.55)*	.32(3.58)***	.25(3.80)***
Entrepreneurial cognitions	.34(5.60)***	.56(11.10)***	.43(8.73)***
Entrepreneurial norms	.14(2.58)*	.15(2.37)*	.10(2.29)*
<b>Mediating Effect</b>			
Vision for women's entrepreneurship			.17(2.98)***
Observations	381	381	381
Number of years	10	10	10
$R^2$	.42	.59	.62
Adjusted $R^2$	.39	.60	.51
$\Delta R^2$			.03***
F-value	22.30***	46.56***	42.20***
F change			5.15**
Max VIF	2.57	2.56	2.40

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , †  $p < 0.1$  (one-tailed test for hypotheses, and two-tailed test for control variables)

### Structural Equation Modeling

We examined the robustness of the preceding results with structural equation modeling (SEM). The first model (SEM1) examined the direct effect of the independent variables on WEL with the path from VWE constrained to zero. The fit indexes ( $\chi^2 [d.f.] = 545.50 [350]$ , CFI = .94, and RMSEA = .04) suggested a good fit with the data. The second model (SEM2), which involved a full mediation of the effect of the independent variables by VWE, also showed a good fit with the data ( $\chi^2 [d.f.] = 530.67 [353]$ , CFI = .94, and RMSEA = .04). Model comparisons with the chi-square difference test indicated that SEM2 performed better than SEM1 ( $\Delta\chi^2 [\Delta d.f.] = -14.83 [3]$ ,  $p < .001$ ). In SEM2, our results were consistent with the regression analysis results. VWE ( $\beta = .29$ ,  $t = 6.93$ ,  $p < .001$ ), regulatory institutions ( $\beta = .36$ ,  $t = 9.50$ ,  $p < .001$ ), entrepreneurial cognitions ( $\beta = .56$ ,  $t = 16.05$ ,  $p < .001$ ) and entrepreneurial norms ( $\beta = .20$ ,  $t = 9.50$ ,  $p < .001$ ) were significantly related to WEL.

Following Brown's (1997) and Shrout and Bolger's (2002) recommendations, we tested the significance of the specific mediation effects as follows: regulatory institutions (total effect  $\beta = 2.16$ ,  $p < .001$ ; direct effect  $\beta = 2.51$ ,  $p < .05$ ; indirect effect through VWE  $\beta = .34$ ,  $p < .001$ ; Sobel test=4.84\*\*\*), entrepreneurial norms (total effect  $\beta = .10$ ,  $p < .05$ ; direct effect  $\beta = .07$ ,  $p < .05$ ; indirect effect through VWE  $\beta = .02$ ,  $p < .001$ ; Sobel test=5.04\*\*\*), and entrepreneurial cognitions (total effect  $\beta = .32$ ,  $p < .001$ ; direct effect  $\beta = .31$ ,  $p < .001$ ; indirect effect  $\beta = .34$ ,  $p < .001$ ; Sobel test=5.03\*\*\*).

### Discussion

Drawing upon the notion of the social embeddedness of entrepreneurship and the insights of institutional theory, we proposed and validated a multi-level model of WEL using data

collected in 92 countries through the GEM project. Our multi-level measures and analysis techniques provided an interactive answer to our research question: how do different institutional arrangements (regulatory, normative, and cognitive) interact to create a VWE that eventually drives WEL? Specifically, we examined the mediating role of the VWE on the relationship between the regulatory, normative, and cognitive pillars of institutional theory and WEL. Overall, the results of this study suggest two main conclusions. First, regulatory institutions, normative institutions, and entrepreneurial cognitions influence the VWE. Second, regulatory institutions, entrepreneurial cognitions and entrepreneurial norms have a direct and an indirect effect (through VWE) on WEL. Note that though the direct effect of VWE on WEL is small relative to the effect of regulatory and cognitive dimensions, it plays an additional role in linking institutional dimensions to WEL.

Previous research has shown that the prevalence of entrepreneurial activity greatly differs between countries (Freytag and Thurik 2007). This study addressed the role of the VWE to explain the country-level differences WEL. This study was conducted because the role of institutional context on entrepreneurial activity seems to be under researched (Ahl 2006). Furthermore, recent conceptualizations of the VWE as a cultural value allow the application of a theoretically and empirically rigorous test of the relationship between institutional dimensions and WEL through a mediating effect of VWE. In general, our study indicated that WEL is explained by the match between a VWE and institutional dimensions.

We found support for the direct effect of entrepreneurial norms, regulatory institutions and entrepreneurial cognitions on both WEL and VWE. We also found that VWE partially mediates the effect of institutional pillars on WEL. This suggests that these pillars of institutional theory may have different intrinsic properties, a nuanced insight that has not yet been recognized in extant contingency theory. This is consistent with the structural contingency theory's argument that favorable institutional dimensions determine the degree to which the VWE is supported. Although women's entrepreneurship literature widely reports that general normative support and a VWE are important factors in the emergence of WEL (Baughn et al. 2006), we offer a new insight by arguing that the latter factor can be the route that makes the former a valuable resource in the emergence of WEL. These results also signal a ready supply of entrepreneurs that see opportunities and believe they are capable of starting a business, and the regulatory components in the environment will facilitate their efforts.<sup>1</sup>

We conducted a series of post hoc moderating tests with other variables in this study but found no significant non-linear or moderated effect of a VWE between institutional pillars WEL. We evaluated the moderating view of the VWE and found significant interaction effects only between the VWE and entrepreneurial cognitions ( $\beta = -1.27, t = -2.36, p < .05$ ) and regulatory institutions ( $\beta = -1.10, t = -4.93, p < .01$ ). These findings are novel. They suggest that a VWE plays not only a mediation role but also an unexpected negative moderating role.

Both policymakers and scholars have considerable interest in measuring the levels of women's entrepreneurship within and between nations. Our multidimensional country-level results underscore the variance between various institutional arrangements and WEL through the mediation of VWE. Our findings suggest that the rate of WEL in a country can be enhanced through supportive regulatory institutions and, most importantly, improving the entrepreneurial cognitions for women's entrepreneurship.

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<sup>1</sup> We thank the anonymous reviewer for this insight.

## **Implications and Contributions**

This study contributes to women's entrepreneurship literature in four main ways. First, the direct effect of country-level institutional dimensions sheds new light on the importance ascribed to the concept of the entrepreneurial environment in the emergence of WEL and the importance that women's entrepreneurship literature places on a broad understanding of normative contexts (Baughn et al. 2006). However, the indirect, positive effects of institutional pillars also emphasize the need to embrace a more fine-grained notion of the entrepreneurial environment. Without this, it is unlikely that women's entrepreneurship theory will unearth new insights into the role of the VWE in the emergence of WEL. Second, all entrepreneurship is contextually embedded in the social, cultural, and political institutions (Bruton and Ahlstrom 2003). We found that where general entrepreneurial norms (entrepreneurship is respected and admired) and VWE (specific normative support women's entrepreneurship) are higher, the emergence of WEL is higher. Moreover, the VWE appears to be a more significant predictor of women's entrepreneurial activity in a country than more general entrepreneurial norms (see Table 3, Model 3). This finding can be interpreted in the light of push and pull entry factors into entrepreneurship, because the impact of general entrepreneurial norms and the VWE are shaped by the context and choice set available to the nascent entrepreneur (Baughn et al. 2006). Females will be pulled into self-employment by the VWE and normative support for entrepreneurship. However, this will be less relevant in the case of necessity-based entrepreneurship, that is, even a country where the VWE and normative institutions may inhibit women's entry into entrepreneurship, economic constraints on employment will close off other options except self-employment (Baughn et al. 2006).

Third, we clarify how and why the VWE matters in the emergence of WEL by showing its simultaneously mediating and moderating roles. We show that the VWE channels institutional dimensions into WEL. This new insight implies that by failing to consider the mediating role of the VWE, previous research may have assumed away the entrepreneurial environment demands in WEL. Therefore, it may have reached a premature and perhaps overly optimistic view of the importance of institutional environment in the emergence of WEL. More importantly, these findings suggest that institutional dimensions are necessary but not sufficient conditions for women's entrepreneurship and that their interaction with the VWE is the key driver of women's entrepreneurship. We show that the VWE plays an important role in the emergence of WEL, by partially mediating the effects of institutional dimensions on WEL. In other words, institutional dimensions may not be intrinsically valuable; their value may be realized through the VWE.

Fourth, given the complexity of the study context, the negative moderating effects of the VWE on entrepreneurial cognition and regulatory institutions suggest that at high levels, they could suppress the effect of institutional dimensions on women's entrepreneurship. It appears that though some dimensions of the institutional theory may make a VWE necessary, the degree of the VWE might be tempered by the contextual complexity of the country. One could suspect positive moderating roles for the VWE. The new insight we offer is that there may be a threshold of the VWE beyond which institutional dimensions may have a detrimental effect on women's entrepreneurship. This is a trade-off that has not been uncovered in extant research.

## **Limitations and future research opportunities**

Some limitations need to be discussed in order to assess the generalizability of our results. Our analysis has a decent sample size for studies of this kind and we relied on data from two independent datasets and, therefore, there is no common method bias in our analysis. However, we have not considered the possibility of a non-linear relationship between institutional

arrangements and WEL, which can cause problems in the use of analytical techniques that depend on causality and on average values (Andriani and McKelvey 2009). Consequently, we do not consider how the cognitive and normative variance deviating from the average might affect individuals' responses to institutional pressures. Future research should study these outliers in detail to develop further understanding of the topic. Second, our aim was to study women's entrepreneurial activity at the national level. Accordingly, we considered all variables at the national level; thus, our results should not be generalized to the individual-level of entrepreneurship. Future research can study the effects of individual-level factors on women's entrepreneurial decisions, for example, personality traits, entrepreneurial family background. Furthermore, we did not address the issue of how our proposed relationships will change over time across different countries. Since the variables used in this study were collected systematically on a regular basis from 2002-2012, to achieve a more complete picture of women's entrepreneurship in different countries, future research can possibly track the trajectories of different countries.

In this article, we have shown that WEL and a VWE are influenced by institutional conditions. A great deal remains to be done to understand institutional effects on women entrepreneurial activity across countries, and thereby to understand better why certain individuals switch from being employees to managing their own ventures. For example, further work could examine the effect of each of the components of our model. Preliminary analysis, not reported here, suggests interaction effects between regulation and entrepreneurial capacity and entrepreneurial opportunity. Repeating the analysis for start-ups in different industries or technology levels could also reveal different effects. While we have chosen to study entry, an analysis of the effect of institutional dimensions on exit rates could also be fruitful. Finally, further investigation of the extent to which women's entrepreneurship is substitutable under different institutional dimensions and regimes could explain why some countries with high regulation and relatively low rates of women's entrepreneurship remain powerful economies.

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