Individualism and Ventue Capital*

Pascal Gantenbein[a] • Axel Kind[b] •Christophe Volonté[a,b]

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Abstract

Venture capital is a driving factor for innovation, productivity, and economic growth. As societies' values and norms affect the willingness to start a company and provide finance to it, we investigate the effect of individualism – a dimension of culture that is strongly associated with entrepreneurship – on venture capital. Our sample consists of 1,496 country-year observations and includes 88 countries from 1998 to 2014. Controlling for economic conditions, the legal environment, and different aspects of culture, we find that individualism is positively and significantly related to several measures of venture-capital investments. The results are stable across different subsamples, several measures of venture-capital investments, and even hold when using the political system 200 years ago as an instrument for individualism.

Keywords: Individualism, Venture capital, Institutions, Culture

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[a] University of Basel, Faculty of Business and Economics, CH-4002 Basel, Switzerland.
[b] University of Konstanz, Department of Economics, D-78457 Konstanz. *Corresponding author*: Tel.: +41 61 267 24 62, Fax: +41 61 267 24 63, E-Mail christophe.volonte@unibas.ch

1. Introduction

The success of the U.S. Silicon Valley is often reported to stem from the American spirit of entrepreneurship, its risk appetite, and its capitalist mentality. These factors are usually perceived as offering an ideal breeding ground for the launch of start-ups and the provision of venture capital (see The Economist, 2009). According to several authors (see, e.g., Jeng and Wells, 2000; Gompers and Lerner, 2001; Samila and Sorenson, 2011; Popov and Roosenboom 2013), start-ups are fundamental for innovation and productivity, the renewal of economies, the creation of jobs, and economic growth. In line with this view, the G20 leaders concluded in their 2014 Summit that the "promotion of competition, entrepreneurship and innovation" would help increasing economic growth.

Beyond doubt, there is a certain degree of consensus on some policy measures that facilitate the rising of start-ups, in particular, on those improving the institutional environment. These policy measures aim at cutting down excessive state regulation (e.g., by facilitating the formation of start-ups, reducing market entry barriers, allowing pension funds to invest in venture capital), strengthening the protection of property rights (e.g., via patent rights), or revising tax systems (e.g., by reducing taxes, simplifying tax rules, extending the tax-loss carryforward period). However, scholars still struggle with explaining the extent by which venture-capital investments differ across countries. Furthermore, start-up activity within a country does not only depend on the formal institutional environment, but also on informal institutions, such as the cultural traits of the people. For example, the Global Entrepreneurship Monitor (GEM) shows that personal factors, such as the ability to establish a start-up and the attractiveness of founding it, play a central role. Also more subjective reasons, such as the fear of failure or the prospect of a high renown, are likely to be important. In view of these considerations, it seems natural to consider the cultural background of a country's people as a determinant of venture-capital investments.

Hofstede, Hofstede, and Minkov (2010) describe a nation's culture along six dimensions that stem from people's values and preferences within a country. Among these, individualism is closely related to pro-market attitudes and entrepreneurship (see, e.g., Morris, Davis and Allen, 1994). The aspect of individualism in the American culture may therefore be one reason why venture-capital investments are distinctively higher in the U.S. than in other countries. The characteristic features of individualism are also related to conditions that foster both business activity and venture capital financing. In particular, individualism is likely related with (i) investor protection, which gives the provider of capital a certain level of legal security (Han, Kang, Salter and Yoo, 2010; Zhang, Liang and Sun, 2013)[1], (ii) accountability and transparency, which decreases information asymmetry (Griffin, Guedhami, Kwok, Li and Shao, 2015), and (iii) corporate governance, which aims to reduce the costs related to principal-agent problems (Gompers and Lerner, 1999; Haxhi and van Ees, 2010). Furthermore, psychologists find that generalized trust is related with individualism (see e.g., Allik and Realo, 2004; Realo, Allik and Greenfield 2008). Since complete contracts between entrepreneurs and investors cannot be written,there is large uncertainty about the future gains of the start-up, information asymmetries between investors and entrepreneurs are typical, mutual trust is essential for that deals to materialize (see, e.g., Duffner, Schmid and Zimmermann 2009; Bottazzi, Da Rin and Hellmann 2011; Fairchild, 2011).

In our study, we investigate whether individualism has a positive effect on venture-capital investments. The empirical analysis relies on a sample of 1,496 country-year observations that has been collected from over 300'000 venture capital transactions across 148 countries over the period 1998-2014in Thomson ONE Banker's database. Controlling for the economic conditions (e.g., GDP

[1] Transaction costs make it impossible to write complete contracts that define instructions for every state of the world.

growth, GDP per capita, exports), formal institutional environment (e.g., rule of law), and various cultural aspects, we find that individualism is positively and significantly related to venture-capital investments. The relationship is robust to several specifications and different subsamples (e.g., income groups). We also use an instrumental variable (IV) approach that confirms this finding. Our instrument (Polity Score) measures the characteristics of a country's political system between the Congress of Vienna (1816) and the outbreak of World War I (1912). This period is relatively stable and we assume that it laid ground to the values and norms that define individualism in modern societies. We provide evidence that Polity Score is a valid instrument as it is related with individualism but uncorrelated with venture-capital investments.

The study contributes in several ways to the current research debate. First, it offers evidence of the importance of culture in economic decisions and therefore adds to the growing literature that investigates this relationship (see, e.g., Guiso, Sapienza, Zingales, 2003, 2006, 2009). Second, it provides some answers to the widely-discussed research question concerning the determinants of venture-capital investments around the world. New institutional theorists, such as North (1980), argue that the "rules of the game" according to which individuals and organizations interact are constituted by both formal institutions (e.g., regulations or law enforcement) and informal institutions (e.g., culture). If culture plays a role, then the preconditions to foster venture capital change substantially. Improvements of the more formal framework conditions should then encompass cultural aspects that motivate entrepreneurship such highlighting not only the risks, but also the benefits of creating or financing start-ups. The fact that individualism as one dimension of culture may be a missing piece in the puzzle of different levels of venture-capital investments around the World is important. Third, the sample of 88 countries employed in this paper is larger than the samples used in existing studies on the determinants of cross-country venture-capital investments (e.g., Jeng and Wells, 2000: 21 countries; Da Rin, Nicodano and Sembenelli, 2006: 14 countries; Anokhin and Schulze, 2009: 64 countries; Li and Zahra, 2012, 68 countries). As it includes both developed countries and emerging markets, we are able to exploit a large variety of manifestations of individualism as well as economic and institutional conditions.The remainder of the paper is structured as follows. Chapter 2 discusses venture capital and its determinants. Chapter 3 describes the data and the methodology. Chapter 4 presents and discusses the empirical results. Chapter 5 concludes.

2. Theory and development of hypotheses

The prosperity of economies depends on the commercialization of ideas. The transformation from innovative ideas into new products requires financial resources (see, e.g., Jeng and Wells, 2000). In this respect, venture capital, risk capital provided to young companies is important because new products often originate from start-ups founded by entrepreneurs (see Kortum and Lerner, 2000).[2] Firms in the very early stage of their development are mostly financed by bootstrapping (founders' private funds), capital provided by family members, friends (and fools, according to the 3F-Hypothesis), and private equity investors such as business angels. On the contrary, internal financing capability is typically inexistent and banks are generally unwilling to provide loans to start-ups because the young firms lack both (stable) cash flows and tangible assets that can be pledged as collateral.

As start-ups develop, they typically require substantial additional funds that can be hardly provided by individuals. At this stage, the chances to grow further depend on the availability of venture capital, i.e.,

[2] Private equity excluding venture capital is mostly concentrated on debt-financed buyouts (leveraged buyout). Due to significant risks involved in critical phases of such relatively mature firms, it is either not possible or considered as disadvantageous to raise (public) capital on stock markets. Consequently, private equity is also used to close the so called "equity gap" of these firms.

financing offered by professional investment funds dedicated to start-ups. Venture-capital investments are challenging for several reasons. First, they are intrinsically risky due to the large number of potential pitfalls that can jeopardize a steady growth path of start-ups and which ultimately results in very high failure rates (Stinchcombe, 1965; Cochrane, 1981). Second, venture-capital investments are characterized by a material asymmetric distribution of information (also due to a relatively low level of transparency) and serious conflicts of interests between the venture capital funds and start-up companies (see Jensen and Meckling, 1976).[3] In particular, venture capital investors have often to overcome an information disadvantage with respect to the technology, the founders' skills and commitment. Further, the entrepreneurs are often emotionally bounded to the firm whereas the venture capitalists mainly focus on the return on investment.

The entrepreneurs' creativity and their innovations are a key driver of economic development. While freedom and lasting peace are basic conditions for economic growth, Cooter and Schäfer (2012) point out that also economic factors, such as GDP per capita, affect the provision of venture capital. Several studies show that a country's (formal) institutional environment (e.g., political and legal environments, financial market development, tax system, labor market regulations, and public spending on research and development) correlates with venture capital activities across countries (see also Black and Gilson, 1998; Da Rin, Nicodano and Sembenelli, 2006; Groh, von Liechtenstein and Lieser, 2010; Lerner and Tag, 2013). For instance, financial risk of investors can be reduced through tax systems which are favorable to risky start-up investments (e.g., by granting tax loss carryforwards over several years). Especially in developed countries with their saturated economies, new ideas enhance productivity and therefore economic growth. For this reason, in the last decades, governments around the World have aimed to foster entrepreneurial activity. Consequently, the legal environment favoring entrepreneurial activity has been improved (e.g., by the Small Business Act for Europe, a framework for the EU policy on Small and Medium Enterprises (SMEs) introduced in 2008), the exchange between universities and business has been promoted, and so called techno parks hosting start-ups have been created (see, e.g., Markman, Siegel and Wright, 2008; Haufler, Norbäck and Persson, 2014). However, there are still significant differences in venture-capital investments across countries that raise fundamental questions on these governmental initiatives. One − so far unexplored − reason for the different development of venture capital among countries might be related to the values and norms of people within a country that either encourage or impede entrepreneurship.

In the economics literature, culture has been argued to affect economic outcomes in a variety of situations and dimensions.[4] Fukuyama (1995, p. 103) states that "non-rational factors like culture, religion, tradition, and other pre-modern sources, will be key to the success of modern societies in a global economy." In the case of venture capital, both entrepreneurs' willingness to start an enterprise and investors' propensity to invest in risky projects depend also on their cultural heritage (see e.g., Bruton, Fried and Manigart, 2005; De Clercq, Meuleman and Wright, 2012). According to Hofstede

[3] A further principal-agent problem exists between the venture capital firm and the limited partners (e.g., pension funds).

[4] Economic growth (Franke, Hofstede and Bond, 1991), economic development (Glahe and Vohries, 1989), financial development (Beck, Demirgüç-Kunt and Levine, 2003), financial intermediation (Aggarwal and Goodell, 2010), foreign direct investment (Guiso, Sapienza and Zingales, 2009; Siegel, Licht and Schwartz, 2013), government quality (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999), international capital flows (Siegel, Licht and Schwartz, 2011), ownership structure (Holderness, 2014), pension systems (Aggarwal and Goodell, 2013), leverage (Li, Griffin, Yue and Zhao, 2011), cash holdings (Chen, Dou, Rhee, Truong and Veeraraghavan, 2015), mergers and acquisitions (Stahl and Voigt, 2008; Frijns, Gilbert, Lehnert and Tourani-Rad, 2013; Ahern, Daminelli and Fracassi, 2015), financial contracts (Giannetti and Yafeh, 2012), and cross-country venture capital flows (Bottazzi, Da Rin, and Hellmann, 2011; Dai, Jo and Kassicieh, 2012; Nahata, Hazarika and Tandon, 2014; Li, Vertinsky and Li, 2014).

(1980) and Schwartz (1999), culture comprises shared values, norms, beliefs, and practices within a society that change only slowly from one generation to the next.

Individualism

In Hofstede's widely used six dimensions of culture, individualism is defined as a "preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families". In contrast to collectivism, individualism has been argued to be related to (i) entrepreneurship, (ii) a general capitalist mentality, and (iii) preference for market solutions.

Individualism emphasizes individual freedom, personal responsibility, self-reward, self-orientation. It fosters collaboration and investments and is closely related to pro-market attitudes, risk-taking, entrepreneurship, and innovation (see, e.g., Shane, 1992, 1993; Morris, Davis, and Allen, 1994; Yamagishi and Yamagishi, 1994; Tiessen 1997; Yamagishi, Cook and Watabe, 1998; Chui, Titman and Wei, 2010; Taylor and Wilson 2012; Shao, Kwok and Zhang 2013; Li, Griffin, Yue and Zhao 2013; Ang, 2015). In contrast, collectivism characterizes societies in which group affiliation (families, clans, personal relations, networks, and loyalty) and in-group thinking are important and forms of nepotism may occur. Such an "insider"-system is rather counterproductive for innovative and "out-of-the-box" ideas which often accompany start-ups.

A higher level of individualism within a country is also associated with conditions that favor venture-capital investments. For example, Han, Kang, Salter, and Yoo (2010) and Zhang, Liang, and Sun (2013) show that individualism is related to investor protection and thereby increases the willingness to provide capital to start-ups (Lerner and Schoar, 2005). Individualism also improves accountability and transparency (Griffin, Guedhami, Kwok, Li and Shao, 2015), which, in turn, decreases information asymmetry between the entrepreneur and the venture capitalist, reduces capital costs, and leads to higher venture-capital investments. Finally, empirical evidence also suggests that individualism leads to better corporate governance (Gompers and Lerner, 1999; Haxhi and van Ees, 2010) and thus reduces agency costs arising from conflicts of interests between the venture capitalist (the principal) and the entrepreneur (the agent).

Several researchers also argue that individualism is positively related to generalized trust (e.g., Yamagishi and Yamagishi 1994, Yamagishi, Cook and Watabe 1998; Allik and Realo 2004; Huff and Kelley 2003, 2005; Realo, Allik and Greenfield 2008). In contrast to particularized trust, generalized trust refers to the interpersonal relationships between people outside their group, which turns out to be particularly important for economic transactions (Banfield 1958).[5, 6] Individualistic societies (e.g., European and Anglo-Saxon countries, such as the United States, Australia, the United Kingdom, or Canada) with the exception of China (Bjornskov 2007 and Steinhardt 2012) exhibit higher levels of generalized trust than collectivistic societies (e.g., countries in Asia, Africa or Latin America). Trust reduces transaction costs in principal-agent situations (Williamson 1975; Nannestad 2008) and, therefore, potentially fosters venture-capital investments. Generalized trust has been argued to affect economic outcomes, such as trade, growth, cross-border investments, and overall economic activity (see, e.g., Guiso, Sapienza, Zingales, 2009; Algan and Cahuc 2010; Sapienza and Zingales 2012; Ang,

[5] Generalized trust describes the general level of (moralistic) trust within a society and means trust towards strangers and not towards known people. In contrast, particularized trust can be seen as trust established between known people and thus involves significant amounts of time for its creation. For the impact of trust on economic activity and investments within a country, the concept of generalized trust has thus to be the reference.

[6] Lacking social capital (i.e., particularized trust dominating generalized trust) has been brought forward as a reason of Southern Italy's relative poverty by Putnam, Leonardi and Nanetti (1993).

Cheng and Wu 2015).[7] Further, Kwon and Arenius (2010) find that generalized trust (or social capital) increases the perception of entrepreneurial opportunities and that investors in countries of higher generalized trust are more likely to invest in entrepreneurs with whom they have only weak personal ties. Our hypothesis is therefore stated as follows:

Hypothesis 1: Individualism is positively related to venture-capital investments.

3. Data and definition of variables

Our aim is to understand the effect of individualism on venture-capital investments as venture capital differs significantly around the world (see Figure 1). We therefore collect information on all venture capital transactions between 1998 and 2014 included in the Thomson ONE Banker's database. Thomson ONE Banker is an established source for studies on venture capital (see, e.g., Gompers, Kovner, Lerner and Scharfstein 2008; Guler and Guillén 2010; Dai, Jo and Kassicieh 2012; Espenlaub, Khurshed and Mohamed 2015). Its private equity module (formely VentureXpert) integrates data from Thomson Venture Economics and Thomson Macdonald.

[insert FIGURE 1 about here]

The database covers over 300,000 venture capital transactions conducted in 148 countries between 1998 and 2014, which corresponds to 2,516 country-year observations. By requiring all countries to have at least one entry in, we make sure that the countries considered are screened by Thomson Reuters with respect to venture-capital investments. We match this data with information about the countries' cultural, economic, and institutional characteristics as provided by Hofstede's homepage (geert-hofstede.com), CIA's World Fact Book, and the World Bank. Due to missing values, we must exclude 60 countries, which leaves us with a final base sample of 1,496 country-year observations (see Table 1).

[insert TABLE 1 about here]

In cases in which control variables that are rather stable, such as life expectancy, had missing values in single years, we replaced missing values in order to save degrees of freedom by averages between two data points available or inserted available values before or after missing values.

3.1 Venture-capital investments

The dependent variable of this study is *Venture capital*, which is the total amount of risk capital received by young companies in a given country during a given year. This amount includes all investments in seed, early-stage, expansion, or later-stage start-ups that are classified as venture capital in Thomson ONE Banker (see Figure 2 for an overview on the stages during the sample period). In consequence, it includes all private equity except leverage buyouts. Thereby, financing is provided

[7] Houser, Schunk, and Winter (2010) differentiate between trust decisions and risky decisions by arguing that trust decisions occur in principal-agent-relationships where one party's decision affects another's outcome, while risky decisions occur where the outcome is determined by statistical conditions (see also Eckel and Wilson 2004; Bohnet and Zeckhauser 2004). Similarly, Knight (1921) distinguishes between risk and uncertainty. Risk (and risk aversion) is related to objective interpretations of (statistical) probabilities ("measurable uncertainty") which are calculable, while uncertainty is related to subjective interpretations of probabilities ("unmeasurable uncertainty") which are based on human beliefs.

from various economic actors: individuals, business angels, corporations, governments, and private equity firms.[8]

3.2 Individualism

We use data on *Individualism* from Geert Hofstede's homepage on the cultural dimension (http://geert-hofstede.com). Individualism can take values from 0 to 100, while countries with scores below 50 are considered "collectivist" and those with scores above 50 are considered "individualist".

3.3 Control variables

We account for several country characteristics that may affect venture-capital investments. *GDP growth* is computed as the one-year lagged annual change in Gross Domestic Product (GDP). We control for this variable because Jeng and Wells (2000), among others, argue that growing countries create more investing opportunities.). *GDP per capita* is the GDP scaled by the population. *Rule of law* measures the quality of contract enforcement, property rights, police, and courts, as well as the likelihood of crime and violence. This variable stems from the Worldwide Governance Indicators (WGI) project (www.govindicators.com). A stronger rule of law should increase the willingness of investors to provide money to start-ups. *Exports* is the percentage of exports of goods and services to GDP. *Population growth* is computed as the annual population growth rate lagged by one year. *GDP* is the Gross Domestic Product in current US Dollars and is an indicator for a country´s economic importance and size. Summary statistics and definitions of baseline variables are provided in Table 2 and 3.

[insert TABLE 2 about here]

[insert TABLE 3 about here]

4. Methodology and empirical results

Individualism has been associated with entrepreneurial spirit. We estimate the following regression model to test the hypotheses about the effect of individualism on venture-capital investments:

$$Venture\ capital_{i,t} = \alpha + \beta_1 Individualism_{i,t} + \delta Controls_{i,t} + \varepsilon_{i,t}$$

where *Venture capital* is the total amount of venture-capital investments of country *i* in year *t*. Many countries have no venture-capital transactions in some years, therefore the distribution of our main dependent variable, venture capital, is strongly right-skewed. For this reason, we log transform it. We run pooled regression with cluster-robust standard errors because errors are likely to be correlated within countries. As our focus variable, *Individualism*, is time invariant, we are not able to use country fixed effects which would account for unobserved (and time-invariant) national characteristics.

4.1 Baseline model

The regression results of our baseline model provide first empirical evidence that individualism is positively related to venture capital (Table 4). In addition, the results in Colum III indicate that

[8] Thomson ONE Banker collects data on venture-capital investments and categorizes them - in dependence of the providing actor/institution - into the following groups: "Angel Group", "Bank Affiliated", "Corporate PE/Venture", "Endowment, Foundation or Pension Fund", "Government Affiliated Program", "Incubator/Development Program", "Individuals", "Insurance Firm Affiliate", "Investment Management Firm", "Non-Private Equity", "Other", "Private Equity Advisor or Fund of Funds", "Private Equity Firm", "SBIC" (Small Business Investment Company), "Service Provider" and "University Program".

individualism explains one third of the variation of venture-capital investments across countries. In other words, only two thirds of the variation of venture capital around the world are not explained by this single variable. As the results holds also after including all the mentioned control variables, it is appropriate to assert that individualism is a critical factor for venture-capital investments.

[insert TABLE 4 about here]

4.2 Additional economic control variables

As individualism may also affect other economic and institutional factors which in turn affect venture-capital investments, we include in a next step a battery of additional control variables. All the data is provided by the World Bank. *Unemployment* is the percentage of labor force without jobs and is lagged by one year. A higher rate of unemployment may increase the pool of (necessity-based) entrepreneurs. *Market capitalization/GDP* is market capitalization of listed companies in a country divided by GDP and lagged by one year. It is used as a proxy for the venture capitalists' potential to exit their investment via an IPO, which increases their willingness to invest in the first place (Jeng and Wells 2000; Nahata, Hazarika, and Tandon 2014). *Foreign Direct Investments* is the ratio of Foreign Direct Investment net inflows (FDI) to GDP. It measures a countries' openness to foreign capital (see Kim and Lu 2013; Nahata, Hazarika and Tandon 2014). *Real interest rate* (lagged by one year) proxies both financing costs and the economic conditions of a country. *Inflation* is also lagged by one year and proxies for the general financial stability of a country. *Company taxes* are taxes on income, profits, and capital gains in percent of revenue. Higher taxes potentially curb investments (Da Rin, Nicodano and Sembenelli 2006; Popov and Roosenboom 2013). As Zak and Knack (2001) argue that income equality fosters generalized trust within a society, we further include the *Gini coefficient* which assumes a value of *0* for perfect income equality and *100* for perfect inequality. *Tertiary education* is the fraction of labor force with tertiary education. Dearmon and Grier (2011) show that trust fosters education. *R&D expenditures* is used as a proxy for the capacity of innovation of a country (Lerner and Tag 2013). However by adding these additional control variables our sample is reduced to 924 country-year observations.

In Table 5, Column I, we first include economic factors, such as the unemployment rate, market capitalization to GDP or company taxes, which have been argued to affect venture capital (see, e.g., Jeng and Wells, 2000). In Column II, we include variables that may capture the propensity to start an enterprise, such as tertiary education or R&D expenditures. The empirical evidence shows that individualism does not lose its strongly significant and positive relationship with venture-capital investments.

[insert TABLE 5 about here]

4.3 Language and religion

Groups that speak the same language or believe in the same religion often share the same values. Therefore, language and religion have been used as proxies for culture. As an example, Stulz and Williamson (2003) proxy culture by language and religion when examining the effect of culture on investor rights. Several other authors use also a country's language and religion as a proxy for culture (see, e.g., Grinblatt and Keloharju 2001; Guiso, Sapienza, and Zingales 2003; 2006).[9] The advantage of this approach is that it allows the researcher to aggregate countries along clearly defined dimensions (language and religion) (see Gupta, Hanges and Dorfman, 2002, Ronen and Shenkar, 1985; Schwartz, 2014).

[9] A good survey on the effect of religion on economic development is provided by Aldashev and Platteau (2014).

According to Hofstede (1980), language is the most important and recognizable element of culture. He argues that people speaking the same language within a specific territory share a common culture. Stulz and Williamson (2003) suggest that a common language facilitates the exchange of information. Similarly, Grinblatt and Keloharju (2001) track back the home bias to language. Finally, Kashima and Kashima (1998) find that languages in which pronouns are not dropped (e.g., English, French, and German) are associated with countries with higher individualism than languages in which pronouns are dropped (Arabic, Spanish, Italian and most Asian languages)..

As language is an important expression of culture, we include six main languages in our analysis: *Arabic*, *Chinese*, *English*, *French*, *German,* and *Spanish.* Unfortunately, we are not able to include languages that are only spoken within one county (e.g., Swedish, Finnish, and Norwegian), because this variable would capture all other institutional factors of this specific country, i.e., it would act as a fixed effect for those countries.

Knack and Keefer (1997), Delhey and Newton (2005), and Bjornskov (2007) suggest that ethnic diversity within a country lowers trust and could therefore curb venture-capital investments. It is possible that the cohabitation of people that speak different languages has a similar effect. Therefore, we include in the model the variable *Linguistic Index* which measures fractionalization of languages within countries using Herfindahl index from Alesina, Devleeschauwer, Easterly, Kurlat and Wacziarg (2003).

[insert TABLE 6 about here]

Table 6 shows that Chinese is positively related with venture-capital investments, whereas Arabic is negatively related to it. However, the inclusion of language does not reduce the strong relation between individualism and venture capital.

Religion is another important expression of culture (Tarakeshwar, Stanton, and Pargament, 2003). It influences norms, beliefs, and rules for behavioral relationships and creates identity. Several empirical studies document that religion influences economic performance (Glahe and Vorhies, 1989; Noland, 2005), the level of creditor rights (Stulz and Williamson, 2003), the quality of government (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1999), and corporate decisions (Hilary and Hui, 2009). The values attributed to different religions have been argued to impact the society's perception of markets. According to Weber (1930) the Protestant work ethic has laid ground to capitalism and economic wealth. In fact, Hayward and Kemmelmeier (2011) find evidence that Protestant countries and Protestant people within countries have pro-market attitudes. There is also strong empirical evidence that beliefs, values, and attitudes associated with religion, rather than religion itself, affect economic outcomes (see La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1997; Barro and McCleary 2003; Guiso, Sapienza, and Zingales, 2006; Arrunada, 2010; Hayward and Kemmelmeier, 2011). Protestants can also be seen as being more individualistic in their characteristics of pursuing economic success (Bjornskov, 2007).

We include five major religions in our empirical analysis: *Buddhism*, *Catholicism*, *Islam*, *Orthodox Christianity* and *Protestantism.* According to several sources, Protestantism is expected to be positively related with venture-capital investments. Again, we do not include religions that are country-specific, such as Hinduism, which would capture all other aspects of a given country. Similarly to the use of a Linguistic Index, we include *Religious Index* that measures religious heterogeneity within a country (see Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg, 2003).

[insert TABLE 7 about here]

Interestingly, Table 7 indicates that all religions have a negative influence on venture-capital investments relative to the reference category "Other" which includes Daoism (in China), Hindu, Judaism, Syncretic (in Zimbabwe), and Local beliefs. Furthermore, the results also suggest that religious diversity is positively related to venture-capital investments.

4.4 Legal environment

An efficient legal system that ensures abidance of basic features of contracts is vital for trade and economic development (see, e.g., Levine 2005). For example, in a well-functioning legal system, an entrepreneur who steals money will get prosecuted. In this respect, a functioning legal system will promote the transmission from ideas to products and services and, in consequence, lead to economic growth. Law (e.g., the protection of [intellectual] property rights) therefore is seen as a driver of innovation and growth; the lack of it may explain why some economies have failed to experience a positive development. Property rights increase finance available to firms and decrease their cost of capital (Rajan and Zingales, 1998; Hail and Leuz, 2006). Using a large sample of 41 countries, Zak and Knack (2001) show that national growth rises with an increase in trust. One reason for this finding could be that countries with lower levels of trust create an unfavorable institutional environment for entrepreneurship and economic growth. For instance, Aghion, Algan, Cahuc, and Shleifer (2008) show that low-trust countries are characterized by higher regulation. The theory of legal origins has been used to explain differences in economic systems and performance around the world. In a series of papers, La Porta et al. (1997, 1998, 2000, 2008) provide empirical evidence that French Civil Law offers lower investor protection in contrast to Common Law which creates a more efficient allocation of capital and higher economic performance. The Legal Origins Hypothesis states that differences in legal rules and regulations can be attributed to the jurisdictions' legal origins (common-law countries are more focused on market-supporting regulations, such as investor protection, whereas civil-law countries rely on state-centered capitalism policies) and that these differences have an impact on economic outcomes.

In addition to the variable Rule of Law of our baseline model, we also include in our regressions the dummy variables *Common law*, *French Civil law*, *German Civil law*, *Nordic Civil law*, and *Socialistic law*)*;* Mixed law serves as reference variable. We obtain information on the origin of the legal system from Djankov, McLiesh, and Shleifer (2007) and NYU's GlobaLex. To control also for the strength of the institutional environment, we include *Strength of legal rights index* (World Bank; 0=weak to 10=strong), *Economic Freedom Overall Score* (Heritage Foundation), *Corruption Perceptions Index* (Transparency International), and the overall Score of *Worldwide Governance Indicator* (Worldwide Governance Indicators)[10]. For all indicators, a higher number stands for a better score.

[insert TABLE 8 about here]

The results in Table 8 show that the legal origins hypothesis does not hold in our model. In Column IV where all variables are included no legal system is significantly related to venture capital. However, all indices except for Economic Freedom Overall Score are positively related to venture capital.

4.5 Geographic conditions

Research suggests that the geographical location of a country and health conditions within countries affect economic outcomes, such as economic growth (see e.g., Acemoglu, Johnson, and Robinson, 2001; Sachs and Malaney, 2002; Gorodnichenko and Roland, 2016). Therefore, we include *Internal*

[10] WGI is the equally weighted average of all 6 governance dimensions from. The index consists of voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

Distance of Country, *Landlocked*, and *Latitude* from GeoDist Database by CEPII, and *Malaria infections* from Geography Datasets by Gallup, Mellinger, and Sachs. Based on the regression results in Table 9, geography plays a minor role in explaining differences in venture-capital investments across countries.

[insert TABLE 9 about here]

4.6 Cultural dimensions

Beside the dichotomy individualism-collectivism, Hofstede (1980) mentions power distance, uncertainty avoidance, and masculinity as other important cultural dimensions. Licht et al. (2005) show that power distance (i.e., greater tolerance for hierarchy) is negatively related to investor protection, which may restrain people to invest. Gupta, MacMillan, and Surie (2004) argue that higher power distance is detrimental to entrepreneurship. Shane (1992, 1993) suggests that higher power distance is negatively related with innovation. Finally, also negotiations have been argued to suffer in case of higher power distance (Chang and Cheung, 2008).

In countries with a high level of uncertainty avoidance, people may worry more about the unknown future. A culture of uncertainty avoidance has been argued to be an obstacle to venture-capital investments (Hofstede 1980) and has been associated with Continental European countries rather than Anglo-Saxon countries and. By examining the relationship between formal institutions and venture-capital investments, Li and Zahra (2012) find a positive relationship which, however, was weaker in uncertainty-avoiding societies and collectivist societies. Shane (1993, 1995) finds a negative relationship between uncertainty avoidance and innovation or entrepreneurship. Research also suggests that higher uncertainty avoidance scores relates to higher risk-aversion (Kwok and Tadesse 2006; Chui and Kwok 2008; Beugelsdijk and Frijns 2010; Frijns, Gilbert, Lehnert and Tourani-Rad 2013; Rieger, Wang and Hens 2015). Masculinity describes a society's preferences for achievement and material rewards for success.

We include *Power distance*, *Uncertainty avoidance*, *Masculinity* as well as newer dimensions of Hofstede (*Long term orientation* and *Indulgence*) into our model. Uncertainty avoidance and Masculinity are negatively related to venture capital, while Long term orientation is positively related to it. Surprisingly, *Trust* from World Value Survey which measures generalized trust by asking people whether "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" is not related to venture capital. In all these models, individualism remains strongly correlated with venture capital (see Table 10).

[insert TABLE 10 about here]

4.7 Instrumental variable approach: Polity Score

Endogeneity caused by omitted variables and simultaneity may plague our empirical analysis. We tackled the omitted-variable bias by including numerous control variables. Simultaneity may not present a significant issue in our analyses since culture and the prevailing system of beliefs, values, and norms that affect trust are deeply rooted within a society and evolve only very slowly (Hofstede, 1980). Licht (2001) defines culture as the ''mother of all path dependencies''. However, in order to exclude the potential issues of endogeneity, we need to find a valid instrument. Zak and Knack (2001) have used the proportion of religious groups (Catholics, Muslims, and Christian Orthodox) within countries as an instrument for trust. However, as argued in Section 4.3, we believe that religion may have a direct effect on venture-capital investments and would therefore not qualify as a valid instrument.

We therefore use the Revised Combined Polity Score (*Polity Score*) from the Polity IV Project "Political Regime Characteristics and Transitions, 1800-2014" as an instrument for trust.[11] The score measures the political system from -10 (strongly autocratic) to +10 (strongly democratic) by subtracting the score of "Institutionalized autocracy" from "Institutionalized democracy". We use the average of this score from 1816 (after Congress of Vienna) to 1912 (before World War I). During this period, Thailand for example, is assigned a value of -10, strongly autocratic, while Switzerland receives a value of +10, strongly democratic. The Congress of Vienna has set many long-lasting territorial borders and has stabilized Europe for almost 100 years until World War I. We therefore believe that the political system during this period may have influenced peoples' individual freedom, personal responsibility, reward attitude, and self-orientation which are all traits associated with individualism. Importantly, no direct impact of the political system 200 years ago can be expected on today's venture-capital investments, which offers a strong argument for the exogeneity of the instrument (see e.g., Wooldridge, 2010). As some countries did not exist at the time (e.g., Croatia or Ukraine) or are not covered by Polity Score, the choice of this instrument reduces the sample to 782 country-year observations.

[insert TABLE 11 about here]

First-stage regressions in Table 11 show that Polity Score is relevant as it is positively and significantly related to individualism. Reduced-form regressions indicate that our instrument has no direct impact on venture-capital investments. We therefore assume that our instrument is valid. The second-stage regressions indicate that individualism is still positively related to venture-capital investments.

4.8 Robustness Checks

We round off the analysis of the paper by performing a battery of robustness checks. First, we re-run the baseline models in Table 12 on different specifications of venture-capital investments: *Venture Capital/GDP*, *Number of transactions/Population*, and *Seed*. Seed is the volume of seed capital, i.e., the first stage of venture capital invested in Start-ups.

[insert TABLE 12 about here]

The relationship between individualism and venture capital remains significant with all three dependent variables. Higher venture-capital investments may also depend on the existence of specific providers of risk capital within a country, namely individuals and governments. As Brander, Du, and Hellman (2015) show, venture capital sponsored by governments increases total venture-capital investments within a country. The results in Table 13 show that also the existence of such particular groups of investors does not affect the relationship between individualism and venture-capital investments. Additionally, in Column IV we use supply rather than demand of venture capital as our dependent variable. However, also in this case the result remain the same. Also, when running Logit, Tobit and Random effects models the qualitative results do not change (see Table 14).

[insert TABLE 13 about here]
[insert TABLE 14 about here]

We also run regressions on a variety of subsamples to check whether the findings are driven by specific countries. As shown in Table 15, individualism remains positively and significantly related to venture-capital investments across different sets of income groups, even when excluding large countries, such as the United States and China. They account for 67.3 % and 8.6 % of total venture

[11] http://www.systemicpeace.org/inscr/p4v2014.xls.

capital volume in the sample, respectively. Furthermore, individualism remains strongly related to venture-capital investments during periods of financial crises, such as 2000-2003 and 2007-2009 (see Table 16).

[insert TABLE 15 about here]
[insert TABLE 16 about here]

5. Conclusion

Venture capital is an essential factor for economic growth and prosperity, especially in developed countries. Nevertheless, the high growth perspectives of start-ups and the potential returns that go along with them go along with substantial risk on the side of entrepreneurs and investors. Due to its high risk, venture capital has been argued to be undersupplied in countries characterized by specific cultural elements. Individualism, which is intrinsically related with values of individual freedom, personal responsibility, and reward, has been argued to be a driving factor of entrepreneurial spirit and, thus, venture-capital investments. By accounting for economic and (formal) institutional factors and controlling for endogeneity, our results confirm that individualism increases venture-capital investments. This result remains robust in a variety of settings.

Governmental market interventions are usually justified by market failures, e.g., due to the presence of asymmetric distributed information, negative externalities, monopolies, and public goods (positive externalities). Even though it is difficult to identify market failures, venture capital is potentially subject to asymmetric distribution of information, and positive externalities similar to public goods. Measures to improve venture capital have most often been aimed to strengthen the institutional environment. However, governments that aim to promote venture-capital investments should be aware that not all recipes that work in one country are applicable to others. As shown in this study, this may be due to fundamental cultural differences. In countries with low levels of individualism, politics could make campaigns to inform about the (social) benefits of entrepreneurship.

In spite of the interesting results, our study has some limitations. First of all, individualism may not be the best proxy for entrepreneurial spirit. For example, it has been suggested that individualism may lead to overconfidence (Van Den Steen, 2004; Chen, Dou, Rhee, Truong, and Veeraraghavan, 2015). Hence, overconfidence − rather than individualism − may result in higher venture-capital investments. Additionally, there are countries, such as Belgium or Switzerland, in which different "cultures" cohabit. In our study, however, we rely on within country averages of individualism across cultures and do only account for cultural heterogeneity linked to religion and language. Another problem is data availability. We rely on data of Thomson ONE Banker which collects data from various sources. Nevertheless, in some countries start-up financing may be provided from sources for which information is not disclosed for reasons of confidentiality. Therefore such venture-capital investments will also not appear in Thomson ONE Banker's database. As this selective reporting could be more pronounced in collectivist countries, we cannot exclude biased results. Additionally, data does not include venture debt or mezzanine finance to start-ups, which may underestimate venture capital in countries with more developed debt markets. Finally, some controls which stem mostly from the World Bank database are often not available for countries in emerging markets, which further complicates the task of evaluating the effect of individualism on venture-capital investments around the world.

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Appendix

Figures

Figure 1 Venture capital world map (venture capital per capita, Ø 1998 – 2014)

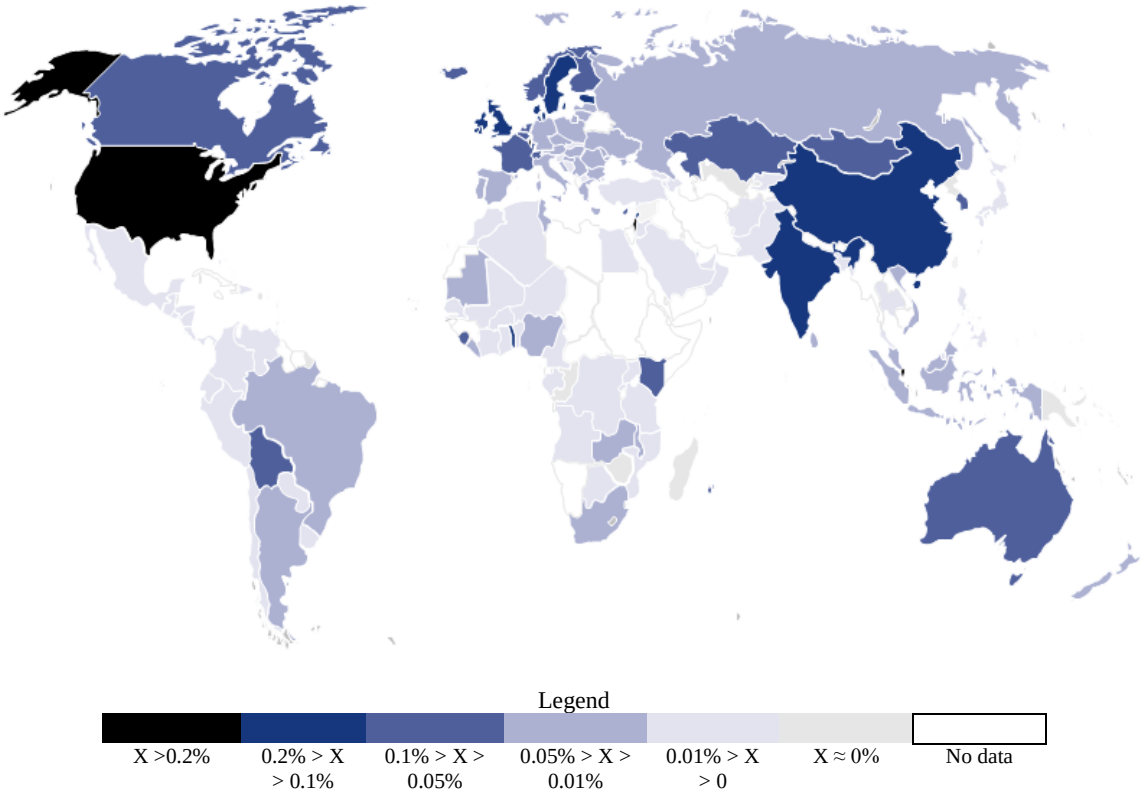
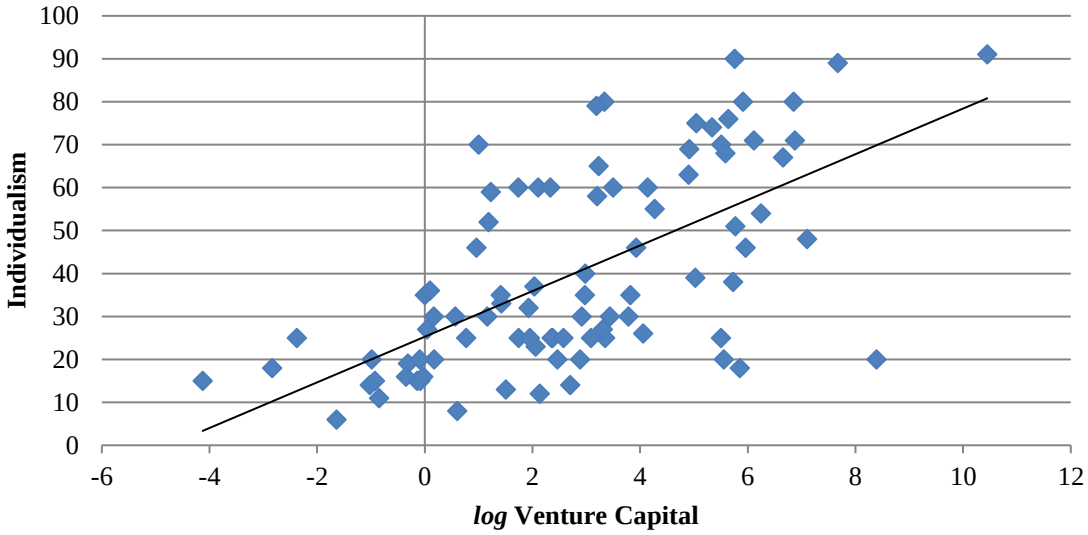


Figure 2 Relation of Individualism to Venture Capital (log)



Tables

Table 1
Sample construction

Number of countries according to United Nations	193
- Number of countries without any venture capital transaction according to Thomson ONE Banker	- 45
Venture capital sample	148
- Number of countries not covered by World Bank or with missing values	- 11
- Number of countries without scores on *Individualism*	- 49
Number of countries in final sample	88

Table 2
Definition of variables and sources

Variable	Description	Data source
Venture capital	All investments classified as venture capital including seed, early-stage, expansion, and later-stage investments in Millions of US dollars.	Thomson ONE Banker
Individualism	Country score of individualism-collectivism from 0 to 100. The higher the score, the more individualist the country is.	Hofstede
GDP growth	Annual change in Gross Domestic Product (GDP) lagged by one year	World Bank
GDP per capita	GDP divided by size of population	World Bank
Rule of law	Quality of contract enforcement, property rights, police, and courts, as well as the likelihood of crime and violence.	World Governance Indicators
Exports	Percentage of exports of goods and services to GDP	World Bank
Population growth	Annual change in population lagged by one year	World Bank
GDP	Gross Domestic Product in Millions US dollars	World Bank

Table 3
Summary statistics

Summary statistics of the variables. The sample consists of 1,496 country-year observations from 1998 to 2014. The table presents mean, median, minimum (Min), and maximum (Max) values as well as standard deviation (S.D.) for each variable.

	Mean	Median	Min	Max	S.D.
Venture capital (M$)	577	4	0	106,900	4,299
Individualism	40.2	32.5	6.0	91.0	22.9
GDP growth (in %)	3.7	3.8	-14.8	33.7	3.9
GDP per capita	16,410	7,694	148	116,700	19,396
Rule of law	0.34	0.22	-1.76	1.99	0.90
Exports (in % of GDP)	43.96	34.54	7.03	230.30	33.70
Population growth (in %)	1.2	1.1	-4.9	17.3	1.5
GDP (M$)	571,700	117,800	636	17,350,000	1,655,279

Table 4
Individualism and venture-capital investments

The table presents regression coefficient estimates for individualism. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital					
	(I)		(II)		(III)	
(Intercept)	-3.53814	(***)	-7.01906	(***)	-0.18940	
	(0.785)		(1.060)		(0.379)	
Individualism			0.02745	(***)	0.06617	(***)
			(0.007)		(0.009)	
GDP growth	0.00187		0.03139	(*)		
	(0.012)		(0.019)			
log GDP per capita	-0.35381	(***)	-0.47998	(***)		
	(0.127)		(0.128)			
Rule of law	1.10858	(***)	0.85768	(***)		
	(0.139)		(0.163)			
Exports	0.00133		0.00787	(**)		
	(0.003)		(0.003)			
Population growth	-0.04141		0.04807			
	(0.039)		(0.060)			
log GDP	0.76758	(***)	1.02060	(***)		
	(0.087)		(0.098)			
Years	included		included		excluded	
Number of observations	2329		1496		1513	
R^2	0.629		0.689		0.330	
Adj. R^2	0.623		0.678		0.330	
F-statistic	177.8	***	141.6	***	745.4	***

Table 5
Individualism and venture-capital investments

The table presents regression coefficient estimates for individualism The sample consists of 1,496 country-ons from1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 0 percent levels is indicated by ***, **, and * respectively.

	log Venture capital					
	(I)		(III)		(IV)	
(Intercept)	-10.75800	(***)	-10.69656	(***)	-8.39204	(***)
	(1.414)		(2.959)		(2.717)	
Individualism	0.02573	(***)	0.03584	(***)	0.03468	(***)
	(0.007)		(0.008)		(0.008)	
GDP growth	0.03972		0.02431		0.00124	
	(0.025)		(0.023)		(0.027)	
log GDP per capita	-0.19447		-0.51764	(*)	-0.32486	
	(0.166)		(0.311)		(0.234)	
Rule of law	0.60865	(***)	0.34340		0.48118	(**)
	(0.199)		(0.248)		(0.224)	
Exports	-0.02809		0.00738		-0.03959	(*)
	(0.019)		(0.005)		(0.021)	
Population growth	0.12257		0.05223		0.11554	
	(0.096)		(0.122)		(0.133)	
Unemployment	-0.02177				-0.05152	(**)
	(0.022)				(0.026)	
Market capitalization/GDP	0.00111				-0.00084	
	(0.002)				(0.002)	
Foreign Direct Investments	0.00651	(*)			0.02994	(***)
	(0.004)				(0.011)	
Trade	0.01874	(*)			0.02376	(**)
	(0.010)				(0.011)	
Real interest rate	0.01118				0.00642	
	(0.008)				(0.010)	
Inflation	0.00476	(**)			0.00398	(**)
	(0.002)				(0.002)	
Company taxes	-0.00078				-0.00957	
	(0.009)				(0.009)	
Gini coefficient			0.02774	(*)	0.02944	(**)
			(0.016)		(0.014)	
Tertiary education			0.01661		0.01848	(*)
			(0.012)		(0.010)	
R&D expenditures			0.66885	(***)	0.61531	(***)
			(0.178)		(0.188)	
Life expectancy			0.03739		-0.02687	
			(0.051)		(0.040)	
log GDP	1.12880	(***)	0.93079	(***)	1.02823	(***)
	(0.104)		(0.094)		(0.101)	
Years	included		included		included	
Number of observations	1265		968		924	
R^2	0.718		0.775		0.793	
Adj. R^2	0.700		0.753		0.763	
F-statistic	104.7	***	119.9	***	103.1	***

Table 6
Individualism, language, and venture capital

Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital			
	(I)		(II)	
(Intercept)	-7.43710	(***)	-7.62491	(***)
	(0.889)		(1.042)	
Individualism	0.03015	(***)	0.02961	(***)
	(0.008)		(0.007)	
Arabic	-1.18816	(***)	-1.14841	(***)
	(0.341)		(0.338)	
Chinese	2.91646	(***)	2.97324	(***)
	(0.483)		(0.530)	
English	0.43687		0.41467	
	(0.329)		(0.338)	
French	0.44153	(**)	0.42266	(*)
	(0.221)		(0.233)	
German	0.31601		0.29324	
	(0.315)		(0.309)	
Spanish	-0.26777		-0.23718	
	(0.297)		(0.304)	
Linguistic Index			0.20732	
			(0.539)	
GDP growth	0.01554		0.01457	
	(0.013)		(0.013)	
log GDP per capita	-0.18346		-0.15632	
	(0.150)		(0.164)	
Rule of law	0.55185	(***)	0.55008	(***)
	(0.183)		(0.184)	
Exports	-0.00289		-0.00345	
	(0.003)		(0.004)	
Population growth	0.12831	(**)	0.11584	(**)
	(0.055)		(0.051)	
log GDP	0.86322	(***)	0.85879	(***)
	(0.087)		(0.087)	
Years	included		included	
Number of observations	1496		1496	
R^2	0.732		0.733	
Adj. R^2	0.717		0.718	
F-statistic	133.5	***	129.9	***

Table 7
Individualism, religion and venture capital

The table presents regression coefficient estimates for individualism and religion. The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital			
	(I)		(II)	
(Intercept)	-4.87365	(***)	-5.49119	(***)
	(1.214)		(1.124)	
Individualism	0.02531	(***)	0.02222	(***)
	(0.007)		(0.007)	
Buddhist	-1.75709	(***)	-1.88327	(***)
	(0.645)		(0.573)	
Catholic	-1.74969	(***)	-1.83681	(***)
	(0.626)		(0.564)	
Muslim	-2.41389	(***)	-2.44535	(***)
	(0.634)		(0.554)	
Orthodox	-1.32778	(*)	-1.42789	(**)
	(0.711)		(0.665)	
Protestant	-1.34466	(**)	-1.67346	(***)
	(0.661)		(0.601)	
Religious Index			1.28718	(***)
			(0.414)	
GDP growth	0.01643		0.01003	
	(0.013)		(0.013)	
log GDP per capita	-0.43464	(***)	-0.33737	(***)
	(0.124)		(0.111)	
Rule of law	0.83129	(***)	0.80673	(***)
	(0.206)		(0.192)	
Exports	0.00502		0.00361	
	(0.004)		(0.004)	
Population growth	0.13106	(**)	0.10431	(*)
	(0.064)		(0.057)	
log GDP	0.95806	(***)	0.92525	(***)
	(0.097)		(0.086)	
Years	included		included	
Number of observations	1496		1496	
R^2	0.726		0.736	
Adj. R^2	0.712		0.721	
F-statistic	138.9	***	141.1	***

Table 8
Individualism, legal environment and venture-capital investments

The table presents regression coefficient estimates for individualism and legal origins. The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital							
	(I)		(II)		(III)		(IV)	
(Intercept)	-7.63083	(***)	-7.88012	(***)	-6.72105	(***)	-7.70588	(***)
	(0.961)		(1.190)		(1.139)		(1.099)	
Individualism	0.02525	(***)	0.02237	(***)	0.02649	(***)	0.02205	(***)
	(0.007)		(0.007)		(0.007)		(0.007)	
Common law	0.62577						-0.16911	
	(0.513)						(0.574)	
French Civil law	0.12404						-0.31915	
	(0.447)						(0.461)	
German Civil law	0.30476						-0.27220	
	(0.372)						(0.396)	
Nordic Civil law	0.88370	(**)					-0.13664	
	(0.346)						(0.444)	
Socialist	0.57516						-0.08343	
	(0.808)						(0.870)	
Strength of Legal Rights Index			0.12141	(***)			0.10618	(*)
			(0.045)				(0.058)	
Economic Freedom Overall Score			-0.01371				-0.01164	
			(0.014)				(0.016)	
Corruption Perceptions Index			0.03021	(***)			0.02938	(**)
			(0.012)				(0.013)	
Worldwide Governance Indicator					1.10914	(***)		
					(0.219)			
GDP growth	0.02703		0.02522		0.02960		0.02489	
	(0.019)		(0.019)		(0.019)		(0.018)	
log GDP per capita	-0.40848	(***)	-0.46477	(***)	-0.58240	(***)	-0.45364	(***)
	(0.158)		(0.143)		(0.147)		(0.169)	
Rule of law	0.73436	(***)	0.29782				0.28182	
	(0.171)		(0.256)				(0.276)	
Exports	0.00744	(**)	0.00615	(**)	0.00800	(***)	0.00599	(*)
	(0.003)		(0.003)		(0.003)		(0.003)	
Population growth	0.02030		0.04419		0.07727		0.03537	
	(0.057)		(0.060)		(0.063)		(0.053)	
log GDP	1.00777	(***)	1.01341	(***)	1.06272	(***)	1.01469	(***)
	(0.114)		(0.099)		(0.101)		(0.118)	
Years	included		included		included		included	
Number of observations	1496		1496		1496		1496	
R^2	0.696		0.706		0.693		0.707	
Adj. R^2	0.683		0.694		0.682		0.692	
F-statistic	120.2	***	135.9	***	144.7	***	113.9	***

Table 9

Individualism, legal environment and venture-capital investments

The table presents regression coefficient estimates for individualism and legal origins. The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital							
	(I)		(II)		(III)		(IV)	
(Intercept)	-6.42741	(***)	-6.81330	(***)	-6.93766	(***)	-7.82843	(***)
	(0.994)		(1.125)		(1.054)		(1.338)	
Individualism	0.02444	(***)	0.02861	(***)	0.02665	(***)	0.02725	(***)
	(0.008)		(0.007)		(0.007)		(0.007)	
Internal Distance of Country	0.00099	(**)						
	(0.000)							
Landlocked			-0.29550					
			(0.330)					
Latitude					0.00356			
					(0.004)			
Malaria infections							0.43419	
							(0.507)	
GDP growth	0.02445		0.03079		0.03209	(*)	0.02954	
	(0.017)		(0.019)		(0.019)		(0.021)	
log GDP per capita	-0.42175	(***)	-0.49578	(***)	-0.49917	(***)	-0.36718	(*)
	(0.122)		(0.129)		(0.131)		(0.191)	
Rule of law	0.93946	(***)	0.87125	(***)	0.86583	(***)	0.82060	(***)
	(0.170)		(0.164)		(0.154)		(0.170)	
Exports	0.00859	(***)	0.00834	(***)	0.00762	(**)	0.00759	(**)
	(0.003)		(0.003)		(0.003)		(0.003)	
Population growth	0.04128		0.05034		0.06421		0.02063	
	(0.057)		(0.061)		(0.065)		(0.058)	
log GDP	0.90848	(***)	1.01033	(***)	1.02122	(***)	1.00691	(***)
	(0.088)		(0.101)		(0.097)		(0.108)	
Years	included		included		included		included	
Number of observations	1496		1496		1496		1479	
R^2	0.695		0.690		0.690		0.689	
Adj. R^2	0.684		0.678		0.678		0.678	
F-statistic	139.8	***	136.3	***	136.2	***	134.4	***

Table 10

Cultural dimensions, trust, and venture-capital investments

The table presents regression coefficient estimates for cultural dimensions The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital					
	(I)		(II)		(III)	
(Intercept)	-5.98180	(***)	-7.54792	(***)	-7.89877	(***)
	(1.136)		(1.343)		(1.140)	
Individualism	0.01908	(***)	0.01992	(***)	0.02624	(***)
	(0.007)		(0.007)		(0.007)	
Power distance	-0.01102		0.00091			
	(0.010)		(0.009)			
Uncertainty avoidance	-0.01676	(***)	-0.02034	(***)		
	(0.006)		(0.006)			
Masculinity	-0.00666		-0.00948	(**)		
	(0.004)		(0.005)			
Long term orientation			0.01055	(*)		
			(0.006)			
Indulgence			0.00620			
			(0.005)			
Trust					0.00745	
					(0.005)	
GDP growth	0.01569		0.01653		0.03290	(*)
	(0.016)		(0.017)		(0.019)	
log GDP per capita	-0.29877	(**)	-0.28464	(*)	-0.44181	(***)
	(0.118)		(0.160)		(0.146)	
Rule of law	0.54225	(***)	0.65642	(***)	0.76272	(***)
	(0.183)		(0.179)		(0.180)	
Exports	0.00569	(**)	0.00370		0.00851	(***)
	(0.003)		(0.003)		(0.003)	
Population growth	0.01626		-0.04399		0.10302	
	(0.057)		(0.101)		(0.093)	
log GDP	1.03806	(***)	1.05668	(***)	1.03192	(***)
	(0.096)		(0.097)		(0.083)	
Years	included		included		included	
Number of observations	1496		1258		1411	
R^2	0.709		0.735		0.703	
Adj. R^2	0.696		0.718		0.691	
F-statistic	137.4	***	121.8	***	137.0	***

Table 11

Individualism, existence of specific investors and supply-side investments

The table presents regression coefficient estimates for individualism. The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital						log Venture capital supply	
	(I)		(II)		(III)		(IV)	
(Intercept)	-6.10981	(***)	-5.73383	(***)	-5.32525	(***)	-8.42250	(***)
	(0.947)		(0.914)		(0.850)		(1.157)	
Individualism	0.02399	(***)	0.02046	(***)	0.01927	(***)	0.02289	(***)
	(0.006)		(0.006)		(0.005)		(0.008)	
State as venture capitalist	1.50800	(***)			(1.048)	(***)		
	(0.280)				(0.228)			
Individual as venture capitalist			1.82628	(***)	1.50855	(***)		
			(0.246)		(0.250)			
GDP growth	0.03190	(**)	0.02483		0.02632	(*)	0.02002	
	(0.015)		(0.016)		(0.014)		(0.017)	
log GDP per capita	-0.37870	(***)	-0.35634	(***)	-0.30743	(***)	-0.37901	(***)
	(0.106)		(0.100)		(0.093)		(0.120)	
Rule of Law	0.59320	(***)	0.63144	(***)	0.48692	(***)	0.98567	(***)
	(0.140)		(0.143)		(0.132)		(0.205)	
Exports	0.00660	(**)	0.00748	(***)	0.00667	(***)	0.01201	(***)
	(0.003)		(0.003)		(0.002)		(0.004)	
Population growth	0.02408		0.02291		0.01061		0.17453	(***)
	(0.049)		(0.044)		(0.040)		(0.050)	
log GDP	0.87795	(***)	0.84394	(***)	0.77549	(***)	0.99655	(***)
	(0.081)		(0.081)		(0.075)		(0.097)	
Years	included		included		included		included	
Number of observations	1496		1496		1496		1496	
R^2	0.721		0.737		0.751		0.746	
Adj. R^2	0.709		0.725		0.738		0.734	
F-statistic	158.8	***	171.7	***	177.6	***	187.8	***

Table 12
Instrumental variable approach: Polity Score

The table presents regression coefficient estimates for individualism The sample consists of 782 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	First stage		Reduced-form		Second stage	
	Individualism		*log* Venture capital		*log* Venture capital	
(Intercept)	-33.56959		-5.05627	(**)	-8.02994	(***)
	(34.570)		(2.290)		(1.084)	
Individualism					0.06314	(***)
					(0.014)	
Polity Score	0.92692	(**)	0.05431			
	(0.453)		(0.038)			
GDP growth	-0.63791	(**)	0.03227	(***)	0.07655	(***)
	(0.316)		(0.010)		(0.021)	
log GDP per capita	3.64810		-0.85684	(***)	-0.54561	(***)
	(4.519)		(0.323)		(0.139)	
Rule of law	9.34809	(**)	1.20739	(***)	0.19600	
	(4.354)		(0.305)		(0.197)	
Exports	0.06923		0.01221	(**)	0.00801	(***)
	(0.089)		(0.005)		(0.003)	
Population growth	-3.35639		0.02828		-0.03377	
	(2.147)		(0.105)		(0.074)	
log GDP	3.85676	(**)	1.23560	(***)	1.04341	(***)
	(1.504)		(0.138)		(0.066)	
Years	included		included		included	
Number of observations	782		901		782	
R^2	0.677		0.747		0.725	
Adj. R^2	0.656		0.728		0.703	
F-statistic	68.9	***	112.8	***	83.9	***

Table 13
Individualism and venture-capital investments

The table presents regression coefficient estimates for individualism The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	Venture capital/GDP		*log* Number of transactions/Population		*log* Seed	
	(I)		(II)		(III)	
(Intercept)	0.00075		-0.00002	(**)	-3.53514	(***)
	(0.002)		(0.000)		(0.780)	
Individualism	0.00001	(**)	0.00000	(**)	0.01979	(***)
	(0.000)		(0.000)		(0.006)	
GDP growth	0.00003	(*)	0.00000	(**)	0.03624	(**)
	(0.000)		(0.000)		(0.015)	
log GDP per capita	-0.00009		0.00000		-0.25066	(***)
	(0.000)		(0.000)		(0.091)	
Rule of law	0.00009		0.00000	(***)	0.45750	(***)
	(0.000)		(0.000)		(0.127)	
Exports	0.00001	(***)	0.00000		-0.00178	
	(0.000)		(0.000)		(0.003)	
Population growth	0.00009		0.00000		0.05886	
	(0.000)		(0.000)		(0.049)	
log GDP	0.00003		0.00000		0.45938	(***)
	(0.000)		(0.000)		(0.085)	
Years	included		included		included	
Number of observations	1496		1496		1496	
R^2	0.033		0.360		0.530	
Adj. R^2	0.033		0.354		0.521	
F-statistic	2.2	***	35.9	***	72.1	***

Table 14

Individualism and dummy variables for venture capital and random effects

The table presents regression coefficient estimates for individualism The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	Venture capital (1=yes, 0=no)		log Venture capital			
	(I)		(II)		(III)	
(Intercept)	-7.25890	(***)	-11.44728	(***)		
	(0.794)		(0.684)			
Individualism	0.03253	(***)	0.03264	(***)	0.02963	(***)
	(0.005)		(0.004)		(0.008)	
GDP growth	0.03461	(*)	0.07675	(***)	0.00226	
	(0.020)		(0.018)		(0.011)	
log GDP per capita	-0.49227	(***)	-0.57340	(***)	-0.37749	(***)
	(0.093)		(0.081)		(0.128)	
Rule of law	0.88541	(***)	1.13345	(***)	0.70231	(***)
	(0.148)		(0.121)		(0.160)	
Exports	0.01365	(***)	0.01372	(***)	0.00187	
	(0.003)		(0.002)		(0.003)	
Population growth	-0.10837	(**)	-0.05665		0.05137	(**)
	(0.044)		(0.041)		(0.026)	
log GDP	0.90507	(***)	1.37201	(***)	0.95623	(***)
	(0.061)		(0.042)		(0.101)	
Years	included		included		included	
Number of observations	1496		1496		1496	
Model	Logit		Tobit		Random effects	
R^2	–		–		0.236	
Adj. R^2	–		–		0.232	
F-statistic	–		–		19.7	***

Table 15

Individualism and venture-capital investments in different income classes

The table presents regression coefficient estimates for individualism The sample consists of 1,496 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital															
	(I)		(II)		(III)		(IV)		(V)		(I)		(II)	
(Intercept)	-13.60132	(***)	-10.27209	(***)	-2.99220		-3.81374		-1.87632	(**)	-6.71047	(***)	-6.67008	(***)
	(3.069)		(3.949)		(3.758)		(3.230)		(0.921)		(1.046)		(1.024)	
Individualism	0.02605	(***)	0.02716	(*)	0.01605		0.04349	(*)	0.02310	(***)	0.02521	(***)	0.02996	(***)
	(0.010)		(0.014)		(0.016)		(0.023)		0.00683		(0.007)		(0.007)	
GDP growth	0.02839		-0.00947		0.07512	(*)	-0.00381		0.00986		0.03060		0.01413	
	(0.030)		(0.011)		(0.041)		(0.046)		(0.018)		(0.020)		(0.013)	
log GDP per capita	0.06279		0.00149		-0.94232	(*)	-0.70459		0.10941		-0.46474	(***)	-0.42788	(***)
	(0.386)		(0.439)		(0.499)		(0.445)		(0.305)		(0.130)		(0.127)	
Rule of law	0.65560		0.12469		0.64776	(**)	0.19598		-0.22678		0.86128	(***)	0.82887	(***)
	(0.548)		(0.635)		(0.273)		(0.317)		(0.252)		(0.164)		(0.166)	
Exports	0.00271		0.01945	(***)	0.00410		0.01174		-0.00315		0.00821	(***)	0.00752	(**)
	(0.006)		(0.007)		(0.007)		(0.013)		(0.006)		(0.003)		(0.003)	
Population growth	0.49710		-0.11772		-0.15696		0.09441		-0.10778	(**)	0.03674		0.06996	
	(0.337)		(0.072)		(0.138)		(0.146)		(0.046)		(0.057)		(0.062)	
log GDP	1.10375	(***)	0.94392	(***)	1.08769	(***)	0.76662	(***)	0.11245		0.98772	(***)	0.94609	(***)
	(0.137)		(0.261)		(0.203)		(0.214)		(0.096)		(0.100)		(0.087)	
Years	included		included		included		included		included		included		included	
Subset	High income: OECD		High income: non-OECD		Upper middle income		Lower middle income		Low income		w/o US		w/o China	
Number of observations	544		238		306		323		85		1479		1479	
R^2	0.745		0.587		0.588		0.423		0.184		0.660		0.689	
Adj. R^2	0.712		0.528		0.542		0.392		0.132		0.649		0.678	
F-statistic	66.1	***	13.2	***	17.5	***	9.5	***	0.6		122.8	***	140.2	***

Table 16
Individualism and venture capital during financial crises

The table presents regression coefficient estimates for individualism The sample consists of 2,516 country-year observations from 1998 to 2014. Cluster-robust standard errors are reported in parentheses. Significance at 1 percent, 5 percent, and 10 percent levels is indicated by ***, **, and * respectively.

	log Venture capital			
	(I)		(II)	
(Intercept)	-7.37216	(***)	-6.49270	(***)
	(1.081)		(1.399)	
Individualism	0.02897	(***)	0.02648	(***)
	(0.007)		(0.009)	
GDP growth	0.07274	(***)	-0.00676	
	(0.019)		(0.051)	
log GDP per capita	-0.42526	(***)	-0.57423	(***)
	(0.124)		(0.180)	
Rule of law	0.74131	(***)	0.86727	(***)
	(0.183)		(0.246)	
Exports	0.01024	(**)	0.00895	(***)
	(0.005)		(0.003)	
Population growth	0.09859		0.01589	
	(0.097)		(0.040)	
log GDP	1.01132	(***)	1.03148	(***)
	(0.094)		(0.136)	
Years	included		included	
Subset	2000-2003		2007-2009	
Number of observations	264		176	
R^2	0.744		0.660	
Adj. R^2	0.716		0.626	
F-statistic	81.9	***	40.5	***