

Cross-national differences in entrepreneurial activity: role of culture and institutional factors

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Abstract A review of literature in entrepreneurship and public policy suggests that the level of political freedom, corruption, and education are important antecedents to the rate of entrepreneurial activity in nations. However, empirical analysis of the effect these factors have on entrepreneurial activity across nations remains ambiguous. This study proposes that the cultural context of nations moderates the effect of these factors. Consistent with this argument, it investigates the role of individualism-collectivism in moderating the effect of political freedom, corruption, and education on entrepreneurial activity across nations. Macro-level data on 84 nations is obtained from multiple reliable sources and used to test the hypotheses. Results support the theorized arguments and suggest that individualism positively moderates the effect of political freedom, negatively moderates the effect of corruption, and positively moderates the effect of education, on the rate of entrepreneurial activity across nations.

Keywords Entrepreneurial activity · Individualism-collectivism · Political freedom · Corruption · Education · Culture · Formal and informal institutional factors · GEM

JEL Classification L26 · M13 · O17 · O50 · O57 · Z18

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1 Introduction

Extant literature on new business formation (e.g., Acs et al. 2012; Memili et al. 2015; Morris et al. 2015) suggests that entrepreneurship or the “process of identifying, valuing and capturing opportunities” (Low 2001, p. 21) contributes to the economic growth of nations. The importance of entrepreneurship has augmented in recent years, given the growing dynamism and evolving nature of today’s economy (Audretsch et al. 2015; Acs et al. 2012; Memili et al. 2015). Through its focus on introducing new products and processes (Morris et al. 2015), entrepreneurship increases the number of existing markets and also raises the level of competitiveness in these marketplaces (Rocha 2004). This benefits both consumers and producers (Reynolds 1987). Starting new ventures also boosts employment opportunities for the youth (Thurik et al. 2008) and attracts foreign enterprises and venture capitalists to invest in the economy of nations (Hermes and Lensink 2003). This contributes to their gross fixed capital formation. It is due to these positive consequences that policy makers around the world have started to emphasize on providing appropriate institutional and social support structures for the creation of new business ventures (Minniti 2008). Innovation is being encouraged, investment is being facilitated, and infrastructure and regulatory frameworks that aim to promote entrepreneurship are being built in place (Acs and Szerb 2007; Minniti 2008; Alhorrt et al. 2008).

However, despite increasing attention and efforts by national and global policy makers, the rate of entrepreneurial activity, i.e., the proportion of nascent and early-

stage entrepreneurs involved in creating new business ventures in a nation (Reynolds et al. 2005), has at best remained low to modest for several nations (Wennekers et al. 2005; Liñán and Fernandez-Serrano 2014; Acs et al. 2008; Bosma et al. 2001). This dilemma has generated interest amongst scholars to analyze the factors that explain differences in people's willingness to pursue entrepreneurial activities across nations. Two groups of antecedents have gained attention in research. The first includes individual-level determinants of entrepreneurial activities (Kirzner 1997). Variables such as entrepreneurial personality, attitude towards risk taking, autonomy, innovativeness, competitiveness, proactiveness, socio-economic status, and entrepreneurial experience have gained intellectual spotlight here (Brockhaus 1982; Uhlaner and Thurik 2007; Cuervo 2005; Verheul et al. 2002). The second includes contextual determinants of entrepreneurial activities. Institutional and cultural factors operating at the macro-level are the center of focus here (Dreher and Gassebner 2013; Gohmann 2012). These facilitate the identification, creation, and exploitation of opportunities through starting new ventures (Verheul et al. 2002). Comparing across these two distinct groups of antecedents, it becomes evident that contextual factors, more than personal factors, would play a role in explaining differences in the rate of entrepreneurial activity across nations (Baumol 1996; Liñán and Fernandez-Serrano 2014; Acs et al. 2008). Despite evidence, which emphasizes the importance of macro-level factors (Acs et al. 2008; Baumol 1996; Clark and Lee 2006; Dickson et al. 2008), there seems to be a dearth of studies that have focused on understanding the manner in which these interact with each other to influence entrepreneurial activity across nations (De Clercq et al. 2014; Hayton et al. 2002; Liñán and Fernandez-Serrano 2014; Urbano and Alvarez 2014). Understanding this is nevertheless critical to advancing our knowledge of the cross-national determinants of entrepreneurship (Rauch et al. 2013; Liñán and Fernandez-Serrano 2014; Acs et al. 2008). It can help in evaluating why some nations are prone to an influx of entrepreneurial activities, while others experience only minimal effects.

In line with the aforementioned objective, this study attempts to understand the role of three macro-level factors: (a) political freedom, (b) corruption, and (c) education, which extant studies have suggested to be critical determinants of entrepreneurial activity across nations (Baumol 1996; Levie and Autio 2008; Acs et al.

2008; Van der Sluis et al. 2008; Avnimelech et al. 2014; Minniti 2008). However, instead of assessing the direct effect of these factors, this study focuses on understanding the manner in which their effect is moderated or shaped by the cultural framework of nations. The rationale behind this approach stems from the fact that culture is an integral aspect of the structural attribute of any nation and is powerful enough to erect boundary conditions on the impact of other variables (Markus and Kitayama 2003; Rauch et al. 2013; Kreiser et al. 2010; Leung et al. 2005; Engelen et al. 2009). Policies and regulatory conditions, which may have positive consequences on a nation's entrepreneurial activity, may result in penalties for others because the appraisal of such policies and regulations by the people of a nation is vulnerable to their cultural orientation. It is somewhat surprising that despite the boundary conditions that culture may impose, this issue has received only limited attention (De Clercq et al. 2014; Taylor and Wilson 2012; Engelen et al. 2009; Liñán and Fernandez-Serrano 2014; Autio et al. 2013). Given this gap in research, this study focuses on understanding the role of individualism-collectivism, an attribute of national culture, in moderating the impact of political freedom, corruption, and education on the rate of entrepreneurial activity across nations. The focus on individualism-collectivism is based on the fact that it is considered the most significant driver of cultural differences between nations (Markus and Kitayama 1991; Zheng et al. 2013), is conceptually and empirically related to other dimensions of culture (e.g., power distance, masculinity, Confucian dynamism; see Blondel and Inoguchi 2006; Yeh and Lawrence 1995), and has critical consequences on the level of economic development and business activities in nations (Franke et al. 1991; Ball 2001; Morris et al. 1994; Tiessen 1997).

This paper makes two main contributions. First, it recognizes that regulations and policies implemented by formal institutions play a critical role in determining the level of entrepreneurial activity across nations. However, it emphasizes that the effect of these regulations, policies, and institutional frameworks cannot be truly understood without taking into consideration the cultural framework of a society. In this regard, cultural theorists (Gorodnichenko and Roland 2012; Leung and Morris 2010; Fiske and Taylor 2013; Markus and Kitayama 1991; Inglehart and Baker 2000) have suggested that the norms and values prevalent in a society condition the inferences, perceptions, intentions and

expectations of individuals within it and consequently shape their motivations, attitude, and behaviors towards various activities, including those oriented towards the creation of new business ventures. Thus, in analyzing the impact of policies and regulations on the rate of entrepreneurial activity across nations, it becomes eminent to ascertain the role of culture on this relationship. Second, this study uses a sample of 84 nations and based on multisource data (obtained from the Global Entrepreneurship Monitor research, the World Bank, the United Nations Development Program, Freedom House database, the Worldwide Governance indicator project and Hofstede's 2001 study) that spans across a period of 10 years, attempts to understand the role of individualism-collectivism in moderating the effect of political freedom, corruption, and education on the rate of entrepreneurial activity across nations. The findings suggest that the effect of formal policies and regulatory conditions is shaped by the cultural context of a society.

The remaining paper is structured as follows: In the next section, theoretical model is presented and hypotheses are developed. Following this, empirical analysis is elucidated and results are presented. The paper concludes by discussing the results, outlining limitations, and suggesting avenues for future research.

2 Theoretical overview and hypotheses development

Over the last few decades, a large volume of literature in entrepreneurship has focused on unraveling the factors that influence the formation of new business ventures. A review of these studies suggests that the discovery of an innovative product or process, which can disrupt existing market equilibrium and destabilize prevalent social patterns (Shane 2000; Schumpeter 2013) or the identification of a rent seeking opportunity, which can offer beneficial economic outcomes (Kirzner 1985, 1997), are critical to the formation of new business ventures (Levie and Autio 2008). However, it is the subjective perception of individuals (whom we refer to as "entrepreneurs") that an entrepreneurial opportunity exists and can be suitably exploited to gain desirable outcomes, which forms the crux of the process of entrepreneurship (Shane 2000; Foss et al. 2008). Fitzsimmons and Douglas (2011) stated that entrepreneurial behavior depends on the idiosyncratic expectancy and valence of an entrepreneurial outcome by an individual. Others (Kautonen et al. 2013; Van

Gelderen et al. 2015; Liñán and Fayolle 2015; Krueger 2007) have similarly noted that entrepreneurial attitudes, intentions, motivations, and actions are a function of the extent to which individuals consider the process of exploiting an opportunity and creating new business venture desirable and feasible.

Institutional theory offers a useful advancement of this line of research. It suggests that peoples' perceptions of the desirability and feasibility to engage in creating new business ventures are shaped by the context in which they live. Institutional determinants, including the social, political, and cultural framework of a society, shape the structural attributes or the "rules of the game" within which entrepreneurs operate (North 1994, p. 361). These may create disequilibrium conditions in existing marketplaces, facilitate or impede the discovery and identification of new opportunities, and more importantly influence their appraisal in the mind of entrepreneurs, such that they are either motivated to exploit these opportunities for economic, social, and psychological gains or are drifted away from these for fear of increase in uncertainty or associated opportunity costs (Acs et al. 2008; Lim et al. 2010; Verheul et al. 2002; Urbano and Alvarez 2014). Thus, by influencing the level of uncertainty and regulating the opportunity costs incurred in steering entrepreneurial activities, institutions impact the level of entrepreneurial activity in a society (Baumol 1996; Bjørnskov and Foss 2013). As such, understanding differences in institutional arrangements across societies may explain differences in the rate of entrepreneurial activity across nations. It may help in deciphering the structure and form of institutional factors that are more or less conducive to the formation of new business ventures.

North (1990, 1994) classified institutions into two major categories: formal and informal. Formal institutions include the political, legal and economic system, bureaucratic and administrative procedures, rule and regulations, etc. that are erected by the governing body of a nation to regulate the behavior of individuals within it. Informal institutions on the other hand are composed of norms, customs, traditions, values, beliefs, attitudes, practices, etc. (North 1995, North 1990). These form the cultural framework of a society (Hofstede 2001; Dheer et al. 2014). Compared to the formal elements, these operate at a more submissive or tacit level; however, they are passed on from one generation to another (Dheer et al. 2015; Tonoyan et al. 2010) and play a critical role in imparting structure and stability to a

society. Since formal and informal institutions are distinct from each other, studies have focused on exploring their unique impact on entrepreneurial activity in societies. However, it is important to remember that despite their conceptual distinctiveness, these elements operate in conjunction with each other. Specifically, economic activities, despite being structured and regulated by the formal institutions, take shape within the cultural milieu of a society (Williamson 2000). Culture forms the lens through which people see the world (Oyserman and Lee 2008). It shapes their perceptions, inferences, and judgments of the self, others, and their environment (Markus and Kitayama 1991). As such, the outcomes of formal institutional policies and their effect on economic actions, including the level of entrepreneurial activity, will depend on the cultural framework of societies (Liñán and Fernandez-Serrano 2014; De Clercq et al. 2014; Rauch et al. 2013; Inglehart 2000; Kirkman et al. 2006; Shinnar et al. 2012). Thus, to understand differences in the rate of entrepreneurial activity across nations, it becomes important to explore the combined effect of culture and formal institutional policies. To systematically advance these research efforts, a conceptual model is presented (Fig. 1) and associated hypotheses are next developed.

2.1 Culture and entrepreneurial activity

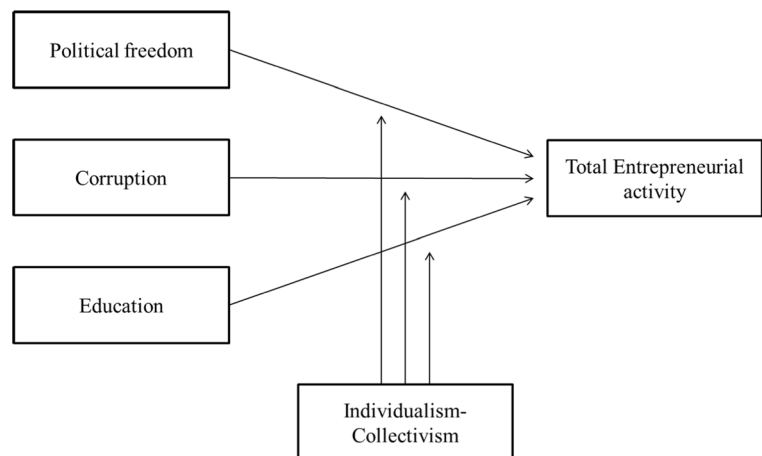
The term culture has often been used to refer to “a hidden unifying theme that provides meaning, direction and mobilization” to people in a society (Morris et al. 1993, p. 597). More popularly, it denotes a collection of values, assumptions, beliefs, practices, symbols, norms, meaning making systems and interpretive frames that

bind members of a society to one another and distinguish them from those of other societies (Hofstede 2001; Kirkman et al. 2006). At the micro-level, culture influences people’s cognitions and interpretive systems (Mitchell et al. 2000; Hofstede et al. 2004). It shapes their needs, preferences, motivations, behaviors, experiences, and attitudes (Taras et al. 2010; Yang et al. 2012). At a more macro-level, culture acts as a reference frame by which societal members understand their relationship with one another as well as with the environment around them (Kreiser et al. 2010). The attributes of culture are stable (Schwartz 2006), in that these are transmitted across generations and form the cornerstone of how a society and its members are perceived by themselves and others.

Culture not only impacts the behavior of people and their relationship with one another, but also has important bearing on the economic functioning of societies (Tsui et al. 2007; Inglehart 1997; Sapienza et al. 2006), including their involvement in entrepreneurial activities (Hayton and Cacciotti 2014; Liñán and Fernandez-Serrano 2014; Thomas and Mueller 2000). This was evident in the writings of Weber (1930), who argued that Protestant cultural values, such as prohibition of luxury, frugality, and self-discipline, encourages the creation of new ventures. Similarly, scholars including Landes (1949), Morris (1967), and Banfield (1967) attributed a society’s entrepreneurial vigor and economic growth to its cultural attributes.

Realizing the importance of culture, scholars have adopted a dimensional approach to analyze its impact on various phenomena of social, psychological, and economic importance. Amongst the different conceptualizations of culture (e.g., Bond et al. 2004; Hofstede 1980;

Fig. 1 Proposed model of total entrepreneurial activity



House et al. 2004; Inglehart 1997; Schwartz 1999), the one proposed by Hofstede and Bond (1988) has received widest reception and is said to be the most influential in predicting behavioral and economic outcomes (Kirkman et al. 2006; Bond et al. 2004). Hofstede proposed four dimensions of culture: individualism-collectivism, uncertainty avoidance, power distance, and masculinity-femininity, to which he added a fifth dimension, long-term orientation, with Hofstede and Bond 1988 (Hofstede 2001; S ndergaard 1994). Extant studies and meta-analytical projects suggest that amongst these five dimensions, individualism-collectivism is the most impactful, not only because it offers insightful understanding of various psychological processes, but also because it accounts for the largest variance in business outcomes (Markus and Kitayama 1991; Zheng et al. 2013) and can conceptually and empirically be linked to other dimensions proposed by Hofstede (e.g., power distance, masculinity, see, Blondel and Inoguchi 2006) and other scholars (e.g., autonomy-embeddedness by Schwartz 1999; survival-self-expression by Inglehart 1997; in-group collectivism by House et al. 2004; see, Inglehart and Oyserman 2004).

Individualism-collectivism denotes the contrast between societies that define people regardless of their group affiliation and those that define people on the basis of their group affiliations (Hofstede 2001). In individualistic societies, the individual forms the basic functional unit. Self is based on one's personal rather than group identity (Markus and Kitayama 1991). Autonomy, independence, self-fulfillment, and personal well-being are prioritized over group harmony (Oyserman et al. 2002). Decisions are based on personal rationality rather than on expectation of utilitarian outcomes for the collectivity. Gratification is based on one's own accomplishments rather than on performance of the group (Kagitcibasi 1997). Interaction with others and willingness to work for others are influenced by consideration of loss and gain that such relationships may offer to the self (Yang et al. 2012; Chen et al. 1998). Collectivistic societies, on the other hand, consider groups as their basic functional unit; individuals exist to fit-in within groups (Hofstede 2001). Self-identity stems from one's social bondages than from personal traits and attitudes (Inglehart and Oyserman 2004). Thus, maintaining harmonious relationships with in-group members and realizing collective goals becomes important (Kim et al. 1994). Conformity, cooperation, and motivation to fulfill group's interests are emphasized more in these societies (Gorodnichenko and Roland 2012).

Because individualistic cultures tend to encourage personal freedom, autonomy, agency, uniqueness and competitiveness, traits that are entrepreneurial in nature (Baum and Locke 2004; Mueller and Thomas 2001; Gartner 1988), and because a large number of studies that have focused on entrepreneurial traits have originated in individualistic societies (mainly in the USA), it is often assumed that individualism is more conducive to the formation of new business ventures. But, empirical analysis has not always supported this assumption (De Clercq et al. 2010; Shane 1993; Pinillos and Reyes 2011; Baum et al. 1993; Hunt and Levie 2002; Morris et al. 1993; Acs 1992). Moreover, some theoretical perspectives suggest that collectivistic societies may offer resources that facilitate rather than impede the proliferation of entrepreneurial activities (Pinillos and Reyes 2011; Fukuyama 1995a; De Clercq et al. 2010). However, it is not the aim of this study to suggest that a particular cultural framework offers conditions that are more or less desirable for the creation and sustenance of new business ventures. Pro-entrepreneurial attributes seem to exist in both individualistic and collectivistic societies. The aim here is to understand the structure of the environment, which may explain the high rate of entrepreneurial activities in some nations over others. As a step towards this direction, it is important to first understand the manner in which individualism and collectivism, i.e., the cultural context of a society, shape the inclination of its people towards entrepreneurial activities.

Individualism and entrepreneurship Individualistic cultures encourage entrepreneurship by emphasizing individual's personal identity over her/his social identity. Specifically, because in these cultures self-identity is based on one's internal attributes (Markus and Kitayama 1991), is not rigid (Gorodnichenko and Roland 2012) and not restrained to the boundaries of a social group, people feel free to advance their independent selves. Enhancing one's self is normatively recognized to be a determinant of one's behavior in these societies (Chen et al. 1998). People display their uniqueness and distinguish themselves from others. Independence, competitiveness, and extraversion are encouraged. These factors boost creativity, innovativeness, and risk taking (Mueller and Thomas 2001; Tiessen 1997), attributes that are associated with the creation of new ventures (Hayton et al. 2002).

Another mechanism by which individualistic societies encourage the creation of new business is based on

their rewarding criterion. Specifically, people are rewarded and recognized for their personal rather than group-based achievements (Hayton et al. 2002). This inspires independent thinking. Rationality of thoughts is emphasized over traditional thinking (Gorodnichenko and Roland 2012). Thus, people care less about social bondages and established mechanisms to pursue means and fulfill their ends (Morris et al. 1993). This encourages risk taking, first because the opportunity costs associated with pursuing risky activities is perceived as low in these societies (Chen et al. 2002) and second because the expectancy of being rewarded for one's ambitious behavior is expected to be high. Lack of restraint on free thinking encourages people to come up with multiple and often less cumbersome, more innovative, and efficient means to fulfill different objectives, thereby advancing the discovery of entrepreneurial opportunities and the creation of new ventures (Mitchell et al. 2000).

Individualistic cultures also facilitate the acquisition of resources by entrepreneurs. Specifically, since people in these societies are more willing and inclined to engage in activities that are instrumental in deriving personal benefits (Chen et al. 1998), they are attracted to invest in ideas and opportunities that may offer them payback in the future. The risk taking tendency in these societies further encourages this behavior (Baughn and Neupert 2003). The result is that seeking venture capital becomes easy. In addition, because expectation of reciprocity is not eminent (Yamagishi et al. 2005), people act based on their free will and self-fulfilling nature. This cultural setup offers entrepreneurs with several exploitable networking opportunities and makes it easier for them to obtain support and commitment from others. Individualistic cultures also boost entrepreneurial activities through their effect on the circulation of information (Taylor and Wilson 2012). Since, boundaries that separate groups are more permeable in these societies, knowledge and information flows relatively easily. At the same time, since people show more trust in others, including strangers (Uslaner 2002; Fukuyama 1995b), they are more open to accepting ideas from them. This triggers the confluence of knowledge, which often leads to identification of new opportunities and creation of new business ventures (Alvarez and Busenitz 2001).

Collectivism and entrepreneurship Similar to individualistic societies, mechanisms exist in collectivistic

societies, which encourage the pursuit of entrepreneurial activities. First, the formation of new business ventures follows the discovery or creation of entrepreneurial opportunities (De Clercq and Arenius 2006), acquisition of resources, such as legitimacy, financial, social, and emotional capital (De Carolis et al. 2009) and procedural knowledge to set up new ventures (Wiklund and Shepherd 2003). A large volume of literature on social capital suggests that these elements may be easily accessible in collectivistic societies (Fukuyama 1995a; Stephan and Uhlaner 2010; Rauch et al. 2013; De Carolis and Saparito 2006). Specifically, since in these societies self-oriented activities and self-beneficial outcomes are not the primary determinant of individual's behavior, people are more open to displaying cooperative tendency towards others, especially when these others are one's in-group members. They share with them knowledge and resources (De Clercq et al. 2010; Chen et al. 1998), which may facilitate the breadth of activities related to the nascent and early phases of entrepreneurial ventures (Morris 2012). Availing these benefits without exorbitant costs is important to entrepreneurs, who are often concerned about monetary resources as well as the timely launch of their ventures.

Second, collectivistic cultures may decrease the level of risk that people perceive as associated with entrepreneurial activities. In an interesting study, Holt (1997) compared Chinese entrepreneurs to American entrepreneurs and found the former to display greater preference for stimulation and higher propensity to seek risks. Feeling of social inclusiveness, collective accountability, and reliance on social networks prevalent in collectivistic societies may boost entrepreneur's capability to tolerate uncertainties (Hsee and Weber 1999; Weber and Hsee 1998). By the same token, since the boundary between an individual's goals and those of her/his family and the social collectivity she/he belong to are blurred in collectivistic societies (Yang et al. 2012; Triandis 1995), people may be more willing to exert extra efforts and spend more time towards the pursuit of entrepreneurial ventures started by others. This may decrease the perception of risk and stress borne by early-stage entrepreneurs.

Third, the dissatisfaction hypothesis (Baum et al. 1993; Wennekers and Uhlaner 2002) suggests that in collectivistic societies, people who are dissatisfied with their jobs may choose self-employment as a means to seek independence, autonomy, and advancement. Since organizations in collectivistic societies offer more

recognition to success of the group as opposed to that of the individual, those with entrepreneurial traits may perceive little satisfaction from working under these conditions. As a result, they may be propelled to start their own business ventures. Extant studies have noted that there is a higher tendency that employees in **collectivistic** cultures perceive less job satisfaction than those in individualistic cultures (Vecernik 2003; Gelfand et al. 2007). This in turn may increase the rate of entrepreneurial activity in collectivistic cultures. The same cannot be ascertained about individualistic cultures, where people are recognized and given considerable autonomy in their workplace (Pinillos and Reyes 2011). They may not perceive the need to start their own business ventures to fulfill their need for autonomy. This leads to the belief that collectivistic rather than individualistic societies may push idiocentric individuals (Triandis 1995) more towards entrepreneurship oriented activities.

To conclude, distinct mechanisms prevail in both individualistic and collectivistic societies that regulate the extent to which people in these cultures are motivated to create new business ventures. However, to presume that culture is the only determinant of the rate of new business creation is for certain a misconception. Institutional policies play an important role (Feldman 2014; Levie and Autio 2008; Bjørnskov and Foss 2013; Estrin et al. 2013; Gohmann 2012; Lim et al. 2010), but their effect on entrepreneurial activities seems to be shaped by the cultural context of a society. To advance our knowledge of cross-national differences in entrepreneurial activity, it is important to understand how the fit between formal and informal institutions impacts the rate of venture creation across societies.

2.2 Institutional precursors of entrepreneurship: the moderating role of individualism-collectivism

Recent studies in entrepreneurship (Dawson 1998; Acs et al. 2008; Acs and Szerb 2007; Noorderhaven et al. 2004; Urbano and Alvarez 2014; Dreher and Gassebner 2013; De Clercq et al. 2010) have emphasized that institutional policies, administrative procedures, regulatory guidelines, and infrastructural makeup influence the creation and sustenance of new business ventures across nations. However, often these institutional foundations do not seem to offer the desired outcomes. For instance, Lithuania and Italy despite having similar level of educational development fare differently in their level of entrepreneurial activities (GEM 2014). Similarly,

Canada and Spain, despite being politically free nations with democratically elected governments have different levels of entrepreneurial activities (GEM 2014). To understand such inconsistencies, this study focuses on three institutional factors: political freedom, corruption, and education, which extant literature has indicated as important determinants of the level of entrepreneurial activity. It aims to understand how their effect is shaped by the individualism-collectivism dimension of culture.

2.2.1 Political freedom and entrepreneurial activity

Freedom grants to individuals “the ability to pursue personal goals without burdensome restraints or coercion” (Preston 1982, p. 73). Political freedom indicates the extent to which citizens of a nation are granted political rights and civil liberties (Gastil 1991). Governments as the institutional bodies or leaders in their authoritative capacity regulate the extent of political freedom that is offered to people of a nation. Citizens of a politically free nation, commonly referred to as a democratic society, are offered equal opportunities to participate in the formation of public policies and face no discrimination because of the content or source of their preference (Gibson 1993). They can challenge governmental policies, testify and protest against claims made by the ruling body, exercise their legal rights, and form oppositional groups (Wu and Davis 1999). They do not face coercion from the state and can compete for public offices (Goel and Nelson 2005). Freedom of press, speech, expression, and assembly is afforded to them. To maximally use these rights and liberties, democratic societies offer universal adult franchise to its people.

While political freedom is said to offer a sense of social equality to people, its effect on economic growth has been the topic of much debate in research. On the one hand, some studies suggest that greater political freedom results in greater economic growth (Scully 1988; Barro 1991; Aixalá and Fabro 2009). Specifically, political freedom is said to decrease the level of political, social, and economic uncertainty in a society, which creates conditions that are more conducive to competition and creation of new ventures. This broadens markets and results in greater economic expansion (Goodell and Powelson 1982; Sirowy and Inkeles 1990). Political freedom also aids in equal distribution of resources, especially creating more opportunities for the less privileged people in a society (Gerring et al. 2005),

which may boost the rate of new venture creation activities. In addition, democratic governments are said to offer greater protection of property rights and higher return on individual's productive efforts through low taxation. These factors may encourage private investment (Aixalá and Fabro 2009). Thus, political freedom motivates people to work and invest, thereby increasing the level of dynamism and vitality in marketplaces, which may lead to an increase in entrepreneurial activity and enhanced economic growth. Some empirical evidence exists (Scully 1988; Kurzman et al. 2002; Doucouliagos and Ulubaşoğlu 2008; Barro 1991) which supports the arguments advanced in favor of these positive effects.

However, contradictory theoretical and empirical evidence exists (Huntington 2006; Adam and Filippaios 2007; Bhagwati 1982; Sirowy and Inkeles 1990; Ken Farr et al. 1998; Helliwell 1994), which challenges the viewpoint that political freedom always has a positive effect on economic growth. Commonly referred to as the “conflict view” (Sirowy and Inkeles 1990; Doucouliagos and Ulubaşoğlu 2008), this perspective suggests that economic growth requires strict enforcement of policies, which only authoritarian governments can provide. According to this viewpoint, democratic governments are weak and fragile, which often fall prey to the irrational and disruptive demands of various sections of the society (See Clark and Lee 2006). Their ability to formulate and implement tough economic measures, allocate resources in an efficient manner, use coercive practices to break traditional patterns, and subside conflicts due to racial and ethnic heterogeneity is said to be compromised due to the vagaries of the electoral politics (Bhagwati 1995). In addition, the economic and entrepreneurial vitality of politically less free nations, such as China, Singapore, Hong Kong, Taiwan, and South Korea, seems to support the notion that less democratic regimes may be more impactful in providing economic safeguards to new business ventures and a boost to prospective entrepreneurs. But is this view convincing enough to conclude that authoritarian governments facilitate or will always result in an increase in the creation and sustenance of new business ventures? Or are we missing another constraining variable, which may shed light on the relationship between political freedom and entrepreneurial activity across nations?

Moderating impact of individualism-collectivism It is argued in this paper that the cultural framework of a

society, especially the individualism-collectivism dimension moderates the relationship between political freedom and entrepreneurial activity, such that this relationship is positive for more individualistic nations, while being less positive (or negative) for more collectivistic nations. This argument is based on the notion that a society's perception of the extent of political freedom it enjoys and ultimately its level of new venture formation is shaped by its cultural framework. People in more individualistic societies may have a more positive and self-fulfilling perception of the greater political freedom afforded by a democratic institutional pattern (Veenhoven 1999), which may get translated into increased opportunities for self-expression and self-enhancement through initiating new ventures. Greater political freedom may symbolize to them that resources and opportunities are available to all members of the society. It will also indicate that independence, autonomy, and welfare of all are prioritized by the open and liberal political settings (Triandis et al. 1988). Prospective entrepreneurs in such cultures will feel encouraged and strive to achieve motives such as personal development, wealth attainment (Scheinberg and MacMillan 1988), independence (Amit et al. 2001), and freedom of choice and expression. Trust in political institutions (Bjørnskov 2007) and the prospect of safeguarding oneself from government intrusion (Sirowy and Inkeles 1990) will further empower individuals and enable them to create and exploit entrepreneurial opportunities. Provision of liberty will not be perceived to foster unpredictability and disorder, but will be considered to generate competitiveness and enhance risk taking, all necessary for the successful pursuit of new business ventures (Gartner 1985).

However, this may not be the case with more collectivistic societies. Here, greater political freedom may be not be associated with a decrease in unpredictability, but may be perceived as leading to an increase in chaos and uncertainty (Gibson 1993). The collectivistic nature of the society suggests that people display greater preference to recognizing themselves as members of groups (Brewer and Yuki 2007). They may not prefer to express their independent self either socially or politically (Inglehart and Oyserman 2004). Studies have found that in these societies, people often look to others for resources and guidance (Oyserman et al. 2002; Gelfand et al. 1996). As such, more political freedom may increase their perception of political instability and the lack of a capable leadership. In addition, the presence

of multiple groups, all with strong collective identities (Bhagwati 1995; Gerring et al. 2005), may increase the likelihood that democratically elected governments may succumb to the need of diverse racial, ethnic, religious, class or caste based groups and are not be able to implement policies that are pro-entrepreneurial in nature and which denote the equal allocation of resources and opportunities amongst all individuals (Aixalá and Fabro 2009; Sirowy and Inkeles 1990). The inability to implement progressive economic policies and force significant changes in the society may discourage entrepreneurs from initiating new ventures. It can be argued that in a more collectivistic society, less politically free configuration, one where multiple groups do not interfere in the enforcement of economic regulations and one where the leadership is commanding may be able to introduce informed market discipline and reconfigure the allocation of resources in a way that benefits prospective entrepreneurs. Such leadership can open new markets and offer appropriate rewards and incentives to entrepreneurs, thereby stimulating creativity and innovation. Such actions may shatter the boundaries created by group membership and foster an increase in entrepreneurial activity. To conclude, while individualism may increase the perception of political freedom and stability, thereby encouraging entrepreneurial activities, collectivism may decrease such benefits. It is hypothesized,

H1: The relationship between political freedom and entrepreneurial activity is moderated by the individualism-collectivism dimension of culture.

2.2.2 Corruption and entrepreneurial activity

Corruption, the misuse of public power for private gains (Dreher and Gassebner 2013), as enunciated through practices such as bribery, extortion, nepotism, and favoritism (Dwivedi 1967), is said to negatively impact economic growth and prosperity of nations (Mauro 1995). Specifically, corruption impedes the development of infrastructure (Mo 2001), delays implementation of favorable social policies (Uslaner 2004), decreases tax revenue (Tanzi and Davoodi 2000), increases income inequality (Gyimah-Brempong 2002), and discourages inward foreign direct investment in nations (Lambsdorff 2003). Despite the negative rhetoric associated with corruption, its consequences for the creation of new business ventures have been debated in

literature. Bribes incurred during the process of entrepreneurship may be intended to secure contracts, acquire permits, expedite administrative processes, seek loans, receive critical information, etc. Some studies have suggested that corrupt practices, such as these are similar to adding “sand in the wheels of commerce” (Cuervo-Cazurra 2006). For instance, Anokhin and Schulze (2009) argued that payments made in the form of bribes increase the transaction costs of starting new businesses. This limits the rent entrepreneurs expect to gain from capitalizing their innovative or novel ideas. Corruption also increases perceived risk of opportunism by others and decreases the motivation of entrepreneurs to exert efforts in starting new ventures (Bardhan 1997). In addition, involvement in corrupt activities and learning the tricks of this trade may take a toll on entrepreneur’s time and energy (Avnimelech et al. 2014), which could otherwise be spent in creating productive and value-generating opportunities (see also Kaufmann and Wei 1999). Rampant corruption also allows less efficient firms to stay in the market and extract limited public resources to maximize their own profits at the expense of more innovative and efficient entrepreneurial projects (Ngunjiri 2010; Estrin et al. 2013). This may generate disincentives for entrepreneurs and decrease the rate of new business formation in a society.

However, some studies have indicated their skepticism towards the negative effect of corruption on entrepreneurship. These tend to support the “greasing wheel hypotheses” (Leff 1964) and argue that corruption may be the grease required to move the otherwise slow and regulated institutional machinery. For instance, Bardhan (1997) indicated that the rise of an entrepreneurial class during the eighteenth and nineteenth century in England and the USA may be attributed to widespread corruption in state and city governments, which enabled entrepreneurs to gain access to privileged public resources. In this case, corruption served to minimize the negative impact of lengthy administrative procedure and ill-functioning institutions. Dreher and Gassebner (2013: 414) stated that “routine corruption may well be efficiency enhancing.” In their empirical analysis of 43 nations over a 2-year period (2003–2005), these scholars found that corruption facilitated new firm entry in highly regulated economies. That corruption may at times facilitate the process of starting new business ventures may also be inferred from the fact that entrepreneurial activities are time constrained. Success is determined by the speed with which new or innovative

products or processes hit the market. Under these conditions, bureaucratic regulation, which are often lengthy and cumbersome (Lui 1985), may increase the level of uncertainty associated with the success of new ventures. Entrepreneurs may weigh the benefits of bribing public officials against the cost of non-materializing their new ideas and/or losing desirable outcomes (Longenecker et al. 1988) and may choose the former to safeguard their interests. Studies have in fact indicated that entrepreneurs possess a strong “action bias” (Harris et al. 2009, p. 408) and so at times may break rules and institutional boundaries (Zhang and Arvey 2009; Brenkert 2009). When opportunities exist to expedite the process of starting new firms, prospective business founders may attempt to use these to their advantage. However, is corruption intrinsic to entrepreneur or the society? The sociological perspective (Aluko 2002; Welzel and Inglehart 2010; O’Connor and Fischer 2011) suggests that the influence of corruption on the rate of new venture creation may depend on the extent to which corrupt practices are socially accepted, normalized, and an institutionalized aspect of the society.

Moderating impact of individualism-collectivism

Societies may differ in the extent to which they support or repudiate corruption (Husted and Estudios 1999), which may influence its consequences on various social and economic phenomena. Particularly interesting is the contrast between individualistic and collectivistic societies. We argue that while corruption may impede the rate of entrepreneurial activities in individualistic societies, its negative impact may not be as pronounced in collectivistic societies. Thus, the effect of corruption on entrepreneurial activity will be shaped by the level of individualism-collectivism of a society. Specifically, differences in the cultural milieu will influence the manner in which corruption is perceived, exercised, and experienced (Davis and Ruhe 2003).

First, in individualistic societies, people emphasize rationality and pay little heed to favoritism and group-oriented behavior (Gelfand et al. 2004). Freedom, autonomy, self-determination, and competitiveness are valued attributes of this society (Kirkman et al. 2006). In this context, corrupt practices, such as bribery or nepotism are construed as an infringement on individual’s autonomy and motivational drive (Gorodnichenko and Roland 2012). This may daunt prospective entrepreneurs from taking risks and advancing their desire to

establish their independent identity through starting new ventures. Second, since individualistic societies emphasize egalitarian principles and seek social justice and equal opportunities for all (O’Connor and Fischer 2011), the prevalence of corrupt practices that tend to disrupt equity-based allocation of rewards (Kirkman et al. 2006) may be socially disapproved and negatively stigmatized in this society. These may bring shame and guilt to entrepreneurs and limit the extent to which corruption may facilitate creation of their ventures. Third, since individualistic societies allocate less significance to group-based boundaries (Triandis 1995), people in these are more open to trusting others, including strangers (Huff and Kelley 2003). However, as trust in this case is not based on the principle of long-term relationships (Khatri 2006; Uslaner 2002), distrustful behavior from others, including that from public officials, such as demand for bribes or graft, may invoke feelings of resentment. It may increase the uncertainty, costs, and risk of doing business. Prospective entrepreneurs may perceive this as opportunism (Chen et al. 2002) and may be discouraged from pursuing venture creation activities. Individualism may also increase the extent to which the practice of offering gifts in return of favorable actions is considered a strain on one’s resources. These arguments suggest that in individualistic societies entrepreneurial activities may not benefit from corruption. However, this may not be true for collectivistic societies.

The negative impact of corruption on entrepreneurial activities may not be as pronounced in less individualistic or more collectivistic societies. First, the meaningfulness of corruption, i.e., its role in greasing the wheels, seems to be more important in collectivistic than in individualistic societies. Studies suggest that in collectivistic societies, the state tends to have a greater likelihood of dominating the economic system (Hofstede 2001). It controls and regulates sectors such as energy, transportation, communications, infrastructure development, permits, and licensing, which directly impact the formation and survival of new businesses. This gives office bearers, who command respect and authority from others in these societies (Hofstede 2001), the ability to divert resources and critical information to their in-group members, without much finger-pointing. Under these conditions, bribing officials and offering them gifts may be a way for entrepreneurs to acquire useful resources and fulfill their entrepreneurial pursuits. It gives them the capability to exert agency to achieve

their goals. Higher control of corruption may make it difficult for them to circumvent regulatory barriers and acquire resources. Entrepreneurship literature has in fact emphasized the importance of informal relationship in collectivistic societies (e.g., Guanxi in China, Inhawa in Korea, Wa in Japan, Blat in Russia, Wasta in Middle East, Sociolismo in Cuba, Combina in Israel) where bribing and gift giving is often an accepted means of formulating long-term relationships with power bearers (Puffer et al. 2010), which can then be used to seek preferential treatment.

Second, studies (e.g., Glaeser and Saks 2006) suggest that the cost of corruption depend on the probability of being caught. In this regard, collectivistic societies seem to offer a cushion of protection from being charged with legal sanctions, which might increase the usefulness of corruption to the process of entrepreneurship. Specifically, bribing officials is a way for prospective and nascent entrepreneurs in collectivistic societies to gain access to in-group networks of power holders (Puffer et al. 2010). Since the resultant relationships are long-term and based on trust and reciprocity (Delhey and Welzel 2012; Realo et al. 2008), the probability of being caught and the penalties of being caught are often an exception rather than the rule. Studies (e.g., Keenan 2007; Nayir and Herzig 2012) have noted that occurrences of whistle blowing are less common in collectivistic than in individualistic societies. This suggests that in these societies, it would be less risky and more feasible for individuals to engage in delinquent activities without the fear of being charged with legal consequences (Mazar and Aggarwal 2011). Based on these arguments, it can be inferred that while corruption may lower the rate of entrepreneurial activities in individualistic societies, its negative consequences may be less pronounced in collectivistic societies. It is hypothesized,

H2: The relationship between corruption and entrepreneurial activity is moderated by the individualism-collectivism dimension of culture.

2.2.3 Education and entrepreneurial activity

Education is another important determinant of the level of entrepreneurial activity across nations. Governments around the world invest a considerable proportion of their budget to build infrastructure and develop resources to educate their citizens (Minniti et al. 2006),

with the belief that this growth in human capital will lead to an increase in economic prosperity of their nations. The consequences of education on the advancement and growth of entrepreneurship have also been a hot topic of debate in social policy and academic research circles. On the one hand, some studies (e.g., Le 1999; Lucas 1978; Robinson and Sexton 1994) have adopted a pro-entrepreneurial perspective of education. These suggest that education enhances individuals' managerial capabilities (Le 1999; Robinson and Sexton 1994). More educated people are more confident of their ability to start new ventures (Li et al. 2008). They are also more confident to sustain and reap profits from their business ventures (Van der Sluis et al. 2004). As such, societies with higher education have an entrepreneurial culture and so display a higher rate of entrepreneurial activity. Consistent with this human capital perspective is the knowledge spillover theory of entrepreneurship (Audretsch 2009; Acs and Audretsch 2010; Stam 2013), which also suggests that educationally advanced nations harbor greater entrepreneurial opportunities and so may experience higher entrepreneurial activity.

Even though the aforementioned theoretical viewpoints suggest that education may increase the rate of entrepreneurial activity across nations, empirical analysis does not confirm these arguments (Van der Sluis et al. 2008; Dickson et al. 2008). Some studies (e.g., Van der Sluis et al. 2004; Li et al. 2008; Le 1999) also present a different perspective. These indicate that since education improves the earning potential of individuals, it may be the case that better educated people have more employment opportunities (Kangasharju and Pekkala 2002). They may weigh the benefits of secure employment against the costs, risks, and uncertainties of starting new business ventures (Acs et al. 2004; Matlay et al. 2012). For them, the expected returns of self-employment may be less than that of employment and so they may select the former over the later. Following this viewpoint, it seems that higher education may raise employment levels in a society as opposed to boosting its rate of entrepreneurial activity. Interestingly, despite these contradictory perspectives, studies have not focused on analyzing whether a society's cultural conditions explain variance in the relationship between education and entrepreneurial activity. We believe that people's attitude towards entrepreneurship and their decision to choose employment over entrepreneurship are influenced by their socio-cultural framework (Arthur

et al. 1989; Brown 2002; Lent et al. 2002). Specifically, it is argued that the individualism-collectivism dimension of culture may moderate the effect of education on the rate of entrepreneurial activity across nations.

Moderating impact of individualism-collectivism There is little doubt that education enables individuals to identify and create entrepreneurial opportunities (Stam 2013; Alvarez and Barney 2007; Urbano and Alvarez 2014; Shane 1993; Acs et al. 2009). However, the capitalization of these opportunities through starting new business ventures may depend on the cultural understandings and context in which people live. In this regard, individualistic societies may provide an environment that encourages and is more conducive to the pursuit of entrepreneurial activities by educated people. Some factors support this argument.

In individualistic societies, people are recognized for their self-accomplishments and heroic deeds (Markus and Kitayama 2003; Kim et al. 1990). They are given opportunities and offered safeguards to accomplish their goals. Financial institutions and venture capitalists bid seed capital to prospective entrepreneurs based on their knowledge, education, and innovativeness rather than on their social contacts (Tiessen 1997). In addition, these societies display greater tolerance to entrepreneurial failures (Petzinger 1997; Hofstede 2001; Lee and Peterson 2001). These do not stigmatize or debar entrepreneurs from getting a second chance to prove their skills and abilities. These factors may decrease the perceived risk and improve the attractiveness of new business formation by educated people. In addition, individualistic societies may increase the extent to which educated people perceive greater confidence in their ability and drive to fulfill their self-actualization need. Since entrepreneurship offers them a chance to display their uniqueness, establish their self-identity, and earn recognition and praise from others, the perceived opportunity costs for entering self-employment may be less for them. However, these arguments may not be valid for less individualistic or more collectivistic societies.

Social groups and not individuals are the basic functional unit in collectivistic societies. People are valued, recognized, and praised when despite gaining education and despite their uniqueness they contribute to the harmony, cohesiveness, and integrity of their social groups (Earley and Gibson 1998). Interdependence, social solidarity, and group identity gain precedence over autonomy, independence, and self-identity (Waterman 1981;

Markus and Kitayama 2003). People display more trust in their in-group members rather than strangers, which limits the number of sources that entrepreneurs can avail to get funding for their pursuits (Lee and Peterson 2001). In addition, people who fail in their entrepreneurial pursuits may perceive greater social stigma and may not find it easy to get a second chance to display their skills and abilities (Tezuka 1997; Damaraju et al. 2010). Educated people, who spend considerable time in acquiring education, may find these factors as social barriers to their entrepreneurial quests. They may prefer wage employment over self-employment as a means to gain social security, solidarity, and group-based identity. For them, the perceived opportunity costs of losing employment opportunities may be higher than that for people in more individualistic cultures. At the same time, the group-based cultural orientation of collectivistic societies may attract educated people to work in established firms rather than start their independent ventures. Thus, while increase in education may boost the rate of entrepreneurship in individualistic societies, it may not exert the same effect in collectivistic societies. It is hypothesized,

H3: The relationship between education and entrepreneurial activity is moderated by the individualism-collectivism dimension of culture.

3 Methodology

3.1 Data and sample

To test the hypotheses, data at the national level were compiled from five different sources: (a) the Global Entrepreneurship Monitor (GEM) research, (b) Freedom House political freedom index dataset, (c) World Bank's Worldwide Governance Indicator Project, (d) United Nation's Development Programme dataset, and (e) Hofstede's (2001) cultural indices database. Data from these sources was used to create a dataset, which contained 10-year of data on different variables. Specifically, data for the main dependent variable, rate of entrepreneurial activity, was obtained for the ten most recent year period of 2005 to 2014. Data for the three independent variables of political freedom, corruption, and education were lagged by 2 years to account for the gap that may exist for the effect of these institutional

factors to show on entrepreneurial activity (Anokhin and Schulze 2009). Thus, these were for the years 2003 to 2012. The final measures of these variables were based on the average of data that covered these 10-year periods. Since culture is a relatively stable factor (Hofstede 1983), we considered it appropriate to use data for individualism-collectivism from Hofstede's study (Hofstede 2001). This is the most commonly used source of cultural indices in entrepreneurship research (Baughn and Neupert 2003; Hayton and Cacciotti 2014). Even though data for the dependent and independent variables could be obtained for about hundred nations, data for the moderator variable was limited to a total of 84 nations. Thus, the final analyses are based on observations of 84 nations for which comparable data for all criterion, predictor, and moderator variables could be obtained. Appendix Table 3 provides a list of the nations included in this study.

3.2 Dependent variable

Entrepreneurial activity This measure was based on data obtained from the GEM research. It has been used in several studies of entrepreneurship and provides a rich source of information to understand and compare the antecedents and consequences of new business creation activities across nations (Reynolds et al. 2005). This study used GEM's measure of total entrepreneurial activity (TEA), which is the most well-known and widely used index (De Clercq et al. 2010). It takes into consideration the percentage of adult population, 18–64 years of age, in each nation that is either currently engaged in the process of creating new business ventures (commonly referred to as the rate of nascent entrepreneurship) or is operating businesses that has paid salaries, wages, or other forms of payment for at least 3 months but no more than 42 months (commonly referred to as the rate of early stage entrepreneurship). The TEA measure is based on data collected by means of annual surveys that are administered by research scholars across the world in telephonic or face-to-face interviews with a minimum of 2000 respondents per nation.¹ Although these surveys are conducted annually, not every nation is surveyed every year. So, in order to increase the sample size for this study and to get a wider coverage of nations, it was decided to collect TEA data for the 10-year period

of 2005 to 2014. An average entrepreneurial activity measure was then created based on this data for each nation. Correlations between TEA measures for these 10 years varied from $r = 0.67$ to 0.97 ($p < 0.001$). This procedure of using average TEA measure is consistent with extant studies (e.g., Anokhin and Schulze 2009; De Clercq et al. 2010; Liñán and Fernandez-Serrano 2014; Pinillos and Reyes 2011). Not only does it helps to increase the sample size but also imparts greater stability and validity to the results of this study and minimizes the effect of any outlier observation (González-Pernía et al. 2012).

3.3 Independent variables

Political freedom A national-level index of political freedom was created using data from the Freedom House database, used previously in several studies (e.g., Dawson 1998; Farr, Lord and Wolfenbarger, 1998; Gerring et al. 2005). Specifically, Freedom House publishes annual reports on the level of political freedom in different nations along two dimensions: political rights and civil liberties. The political rights index captures the extent to which people enjoy various rights, such as to vote, participation in fair elections, and involvement in political decision making. The civil liberties index captures the extent to which people are granted fair legal procedures, equality of opportunities, and freedom of expression, assembly, association, religion, etc. Each index is measured on a scale of 1 to 7, where 1 denotes the highest and 7 denotes the lowest level of freedom. For this study, data on these indices was collected for the 10-year period of 2003 to 2012. Then, for each nation, an overall index of political freedom was calculated as the mean of political rights and civil liberties index for these 10 years. This procedure is consistent with extant studies (e.g., Goel and Nelson 2005; Helliwell 1994). Correlation of this index for the different nations across 10 years varied from $r = 0.95$ to 0.98 ($p < 0.001$), which indicated the reliability of this measure. Finally, for this study, the original scale was reversed such that higher numbers denote higher and lower numbers denote lower levels of political freedom.

Corruption The measure for this variable was based on data from World Bank's Worldwide Governance Indicators Project (Kaufmann et al. 2007). This database provides an index for the control of corruption across nations. It incorporates a wide range of issues associated

¹ See Reynolds et al. (2005) for additional details on the GEM methodology.

with corruption, such as the frequency and size of additional payments needed to get things done, extent of nepotism or patronage in civil services, involvement of elected officials in corrupt activities, etc. Overall, it is based on 22 different surveys and assessments of experts, businesspeople, and citizens in each nation. These are weighed depending on their precision and country of coverage, which reduces the error associated with any single indicator. Values on this index ranged from -2.5 (low control of corruption) to $+2.5$ (high control of corruption). For this study, data were obtained for the period 2003 to 2012 and were averaged to derive the final index. Correlation of this index for the different nations across 20 years varied from $r = 0.97$ to 0.99 ($\rho < 0.001$), which indicated the reliability of this measure. Since this study focuses on a measure of corruption, the average control of corruption index was multiplied by -1.0 to come up with a final corruption index. Higher numbers thus denote more corrupt societies. This index has previously been used in several studies (e.g., Anokhin and Schulze 2009; Dreher and Gassebner 2013).

Education The measure for this variable was created by using data from the United Nations Development Programme database, which provides statistics on the level of education in different nations based on the mean years of schooling of adults and the expected years of schooling of children. The index of education based on this data has been used in several extant studies (e.g., Dow and Karunaratna 2006; Schimmel 2009). It ranges from 0 to 1, where higher numbers indicate greater level of educational attainment. Unfortunately, education data could not be obtained for the years 2003 and 2004. Thus, in this study, data was obtained for the period of 2005 to 2012 and averaged for each nation. Correlation of this index for the different nations across 8 years varied from $r = 0.98$ to 0.98 ($\rho < 0.001$), which indicated the reliability of this measure.

Individualism A national-level measure for individualism was obtained from Hofstede's (2001) study. Hofstede's individualism index captures the extent to which societies give priority to the goals of an individual over that of groups. The index is based on 117,000 surveys collected from around 88,000 employees working in 72 nations (reduced to 40 nations that had 50 or more responses) for a large multinational corporation. Hofstede later expanded the database to include score

for more nations. These were obtained from his Web site (www.geert-hofstede.com). In all, scores for 84 nations could be obtained. The index ranges from 1 to 100, where higher scores denote higher level of individualism and lower scores denote lower level of individualism or more collectivism.

3.4 Control variables

In line with extant studies, controls were included for the effect of *unemployment*, *population*, and *wealth* on the level of entrepreneurial activity across nations. The rate of entrepreneurial activity is said to be influenced by the level of unemployment in nations. Studies (e.g., Noorderhaven et al. 2004) have suggested that since compared to employed people, the opportunity cost of engaging in new business formation is less for unemployed people, and unemployment may be a driver of entrepreneurship. As such, nations with higher unemployment rates may display greater rates of entrepreneurial activity. To control for unemployment, a measure of the average unemployment rate (*UNPL*) for the period 2003 to 2012 was included in this study. This was based on data from the World Bank database. Along with unemployment, studies (e.g., Anokhin and Schulze 2009; Noorderhaven et al. 2004) have noted that the rate of new business formation may also depend on a nation's size as reflected through its population, higher population being correlated with high entrepreneurial activity. To account for this, a measure of the average population for the period 2003 to 2012 (*POPUL*) was created based on data from the International Monetary Fund and included as a control variable in the analysis.

Finally, wealth which is an indicator of economic development is also said to be associated with a nation's rate of new business formation (Acs et al. 2008; Van Stel et al. 2005), although the exact nature of this relationship has remained ambiguous. Some studies suggest a positive effect of wealth on entrepreneurship (Wong et al. 2005; Parker and Robson 2004); others indicate a negative effect (Noorderhaven et al. 2004; McMullen et al. 2008; Bjørnskov and Foss 2008), and still some show no such effects (Ovaska and Sobel 2005). Irrespective of the direction, the effect of wealth was controlled for in the analyses. To do so, a measure of GDP per capita (*GDP per cap*) in constant 2005 US dollars averaged for the 10-year period of 2003 to 2012 was included in the analyses. Data for this measure was obtained from the World Bank database.

4 Analysis and results

Table 1 presents descriptive statistics including the mean, standard deviation, and correlations between the dependent, independent, and control variables. As a first step, multicollinearity was checked by examining the variance inflation factor (VIF) values as well as tolerance for all independent and control variables included in the analyses. The VIF values were below the cutoff of 10.0 (Hair et al. 2006; Verheul et al. 2015). Tolerance values, which denote variability in independent variables not explained by other independent variables (Özgener and İraz 2006), were above the cutoff of 0.10 (Lin 2008). These results suggest that severe collinearity does not exist and so will not impact the findings of this study. In line with De Clercq et al. (2014), the average VIF values for all regression models are also reported in Table 2. All values were below the threshold of 10.0 (Hair et al. 2006). Next, preliminary examination of the correlations (see Table 1) suggested that political freedom is negatively ($r = -0.26$, $\rho < 0.05$), corruption is positively ($r = 0.49$, $\rho < 0.01$), education is negatively ($r = -0.57$, $\rho < 0.01$), and individualism is negatively ($r = -0.50$, $\rho < 0.01$) associated with entrepreneurial activity.

Hypotheses were tested using hierarchical multiple regression analysis. Results are provided in Table 2. In the first step, only control variables were included in the regression equation (model 1). Overall regression was significant ($R^2 = 0.26$, $F(3, 80) = 9.51$, $\rho < 0.001$). Population ($\beta = -0.07$, $\rho = \text{n.s.}$) and unemployment

($\beta = -0.11$, $\rho = \text{n.s.}$) were found to have no significant effect on total entrepreneurial activity. GDP per capita was the only covariate to have a significant effect on the dependent variable ($\beta = -0.54$, $\rho < 0.001$). The next step called for examining the moderating effect of individualism on the relationship between political freedom and entrepreneurial activity. For this, first measures for political freedom and individualism were included in the regression equation along with the control variables. Overall regression (model 2) was significant ($R^2 = 0.31$, $F(5, 78) = 7.05$, $\rho < 0.001$) with a significant change in R^2 over the baseline model ($\Delta R^2 = 0.05$, $\rho < 0.10$). Next, the interaction term was added to the regression equation. To avoid issues of multicollinearity, variables for political freedom and individualism were mean centered before creating the interaction term (Aiken et al. 1991). The interaction term ($\beta = 0.33$, $\rho < 0.05$) as well as overall model ($R^2 = 0.36$, $F(6, 77) = 7.44$, $\rho < 0.001$) was significant (model 3). These results supported hypothesis 1.

To further characterize the nature of this moderation, interaction effects were tested using the bootstrapping procedure and floodlight analysis (Hayes 2012; Hayes and Matthes 2009). The Process macro in SPSS (Preacher and Hayes 2008) was used for this purpose. In this case, bias-corrected estimates with 95% confidence interval (CI) and 5000 bootstrap resample were calculated. In addition, it automatically centers the variables before assessing the interaction effects (Preacher et al. 2006; Preacher and Hayes 2004). Results were consistent with those obtained earlier, in that a

Table 1 Descriptive statistics and Pearson's correlations

Variables	1	2	3	4	5	6	7	8
Population	1							
Unemployment	-0.17	1						
GDP per capita	-0.16	-0.27*	1					
Political freedom	-0.21*	0.03	0.50**	1				
Corruption	0.19	0.22*	-0.85**	-0.63**	1			
Education	-0.21	0.03	0.67**	0.63**	-0.72**	1		
Individualism	-0.06	0.06	0.65**	0.55**	-0.66**	0.68**	1	
Total entrepreneurial activity	0.03	0.05	-0.50**	-0.26*	0.49**	-0.57**	-0.50**	1
Min	0.31 (in million)	1.18	199.71	1.25	-2.46	0.21	6.00	3.62
Max	1324 (in million)	24.13	81,364.60	7.00	1.31	0.91	91.00	38.00
Mean	67.69	8.08	16,435.37	5.39	-0.37	0.68	41.48	12.51
Standard deviation	192.65	4.31	18,254.93	1.77	1.07	0.16	22.80	7.58

*Correlation is significant at the 0.05 level (two-tailed); **correlation is significant at the 0.01 level (two-tailed)

Table 2 Regression results for total entrepreneurial activity

Predictors	Model 1 (baseline)	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Population	-0.07	-0.03	-0.05	-0.04	-0.04	-0.08	-0.02
Unemployment	-0.11	-0.03	0.05	-0.03	0.07	0.01	0.14
GDP per capita	-0.54***	-0.34*	-0.40**	-0.22	-0.39	-0.15	-0.17
Individualism		-0.32*	-0.57**	-0.27†	-0.44**	0.13	-0.44**
Political freedom		0.08	0.30*				
Corruption				0.14	-0.01		
Education						-0.40**	-0.15
Interaction effects							
Political freedom × individualism			0.33*				
Corruption × individualism					-0.43***		
Education × individualism							0.38***
Constant							
N	84	84	84	84	84	84	84
Mean model VIF	1.11	1.76	2.20	2.50	2.52	1.98	2.29
R ²	0.26	0.31	0.36	0.31	0.44	0.38	0.46
ΔR ²		0.05†	0.05*	0.05†	0.13***	0.11**	0.08***
Adj. R ²	0.23	0.27	0.32	0.27	0.40	0.34	0.41
F	9.51	7.05	7.44	7.07	10.11	9.33	10.73

*Significant at the 0.05 level (two-tailed); **significant at the 0.01 level (two-tailed); ***significant at the 0.001 level (two-tailed); †significant at the 0.1 level (2-tailed)

significant interaction effect of political freedom and individualism on entrepreneurial activity was observed ($B = 0.09$, $t_{(77)} = 2.41$, $\rho < 0.05$, $CI = 0.02$ to 0.16). The Process macro also provides results for the conditional effects of independent variable on the dependent variable based on 10th, 25th, 50th, 75th, and 90th percentile values of the moderator variable (Hayes 2012). These values correspond to “very low,” “low,” “moderate,” “high,” and “very high” points of the moderator variable. An interaction plot was created using these values to facilitate interpretation of the findings. The plot (see Fig. 2) along with results of conditional effect analysis (Bass and Chakrabarty 2014; Preacher et al. 2006) suggested that for nations on 10th, 25th, and 50th percentiles of individualism index, political freedom had no significant (although a negative) effect on the rate of entrepreneurial activity (slope_(10th percentile) = -1.10 , $t_{(77)} = -1.34$, $\rho = \text{n.s.}$; slope_(25th percentile) = -0.66 , $t_{(77)} = -0.98$, $\rho = \text{n.s.}$; slope_(50th percentile) = 0.74 , $t_{(77)} = 1.72$, $\rho = \text{n.s.}$). However, for nations on 75th and 90th percentiles, the conditional effect of political freedom on entrepreneurial activity is positive and significant (slope_(75th percentile) = 2.86 , $t_{(77)} = 2.75$, $\rho < 0.01$; slope_(90th percentile) = 4.10 , $t_{(77)} = 2.69$, $\rho < 0.01$).

Next, floodlight analysis which is based on Johnson-Neyman technique was used to identify zones of significance (Spiller et al. 2013), i.e., regions in the range of moderator variable where the effect of independent variable on dependent variable is significant and regions where it is not significant (Hayes and Matthes 2009; Johnson and Neyman 1936). This technique overcomes the arbitrariness of using values of the moderator variable that are ± 1 standard deviation from the mean. Results indicated that for nations with an individualism index of 37 and below, the relationship between political freedom and total entrepreneurial activity is not significant (although it ranged from slope = 0.72 , $t_{(77)} = 1.67$, $\rho = \text{n.s.}$, for nations with an individualism score of 36 to slope = -1.89 , $t_{(77)} = -1.70$, $\rho = \text{n.s.}$, for nations with an individualism score of 6). While for nations with individualism index above this point ($\sim 51\%$ of the sample), this relationship is positive and significant (slope = 0.90 , $t_{(77)} = 1.99$, $\rho = 0.05$ for nations with an individualism score of 38) and increases in strength as the level of individualism increases, with the strongest positive effect for nations with the highest level of individualism (slope = 5.60 , $t_{(77)} = 2.63$, $\rho = 0.01$ for nations with individualism score of 91). These results support the

argument that the relationship between political freedom and total entrepreneurial activity is more positive for more (rather than less) individualistic nations.

Hypothesis 2 was then tested. First, the measures for corruption and individualism were included in the regression equation along with control variables (model 4). Overall regression was significant ($R^2 = 0.31$, $F(5, 78) = 7.07$, $p < 0.001$) with a significant change in R^2 over the baseline model ($\Delta R^2 = 0.05$, $p < 0.10$). Next, the interaction term was added to the regression equation. Here again, the independent and moderator variables were mean centered before creating the interaction term (Aiken et al. 1991). The interaction term ($\beta = -0.43$, $p < 0.001$) as well as overall model ($R^2 = 0.44$, $F(6, 77) = 10.32$, $p < 0.001$) were significant (model 5). These results supported hypothesis 2. Similar to the previous case, the interaction effect was further analyzed using bootstrapping procedure and floodlight analysis. Using Process macro, bias-corrected estimates with 95% CI and 5000 bootstrap resample were calculated. Results indicated that the interaction effect of corruption and individualism on entrepreneurial activity was significant ($B = -0.14$, $t_{(77)} = -4.71$, $p < 0.001$, $CI = -0.20$ to -0.08). An interaction plot was created to visualize the effect of corruption on total entrepreneurial

activity at the 10th, 25th, 50th, 75th, and 90th percentiles of the moderator variable. The plot (see Fig. 3) along with results of conditional effect analysis (Bass and Chakrabarty 2014; Preacher et al. 2006) suggested that for nations on the 10th and 25th percentiles of individualism scale, the conditional effect of corruption on total entrepreneurial activity is positive and significant ($\text{slope}_{(10\text{th percentile})} = 3.68$, $t_{(77)} = 2.57$, $p < 0.01$; $\text{slope}_{(25\text{th percentile})} = 2.98$, $t_{(77)} = 2.98$, $p < 0.05$). For nations on the 50th percentile, the conditional effect of corruption on total entrepreneurial activity is not significant ($\text{slope}_{(50\text{th percentile})} = 0.73$, $t_{(77)} = 0.57$, $p = \text{n.s.}$). However, for nations on the 75th and 90th percentiles, the conditional effect is negative and significant ($\text{slope}_{(75\text{th percentile})} = -2.64$, $t_{(77)} = -1.82$, $p < 0.10$; $\text{slope}_{(90\text{th percentile})} = -4.61$, $t_{(77)} = -2.72$, $p < 0.01$). These results indicate that for highly individualistic nations, corruption decreases entrepreneurial activity while for less individualistic (or more collectivistic) nations, it display a greasing effect.

Next, floodlight analysis was used to identify zones of significance, which in this case were two. The first zone of significance was for nations with an individualism index of 22 and below. In this case (25% of the sample), the relationship between corruption and total

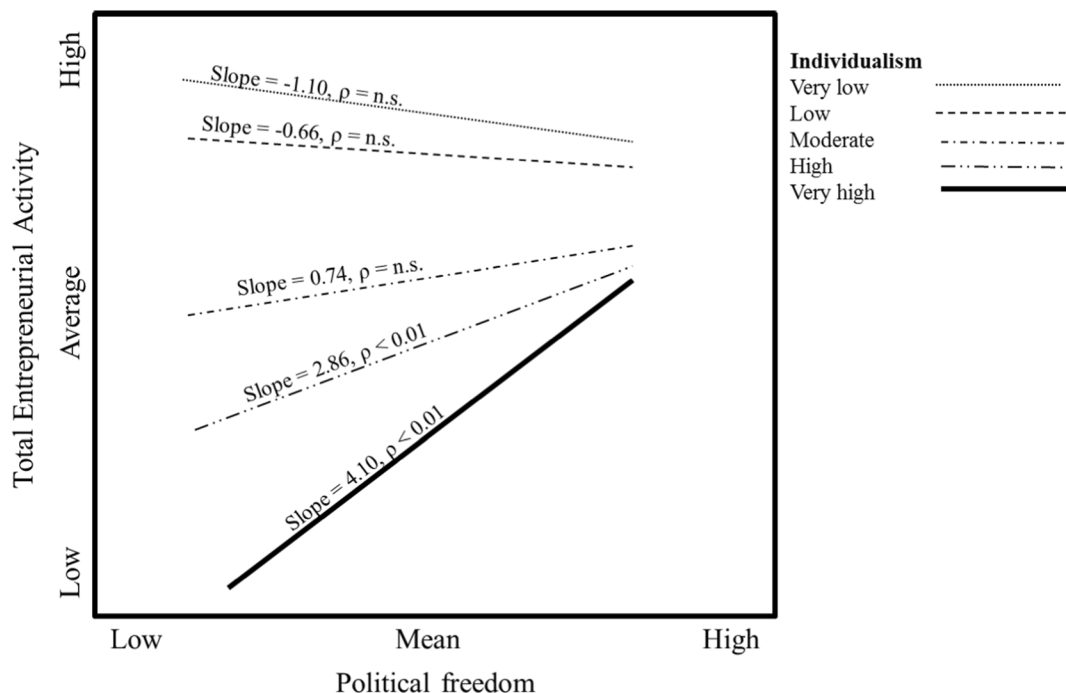


Fig. 2 Impact of political freedom on total entrepreneurial activity at different levels of individualism

entrepreneurial activity was positive and significant ($B = 2.68$, $t_{(77)} = 1.99$, $\rho = 0.05$ for nations with an individualism score of 22) and increased in strength, with the strongest positive effect for nations with the lowest level of individualism ($B = 4.95$, $t_{(77)} = 3.15$, $\rho = 0.002$ for nations with an individualism score of 6). The second zone of significance was for nations with an individualism index of 63 and above. In this case (23% of the observations), the relationship between corruption and total entrepreneurial activity was negative and significant ($B = -2.96$, $t_{(77)} = -1.99$, $\rho = 0.05$ for nations with an individualism score of 63) and increased in strength with the strongest negative effect for observations with the highest level of individualism ($B = -7.00$, $t_{(77)} = -3.38$, $\rho = 0.001$ for nations with an individualism score of 91). These results suggest that the relationship between corruption and total entrepreneurial activity is more negative for more (rather than less) individualistic nations.

Hypothesis 3 deals with examining the moderating effect of individualism on the relationship between education and entrepreneurial activity. To test this, first measures for education and individualism were included in the regression equation along with control variables (model 6). The regression was significant ($R^2 = 0.38$, F

(5, 78) = 9.33, $\rho < 0.001$) with a significant change in R^2 over the baseline model ($\Delta R^2 = 0.11$, $\rho < 0.01$). Next, the interaction term was included in the regression equation. The independent and moderator variables were mean centered before creating the interaction term (Aiken et al. 1991). The interaction term ($\beta = 0.38$, $\rho < 0.001$) as well as overall model ($R^2 = 0.46$, F (6, 77) = 10.73, $\rho < 0.001$) were found to be significant (model 7). These results supported hypothesis 3. The interaction effects were then analyzed using bootstrapping procedure and floodlight analysis. Bias-corrected estimates with 95% CI and 5000 bootstrap resample were calculated. Results indicated that the interaction effect of education and individualism on entrepreneurial activity was significant ($B = 0.90$, $t_{(77)} = 2.75$, $\rho < 0.01$, CI = 0.25 to 1.55). An interaction plot was created to visualize the effect of education on total entrepreneurial activity at the 10th, 25th, 50th, 75th, and 90th percentile levels of the moderator variable. The plot (see Fig. 4) along with results of conditional effect analysis (Preacher et al. 2006) suggested that for nations on the 10th and 25th percentiles, conditional effect of education on total entrepreneurial activity is negative and significant (slope_(10th percentile) = -31.36, $t_{(77)} = -2.84$, $\rho < 0.01$; slope_{(25th}

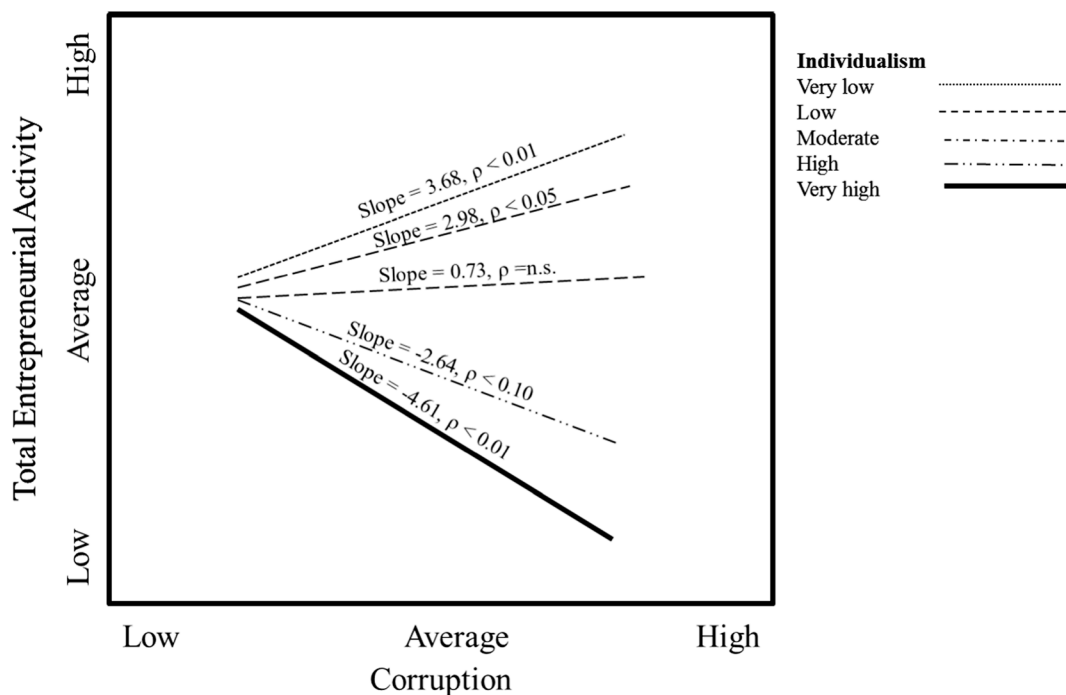


Fig. 3 Impact of corruption on total entrepreneurial activity at different levels of individualism

percentile) = -26.86 , $t_{(77)} = -2.70$, $\rho < 0.01$). However, for nations on the 50th, 75th, and 90th percentiles, education had no significant conditional effect on total entrepreneurial activity (slope_(50th percentile) = -12.44 , $t_{(77)} = -1.57$, $\rho = \text{n.s.}$; slope_(75th percentile) = 9.18 , $t_{(77)} = 0.87$, $\rho = \text{n.s.}$; slope_(90th percentile) = 21.81 , $t_{(77)} = 1.55$, $\rho = \text{n.s.}$).

Next, floodlight analysis was used to identify zones of significance. Results indicated that for nations with an individualism index of 35 and below (45% of the sample), the relationship is negative and significant ($B = -16.22$, $t_{(77)} = -1.99$, $\rho = 0.05$ for nations with an individualism score of 32) and increases in strength as the level of individualism decreases, with the strongest negative effect for observation with the lowest level of individualism ($B = -39.47$, $t_{(77)} = -2.97$, $\rho = 0.004$, for nations with an individualism score of 6). However, for nations above this point, no significant relationship existed between education and entrepreneurial activity (although it ranged from $B = -12.66$, $t_{(77)} = -1.60$, $\rho = \text{n.s.}$, for nations with an individualism score of 36 to $B = 37.12$, $t_{(77)} = 1.96$, $\rho = \text{n.s.}$, for nations with an individualism score of 91). These results support the argument that the relationship between education and total entrepreneurial activity is more (rather than less) negative for less individualistic nations.

4.1 Robustness test

Consistent with extant studies (e.g., Anokhin and Schulze 2009; Levie and Autio 2008; McMullen et al. 2008), GDP was found to be strongly correlated with other variables in this study (see Table 1). As such, it was considered important to test the robustness of interaction analyses against any issues of multicollinearity. To do so, a measure of GNI per capita in constant 2005 US dollars averaged across the period 2003–2012 for all nations was used as an alternative to the GDP per capita measure. The robustness checks with this measure lead to similar results. Specifically, the interaction effect of individualism with political freedom ($\beta = 0.32$, $\rho < 0.05$), corruption ($\beta = -0.43$, $\rho < 0.001$), and education ($\beta = 0.37$, $\rho < 0.001$) on entrepreneurial activity across nations was significant. As another alternative test, the measure of GDP per capita and GNI per capita were altogether removed from the interaction analyses and the regressions run (controls for unemployment rate and population were still included in the regression equation). The interaction effects of individualism with political freedom, corruption, and education on entrepreneurial activity were assessed. Results indicated that the interaction effects of individualism with political freedom ($\beta = 0.27$, $\rho = 0.06$), corruption

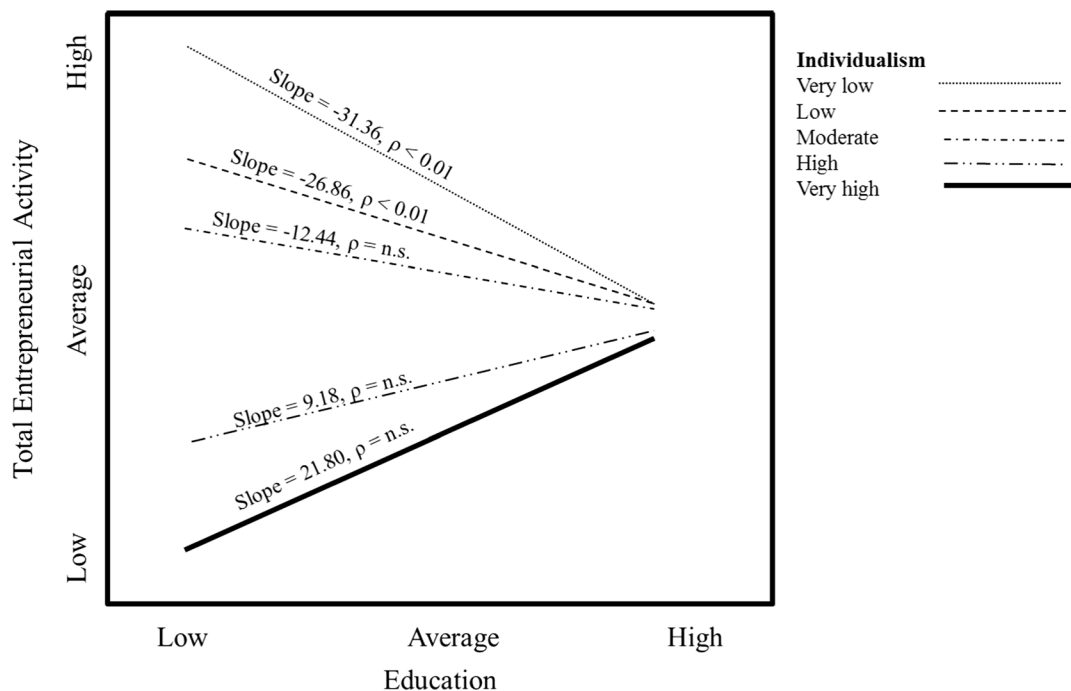


Fig. 4 Impact of education on total entrepreneurial activity at different levels of individualism

($\beta = -0.38$, $\rho < 0.001$), and education ($\beta = 0.37$, $\rho < 0.001$) on entrepreneurial activity were significant and were consistent with those found earlier. These results suggest that the findings concerning the moderating role of individualism on the relationship between these three predictors on entrepreneurial activity is robust.

5 Discussion and conclusion

The rate of entrepreneurial activity differs considerably across nations (Verheul et al. 2002) and a large volume of literature in entrepreneurship has focused on exploring the factors that explain these differences. Extending this line of research, this study investigated the role of individualism-collectivism in moderating the effect of formal institutional elements, specifically political freedom, corruption, and education on the rate of entrepreneurial activity across nations. The findings, discussed below, lend support to the perspective that culture shapes the perceptions, intentions, and actions of individuals and so is a critical determinant of the rate of entrepreneurial activity across nations.

First, concerning the effect of control variables, GDP per capita was the only covariate to have a significant effect on total entrepreneurial activity ($\beta = -0.54$, $\rho < 0.001$). Consistent with extant studies (e.g., De Clercq et al. 2014; Fernández-Serrano and Romero 2014; Uhlaner and Thurik 2007), this finding suggests that high income countries may exhibit lower levels of new venture creation activities. Thus, in these nations, people display a tendency to prefer wage employment over creating new ventures. This may be attributed to the large number of enterprises that are in existence in these nations and the higher number of jobs that these support. Studies have indicated that large companies promote intrapreneurship within business units to achieve more flexibility and innovativeness (Carree et al. 2002). In addition, people may perceive wage employment more secure than starting new ventures and so may associate higher opportunity cost with abandoning it (McMullen et al. 2008), while starting new ventures may be considered as more risky in nature. In low-income countries on the other hand, lack of employment opportunities may push people towards starting their own ventures. Next, consistent with previous studies (e.g., Anokhin and Schulze 2009; Noorderhaven et al. 2004), population and unemployment rate had a weak and non-

significant impact on the rate of entrepreneurial activity across nations. Thus, whether these influence entrepreneurial activities could not be found from the results. Irrespective, this study revealed three main findings.

The first set of findings concern the relationship between political freedom and total entrepreneurial activity. Even though a negative association was found between these variables ($r = -0.26$, $\rho < 0.05$), which is consistent with studies in the past (Helliwell 1994; Barro 1991; Tavares and Wacziarg 2001), the analytical results obtained here shed additional light on this complicated relationship. Specifically, it was found that individualism moderates the effect of political freedom on total entrepreneurial activity ($\beta = 0.33$, $\rho < 0.05$), such that this effect is more positive and significant for nations, which fall on the upper end of individualism scale than for nations on the lower end of this scale. Conditional effect analysis along with Johnson-Neyman test results specifically suggested that this effect is positive and significant only for nations with an individualism score of 37 and above on Hofstede's (2001) individualism scale. For these nations, the association between political freedom and total entrepreneurial activity is positive (slope = 0.90, $\rho = 0.05$) and becomes stronger (with a final slope of 5.60, $\rho = 0.01$) as the level of individualism increases. So, it would not be wrong to say that greater political freedom increases peoples' perception of safety, enables them to express themselves, take initiatives, make decisions, and encourages the pursuit of entrepreneurial activity (Aixalá and Fabro 2009; Veenhoven 1999; North 1990; Audretsch and Thurik 2001), but only for nations which display an individualistic cultural framework. For these nations, political freedom and individualism synergistically have an amplified effect on total entrepreneurial activity, which also points to the symmetric nature of interaction effects (Berry et al. 2012). However, for nations with an individualism score of 37 and below (or which fall on the high end of collectivism scale), political freedom, allocated through adequate civil liberties and political rights, may not play a significant role in influencing their level of entrepreneurial activity. These may not generate conditions that facilitate the proliferation of entrepreneurial activities.

This study also deciphered interesting findings concerning the role of individualism on the relationship between corruption and the rate of entrepreneurial activity. Even though a positive correlation was found between these variables ($r = 0.49$, $\rho < 0.01$), regression results suggested that this relationship is moderated by

the individualism-collectivism dimension of culture. Specifically, conditional effect analysis and Johnson-Neyman test results indicated that corruption had a significant negative impact on entrepreneurial activity for highly individualistic nations (specifically those with an individualism score of 63 and above). For these nations, the negative effect of corruption on entrepreneurial activity strengthened (from an initial slope of -2.96 , $\rho = 0.05$ to a final slope of -7.00 , $\rho = 0.001$) with increase in the level of individualism. This provides empirical evidence to the notion that corruption may be contradictory to the spirit of individualism, and together, they may have a derogatory impact on entrepreneurial activity in nations that fall on the high end of individualism scale. However, contrary is the case with nations on the lower end of individualism scale (specifically those with score of 22 and below). In their case, corruption had a positive and significant effect on total entrepreneurial activity, which increased in magnitude (from an initial slope of 2.68 , $\rho = 0.05$ to a final slope of 4.95 , $\rho = 0.001$) as the level of individualism decreased or collectivism increased.

It can be inferred from these findings that corruption increases the perception of inefficient bureaucratic system and non-egalitarian environment in individualistic nations. People in these nations tend to perceive that it restricts their right to seek equal opportunities and independently express themselves (O'Connor and Fischer 2011). In addition, it generates the feeling that people are discriminated because of their inability to pay illegal surcharges. The time spent in negotiating bribes with bureaucrats is considered an infringement to one's personal resources (Kaufmann and Wei 1999). These factors increase the perceived opportunity cost of starting new business ventures in individualistic societies. However, corruption seems to enable the start-up of new business ventures in collectivistic nation, an argument consistent with some recent studies (e.g., Dreher and Gassebner 2013). In the case of these nations, paying bribes may be a means of establishing relationships with bureaucrats, thereby entering into their good books. It may enable prospective entrepreneurs to gain legitimacy and authenticity from the governing bodies and circumvent lengthy regulations, which are an impediment to new venture creation (Bjørnskov and Foss 2012; Dreher and Gassebner 2013). In conclusion, the effect of corruption on entrepreneurial activity differs across nations and is shaped by their cultural context. It may sand the wheels of growth (Méon and Sekkat 2005) in individualistic

nations, however, may grease the wheels of growth (Cuervo-Cazurra 2006) in collectivistic societies.

The third set of findings elaborate on the moderating impact of individualism-collectivism on the relationship between education and entrepreneurial activity. A negative correlation was found between these variables ($r = -0.57$ $\rho < 0.01$), which suggests that societies with a higher level of education have lower rates of entrepreneurial activity. At a more individual level, since education is an investment that people make towards improving their social status and gaining life satisfaction (Bathmaker et al. 2013; Hout 2012), the opportunity cost of starting new business ventures may be higher for more rather than less educated people. The former have more to lose if their new business ventures fail (Matlay et al. 2012). However, the perception of loss versus gain from involvement in entrepreneurial activity seems to be shaped by the cultural milieu of a society. The results obtained in this study suggest that the negative effect of education on entrepreneurial activity prevails more in collectivistic than in individualistic nations. Specifically, conditional effect analysis and Johnson-Neyman test results indicated that education has a significant negative impact on entrepreneurial activity only in nations which lie on the lower end of individualism scale (i.e., have a score of 35 and below on Hofstede's individualism index). Further, this negative impact was found to increase (from an initial slope of -16.22 , $\rho = 0.05$ to a final slope of -39.47 , $\rho = 0.01$) as the level of individualism decreases (or collectivism increases). Thus, it seems that in highly collectivistic nations attaining education draws people towards working in established organizations (Le 1999). In these, education signals an individual's ability, worth, and potential value to prospective employers (Van der Sluis et al. 2004; Li et al. 2008), who then attract them with lucrative salaries to become part of their organization and a member of their in-group. The collectivistic nature of these societies implies that people prefer to build their identity and social status as part of a collectivity. For educated people in these societies, pursuing entrepreneurial activity may be associated with higher risks and fewer benefits. However, same is not the case with nations which have an individualism score of 35 and above. For these, no significant relationship between education and total entrepreneurial activity was found to prevail.

Overall, the results obtained in this study make a notable contribution towards resolving some of the inconsistency that has prevailed in research regarding the impact of formal institutional variables (specifically political freedom, corruption and education) on a nation's rate of entrepreneurial activity. Specifically, these emphasize the importance of cultural milieu in explaining these effects. In addition, these point to the importance of culture in shaping people's cognitions and actions. These findings also have important implications for policy makers, in that these emphasize that rules and policies that are intended towards driving new venture creation activities should be in line with the nation's cultural milieu, otherwise the expected outcomes of such policies may not be observable. Policies which are misaligned or contradictory to the nation's cultural orientation or with the cultural mindset of individuals within it may only increase its financial burden. These may not result in increasing its rate of growth or prosperity through entrepreneurship.

5.1 Limitations and future research suggestions

Like any other study, this too has some limitations. First, the inferences derived from this study are limited by the data on which the results are based. This is especially true for the cultural measure of individualism-collectivism, which is based on Hofstede's (2001) study. Irrespective of the fact that Hofstede's dimensions are the most widely used measures of culture in entrepreneurship research (Hayton et al. 2002), and have been replicated and validated in several other research projects (Søndergaard 1994; Spector et al. 2001), these have some weaknesses (McSweeney 2002; Schwartz 1992; Smith 2002). Taking this point into consideration, future studies should use other indicators of a society's level of individualism-collectivism (such as those proposed by House et al. (2004) or Schwartz's (1994) research project) to decipher the relationships investigated in this study. Future studies should also aim to understand the effect of other cultural dimensions (e.g., power distance and uncertainty avoidance) on the rate of entrepreneurial activity across nations. For example, in a recent study Liñán and Fernandez-Serrano (2014) explored the effect of cultural values in explaining differences in the rate of entrepreneurial activity across the European region. In their study, these scholars used the cultural dimensions proposed by Schwartz (1994).

Second, while this study focused on understanding the effects of various formal and informal institutional elements on the rate of entrepreneurship across nations, it did not aim to investigate the underlying mechanism behind these findings. These were theorized rather than empirically analyzed. Thus, whether high political freedom (i.e., democratically elected governments) in individualistic societies encourages people to make investments and take risks or whether in collectivistic societies it falls prey to the vices of sectoral politics (Gerring et al. 2005; Gibson 1993; Peev and Mueller 2012), thereby increasing uncertainty and decreasing entrepreneurial activity, was not investigated. Similarly, the underlying mechanism that contributes to the greasing effect of corruption in collectivistic societies and its sanding effect in individualistic nations was theorized rather than empirically analyzed. Future studies may contribute to advancing research in this direction by analyzing the mechanisms that underlie these effects.

Third, this study focused on analyzing the rate of entrepreneurial activity, as measured by the total entrepreneurial activity construct from the GEM project. Thus, it only focused on one aspect of the process of entrepreneurship, which in itself is multifaceted, complex, and involves several steps and substeps (Shane and Venkataraman 2000; Shane 2000; Bhawe 1994; Kuratko 2016). Much of the effect that macro-level institutional factors have on these different steps needs further investigation. For example, future studies can aim to understand the manner in which institutional factors explain the rate of social entrepreneurship or the formation of high growth ventures across nations.

Despite these limitations, the results seemed to help in sorting some of the inconsistencies in existing research. While the central importance of entrepreneurship for a nation's well-being cannot be denied, it is important that scholars and policy makers focus on the right set of factors and understand how these interact with each other to impact various entrepreneurial outcomes when formulating policies that foster the initiation and growth of business ventures. The results suggest that values, beliefs, and cultural attributes play an important role in regulating or shaping the impact that institutional policies and regulations have on entrepreneurial activity across nations. What might be beneficial for a certain nation might not be beneficial for another. It is my hope that this study was able to contribute towards understanding of some of these complex macro-level relationships.

Appendix

Table 3 List of 84 nations included in this study

Angola	Ethiopia	Libya	Serbia
Argentina	Finland	Lithuania	Singapore
Australia	France	Luxembourg	Slovakia
Austria	Germany	Malawi	Slovenia
Bangladesh	Ghana	Malaysia	South Africa
Belgium	Greece	Mexico	Spain
Brazil	Guatemala	Morocco	Suriname
Burkina Faso	Hong Kong	Namibia	Sweden
Canada	Hungary	Netherlands	Switzerland
Chile	Iceland	New Zealand	Syria
China	India	Nigeria	Taiwan
Colombia	Indonesia	Norway	Thailand
Costa Rica	Iran	Pakistan	Trinidad and Tobago
Croatia	Ireland	Panama	Turkey
Czech Republic	Israel	Peru	United Arab Emirates
Denmark	Italy	Philippines	United Kingdom
Dominican Republic	Jamaica	Poland	United States
Ecuador	Japan	Portugal	Uruguay
Egypt	Jordan	Romania	Venezuela
El Salvador	Latvia	Russia	Vietnam
Estonia	Lebanon	Saudi Arabia	Zambia

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