Universidad del Desarrollo
Facultad de Economía y Negocios

SERIE WORKING PAPERS

Corruption and bureaucracy in entrepreneurship

Antonio Lecuna

December 2014 Working Paper 17

Corruption and Bureaucracy in Entrepreneurship

Abstract

Entrepreneurship has been associated with three categories of factors: (1) macroeconomic factors, such as unemployment and income; (2) factors related to government institutions, such as corruption and political stability; and (3) competitiveness-related factors, such as the capacity for innovation and the number of procedures required to start a business. In this study, I find that all three categories are equally significant and that a combination of these three categories generates the most significant statistical results. The findings also reveal that two specific indicators are consistently more significant than the others. I posit that better control of corruption and a lower unemployment rate are associated with increasing levels of entrepreneurial activity as measured by business registrations and entrepreneur participation rates. Furthermore, interaction tests between the control of corruption and competitiveness-related factors found that simultaneous decreases in corruption and the number of procedures required to start a business provide added value, jointly boosting entrepreneurial activity. Panel data from 55 nations for the 2004–2009 period support these findings.

Kew words: entrepreneurship, institutions, public policy, economic development

INTRODUCTION

The relationship between corruption and entrepreneurial activity as measured across nations remains a topic of debate. Although a growing body of research has demonstrated a uniformly positive relationship between lower corruption and an improvement in a variety of important indicators, the specific relationship between corruption and entrepreneurship has received little attention. This paper contributes to the argument that corruption erodes the foundations of institutional trust that are necessary to foster the growth of entrepreneurial activity in both developed and developing economies. The focus in this work is on the control of corruption as an institutional factor that encourages entrepreneurial activity and the moderating effect of the procedures required to start a business.

What is the relative impact of government institutions on entrepreneurship? What is the relationship between entrepreneurship and corruption across nations? What are the interaction effects between corruption and the competiveness-related factors in entrepreneurship? This work addresses these research questions using panel data from 55 nations for the 2004–2009 period. I use two indicators for entrepreneurial activity as dependent variables, each of which reflects a different and specific aspect of entrepreneurship. The results strongly suggest a positive relationship between the control of corruption and entrepreneurial activity across nations. Additionally, the moderating effect of the procedures required to start a business seems to amplify the benefits of decreasing corruption by increasing entrepreneurial activity. These findings are relevant findings because although corruption is an extremely complex phenomenon, decreasing the number of procedures required to start a business is a public policy change that is relatively straightforward to implement. Hence, anti-corruption efforts aimed at encouraging entrepreneurial activity should be introduced in tandem with a policy that decreases bureaucratic procedures.

The dependent variables that measure entrepreneurial activity are defined from two uncorrelated perspectives: (1) entry density, obtained from the 2010 World Bank Entrepreneurship Snapshots (WBGES), and (2) total early stage entrepreneurial activity (TEA), obtained from the Global Entrepreneurship Monitor (GEM) project. The WBGES uses new business entry density to measure entrepreneurial activity. This measure is calculated as the number of newly registered firms as a percentage of an economy's working-age (15–64 years) population normalized by 1,000 (World Bank, 2011). Conversely, the TEA measures the participation rate of working-age

individuals in the early stages of venture creation. This “early stage” work includes the phase called “nascent entrepreneurship” that occurs before the opening of a new firm and the phase referred to as “owning-managing a new firm” that consists of the first 42 months after the startup date (Bosma et al., 2012: 20). Estimates of the number of working-age individuals who engage in entrepreneurial behavior range from approximately 20% (Reynolds and White, 1997) to more than 50% of the population (Aldrich and Zimmer, 1986).

The main independent variables of interest, “control of corruption” and the “number of procedures (required) to start a business,” are defined by the World Bank’s WGI and the Global Competitiveness Index (GCI) dataset from the World Economic Forum, respectively. The first reflects perceptions of the extent to which public power is exercised for private gain—including both petty and grand forms of corruption—in addition to measuring the extent to which the state has been "captured" by elites and private interests. The “number of procedures required to start a business” is an indicator of the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimal follow-up with government agencies and no extra payments. A “procedure” is defined as any interaction between the company founders and external parties (e.g., government agencies, lawyers, auditors, or notaries).

In agreement with the findings presented in this paper, Anokhin and Schulze (2008), Tonoyan et al. (2010), and Aidis et al. (2012) argue that corruption plays an important role in explaining disparities in the rates of entrepreneurship across nations. However, Anokhin and Schulze (2008) only control for wealth (measured as the log of per capita GDP), net inflows of foreign direct investment (FDI) as a percentage of GDP, foreign trade as a percentage of GDP, and the log of population. Additionally, the sample used by Tonoyan et al. (2010) only includes 20 transitional and mature market economies and one outdated measurement of entrepreneurial activity (for the year 2000), whereas Aidis et al. (2012) focus on entrepreneurs instead of incorporated firms, using the available GEM data from the 1998–2005 surveys. Furthermore, Aidis et al. (2012) employ data from the Heritage Foundation/Wall Street Journal to measure the institutional indicators, including “freedom from corruption” as a key variable of interest. However, this particular dataset seems biased, preventing objective conclusions.[1] The dataset presented here uses a different measurement for government institutions based on the World Bank’s Worldwide Governance Indicators (WGI).

[1] An anonymous referee introduced this point. However, I take full responsibility for this statement.

This paper complements previous research in two ways: (1) by using two independent measures of entrepreneurial activity as dependent variables and including a larger set of controls over a broader dataset and a more recent time period (55 countries during the period from 2004 to 2009) and, more importantly, (2) by introducing the World Economic Forum's GCI "number of procedures (required) to start a business" as a significant moderating variable related to competitiveness factors. The number of procedures (required) to start a business is redefined and used interchangeably here with the term "bureaucratic procedures," or simply bureaucracy. It is important to note that this definition of bureaucratic procedures does not correspond to the classical definition of bureaucracy. Max Weber (1978) defined a bureaucracy as an organization with a hierarchical structure designed to coordinate many individuals in the pursuit of large-scale administrative tasks and organizational goals.

The remainder of this article is structured as follows. The next section reviews the literature on entrepreneurship and government institutions—particularly as related to the control of corruption—and frames the current state of the literature by formulating a set of hypotheses. Then, I describe the data sources, variables, and the sample selection. After defining the data, I report a series of statistical tests and highlight the most significant findings. The results are interpreted following the principle of Occam's razor to maintain simple descriptions. After interpreting the main results, I address multicollinearity issues and further test a series of interaction effects between the control of corruption and competitiveness-related factors, including the number of procedures required to start a business. The last section discusses the significance of the results, provides suggestions for future research, and addresses the main limitations of the study.

THEORIES AND HYPOTHESES

Entrepreneurship is linked to economic growth (Baumol, 1968; Kirzner, 1997; Minniti, 1999), innovation (Schumpeter, 1934), well-defined private property rights (Williamson, 2000), effective and beneficial political and economic institutions (Rodrik, 2000), solid and unbiased business regulations (Parker, 2007), the production and introduction of new products (Baumol, 1990), high-net FDI as a percentage of GDP (Ovaska and Sobel, 2005), and economic freedom (Kreft and Sobel, 2005). However, despite the growing list of benefits derived from entrepreneurial activities,

relatively little is known about the relationship between these activities and governmental institutions, particularly with respect to corruption.

Lin and Nugent (1995: 2306-2307) broadly define institutions as "a set of humanly devised behavioral rules that govern and shape the interactions of human beings, in part by helping them to form expectations of what other people will do." Based on Lin and Nugent's (1995) definition and on Williamson's (2000) measures of institutional governance, I evaluate institutions as the rules and laws that create the economic incentives that guide individual and organizational choices (North, 1990). Delving more deeply, I explore how heterogeneity in the institutions of government across countries affects entrepreneurial activity. Estrin et al. (2013b) group government institutions into a higher (constitutional) order and argue that given the hypothesized benefits of entrepreneurship, it is of theoretical and political interest to identify the institutions that support the development of entrepreneurship, which should help us to gain further insight into the institutions that should be targeted for change by policy makers.

Government institutions are assessed using the following five indicators from the World Bank's WGI: (1) control of corruption; (2) political stability and the absence of violence; (3) voice and accountability; (4) government effectiveness; and (5) rule of law. "Political stability and the absence of violence/terrorism" reflects the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. "Voice and accountability" reflects the extent to which a country's citizens are able to participate in selecting their government as well as freedom of expression, freedom of association, and a free media. "Government effectiveness" reflects the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. "Rule of law" reflects the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (control of corruption is defined in the previous section)

The power of these five government institution-related factors to explain entrepreneurial activity is then compared against five macroeconomic factors and five competitiveness-related factors. Consistent with the general research question of the relative impact of governmental institutions on entrepreneurship, the first hypothesis "H1" tested is that government institutions are

the most significant category of factors that explain entrepreneurial activity, compared to the macroeconomic and competitiveness-related factor categories.

This hypothesis is based on the concept that institutional factors play an important role in determining whether productive entrepreneurial initiatives will develop (Baumol, 1990). Institutional voids are particularly harmful to entrepreneurial activity because weak institutions encourage informality and strengthen barriers to growth (Capelleras and Rabetino, 2008). According to Aidis et al. (2012), weak institutions may not provide a sufficient foundation for the functioning of a market economy and may influence both the potential returns from entrepreneurial activity and the variance around expected income streams. Weak institutions also make entrepreneurs less likely to undertake new projects and encourage potential entrepreneurs to focus their energies on unproductive activities (Aidis et al., 2012).

Following Baker et al. (2005), I specifically argue that the decision to pursue an entrepreneurial opportunity depends on the portion of the value created by the venture that the entrepreneur will be able to employ for his or her own purposes. When corruption is an institutional constraint, entrepreneurs face a much greater risk that the other actors in the value chain will be opportunistic and appropriate profits to which the prospective entrepreneur is entitled. Consequently, to address the specific research question of the relationship between entrepreneurship and corruption across nations, the second hypothesis "H2" specifically tests whether better control over corruption has a positive and significant impact on entrepreneurial activity.

A growing body of research has argued that decreasing the level of corruption encourages entrepreneurial activity (Anokhin and Schulze, 2008; Tonoyan et al., 2010; Aidis et al., 2012). The reason for this phenomenon is that in the absence of impartial law enforcement—which is a common trait of highly corrupt governments—it becomes risky to rely on legal contracts and/or the goodwill of service providers (Alchian and Woodward, 1988). Alternatives to trust as foundations of entrepreneurship, such as affect, kinship, and/or ethnic identity, are economically inferior because they necessarily limit the size of the provider pool and expose promising entrepreneurs to a greater risk of adverse selection. Corruption also creates disincentives for investment in innovation and other economic activities with payoffs that are difficult or costly to monitor because they are uncertain and/or temporally distant (Teece, 1981). Similarly, corruption increases transaction costs and limits the potential scale and scope of the entrepreneur's market (Luhmann, 1988). Therefore, corruption can be viewed as a progressive tax that reduces the returns for all

types of entrepreneurship, particularly for entrepreneurs who aspire to high levels of growth (Estrin et al., 2013a) and therefore face a greater risk of expropriation by corrupt officials (Aidis and Mickiewicz, 2006).

The direct effect of corruption as a structural factor in entrepreneurial activity is then tested by combining the control of corruption with the following five competitiveness-related factors from the World Economic Forum's GCI: (1) capacity for innovation, (2) number of procedures required to start a business, (3) quality of the overall infrastructure, (4) flexibility of wage determination, and (5) business costs of crime and violence. "Capacity for innovation" measures the capacity that companies have to innovate, ranging from licensing or imitating foreign companies all the way to conducting formal research and pioneering their own new products and processes. "Quality of the overall infrastructure" evaluates the general infrastructure in a particular country by international standards, ranging from underdeveloped up to extensive and efficient. "Flexibility of wage determination" addresses the question of how wages are generally set, either by a centralized bargaining process or by each individual company. "Business costs of crime and violence" measure the significant costs to businesses resulting from the incidence of common crime and violence. The number of procedures required to start a business is defined in the previous section.

To address the third research question of the interaction effects between corruption and the competiveness-related factors in entrepreneurship, the third set of hypotheses tests whether the combination of control of corruption and other competitiveness-related factors yields additional benefits for entrepreneurship, i.e., entrepreneurial activity is positively reinforced by the following interaction effects: better control over corruption in combination with a greater capacity for innovation (H3a), fewer procedures required to start a business (H3b), a greater quality of the overall infrastructure (H3c), greater flexibility of wage determination (H3d), and lower business costs resulting from crime and violence (H3e). Introducing the five competitiveness-related factors is expected to generate significant moderating effects on entrepreneurial activity because these factors assess the competitiveness landscape of a particular country, providing insight into the drivers of productivity and prosperity. Competitiveness is defined by the World Economic Forum as the set of policies and factors that determine a country's level of productivity. In turn, the level of productivity sets the level of prosperity that can be achieved by an economy.

DATA AND SAMPLE

Dependent Variables

As a novel contribution to the empirical literature, I use two independent measures of entrepreneurial activity as the dependent variables: the WBGES and the TEA. These two variables measure different aspects of entrepreneurial activity, as demonstrated by the insignificant pairwise correlation coefficient of -0.08. The WBGES provides a unique indicator of business creation throughout the world that facilitates research on the factors that foster dynamic private sector growth (World Bank, 2011). The 2011 volume of the WBGES measures entrepreneurial activity by means of business registration in 115 developing and industrial countries over a six-year period from 2004 through 2009. The TEA assesses entrepreneurial activities, aspirations, and attitudes in people from 18 to 64 years old in a wide range of countries. The TEA is part of the GEM project, the largest ongoing study of entrepreneurial dynamics.

The TEA provides advantages in that it focuses on the individual and on both formal and informal work. As with the Entrepreneurship Eurobarometer developed by the Gallup Organization, GEM studies examine the grassroots-level behavior of individuals who are starting and managing businesses, although GEM studies cover more countries over a longer period of time. This approach provides a more detailed picture of entrepreneurial activity than other firm-creation measures, including the Organization for Economic Co-operation and Development (OECD)/Kauffman Entrepreneurship Indicators Program, which focuses on information found in official national registry datasets.

Main Independent Variable

The main independent variable or variable of interest is the control of corruption indicator, which is derived from the WGI. The external validity of the main independent variable is tested using a bivariate correlation analysis between the control of corruption indicator and the corruption perception index (CPI), which is defined by TI as the abuse of entrusted power for private gain. As expected and confirmed through tests in many other studies, the correlation value between these two variables is very high (over 0.80), indicating the high external validity of this study's main

independent variable. The expected direction of this correlation is positive, indicating that greater entrepreneurial activity is linked to better control of corruption, thus providing support for the "H2" hypothesis.

Corruption is a relevant phenomenon because it has significant and harmful effects on the quality of government in that it undermines the government's essential obligations to respect contracts, protect private property, and deliver impartial justice (Tanzi 1988). Previous research has shown that corruption is associated to the following: increased consumer price inflation (Cukierman et al., 1992), higher interest rates (Bahmani and Nasir, 2002), wider socioeconomic inequalities (Alonso-Terme et al., 1998), unproductive public policy choices such as less spending on education and more spending on defense (Mauro, 1998), weak subnational governments (Lecuna, 2012) and less governmental legitimacy to the point of instigating civil wars (Klitgaard, 1990), an additional cost to businesses that can be thought of as an arbitrary tax (amounting to 20% of total business returns) that significantly inhibits the rate of investment (Wei, 1999), and an approximately 0.5% annual decrease in the rate of economic growth (Mauro, 1995).

Macroeconomic Explanatory Variables

The first macroeconomic explanatory variable is GDP per capita, as expressed in current U.S. dollars per person. The association between entrepreneurship and income is a relevant issue that has previously been tested in several studies. Entrepreneurship has been identified as a catalyst for economic growth (Minniti, 1999) and as vital to markets' effectiveness (Kirzner, 1997) because entrepreneurship improves the allocation of scarce resources (McMillan and Woodruff, 2002) and is a necessary stimulus for a healthy market economy (Baumol, 1968). GDP per capita is expected to be positively correlated with entrepreneurial activity. However, because of the potential for endogeneity (i.e., the possibility that greater entrepreneurial activity generates a larger GDP per capita), the regressions are also tested when excluding this variable. Log GDP per capita values are used to better interpret the GDP per capita explanatory variable in the regression models and to avoid excessive weighting of extremely high and low observations.

The rates of unemployment (number of unemployed persons as a percentage of the labor force), inflation (percentage change in average consumer prices), investment (total investment as a percentage of GDP), and savings (gross national savings as a percentage of GDP) are included to reflect the soundness of a country's monetary policy. Unemployment and inflation rates are

expected (if anything) to be negatively related to entrepreneurial activity, whereas the opposite results are expected for investment and savings rates. All the macroeconomic variables are measured using the IMF World Economic Outlook (WEO) database. The WEO database contains selected macroeconomic data series from the statistical appendix of the WEO report.

Government Institutions and Competitiveness Factors

In addition to the macroeconomic factors, the OECD (1998) suggests several other factors that are significant for entrepreneurial activity, including government institutions such as a strong rule of law (Estrin et al., 2013b) and competitiveness-related factors such as the capacity for innovation (Schumpeter, 1934). These factors are measured using two sources: (1) the WGI from the World Bank and (2) the GCI from the World Economic Forum.

The WGI measurements report on broad characteristics of government institutions, including the rule of law, voice and accountability, political stability and the absence of violence, government effectiveness, and control of corruption. The institutional indicators presented here reflect a statistical compilation of responses on the quality of governance collected from a large number of enterprise, citizen and expert survey respondents in industrial and developing countries, as reported by a number of survey institutes, think tanks, non-governmental organizations, international organizations, and private-sector firms. The scores range from approximately -2.5 to 2.5, with higher values corresponding to better governance. These variables are also expected to have strong positive coefficients.

The GCI is a weighted average of many different components, each of which measures a different aspect of competitiveness, including the burden of bureaucracy, infrastructure, and wage flexibility. Data for the GCI are only available for the 2006-2009 period. This report remains the most comprehensive worldwide assessment of national competitiveness, providing a platform for dialogue between government, business and civil society about the actions required to improve economic prosperity. Scores are expressed on a scale that ranges from 1 to 7, with 7 being the most desirable outcome. Each of these variables is expected to have a strong positive coefficient except for the number of procedures required to start a business, which is expected to enter the regression model with a strong negative sign, indicating that fewer bureaucratic procedures leads to increased entrepreneurial activity.

The competiveness-related factors tested in the interaction effects with the control of corruption (H3 set of hypotheses) are measured as follows. "Capacity for innovation" is measured with the following question: in your country, how do companies obtain technology? (1 = exclusively from licensing or imitating foreign companies; 7 = by conducting formal research and pioneering their own new products and processes). "Quality of overall infrastructure" is measured with the following question: how would you assess general infrastructure—e.g., transport, telephony, and energy—in your country? (1 = extremely underdeveloped—among the worst in the world; 7 = extensive and efficient—among the best in the world). "Flexibility of wage determination" is measured with the following question: how are wages generally set in your country? (1 = by a centralized bargaining process; 7 = up to each individual company). "Business costs of crime and violence" is measured with the following question: to what extent does the incidence of crime and violence impose costs on businesses in your country? (1 = to a great extent; 7 = not at all). Table 1 presents descriptive statistics of all variables.

Table 1. Descriptive Statistics.

	Observa-tions	Mean	Std. deviation	Min.	Max.	Source	Expected direction
Dependent variables							
WBGES	304	3.75	4.27	0.09	27.03	WB	
TEA	209	8.76%	6.15%	1%	40%	GEM	
Macroeconomic factors							
Log GDP per capita (US$)	330	4.09	0.48	3.04	4.98	WEO	+
Unemployment rate	330	8.60%	5.12%	1%	31%	WEO	-
Inflation rate	330	4.45%	4.45%	-2%	51%	WEO	-
Investment rate	330	23.36%	4.93%	14%	47%	WEO	+
Savings rate	330	22.56%	8.33%	-4%	58%	WEO	+
Government institutions factors							
Control of corruption	330	0.66	1.05	-1.12	2.59	WGI	+
Political stability & absence of violence	330	0.22	0.87	-2.20	1.59	WGI	+
Voice & accountability	330	0.61	0.80	-1.22	1.83	WGI	+
Government effectiveness	330	0.78	0.88	-0.80	2.37	WGI	+
Rule of law	330	0.61	0.95	-1.03	2.01	WGI	+
Competitiveness factors							
Capacity for innovation	219	3.92	1.02	2.10	6.14	GCI	+
No. of procedures to start a business	219	7.89	3.53	1	18	GCI	-
Quality of overall infrastructure	219	4.52	1.30	1.97	6.70	GCI	+
Flexibility of wage determination	219	4.75	0.99	2.29	6.42	GCI	+
Business costs of crime & violence	219	4.91	1.12	1.70	6.65	GCI	+

Note: Panel data for the period from 2004-2009 are used for all variables.

Selection of the Sample

The sample is constructed using the probability systematic sampling technique, in which the initial sampling point is selected at random and then the cases are selected at regular intervals. The initial sampling point is the WBGES dataset of 115 countries for the six-year period from 2004 through 2009. China is not included in this sample because of the lack of data in the WBGES database. This period covers the entire WBGES dataset and thus provides the most complete sample. For analysis, the final sample was first trimmed to the 62 countries that appeared in both the WBGES and GEM datasets for the 2004–2009 period. A second set of countries were eliminated because of the lack of data for six countries after the macroeconomic variables included in the WEO database were used. This step excluded Bolivia, Guatemala, India, and Uganda (lack of unemployment data); Macedonia (lack of investment data); and Switzerland (lack of savings data).

The final elimination (Tunisia), which reduced the sample to 55 countries, coincided with the use of the government institutions data from the WGI. As shown in Table A1 in the appendices, the final sample group of 55 countries mostly consists of "very high human development" countries, with none from the "low human development" category. This sample selection bias is the most significant statistical limitation of the sample and is an inherent consequence of using GEM data. As GEM country surveys are relatively expensive, developed countries are more likely to be able to afford the costs of conducting these surveys (Aidis et al., 2012).

STATISTICAL TESTS

Between-effects (BE) models with the weighted least squares (WLS) option are used in all the specifications. The p-value of the Hausman test is not significant, which rejects the choice of fixed-effects models. Moreover, for unbalanced data—such as the imbalance observed here due to the small number of years in the GCI dataset—WLS should be used rather than the default ordinary least squares (OLS) option (StataCorp, 2009: 443). BE models estimate the cross-sectional information in the data, the fixed-effects models use the time-series information in the data, and the random-effects estimator is a matrix-weighted average of the results from these two models. BE models fit "random-effects models by using the between-regression estimator" (StataCorp, 2009:

442). Regressions with between effects are equivalent to taking the mean of each variable for each case across time and running a regression on the collapsed dataset of the means. The BE model should be used to control for omitted variables that change over time but are constant between cases. This is a typical characteristic of cross-country estimates that explain entrepreneurial activity using individual factors, macroeconomic factors, and factors related to government institutions and competitiveness. In particular, BE models use the variation between countries to estimate the effect of the omitted independent variables on the two measurements of entrepreneurial activity. In all specifications, the BE models are consistent because the panel-level means of the regressors are not correlated with the panel-specific heterogeneity terms.

The left side of the first column of Table 2 indicates that on average, if the unemployment rate decreases by 1 percentage point, the median number of newly registered firms per 1,000 working-age individuals increases by approximately 0.27 (significant at the 10% level). The right side of the first column supports these findings. That is, a 1 percentage point decrease in the unemployment rate, ceteris paribus, is associated with an increase of less than half a percentage point in the average number of working-age adults who engage in entrepreneurial behavior. As expected for the WBGES specification (Klapper and Love, 2010), GDP per capita enters the regression model with a strong positive coefficient that is reinforced at a highly significant level, which implies that if GDP per capita increases by 1%, the number of legal businesses per 1,000 working adults increases by 0.04 on average. However, the negative estimator of the parameter in the TEA specification does not conform to the underlying classical theory, which maintains that entrepreneurship and economic growth share a positive relationship (Baumol, 1968; Romer, 1994).

One interpretation of the unexpected negative relationship between entrepreneurship and income is that the high rates of entrepreneurial activity observed in some poor countries are mostly due to necessity—as opposed to opportunity—as a driver of entrepreneurship (Acs and Amorós, 2008; Block and Wagner, 2010). Necessity-driven entrepreneurship is common in poor countries, whereas opportunity-driven entrepreneurship is common in wealthy countries. Another explanation might be that the TEA measurement captures both formally and informally registered businesses (Bosma et al., 2012). Although the general consensus is that entrepreneurs in the informal sector generate more harmful secondary consequences than beneficial spillover effects (Williams and Nadin, 2012), common sense would argue that including informal entrepreneurship in the measurement of entrepreneurial activity generates more accurate results.

Table 2. Cross-country results for entrepreneurial activity, panel data 2004-2009
(Between-estimates linear regression models, WLS)

	(I) *Macroeconomic*		(II) *Government institutions*		(III) *Competitiveness*		(IV) *Whole set*	
	WBGES	TEA	WBGES	TEA	WBGES	TEA	WBGES	TEA
Log GDP per capita	3.67 (2.46)**	-0.12 (-5.96)***					2.73 (1.16)	-0.12 (-2.67)**
Unemployment rate	-26.49 (-1.98)*	-0.44 (-2.63)**					-15.89 (-1.38)	-0.55 (-2.97)***
Inflation rate	8.59 (0.40)	-0.39 (-1.45)					10.44 (0.54)	-0.29 (-0.94)
Investment rate	9.98 (0.80)	-0.05 (-0.36)					-9.04 (-0.75)	0.05 (0.30)
Savings rate	-10.62 (-1.49)	-0.12 (-1.29)					-3.02 (-0.40)	-0.02 (-0.17)
Control of corruption			4.52 (2.39)**	0.06 (2.33)**			4.46 (2.88)***	0.04 (1.70)*
Political stability & absence of violence			1.09 (1.12)	-0.03 (-1.91)*			0.39 (0.46)	-0.03 (-2.11)**
Voice & accountability			-0.77 (-0.75)	0.01 (0.29)			0.28 (0.19)	0.03 (1.03)
Government effectiveness			-1.35 (-0.58)	-0.04 (-1.28)			-0.36 (-0.15)	0.004 (0.11)
Rule of law			-1.57 (-0.63)	-0.04 (-1.09)			-2.19 (-0.89)	-0.03 (-0.77)
Capacity for innovation					0.08 (0.10)	-0.03 (-2.40)**	-1.51 (-1.62)	-0.03 (-2.22)**
No. of procedures to start a business					-0.57 (-3.43)***	0.001 (0.79)	-0.21 (-1.32)	0.002 (0.70)
Quality of overall infrastructure					0.04 (0.06)	0.01 (1.39)	-0.73 (-0.91)	0.02 (1.14)
Flexibility of wage determination					1.11 (2.19)**	0.003 (0.42)	1.81 (3.59)***	-0.004 (-0.49)
Business costs of crime & violence					0.84 -1.49	-0.02 (-2.56)**	0.51 (0.76)	-0.01 (-1.13)
Adjusted R-squared	33%	49%	37%	38%	44%	43%	70%	67%
N	256	178	256	178	149	108	149	108

Notes: ***Significant at 1%; **Significant at 5%; and *Significant at 10%. Endogeneity is alleviated by lagging the predictor variables by one year. Heteroskedasticity-consistent t-ratios in parentheses (White, 1980).

The second column of Table 2 introduces five government institution factors from the WGI. Political stability and the absence of violence are significant in the TEA specification, but the direction is incorrect. In contrast, the control of corruption enters both models with strong positive coefficients that are reinforced with significant p-values. Statistically speaking, the control of corruption provides reasonably good explanatory power for entrepreneurial activity when judged by the usual t-test of significance. Overall, the estimated F-values are highly significant (i.e., the critical F-values are always close to 0), which implies that the null hypothesis that no regression models shown in Table 2 have any impact on output is strongly and consistently rejected. These findings provide strong support for the "H2" hypothesis, which specifically tests whether better control over corruption has a positive and significant impact on entrepreneurial activity.

The third column presents five predictors from the GCI. In general, the results obtained in this study do not conform to the underlying theory, mainly because the significant estimators have the wrong signs, with the exception of the number of procedures to start a business in the WBGES specification. That is, the negative slope coefficient of bureaucratic procedures is relevant because it implies that requiring approximately two fewer procedures to start a business is linked to one newly registered firm per 1,000 adults. This result reinforces the logic that requiring fewer procedures to start a business encourages the creation of more businesses. Moreover, the third column also enables an interesting comparison between the three categories of factors. While government institutional factors are an important category of factors explaining entrepreneurial activity, the effects of macroeconomic and competitiveness-related factors appear to be equally important, possibly implying that the inclusion of the three factors is even more significant. These findings reject the "H1" hypothesis, which states that government institutions are the most significant category of factors explaining entrepreneurial activity, more important than the macroeconomic and competitiveness-related factor categories.

The fourth and last column of Table 2 demonstrates a dramatic improvement of approximately 70% in the overall goodness of fit for both specifications (WBGES and TEA), which is a fairly high value. The whole-set model also reinforces the predictive relationship between greater entrepreneurial activity and results in better scores for control of corruption, further supporting the "H2" hypothesis. The slope coefficients in the WBGES model imply that an improvement of 20% in the score for control of corruption is associated with an increase in registration of approximately five new firms for every 1,000 working-age adults and with an

increase of approximately four percentage points in the number of working-age individuals who engage in some type of entrepreneurial activity (assuming that all other factors affecting entrepreneurial activity are held constant). One argument explaining this phenomenon is that corruption facilitates the development of entrepreneurs who are willing and able to engage in corrupt practices, while simultaneously acting as a barrier that discourages potential entrepreneurs from starting or growing a business (Aidis et al., 2012).

MULTICOLLINEARITY AND INTERACTION TESTS

Estimating individual joint relationships between entrepreneurial activity and the government institution indicators including control of corruption might result in a considerable degree of multicollinearity. As Table A2 shows, the pairwise correlation coefficients between the explanatory variables are relatively high for the logs of GDP per capita, control of corruption, rule of law, voice and accountability, and government effectiveness. Multicollinearity does not seem to be a problem with respect to the competiveness-related variables. High multicollinearity in income is not surprising because of the historically high correlation between income and other factors. High multicollinearity among the variables related to government institutions is also not surprising because of the abundance of closely related indicators (Aidis et al., 2012). Theory provides a guide to the relative importance of different institutional dimensions but is of limited assistance when considering the choice of alternative measures for related institutional features.

In the strictest sense, however, low pairwise correlations among explanatory variables are frequently unreliable and misleading, "for pairwise correlations can be low (suggesting no serious collinearity problems) yet collinearity is suspected because very few t ratios are statistically significant" (Guratti and Porter, 2010: 254–255). As an alternative to simple pairwise correlations, a few indicators signal the existence of multicollinearity in concrete applications. For example, the main variable of interest, control of corruption, generates small changes in the estimated regression coefficients when predictor variables are added or deleted. I ran several regressions (not shown in Table 2) that always included control of corruption but omitted explanatory variables with high degrees of collinearity. In this way, I marginally controlled for plausible scenarios in which the main independent variable might capture the explanatory power of similar predictors. In all cases, control of corruption had a strong and significant positive coefficient in these regression models.

I also formally tested the variance inflation factor (VIF) as an indicator of multicollinearity. As anticipated, the variables that measure government institutions exhibit the highest degree of multicollinearity; in particular, the rule of law and government effectiveness exhibit VIF values of 32.68 and 27.90, respectively. After dropping these highly correlated variables, all VIF values score below 10, and the mean VIF decreases from 7.94 to 3.43. Furthermore, in the best-fit model shown in Table 3, the mean VIF score is 3.12 and the individual VIF values range from 1.31 for the unemployment rate to 5.25 for log GDP per capita (control of corruption score of 4.95). These figures do not indicate a multicollinearity problem. The cutoff of 10 for the VIF was originally suggested by Marquardt (1970: 610). Marquardt (1987), O'Brien (2007), and Mason and Perreault (1991) later validated this cutoff score. Furthermore, in both specifications of the best-fit model (WBGES and TEA), the majority of the individual t-tests of the partial slope coefficients are significantly different from zero.

Similar to the results reported in Table 2, the low multicollinearity specifications shown in Table 3 confirms that the three categories of factors are equally important in explaining entrepreneurship. The best-fit model (shown in the first column of Table 3) includes a balanced mix of the two most significant variables from the three categories of factors (macroeconomic factors, government institution factors, and competitiveness-related factors). With only six variables, the best-fit model is able to explain almost 60% of the variation in entrepreneurial activity from two independent perspectives: (1) the participation rate of working-age individuals in the early stages of venture creation and (2) the participation rate of venture creation.

Following the “H3” set of hypotheses, I also tested the interaction effects between control of corruption and competitiveness-related factors, only finding one significant result. Only the combination of corruption and bureaucratic procedures is consistently significant, implying that the effect of better control over corruption on entrepreneurial activity depends on the number of procedures required to start a business. Countries that have both good corruption scores and relatively few procedures required to start a business tend to have greater entrepreneurial activity. That is, as the number of bureaucratic procedures decreases, the positive effects of better control over corruption increase entrepreneurial activity. This phenomenon can be explained by the argument that weak institutions such as highly corrupt governments lead to extensive networks of regulations that in turn lead to increased bureaucratic costs (Estrin et al., 2013a); this increased bureaucratic complexity affects not only the internal organization of the government but also those who must contend with the government, including businesses.

However, contrary to the background literature that argues that the capacity for innovation increases the ability of entrepreneurs to perform the generic entrepreneurial tasks of discovering and exploiting business opportunities (Shane and Venkatraman, 2000; Shane, 2000), the direction of the double interaction effect between the control of corruption and the capacity for innovation on entrepreneurial activity is negative, rejecting hypothesis "H3a". Another result not shown in Table 3 is that the interaction effects between the control of corruption and the following three competitiveness-related factors were also tested and did not yield significant results: the quality of the overall infrastructure (H3c), flexibility of wage determination (H3d), and business costs of crime and violence (H3e). Only the "H3b" hypothesis—entrepreneurial activity is positively reinforced by requiring fewer procedures to start a business—is supported by the statistical tests. Therefore, with the exception of the "H3b" hypothesis, the "H3" set of hypotheses is rejected due to insignificant p-values and/or incorrect signs.

Table 3. Low multicollinearity interaction effects.
(Cross-country results for entrepreneurial activity, panel data 2004-2009)

	(I)		(II)		(III)		(IV)	
	Best Fit		*Corruption * Innovation*		*Corruption * Procedures*		*Robustness checks*	
	WBGES	TEA	WBGES	TEA	WBGES	TEA	WBGES	TEA
Unemployment rate	-19.93 (-1.80)*	-0.42 (-2.56)**	-17.00 (-1.56)	-0.47 (-2.84)***	-19.66 (-1.83)*	-0.45 (-2.81)***	-14.50 (-1.47)	-0.46 (-2.81)***
Log GDP per capita	1.56 (0.67)	-0.11 (-3.22)***	0.89 (0.39)	-0.10 (-3.10)***	1.84 (0.81)	-0.11 (-3.40)***	0.88 (0.43)	-0.11 (-3.26)***
Control of corruption	2.48 (2.81)***	0.04 (3.21)***	6.80 (2.79)***	-0.002 (-0.08)	3.90 (3.55)***	0.07 (3.63)***	12.20 (4.49)***	0.46 (0.89)
Political stability & absence of violence	0.11 (0.13)	-0.02 (-2.16)**	-0.08 (-0.10)	-0.02 (-2.20)**	0.47 (0.55)	-0.02 (-2.03)**	0.36 (0.46)	-0.02 (-2.04)**
Capacity for innovation	-2.46 (-3.13)***	-0.02 (-1.82)*	-1.37 (-1.43)	-0.03 (-2.31)**	-2.34 (-3.07)***	-0.02 (-1.79)*	-0.40 (-0.44)	-0.02 (-1.60)
No. of procedures to start a business	-0.36 (-2.25)**	0.003 (1.76)*	-0.42 (-2.66)**	0.004 (2.06)**	-0.22 (-1.27)	0.01 (2.40)**	-0.23 (-1.52)	0.01 (2.37)**
Corruption * Innovation			-1.03 (-1.90)*	0.01 (1.41)			-1.76 (-3.29)***	0.01 (0.40)
Corruption * Procedures					-0.29 (-2.06)**	-0.01 (-1.86)*	-0.47 (-3.39)***	-0.01 (-1.24)
Adjusted *R*-squared	55%	58%	58%	60%	58%	62%	66%	62%
N	149	108	149	108	149	108	149	108

Notes: ***Significant at 1%; **Significant at 5%; and *Significant at 10%. Endogeneity is alleviated by lagging the predictor variables by one year. Heteroskedasticity-consistent t-ratios in parentheses (White, 1980).

CONCLUSION

This paper draws on panel data from 55 economies to advance the proposition that stronger government institutions, namely, better control over corruption, are associated with increased entrepreneurial activity across nations. The first finding is that the coefficient estimates for the control of corruption and the unemployment rate are robust to the inclusion and exclusion of certain regression variables. Although the unemployment rate is an important factor in entrepreneurial activity, its effect is not as significant as that of the control of corruption. Income—measured as GDP per capita—is also significant in most specifications, but the TEA models do not exhibit the expected signs. Second, while government institutions are an important category of factors explaining entrepreneurial activity, the effects of macroeconomic and competitiveness-related factors appear to be equally important, implying that it is important to include all three factors. Third, the combination of low corruption with relatively few procedures required to start a business provides an additional boost to entrepreneurial activity over and above the direct effects (endogeneity is alleviated by lagging explanatory variables).

This study highlights that entrepreneurial activity does not thrive in an institutional void in which corruption is commonplace (Klapper et al., 2006; MacMullen et al., 2008). These arguments are consistent with those advanced by Baumol (1990), who suggested that institutional factors help determine whether entrepreneurial initiatives will lead to productive welfare-enhancing outcomes or to non-productive outcomes such as exploitative monopolies. In particular, these findings support the specific argument that corruption may encourage unproductive and destructive forms of entrepreneurship and breed negative societal attitudes toward entrepreneurs (Baumol 1990). This is mainly because corruption increases agency costs (Alchian and Woodward, 1988), transaction costs (Luhmann, 1988), and institutional risks for prospective entrepreneurs, forcing them to rely on one-sided trust (Anokhin and Schulze, 2008). In contrast, better control over corruption should increase cash flow reliability and allow entrepreneurs to capture a greater share of revenue (Anokhin and Schulze, 2008).

Controlling corruption is an extremely difficult endeavor that involves all sectors of society, including cultural and moral values. While strengthening governmental institutions is not enough, it is a strong first step in the right direction. In reference to the “cures” of corruption, Tanzi (1998: 587) argued the following: “The greatest mistake that can be made is to rely on a strategy that depends excessively on actions in a single area, such as increasing the salaries of the public sector

employees, or increasing penalties, or creating an anticorruption office, and then to expect quick results." However, decreasing the number of procedures required to start a business is a relatively straightforward public policy measure. Therefore, this paper has important policy implications because the theory and evidence presented here indicate that stimulating entrepreneurial activity in an economy is more effective when policy reforms aimed at better control over corruption are implemented in combination with decreasing bureaucratic procedures.

From a statistical perspective, however, a relationship can never establish a causal connection. Causality must be shown or inferred from the theory underlying the phenomenon that is tested empirically (Kendal and Stuart, 1961). It is important to recall that although all macroeconomic factors, government institution factors, and competitiveness-related variables are lagged one year to alleviate (but not eliminate) potential endogeneity between these variables and the two measures of entrepreneurial activity, the aim of this study is to test the link between entrepreneurial activity and control of corruption rather than determine causation. This is an important limitation of the study. Therefore, future work should determine the direction of causality while drawing on different sources of qualitative data. As Tonoyan et al. (2010) recalled, although there is good justification for using multi-country samples to determine institutional factors that are similar across different countries and the effects of such institutional factors on entrepreneurial activity, there is also a need for more case studies of individual countries.

The case of Chile is an interesting place to begin to understand the positive effects of decreasing bureaucratic procedures: both better control over corruption and the encouragement of entrepreneurial activity. Prior to 2013, to establish a legal business in Chile, an entrepreneur had to hire a lawyer to write a legal document and then go to a notary to certify the paper. After that, the business constitution had to be announced in an official newspaper and registered in the real estate commerce office to finally obtain a tax-paying number. Currently, following a de-bureaucratization program that has been implemented with great success in New Zealand, Australia, Canada, and Singapore, among others, an entrepreneur in Chile is able to complete the entire process required to start a business with only one procedure in one day at zero cost. This is accomplished through an online platform called "your business in one day" (www.tuempresaenundia.cl). Chile has also introduced a series of entrepreneurship-related programs, including the flagship program Start-Up Chile. Given the success of the Start-Up Chile program and the decrease in the number of bureaucratic procedures, it is not surprising that according to TI, Chile ranked the 22nd least corrupt nation out of 177 countries in 2013. Future research should delve deeper in these issues.

REFERENCES

Acs, Z., & Amorós, J. E. (2008) Entrepreneurship and competitiveness dynamics in Latin America. Small Business Economics, 31(3), 305-322.

Acs, Z., & Audretsch, D. (2005) Entrepreneurship and innovation. Discussion Papers on Entrepreneurship, Growth and Public Policy # 2005-21.

Aidis, R., & Mickiewicz, T. (2006) Entrepreneurs, expectations and business expansion: Lessons from Lithuania. Europe Asia Studies, 58(6), 855-880.

Aidis, R., Estrin, S., & Mickiewicz, T. (2012) Size matters: Entrepreneurial entry and government. Small Business Economics, 39(1), 119-139.

Alchian, A., & Woodward, S. (1988). The firm is dead; long live the firm: a review of Oliver E. Wiliamson's the economic institutions of capitalism. Journal of Economic Literature, 26(1), 65-79.

Aldrich, H., & Zimmer, C. (1986) Entrepreneurship through social networks. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship.

Alonso-Terme, R. Davoodi, H., & Grupta, S. (1998) Does corruption affect income inequality and poverty? IMF working paper # 98-76.

Amit, R., Glosten, L., & Mueller, E. (1993) Challenges to theory development in entrepreneurship research. Journal of Management Studies, 30(5), 815-834.

Amorós, J. E., & Cristi, O. (2008) Entrepreneurship and competitiveness development: a longitudinal analysis of Latin American countries. International Entrepreneurship and Management Journal, 4(4), 381-399.

Anokhin, S., & Schulze, W. (2008) Entrepreneurship, innovation, and corruption. Journal of Business Venturing, 24(5), 465-476.

Bahmani-Oskooee, M. and Nasir, A. (2002) Corruption, law and order, bureaucracy, and the real exchange rate. Economic Development and Cultural Change, 50(July), 1021-1028.

Baker, T., Gedajlovic, E., & Lubatkin, M. (2005) A framework for comparing entrepreneurship processes across nations. Journal of International Business Studies, 36(5), 492-504.

Baumol, W. (1968) Entrepreneurship in economic theory. American Economic Review, 58(2), 64-71.

Baumol, W. (1990) Entrepreneurship: productive, unproductive, and destructive. The Journal of Political Economy, 98(5), 893-921.

Block, J., & Wagner, M. (2010) Necessity and opportunity entrepreneurs in Germany: Characteristics and earning s differentials. Schmalenbach Business Review, 62(April), 154-174.

Bosma, N., Coduras, A., Litovsky, Y., & Seaman, J. (2012) GEM Manual: a report on the design, data and quality control of the Global Entrepreneurship Monitor, Babson Park, MA, US: Babson College, Santiago, Chile: Universidad del Desarollo, Kuala Lumpur, Malaysia: Universiti Tun Abdul Razak and London, UK: Global Entrepreneurship Research Association.

Capelleras, JL., & Rabetino, R. (2008) Individual, organizational and environmental determinants of new firm employment growth: evidence from Latin America. International Entrepreneurship and Management Journal, 4(4), 79-99.

Casson, M. (1982) The entrepreneur. Totowa, NJ: Barnes & Noble Books.

Cukierman, A., Edwards, S., & Tabellini, G. (1992) Seignorage and political instability. American Economic Review, 82(3), 537-555.

Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013a) Which institutions encourage entrepreneurial growth aspirations? Journal of Business Venturing, 28(4), 564-580.

Estrin, S., Mickiewicz, T., & Stephan, U. (2013b) Entrepreneurship, social capital, and institutions: Social and Commercial Entrepreneurship Across Nations. Entrepreneurship Theory and Practice, 37(3), 479-504.

Gujarati, D., & Porter, D. (2010) Essentials of econometrics. New York: McGraw Hill.

Kendal, M., & Stuart, A. (1961) The advanced theory of statistics. New York: Charles Griffin Publishers.

Kirzner, I. (1997) Entrepreneurial discovery and the competitive market process: an austrian approach. Journal of Economic Literature, 35(1), 60-85.

Klapper, L., & Love, I. (2010) The impact of the financial crisis on new firm registration. World Bank Policy Research Working Paper # 5444.

Klapper, L., Laeven, L., & Rajan, R. (2006) Entry regulation as a barrier to entrepreneurship. Journal of Financial Economics, 82(3), 591-629.

Klitgaard, R. (1990) Controlling Corruption. Berkeley, CA: University of California.

Kreft, S., & Sobel, S. (2003) Public policy, entrepreneurship, and economic growth. West Virginia University Economics Working Paper # 02-2003.

Lecuna, A. (2012) Corruption and size decentralization. Journal of Applied Economics, Vol. 15(1), 139-168.

Lin, J., & Nugent, J. (1995) Institutions and Economic Development, in J. Behrman and T.N. Srinivasan eds., Handbook of Economic Development, vol. 3A, North-Holland, Amsterdam.

Luhmann, N. (1988) Familiarity, confidence, and trust: Problems and alternatives. In: Gametta, D. (Ed.), Trust: Making and Breaking Cooperative Relations. Oxford: Basil Blackwell.

Marquardt, D. (1987) Collinearity and least squares regression: Comment. Statistical Science, 2(1), 84-85.

Marquardt, D. (1970) Generalized inverses, ridge regression, biuased linear estimation, and nonlinear regression. Technometrics, (12), 591-613.

Mason, C., & Perreault, W. (1991) Collinearity, power, and interpretation of multiple regression analysis. Journal of Marketing Research, 28(3), 268-80.

Mauro, P. (1995) Corruption and growth. Quarterly Journal of Economics, 110(3), 681-712.

Mauro, P. (1998) Corruption and the composition of government expenditure. Journal of Public Economics, 69(2), 263-279.

McMillan, J., & Woodruff, C. (2002) The Central Role of Entrepreneurs in Transition Economies. Journal of Economic Perspectives, 16(3), 153-170.

McMullen, J., Bagby, D., & Palich, L. (2008) Economic freedom and the motivation to engage in entrepreneurial action. Entrepreneurship Theory and Practice, 32(5), 875-895.

Minniti, M. (1999) Entrepreneurial activity and economic growth. Global Business and Economics Review, 11(1), 31-42.

North, D. (1990) Institutions, institutional change and economic performance. Cambridge, MA: Cambridge University Press.

O'Brien, R. (2007) A caution regarding rules of thumb for variance inflation factors. Quality and Quantity, 41(5), 673-690.

OECD. (1998) Fostering Entrepreneurship. Paris: Organization for Economic Co-operation and Development.

Ovaska, T., & Sobel, R. (2005) Entrepreneurship in post-socialist economies. Journal of Private Enterprise, 21(1), 8-28.

Parker, S. (2007) Law and the economics of entrepreneurship. Comparative Labor Law and Policy Journal, 28(4), 695-716.

Reynolds, P., & White, S. (1997) The Entrepreneurial Process. Greenwich, CT: Greenwood Press.

Romer, P. (1994) The origins of endogenous growth. Journal of Economic Perspectives, 8(1), 3-22.

Schumpeter, J. (1934) The Theory of Economic Development. Cambridge, MA: Harvard University Press.

Shane, S., & Venkataraman, S. (2000) The promise of entrepreneurship as a field of research. Academy of Management Review, 25(1), 217-226.

StataCorp (2009) Stata: Longitudinal Data/Panel Data Reference Manual (release 11). College Station, TX: StataCorp LP.

Tanzi, V. (1998) Corruption around the world: Causes, consequences, scope, and cures. IMF Working Paper # 45-4.

Teece, D. (1981) The market for know-how and the efficient international transfer of technology. Annals of the Academy of Political and Social Science, 458(1), 81-96.

Tonoyan, V., Strohmeyer, R., Habib, M., & Perlitz, M. (2010) Corruption and entrepreneurship: How formal and informal institutions shape small firm behavior in transition and mature market economies. Entrepreneurship Theory and Practice, 34(5), 803-832.

Van Stel, A., Carree, M., & Thurik, R. (2005) The effect of entrepreneurship on national economic growth. Discussion Papers on Entrepreneurship, Growth and Public Policy # 0405.

Venkataraman, S. (1997) The distinctive domain of entrepreneurship research: An editor's perspective. Advances in Entrepreneurship, Firm Emergence, and Growth, 3, 119-138.

Wei, S. (1999). Does corruption relieve foreign investors of the burden of taxes and capital controls? World Bank Working Paper # 2209.

White, H. (1980) A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica, 48(4), 817–838.

Williams, CC., & Nadin, S. (2012). Entrepreneurship in the informal economy: commercial or social entrepreneurs? International Entrepreneurship and Management Journal, 8(3), 309-324.

Williamson, O. (2000). New institutional economics. Journal of Economic Literature, 38(3), 595-613.

World Bank (2011). Entrepreneurship snapshots 2010: Measuring the impact of the financial crisis on new business registration, Washington, DC: The International Bank for Reconstruction and Development. (Available at http://issuu.com/world.bank.publications/docs/9780821384763)

APPENDICES

Table A1. Sample.

Very High Human Development	WBGES	TEA	High Human Development	WBGES	TEA	Medium Human Development	WBGES	TEA
Argentina	0.56	13.04	Algeria	0.45	16.68	Dominican Rep.	2.13	18.21
Australia	6.33	12.07	Bosnia & Herz.	0.71	6.73	Egypt	0.13	13.11
Austria	0.64	3.86	Brazil	2.10	12.75	Indonesia	0.17	19.28
Belgium	4.15	3.27	Colombia	1.02	23.07	Jordan	0.59	14.25
Canada	8.00	8.43	Jamaica	1.12	18.92	Morocco	0.98	15.75
Chile	2.18	12.31	Kazakhstan	2.88	9.36	Philippines	0.23	20.44
Croatia	2.95	6.48	Malaysia	2.60	7.75	South Africa	1.13	5.90
Czech Rep.	2.53	7.85	Mexico	0.62	8.09	Thailand	0.64	20.94
Denmark	6.29	4.81	Panama	3.04	9.59			
Finland	3.20	5.63	Peru	2.13	30.58			
France	3.14	4.82	Romania	5.75	4.34			
Germany	1.18	4.51	Russian Fed.	4.03	3.73			
Greece	0.94	7.42	Serbia	2.10	7.02			
Hong Kong	15.25	5.52	Turkey	0.99	5.87			
Hungary	4.46	5.81	Uruguay	3.08	12.21			
Iceland	14.61	11.58						
Ireland	5.97	8.14						
Israel	4.66	6.15						
Italy	1.89	4.35						
Japan	1.43	3.27						
Korea, Rep.	1.56	8.50						
Latvia	5.88	6.94						
Netherlands	2.95	5.41						
New Zealand	22.85	16.12						
Norway	4.84	8.18						
Poland	0.49	8.83						
Portugal	4.01	6.37						
Singapore	6.55	5.93						
Slovenia	3.49	4.69						
Spain	4.57	6.30						
Sweden	4.04	3.84						
United Kingdom	9.25	5.90						

Notes: This information reflects the data available for the 2004–2009 period. Countries are subdivided into categories based on the Human Development Index (HDI) value by the United Nations Development Programme. Countries are listed in alphabetical order.

Table A2. Pairwise Correlations of Variables.

	Unemployment rate	Log GDP per capita	Inflation rate	Investments rate	Savings rate	Control of corruption	Political stability & absence of violence	Voice & accountability	Government effectiveness	Rule of law	Capacity for innovation	No. procedures to start a business	Quality of overall infrastructure	Flexibility of wage determination	Business costs of crime & violence
Unemployment rate	1														
Log GDP per capita	-.49*	1													
Inflation rate	.20*	-.43*	1												
Investments rate	-.07	-.14*	.09	1											
Savings rate	-.33*	.02	-.17*	.30*	1										
Control of corruption	-.42*	.85*	-.45*	-.20*	.05	1									
Political stability & absence of violence	-.38*	.76*	-.32*	-.03	-.01*	.77*	1								
Voice & accountability	-.27*	.80*	-.37*	-.23*	-.29*	.78*	.72*	1							
Government effectiveness	-.51*	.88*	-.47*	-.19*	.11*	.95*	.76*	.77*	1						
Rule of law	-.47*	.87*	-.47*	-.17*	.04	.96*	.79*	.79*	.96*	1					
Capacity for innovation	-.45*	.78*	-.44*	-.27*	.13	.75*	.57*	.63*	.82*	.77*	1				
No. procedures to start a business	.32*	-.53*	.17*	.05	.01	-.59*	-.48*	-.41*	-.61*	-.59*	-.44*	1			
Quality of overall infrastructure	-.44*	.72*	-.42*	-.20*	.16*	.80*	.62*	.52*	.88*	.84*	.76*	-.51*	1		
Flexibility of wage determination	-.01	-.31*	.15*	.20*	.05	-.24*	-.22*	-.39*	-.20*	-.22*	-.27*	-.09	-.16*	1	
Business costs of crime & violence	-.44*	.59*	-.32*	.04	.16*	.65*	.55*	.35*	.65*	.71*	.52*	-.43*	.63*	-.07	1

Note: Significant at the 5% level or better.