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The Influence of Institutions on Venture Capital

How Transaction Costs, Uncertainty, and Change Affect New Ventures

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Abstract

Institutional dynamics and uncertainty in a country are crucial considerations for investors when searching for venture capital opportunities. International entrepreneurship literature has focused on the impact of unidimensional measures of institutions, despite that institutional environments undergo substantial and continuous changes in multiple dimensions. This study connects literature on the institution-based view and transaction cost economics by examining the effects of reduced transaction costs and uncertainty as institutional outcomes on entrepreneurial activities. Empirical results from 85,711 ventures in 120 countries during the period from 1996 to 2018 show that ventures raise higher funding in countries with (1) generally lower transaction costs that are not constrained by overregulation, (2) higher uncertainty, and (3) institutional environments undergoing change. Funded ventures are more likely to survive in countries with (1) lower transaction costs, (2) lower uncertainty, and without (3) general or (4) disruptive institutional change. Hence, we promote a dynamic perspective for investors and founders when assessing entrepreneurial opportunities in heterogeneous countries since institutional effects driven by uncertainty and transaction costs depend on the individual business purpose.

JEL-Codes: D02, D23, G24, L26, M13, O57, P48

Der Einfluss von Institutionen auf Wagniskapital
Wie sich Transaktionskosten, Unsicherheit und Wandel auf neue Unternehmen auswirken

Zusammenfassung

Die institutionelle Dynamik und Unsicherheit in einem Land sind entscheidende Faktoren für Investoren bei ihrer Suche nach riskanten Beteiligungsmöglichkeiten. Die internationale Entrepreneurship-Literatur hat sich auf die Auswirkungen eindimensionaler Messungen von Institutionen konzentriert, obwohl sich das institutionelle Umfeld in mehreren Dimensionen stark und kontinuierlich verändert. Diese Studie verbindet Literatur zur institutionenbasierten Sichtweise und Transaktionskostenökonomie, indem sie die Auswirkungen reduzierter Transaktionskosten und Unsicherheiten als institutionelle Ergebnisse auf unternehmerische Aktivitäten untersucht. Empirische Ergebnisse von 85.711 Unternehmen in 120 Ländern im Zeitraum von 1996 bis 2018 zeigen, dass Startups in Ländern mit (1) generell niedrigeren Transaktionskosten, die nicht durch Überregulierung eingeschränkt sind, (2) höherer Unsicherheit und (3) sich verändernden institutionellen Rahmenbedingungen mehr Mittel einsammeln. Bereits finanzierte Startups überleben eher in Ländern mit (1) niedrigeren Transaktionskosten, (2) geringerer Unsicherheit und ohne (3) allgemeinen oder (4) disruptiven institutionellen Wandel. Daher vertreten wir eine dynamische Perspektive für Investoren und Gründer bei der Beurteilung unternehmerischer Chancen in heterogenen Ländern, da institutionelle Effekte, die von Unsicherheit und Transaktionskosten getrieben werden, vom jeweiligen Geschäftszweck abhängen.

Im Internet unter:

http://www.wiwi.uni-muenster.de/io/forschen/downloads/DP-IO_09_2019

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1. Introduction

Entrepreneurial activities are considered as an indispensable driver of economic development, as they create employment, foster innovation, and increase welfare (Acs & Audretsch, 1988; Schumpeter, 1912; Wennekers & Thurik, 1999). In fact, entrepreneurship and its close connection to innovation are perceived as the fundamental driver in every conceivable economic situation (Hitt, Haynes, & Serpa, 2010; Kuratko, 2009). Audretsch and Thurik (2001) even highlight a fundamental shift in policy and institutions towards a so-called entrepreneurial economy. However, these entrepreneurship dynamics can, without a doubt, vary at considerable levels between different institutional contexts and economic levels of development. Acs, Desai, and Hessels (2008) review that there are substantial differences in the pattern of entrepreneurial activities between individual countries and Acs and Varga (2005) find that the effect of entrepreneurship on economic development depends on the opportunities given by the economy's environment. This environment is shaped by interdependencies between different institutions, determining economic behavior (North, 1990), affecting transaction costs (North, 1987; Williamson, 1979), reducing uncertainty (North, 1991), and providing stability (Beck, 2001). To understand the causes of substantial variance in entrepreneurial outcomes within or between countries, research has to consider the complexity of the nexus between institutional outcomes and entrepreneurial activities. Assessing this interplay is crucial to gain insights into circumstances promoting funding of entrepreneurial activities to drive economic development. Thus, this paper aims at enhancing our understanding of this nexus between institutional development and institutional change on the one hand and entrepreneurial activities on the other hand.

Given the relevance and complexity of entrepreneurial activities, and the undisputed influence of institutional factors, a growing number of studies have focused on the importance of the institutional dimensions in the economic environment. However, previous attempts to explain the complex effects of institutional development and institutional change in an entrepreneurial context reveal a puzzling pattern and leave various gaps in both theoretical and empirical research:

The first and most prevalent gap we identified in the prevalent research concerns the actual theoretical link between institutions and entrepreneurial activities. Albeit a growing body of literature examines the empirical connection between institutional features and entrepreneurial activities, most of them fail to provide a convincing and comprehensive theoretical explanation for this connection (Bjørnskov & Foss, 2016; Welter, 2011). They explore the effects of different institutions but remain inconclusive to explain their cause. Thus, we follow the call of Bjønskov and Foss (2016) and aim at providing this missing theoretical link between institutional development and entrepreneurial activities using a theory from management research. For that reason, we introduce the concepts of transaction costs and uncertainty as factors that are closely connected to both sides of the gap: On the one hand, one of the main purposes and outcomes of institutions is to reduce transaction costs and uncertainty. On the other hand, transaction costs and uncertainty have a strong influence on entrepreneurial activities (Butler, Doktor, & Lins, 2010). Furthermore, the concept of reduced transaction costs and reduced uncertainty as institutional outcomes offers further insights into our understanding of institutional effects as two distinct institutional outcomes allow us to reveal opposing effects of institutional development. That said, the investigation of distinct outcomes of institutional development enables us to capture both potentially harmful and beneficial effects of institutional context at the same time, which is another shortcoming of the prevalent institution-based view on entrepreneurship (Welter, 2011). This ambiguity includes another dimension as investors and ventures both are heterogeneous groups and institutional effects might differ between distinct actors within and between these groups. Given the unique characteristics of entrepreneurs and venture capital investors, the transfer of generalized institutional effects on these actors might be a vast oversimplification of this complex nexus. Thus, we enhance the institution-based view on entrepreneurship by introducing transaction costs and uncertainty to explain institutional effects in general and explore the understudied complexity of these effects.

The second major set of research gaps we address concerns the empirical investigation of the effects of institutional development on entrepreneurial activities. A first shortcoming of previous empirical investigations highlighted by Bruton, Ahlstrom, and Li (2010) is the lack of studies on a multi-country level. Since cross-country comparisons are vital for the general validity and comparability of studies examining institutional effects (Knack & Keefer, 1995), we take advantage of a large firm-level database including ventures in 120 countries and combine it with country-level data on the institutional environment thus creating a new and unique dataset. Beyond these data issues, the latest state of research reveals a surprising gap

with respect to the different dimensions and measurements of institutions: Although the institutional effects on entrepreneurship become increasingly important, a focus on culture or on specific regulatory institutions leaves the effects of the institutional development in general understudied (Bruton *et al.*, 2010). Furthermore, the few studies focusing on the relationship between the general level of regulatory institutions and entrepreneurship suffer from a misleading conceptualization of institutional development and circular reasoning because they regard highly developed and good institutions as equal. For instance, Bjørnskov and Foss (2016) find that only four studies deal with macro-level institutional determinants of entrepreneurship and that all of them conceptualize institutional development through economic freedom. However, economic freedom is less a measure for institutional development but rather for the goodness of the institutional framework, which alters the theoretical implications. Therefore, we identify the conceptualization and measurement of institutional development as the second severe gap in previous attempts to understand its influence on entrepreneurial activities. Again, we use the concept of transaction costs and uncertainty as institutional outcomes to bridge this gap. More precisely, we use measures for the institutional capabilities to reduce transaction costs and uncertainty as an alternative way to conceptualize the effects of institutional development on economic activities. That way, we are able to capture institutional development precisely and conveniently while, at the same, acknowledging the complex and potentially conflicting nature of distinct institutional effects.

Hence, we combine the institution-based view with the theory of transaction costs by utilizing the institutional outcomes of reduced transaction costs and reduced uncertainty to explain the effects of institutional development theoretically and capture these effects accurately in the first place.

To test these effects empirically, we use a very recent snapshot of the open-source platform CrunchBase including 85,711 new ventures in 120 countries during the period from 1996 to 2018. We combined these firm-level data with country-level data provided by the World Bank. More precisely, we use the rule of law as a measurement for the reduction of transaction costs and political stability as a measurement for the reduction of uncertainty to capture the institutional outcomes as country-level explanatory variables. Taking advantage of this unique database, we investigate the effects of these institutional outcomes on new venture capital investment and on new venture survivability as measurements for entrepreneurial activities.

Our results suggest opposing effects of both institutional outcomes considered as well as different effects on new venture funding and new venture survivability. On the one hand, reduced transaction costs, provided by a higher rule of law, foster entrepreneurial activities, such as funding and survivability. However, the effect diminishes and finally even reverses for higher levels. On the other hand, reduced uncertainty, provided by political stability, also increases survivability but decreases funding. Therefore, we present that the effects of higher levels of institutional development are not just good per se. Instead, the effect itself differs between the institutional outcomes, venture capital and traditional investments, and survival and funding of new ventures. This complexity also encompasses institutional dynamics as our findings suggest that the effect of institutional change is positive for venture capital investment but negative for new venture survival.

This study contributes new insights into entrepreneurial activities by drawing on scholarly work on institutions and entrepreneurship. More specifically, we enhance the literature by highlighting the roles of transaction costs and uncertainty as institutional outcomes. First, we enhance our understanding of the interplay between institutions and entrepreneurship by highlighting the opposing effects of institutional outcomes. Second, we further extend this contribution by introducing institutional change and its effects in the light of institutional outcomes. Thus, we offer explanations for two of the most puzzling phenomena concerning the interplay between institutions and entrepreneurship: The small number of entrepreneurial activities in advanced economies and the remarkable surge of entrepreneurial activities in emerging economies.

2. Institutions and New Venture Activities

Following the seminal definition of North (1991), institutions are human-made constraints structuring the interactions of actors in a given society, therefore constituting "the rules of the game" (North, 1991, p. 98). That said, institutions in modern economies influence market participants through their institutional outcomes in two ways: First, higher developed institutions lower transaction costs by providing and enforcing reliable laws (North, 1987). Second, they reduce uncertainty by providing stability (North, 1993). Therefore, we expect the level of institutional development and institutional change to influence entrepreneurial activities in new ventures in multidimensional ways. More precisely, we examine how the rule of law, political stability, and changes in the institutional framework affect funding and survivability

of new ventures. In the following, we cover these both manifestations of new venture activity and derive hypotheses concerning the influence of each institutional outcome, respectively.

2.1. Venture Capital Investment

Like any other enterprise, young and innovative ventures require capital for boosting growth. However, their limited financial resources constrain the achievement of their ambitious growth targets. Indeed, young ventures face more considerable difficulties in their funding as they cannot rely solely on the bank's borrowed capital on the one hand (Kim, Aldrich, & Keister, 2006) and are oftentimes not ready for the public stock market on the other hand (Chittenden, Hall, & Hutchinson, 1996). This problem is exacerbated in emerging economies, where neither the banking system nor the stock market is capable to meet the needs of new ventures to finance the scaling (Demirgüç-Kunt & Levine, 1996). Therefore, new ventures highly depend on the capital of external investors and venture capitalists (Ahlstrom & Bruton, 2006). The market for venture capital fills out this role by connecting new ventures and investors that are interested in investments in young and uprising firms with high-risk, promising high-rewards (Amit, Brander, & Zott, 1998). Nevertheless, how this market works and how attractive such venture capital investments are, depends on the institutional framework that surrounds both the new venture and the investor (Lerner & Tåg, 2013). Considering the growing international market for venture capital, these two players do not necessarily have to be embedded in the same institutional environment. Hence, given the intermediary role of venture capital firms (Hellmann & Puri, 2002) and the multitude of investors for one venture, the institutional environment might be very heterogeneous for investors across different countries. Therefore, and since our initial research focus is how institutions influence entrepreneurial activity, we focus on the institutional features in the home country of the new venture. In this context, the natural connecting factors between venture capital investment and institutional framework are transaction costs and uncertainty: First, transaction costs, which are reduced by institutions through effective law enforcement (North, 1987), are one of the major problems regarding venture capital investment (Cumming, 2005). Second, uncertainty, which is reduced by institutions through political stability (North, 1993), is an inherent property of venture capital as a form of risk investment (Li & Zahra, 2012). Consequently, we deliberate how the rule of law and the political stability provided by these institutions affect the funding of new ventures.

2.1.1. Reduced Transaction Costs as an Institutional Effect on Venture Capital Investment

Institutions reduce transaction costs (North, 1991) by protecting property rights, and enforcing contracts through a reliable rule of law (Karayiannis & Hatzis, 2012). In our case, the rule of law is defined as "the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts" (Kaufmann, Kraay, & Mastruzzi, 2011, p. 223). Therefore, a high rule of law is favorable for every kind of transaction, every firm, and economic development in general (North, 1987, 1990). This especially holds true for investments and even more particularly for venture capital investments since these are characterized by exceptionally high transaction costs (Amit *et al.*, 1998; Sahlman, 1990). That said, the most important reason for the high level of transaction costs in venture capital investment are classical agency problems caused by information asymmetry: The investor does not know the value of the firm or the skills and motivations of the entrepreneur while the entrepreneur him- or herself does (Davila, Foster, & Gupta, 2003). Such an information asymmetry imposes high costs of information, negotiation, and monitoring on the principal (Williamson, 1979) who is the venture capital investor (Kaplan & Stromberg, 2001). More precisely, the information asymmetry forces investors to gather information ex ante (Ueda, 2004), to develop and enforce more comprehensive and detailed contracts (Triantis, 2001), and to monitor the behavior of the entrepreneur ex post (Gompers, 1995). A high rule of law decreases these costs directly in multiple ways: First, it decreases information asymmetry in the first place by providing standards and tools for more precise performance measurement (Jandik & Kali, 2009). Second, it makes opportunistic behavior more difficult (Haggard, MacIntyre, & Tiede, 2008) and protects investor rights (Bergman & Nicolaievsky, 2007). Third, it decreases the costs of monitoring and contract enforcement by providing reliable instruments for this purpose (Katz, 2005). Hence, we assume that new ventures in countries with lower transaction costs attract higher funding.

Hypothesis 1a: *Reduced transaction costs attract higher investments in new ventures.*

However, there is an uncontested consensus in the economic analysis of law that the highest possible rule of law is not the optimum when it comes to the evaluation of transaction costs (Demsetz & Barzel, 1964; Ehrlich & Posner, 1997). The provision and enforcement of laws not only reduce but also cause transaction costs for market participants (Ehrlich & Posner, 1974) since the demands of a highly developed regulatory system impose substantial costs on firms that have to comply (Heckathorn & Mase, 1987). These costs range from obvious costs of lawyers and legal departments, which are necessary to deal with complex laws (Leone,

1977), to more hidden costs connected to the demands of employee protection (Banker, Byzalov, & Chen, 2013), environmental regulation (Joshi, Krishnan, & Lave, 2001; Ryan, 2012), and other instances of specific regulatory demands (Crocker & Masten, 1996). These costs of overregulation harm especially small and young ventures that lack the experience and resources to deal with these bureaucratic demands (Dean & Brown, 1995). Furthermore, a high rule of law also imposes costs on the public, as elaborated laws and extensive enforcement do not come cheap (Polinsky & Shavell, 2000). This public spending is financed via increased taxation, which in turn harms firms in general but especially hurts entrepreneurial activities (Stenkula, 2012). Again, previous studies prove both connections between the rule of law and taxation (Besley & Persson, 2014; Guillamón, Bastida, & Benito, 2011) and between taxation and entrepreneurship (Da Rin, Di Giacomo, & Sembenelli, 2011) as well as between taxation and new venture success in particular (Keuschnigg & Nielsen, 2004). However, although overregulation is an issue in developed economies, on a global scale, underdeveloped institutions are much more common and damaging (Shirley, 2005). Therefore, the positive effects of the rule of law should outweigh the negative ones in most cases. Nevertheless, we argue that the problems of overregulation diminish the positive effect of the rule of law at higher levels.

Overall, we first expect the rule of law to reduce transaction costs and therefore increase venture capital investments. However, we further expect that this positive effect becomes weaker for higher levels of the rule of law and eventually, in extreme cases, even turns into the opposite when more regulation does more harm than good.

Hypothesis 1b: *The positive marginal effect of reduced transaction costs on investments in new ventures diminishes at a more pronounced level.*

2.1.2. Reduced Uncertainty as an Institutional Effect on Venture Capital Investment

Beyond the reduction of transaction costs, institutions also reduce uncertainty (North, 1991) by providing political stability (Beck, 2001). Therefore, we use political stability that is defined as "the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means" (Kaufmann *et al.*, 2011, p. 223) as a measurement for the ability of an institutional framework to reduce uncertainty.[1] Although transaction costs and uncertainty,

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[1] Like most of the literature on entrepreneurship, we refer to the concept of Knightian uncertainty. That said, political stability constitutes an appropriate measurement of the institutional ability to reduce Knightian uncertainty (Erbas & Sayers, 2006) since political instability is a manifestation of both major interpretations of Knightian uncertainty as insurable uncertainty (LeRoy & Singell Jr, 1987) or as uncertainty that cannot be evaluated precisely (Langlois & Cosgel, 1993).

on the one hand, as well as the rule of law and political stability, on the other hand, are highly interconnected respectively, they are still different concepts. While the rule of law and political stability are both manifestations of institutional quality and naturally support each other, one neither presupposes nor necessarily results from the other (Alexander, 2002). There are various examples of corrupt but stable autocracies, dictatorships, and monarchies (Persson & Tabellini, 2006) or of emerging economies that successfully provide property rights and enforceable contracts while facing political instability at the same time (Lacina, 2009).

Transaction costs and uncertainty are even more entangled since uncertainty increases information costs, which in turn are a form of transaction costs (Williamson, 1981). However, there is one small but crucial distinction to be made as uncertainty turns into risk in the context of modern economic transactions (North, 1991): While transaction costs in general always lower the attractiveness of a given transaction, a higher uncertainty means first and foremost a different risk structure (Knight, 1921).[2] Such differences in the risk structure are, depending on the goal and the kind of the transaction, not necessarily a bad thing but can also be desirable (Obstfeld, 1994; Sharp, 1991). We argue that entrepreneurship in general and venture capital investments in particular are just the kind of risk-seeking transactions that can benefit from uncertainty and even presuppose it as a crucial condition. In the following, we deliver three main arguments to support and further deliberate this proposition.

Our first argument builds upon the unique risk-structure of entrepreneurial activities and venture capital investments. Every entrepreneurial activity is inherently risky since the outcome is highly uncertain (McKelvie, Haynie, & Gustavsson, 2011), and the same is true for investments in this kind of activity (Sapienza & Gupta, 1994). Naturally, that alone does not change the evaluation of the role of uncertainty since risk and uncertainty are part of virtually every economic activity and certainly of every investment. The decisive point is that some activities are inherently riskier than others and that individuals engaging in such activities are less risk-averse. Indeed, the capability to deal with and the willingness to bear uncertainty is seen as one of the key determinants of entrepreneurial activities in the economic literature on entrepreneurship (Butler *et al.*, 2010), which is further supported by fundamental research in psychology (Kirzner, 1979). Technically speaking, the evaluation of uncertainty changes in the context of entrepreneurial activities because entrepreneurs are risk-seeking (Anderson, Kreiser, Kuratko, Hornsby, & Eshima, 2015; March & Shapira, 1987) and the costs of uncer-

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[2] Although Knight (1921) explicitly distinguishes between risk and uncertainty, the notion that higher uncertainty translates into higher risk is sufficient for the purpose of this paper (Rachev, Stoyanov, & Fabozzi, 2008).

tainty are lower for risk-seeking individuals. Similar reasoning holds for venture capital investments and venture capital investors: First, investments in new ventures are already very uncertain so that the transaction costs connected to an unstable environment increase less compared to more conservative investments since the marginal costs of uncertainty are diminishing. That said, the costs of uncertainty for venture capital investments and investments in unstable environments are very similar: Both of them decrease the reliability of business partners and increase the likelihood of failure for the whole project (Hiatt & Sine, 2007). Thus, uncertainty from political instability mainly increases some risks that are already included in this kind of investment. To the contrary, political instability adds an entirely new dimension of costs connected to unwanted and unexpected uncertainty to more traditional investments (Alesina & Perotti, 1996). Second, just like entrepreneurs, investors in venture capital are less risk-averse or even risk-loving. Therefore, uncertainty implies lower costs in their evaluation of risks and rewards (Carpenter, Pollock, & Leary, 2003), and they are more willing to accept uncertainty in the first place (Ruhnka & Young, 1991).Third, the costs of uncertainty are lower for venture capital firms since these are specialized in dealing with uncertain and risky investments (Ewens, Jones, & Rhodes-Kropf, 2013). More specifically, venture capital firms obtain unique strategies and resources to reduce the costs of increased principal-agent problems, unknown markets, and high likelihoods of failure (Davila *et al.*, 2003). Consequently, both entrepreneurs and venture capital investors do not fear uncertainty but rather seek for uncertain environments that involve high risks but also promise high rewards.

In connection with these reward considerations, our second argument conveys that uncertainty does not only change the risk-reward-structure of entrepreneurial activities but also directly increases entrepreneurial success and opens up opportunities for entrepreneurship. Although not every kind of uncertainty leads to entrepreneurial opportunities, every entrepreneurial activity includes uncertainty (McKelvie *et al.*, 2011; McMullen & Shepherd, 2006). Moreover, uncertainty that involves decision making causes entrepreneurial opportunities and therefore promotes entrepreneurial activities (Rao, 1971). In general, uncertainty is an inherent feature and a necessary prerequisite of entrepreneurship while uncertainty in combination with decision making leads to opportunities for entrepreneurship. Further, we argue that the uncertainty created by lower institutional development includes decision making since every actor has to decide how to deal with institutional voids while institutional regulation actively constraints this process of decision making. Therefore, uncertain environments may be beneficial for entrepreneurial activities when they create shocks to the market equilibrium (Eck-

hardt & Shane, 2003), institutional voids (Mair & Marti, 2009), or new and unregulated markets (Henrekson, 2006) that enable opportunities for entrepreneurship.

Beyond this promotion of opportunity entrepreneurship, uncertainty created by political instability also creates incentives for entrepreneurial activities on the individual level as it promotes necessity entrepreneurship. Since many new ventures are born out of necessity (Margolis, 2014) and political instability worsens the situation of the national economy (Alesina, Özler, Roubini, & Swagel, 1996; Barro, 1991) political instability increases entrepreneurial activities. More precisely, political instability causes low economic growth (Feng, 1997) and unemployment (Gonçalves Veiga & Chappell, 2002) while both promote entrepreneurial activities (Faria, Cuestas, & Gil-Alana, 2009) because an instable environment lowers the opportunity costs for entrepreneurship as the alternatives become less attractive. That said, instability firstly enables entrepreneurial activities by providing the opportunities of an uncertain environment, and secondly forces individuals to take their chances and engage in entrepreneurial activities by limiting the alternatives. In this context, stability is a constraint while instability creates opportunities and incentives for entrepreneurial activities that, in turn, support the funding of new ventures.

Our third argument introduces positive indirect effects of uncertainty on the supply for venture capital when the negative influence on alternative forms of investment are considered. Admittedly, despite the crucial role uncertainty plays in research on entrepreneurship, a substantial portion of studies perceive uncertainty mainly as a barrier preventing entrepreneurial action (McMullen & Shepherd, 2006), increasing transaction costs (Williamson, 1981), and decreasing the willingness to embrace a given opportunity (McKelvie *et al.*, 2011). Although the presented arguments of uncertainty as a determinant of a fitting risk-structure and entrepreneurial opportunities mitigate these problems for new ventures, we admit that there are opposing effects of uncertainty. However, we argue that the problems of uncertainty apply to all economic activities but the opportunities coming with uncertainty apply only to entrepreneurial activities. Thus, even if uncertainty did not directly promote entrepreneurial activities, it would still create a competitive advantage for new ventures compared to established firms. With increasing uncertainty, venture capital investments become consequently more attractive compared to investments in established firms. The supply side of the market for venture capital depends on the attractiveness of conventional investments since there is only a finite amount of disposable capital and investors have to decide between these different forms of investment (Constantinides, 1986). Assuming that uncertainty also decreases the total amount

of investments[3] there are again two opposing effects of uncertainty on the supply for venture capital: First, a sort of income effect as the total amount of investments decreases, and second, a substitution effect as venture capital investments become more attractive compared to the alternatives. In combination with the previous arguments for the beneficial direct effect of uncertainty on venture capital investment, we expect the substitution effect to exceed the income effect so that uncertainty increases the supply for venture capital.

In conclusion, we argue that uncertainty, caused by political instability, fits the risk-structure of venture capital investments, supports the supply side of the market for venture capital, and creates opportunities and provides prerequisites for entrepreneurial activities.

Hypothesis 2: *Higher levels of uncertainty increase investment in new ventures.*

2.1.3. The Influence of Institutional Change on Venture Capital Investment

Beyond the level of institutional development, we also examine the effects of institutional change on entrepreneurial activities. To capture institutional change, we refer to changes in the broad institutional setting represented by regime characteristics. In this sense, institutional change influences entrepreneurial activities through the uncertainty it creates (Beckert, 1999). More precisely, institutional change constitutes a major contextual change and therefore acts as an exogenous shock (Seo & Creed, 2002) that, in turn, promotes entrepreneurial activities (Koellinger & Roy Thurik, 2012; Yang, 2008). Similar to the case of institutional voids, institutional change creates uncertainty (Dewatripont & Roland, 1996) and, at the same time, opens up opportunities for entrepreneurship (Beckert, 1999). To theorize the unique entrepreneurial opportunities arising from change, Schumpeter (1991) proposes that established firms try to adapt to changes in the institutional framework while entrepreneurs recognize the opportunities of the change and respond creatively. Building on this perception of entrepreneurship, it also becomes a valid strategy for entrepreneurs to even actively promote institutional change in order to take advantage of the following entrepreneurial opportunities (Sheingate, 2003). Although such institutional entrepreneurship (Battilana, Leca, & Boxenbaum, 2009) does not constitute the core of our argument, it illustrates how institutional change supports entrepreneurship and how entrepreneurs seek for changing institutional environments. Beyond the creation of unique opportunities, changing institutions also promote uncertainty in

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[3] On the theoretical level, a detrimental effect of uncertainty on the investment volume is not straightforward (Caballero & Pindyck, 1996). However previous studies showed that uncertainty caused by political instability has negative effects on the economy as a whole (Feng, 1997) as well as on the willingness to invest (Busse & Hefeker, 2007; Daude & Stein, 2007).

the short run since changing institutions are inherently unstable (Beckert, 1999). Independent of whether the final result is an improvement or not, any institutional transition creates uncertainty in at least two ways: First, the outcome of the institutional change itself is uncertain since neither the success nor the extent or the prevalence of a transition is certain (Greif & Laitin, 2004). Second, even after the new institutional framework is established successfully, the effects of this new environment are unknown to the concerned actors (Dewatripont & Roland, 1996). Thus, we can once again apply the argumentation why uncertainty created by low levels of institutional development promotes entrepreneurship to argue that uncertainty created by institutional change also promotes entrepreneurial activities.

Analog to the effects of uncertainty created by low institutional development, we argue that the positive effects of uncertainty created by institutional change on entrepreneurial activities also translate to venture capital investors: First, when entrepreneurship becomes more attractive, investments in new ventures also become more attractive. Second, the risk-structure that constitutes the attractiveness of uncertainty for entrepreneurs in the first place also applies to risk-seeking venture capital investors. Consequently, this argumentation leads to the expectation that the direction of the change does not matter since every change in the institutional framework leads to a shock, creates uncertainty, and opens up opportunities. Thus, considering only the effect of uncertainty, we expect that institutional change in any form has a positive effect on venture capital investment.

Hypothesis 3a: *Institutional change increases investment in new ventures.*

However, the pace of the change influences the associated uncertainty and therefore, the expected effect on venture capital investment. In particular, more disruptive change creates more uncertainty compared to incremental change. Thus, we expect that the funding of new ventures increases with a higher pace of institutional change representing disruptive changes.

Hypothesis 3b: *More disruptive institutional change increases investment in new ventures.*

2.2. New Venture Survivability

One of the major restrictions to entrepreneurial activities is the high mortality of new ventures (Shepherd, Douglas, & Shanley, 2000) since for venture investments to be successful, they have to survive in the first place. While this is true for all kinds of firms, ventures are far more vulnerable to critical failures because they lack financial reserves and other resources do deal with substantial threads (Aspelund, Berg-Utby, & Skjevdal, 2005). Thus, the ability to en-

hance or to deteriorate new venture survivability is another even more direct way how the institutional framework promotes or constraints entrepreneurial activities.

Considering the rule of law, the main effects on venture survivability are quite similar to the case of venture capital investment. Again, the provision of property rights (Lyles, Saxton, & Watson, 2004) and the reduction of transaction costs (Mudambi & Zahra, 2007) increase the survivability of new ventures. However, this positive effect is diminished when the rule of law causes more transaction costs than it safes while additionally imposing direct costs to the public. These direct effects are further supported by the analog effects on funding since higher funding also increases survivability. Therefore, we expect the effect of reduced transaction costs on new venture funding and survivability to be very similar.

Hypothesis 4a: *Reduced transaction costs increase new venture survivability.*

Hypothesis 4b: *The positive marginal effect of institutional development through reduced transaction costs on new venture survivability diminishes at a more profound level.*

When it comes to political stability, however, the expected effects on new venture survivability and venture capital investments differ substantially. While prospects of high-risk and high-reward favor venture capital investments, they still increase the risk of failure after all (Shepherd *et al.*, 2000). The fact that new ventures already show a high mortality rate indicates that the survivability of the venture is not decisive for new venture capital investors since they already discounted for the high risk of failure (Shepherd, 1999). Therefore, venture capital investors invest in many different new ventures in the hope that some will skyrocket while many others fail (Cochrane, 2005; Norton & Tenenbaum, 1993). Thus, uncertainty can promote venture capital investment and, at the same time, decrease new venture survivability. Indeed, it is uncontested in the assessment of new venture survival chances that higher levels of uncertainty reduce survivability (Shepherd, 1999). This general relationship between uncertainty and firm survival manifests in virtually every strategic decision altering the level of uncertainty. Thus, the firm's position in the value chain (Stearns, Carter, Reynolds, & Williams, 1995), socio-political legitimacy (Shane & Foo, 1999), or internalization (Sapienza, Autio, George, & Zahra, 2006) are examples of different ways how the chances of new venture survival change through altering levels of uncertainty. Beyond these strategic effects of uncertainty, at least high levels of political instability impose additional unique threads to firm survival. While established firms can use their resources to deal with minor problems like corruption (Beck, Demirgüç☐Kunt, & Maksimovic, 2005) or avoid major threads like

physical violence of state failure through internalization strategies (Sapienza *et al.*, 2006) new ventures lack the necessary means to do so (Hiatt & Sine, 2007). New ventures also try to take advantage of corruption in an attempt of rent-seeking (Ufere, Perelli, Boland, & Carlsson, 2012) but since bribes are often fixed costs they hurt the smaller new ventures more than established firms (Hallward-Driemeier, 2009). Likewise, new ventures also try to internationalize in an attempt to escape uncertain environments (Yamakawa, Peng, & Deeds, 2008) but due to their lack of capabilities, internationalization strategies also increase uncertainty and reduce survival chances for new ventures (Sapienza *et al.*, 2006). Therefore, we expect uncertainty caused by political instability to decrease venture survivability.

Hypothesis 5: *Higher levels of political stability increase new venture survivability.*

Likewise, our expectations for the effects of institutional change on new venture funding and new venture survival differ due to the different effects of uncertainty. Since the mere presence of institutional change generates uncertainty that harms new venture survival, we expect a negative effect of institutional change in general.

Hypothesis 6a: *Institutional change decreases new venture survivability.*

Likewise, we can transfer our arguments regarding the differences between disruptive and incremental change to the effects on new venture survivability: Since disruptive change creates higher uncertainty, which decreases new venture survivability, we expect that the probability of new venture survival decreases with a higher pace of institutional change.

Hypothesis 6b: *More disruptive institutional change decreases new venture survivability.*

3. Data and Method

We test the effect of the institutional setting on venture funding and firm survival. In the following section, we present the various data sources and describe the methods and models we used. By matching data about characteristics of new ventures with data characterizing the institutional environment and its dynamics, we construct a novel dataset to advance our understanding of how the level of institutional development influences entrepreneurial activities.

3.1. Data

We tested our hypotheses using a dataset based on CrunchBase[4], an open-source platform containing information on tech-oriented public and private companies on a global scale. The website further provides detailed data on newly funded entities, such as the founding date, home country, industry classification, and firm size but also information about executives and founders. Furthermore, CrunchBase provides information about investors and their characteristics as well as deals. This way, CrunchBase offers a comprehensive overview of new ventures, their funding sources, and activities regarding mergers and acquisitions. All analyses are based on a CrunchBase-snapshot of the year 2018.

After restricting our sample to ventures founded between 1996[5] and 2018 and providing sufficient information about the size and their operating status, it consists of 85,711 individual companies nested in 120 countries all over the world. Among all countries in the database, the US has the highest number of firms included (57 percent), followed by Great Britain (7 percent), India (4 percent), Canada, China, and Germany (all at approximately 3 percent).

To look at the effects of institutions, we draw on country-specific determinants provided by the Polity IV project (Marshall *et al.*, 2017) and the World Bank (Kaufmann *et al.*, 2011).

3.2. Main Variables

3.2.1. Dependent Variables

We tested hypotheses 1a to 3b by using the natural logarithm of the total funding received in USD *ln(Total Funding)* as the dependent variable. In our sample, 67,508 ventures from 112 individual countries received a disclosed amount of funding over an average of 1.9 funding rounds.

Regarding our Hypotheses 4a to 6b, *Survived* is the dependent variable. It was coded as a dummy variable equal to 1 for ventures that are still active or were fully acquired after receiving at least one recorded funding and 0 if they closed down after financing. Our overall sample included 80,222 operating and 5,448 closed ventures.

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[4] www.crunchbase.com
[5] We chose 1996 as the cut-off date, as information about e.g. the *Rule of Law* index, one of our main explanatory variables, only goes back to 1996.

3.2.2. Explanatory Variables

Rule of Law is an index consisting of a variety of individual variables (such as availability of property rights protection, law and order, contract enforcement, confidence in the judicial system, etc.) and captures how individuals perceive the extent to which members of a society are confident in and abide by its rules. We use *Rule of Law* as a proxy for the ability of the institutional framework to reduce transaction costs. A low degree of *Rule of Law* means that market participants cannot rely on each other, whereas a high degree represents lower transaction costs due to the possibility of a reliable enforcement of contracts and property rights.

Political Stability provides an aggregated measure of the likelihood of destabilization of the government or its overthrow by unconstitutional or violent means, which includes politically motivated violence and terrorism. We use political stability as a measurement for the ability of an institutional framework to reduce uncertainty. Both indexes range from -2.5 to 2.5, where lower values represent a weak institutional ability to reduce transaction costs and uncertainty whereas higher values show a superior ability of institutions to supply these outcomes. We obtained the data for *Rule of Law* and *Political Stability* from the World Bank (Kaufmann *et al.*, 2011).

To test the relationship between the dependent variable *ln(Total Funding)* and institutional outcomes, we calculated the mean of the values in the year of the founding and the year of the last funding of the venture for the particular institutional variables. To test the relationship between the dependent variable *Survived* and the institutional outcomes, we computed the mean of the values at each venture's founding year, its first funding year, its last funding year, and either 2017 or the date the venture terminated its operations. We dropped all observations where a venture received its last funding in the year of its foundation to assess (in)stability over time.

To assess how changing or unstable institutional environments affect entrepreneurial activities (hypotheses 3a and 6a), we included the variable *Institutional Change (dummy)*, to assess whether a country's institutional setting changed. For the total funding, the binary variable is coded equal to 1 if the *Polity Index* changed during the period from a new venture's founding year to its last funding year (18 percent of all observations) and 0 if the institutional environment remained stable (82 percent). For *Survival* (hypothesis 6a), the variable is coded equal to 1 if the *Polity Index* changed during the period from the venture's last funding to 2018 or until it was closed (40 percent of all observations) and 0 if the environment remained stable (60 percent). The *Polity Index* (Marshall *et al.*, 2017) measures the regime type of a country and

consist of a 21-point scale ranging from -10 (full autocracy) to +10 (full democracy). Thus, we use it to capture institutional change in the sense of change in the characteristics of the broad institutional framework.

We further asses the dynamics of change by calculating the average change per year and used the same year-points to calculate the periods as outlined before for *Institutional Change*. The change in the *Polity Index* can take on positive and negative values, depending on the direction of the change, which might be hard to interpret and misappropriates essential information since we are interested in institutional change only as a source of uncertainty. Thus, we computed the absolute values for the *Pace of Change*, where higher values propose a more rapid change.

3.2.3. Control Variables

We included further information about the ventures that are based on the year of the Crunch-Base snapshot (2018). These controls are the number of *Funding Rounds* an individual venture received until 2018, the venture's *Age,* and its number of *Employees* as a categorical measure. Finally, we created industry dummies by using the categorization of the organization. We selected categories according to the Standard Industrial Classification Code (SIC-Code), such as Agriculture/Forestry/Fishing, Mining, Construction, Transportation & Public Utilities, etc., where we used descriptive tags to assign each firm to any category. Additionally, we created a "high-technology"-industry to capture effects stemming from this.[6]

Apart from *Rule of Law* and *Political Stability*, we included further country-level variables to account for country-specific effects: We apply the prior described *Polity Index (Marshall et al.*, 2017) as a control variable since considerations regarding political regime characteristics might influence investment decisions or the chances of venture survival (Oakey, 2003). Lastly, the natural logarithm of the Gross Domestic Product per Capita *ln(GDP per Capita)* was included. We obtained the data from the World Bank[7].

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[6] Relevant categories include words as "software", "technology", "information", "artificial", "ai", "hardware", "data". We used truncation searching technique to capture different variations of these words. We do not report the full list of all relevant descriptive tags in this paper. A detailed list is available upon request.
[7] https://data.worldbank.org/indicator/ny.gdp.pcap.cd

3.3. Statistical Analysis

The first relationship to consider is the relationship between institutional outcomes (*Rule of Law* and *Political Stability*) and the amount of venture capital funding. To test hypotheses 1 to 3b, we used standard OLS regression analysis on firm- and country-level data. To test our hypotheses 4a to 6b on venture survival, we used probit regression analyses given the dichotomous nature of our dependent variable, *Survived* vs. closed.

To assess the effect between the direction and the strength of the institutional change, we use a subsample analysis by dividing our sample to examine the strength of change individually in environments with positive and negative change. To test the curvilinear relationship proposed, we follow the advice of Haans, Pieters, and He (2016) and further apply the three-step testing of Lind and Mehlum (2010).

4. Empirical Results

4.1. Descriptive Statistics

Table 1 reports the descriptive statistics of the variables used in the regression: It provides the number of observations, means, standard deviations, minimum and maximum values, and correlation coefficients.

Variable	Obs.	Mean	Std. Dev.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ln(Total Funding)	67,508	14.46	2.36	6.84	23.82	1								
Survived	85,711	0.94	0.24	0.00	1.00	0.03*	1							
Rule of Law	85,711	1.36	0.66	-2.14	2.10	0.07*	-0.02*	1						
Political Stability	85,711	0.41	0.58	-2.74	1.76	0.03*	-0.02*	0.79*	1					
Polity Index	85,707	8.79	3.32	-10.00	10.00	-0.06*	-0.03*	0.58*	0.38*	1				
Pace of Change	70,815	0.13	0.39	-2.00	10.00	-0.01*	0.06*	0.02*	-0.04*	-0.03*	1			
Funding Rounds	85,711	1.94	1.60	1.00	43.00	0.47*	0.04*	0.07*	0.02*	0.02*	0.02*	1		
Age	85,711	7.22	5.20	0.00	21.00	0.41*	-0.00	0.07*	0.10*	0.06*	-0.25*	0.14*	1	
Employees	73,655	2.03	1.40	1.00	9.00	0.52*	0.07*	-0.08*	-0.06*	-0.09*	-0.08*	0.22*	0.42*	1
ln(GDP per Capita)	84,835	10.38	0.96	5.36	11.69	0.00	-0.02*	0.87*	0.73*	0.44*	0.10*	0.06*	-0.10*	-0.17*

*p < 0.001 (two tailed)

Table 1: Descriptive Statistics and Correlations

4.2. Regression Results

4.2.1. Venture Funding

To examine the influence of institutional outcomes on venture investment, we use the *ln(Total Funding)* of each venture. The results of our regressions are presented in Table 2. Models 1 to 3 present the estimates of the main effects of two of our main explanatory variables *Rule of*

Law in Model 1 (and the squared term of *Rule of Law* in Model 2) and *Political Stability* in Model 3. We include *Institutional Change* in Model 4 and *Pace of Change* in Model 5.

	(1)	(2)	(3)	(4)	(5)
Rule of Law	0.855***	2.195***	3.175***	2.751***	2.741***
	(0.156)	(0.249)	(0.257)	(0.281)	(0.282)
Rule of Law^2		-0.686***	-1.115***	-1.159***	-1.166***
		(0.097)	(0.099)	(0.109)	(0.109)
Political Stability			-0.440***	-0.406***	-0.398***
			(0.050)	(0.052)	(0.053)
Institutional Change (dummy)				0.426***	0.452***
				(0.028)	(0.033)
Pace of Change					-0.042
					(0.029)
Polity Index			-0.413***	-0.198***	-0.198***
			(0.017)	(0.022)	(0.022)
ln(GDP per Capita)	-0.188**	-0.215***	-0.113	-0.08	-0.081
	(0.061)	(0.061)	(0.061)	(0.063)	(0.063)
Funding Rounds	0.434***	0.434***	0.414***	0.372***	0.371***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age	0.068***	0.065***	0.083***	0.073***	0.072***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
11-50 Employees	1.306***	1.306***	1.281***	1.169***	1.168***
	(0.017)	(0.017)	(0.016)	(0.017)	(0.017)
51-100 Employees	2.250***	2.247***	2.208***	2.108***	2.107***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
101-250 Employees	2.713***	2.710***	2.626***	2.479***	2.476***
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
251-500 Employees	2.857***	2.855***	2.801***	2.697***	2.696***
	(0.047)	(0.047)	(0.047)	(0.046)	(0.046)
501-1,000 Employees	2.911***	2.909***	2.873***	2.779***	2.779***
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
1,001-5,000 Employees	3.162***	3.152***	3.113***	3.050***	3.051***
	(0.076)	(0.076)	(0.075)	(0.073)	(0.073)
5,001-10,000 Employees	2.905***	2.899***	2.849***	2.801***	2.802***
	(0.115)	(0.115)	(0.112)	(0.111)	(0.111)
> 10,000 Employees	2.691***	2.684***	2.664***	2.644***	2.645***
	(0.110)	(0.110)	(0.108)	(0.102)	(0.102)
Constant	12.558***	13.519***	16.739***	15.489***	15.503***
	(0.704)	(0.768)	(0.746)	(0.754)	(0.755)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
N	58,026	58,026	58,026	49,939	49,939
R^2	0.516	0.517	0.526	0.508	0.508

***p < 0.001, **p < 0.01, *p < 0.05

Table 2: OLS Regression of Total Funding

We find support for both hypothesis 1a and hypothesis 1b regarding the linear and curvilinear relationship between *ln(Total Funding)* and a country's *Rule of Law* (p<0.001). The tests of our curvilinear relationship confirm the presence of an inverse U-shape with an extreme point of 1.2 to 1.6. As the scale for *Rule of Law* ranges from -2.5 to 2.5, the extreme point suggests that investors favor higher, but not too high institutional development for more substantial investments.

The coefficients of *Political Stability* for Models 3 to 5 are found to be consistently negative and significant, suggesting that if *Political Stability* increases by 1 unit, the total funding of a new venture decreases by more than 40 percent (p<0.001). In other words, investors value more unstable environments, which is consistent with our hypothesis 2.

Models 4 and 5 confirm our hypothesis 3a and suggest that new ventures in countries undergoing an institutional change, on average, achieve approximately 54 percent[8] higher total funding holding all other variables constant. With Model 5, however, we reject our hypothesis 3b, which states that the *Pace of Change* positively influences the total funding of new ventures.

As institutions change in a positive and negative direction, we ran subsample analyses to shed light on this relationship. We find that more disruptive negative change decreases the total funding, whereas positive change does not have any effect.

The other coefficients of our venture-related control variables *Age*, *Funding Rounds*, *Employees*, and *Survived* (as independent variable) reveal further insights: The models are consistent in indicating that an increase by one year of age increases funding by 7 to 8 percent. An increase by one funding round also increases the total funding significantly. We further show that venture survival and size are positively related to the total funding ventures receive from investors. The results of our country-related control variable *Polity* suggests that investors favor less democratic economies for venture-capital investments, whereas the economy's advancement (measured as the logarithm of GDP per capita) only has an effect in the less complex models.

4.2.2. Venture Survival

Table 3 shows the results of the probit regressions regarding venture survival. Models 1 to 3 estimate the main effects with only our main explanatory variables *Rule of Law* in Model 1 (and the squared term for *Rule of Law* in Model 2) and *Political Stability* in Model 3. The positive values for *Rule of Law* and *Rule of Law²* in Model 2 suggest rejecting our assumption regarding a U-shaped curve, as stated in hypothesis 4b. The tests for the presence of an inverse U-shaped curve also reject this assumption throughout all models. Model 1 confirms hypothesis 4a that venture survival generally increases with higher levels of *Rule of Law*. Hence, we only use *Rule of Law* without its squared term in the subsequent models.

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[8] Calculated as exp(0.426) and exp(0.452).

Variables	(1)	(2)	(3)	(4)	(5)
Rule of Law	0.267***	0.145***	0.200***	0.114***	0.148***
	(0.027)	(0.042)	(0.032)	(0.033)	(0.039)
Rule of Law^2		0.060***			
		(0.016)			
Political Stability			0.009	0.061***	0.070***
			(0.010)	(0.006)	(0.012)
Institutional Change (dummy)				-0.110***	-0.158***
				(0.007)	(0.011)
Pace of Change					-0.125***
					(0.014)
Polity Index			-0.123***	-0.016*	-0.038***
			(0.008)	(0.008)	(0.011)
ln(GDP per Capita)	0.189***	0.188***	0.196***	0.176***	0.177***
	(0.007)	(0.007)	(0.007)	(0.010)	(0.012)
Funding Rounds	0.005***	0.005***	0.003***	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age	0.006***	0.006***	0.008***	0.007***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
11-50 Employees	0.038***	0.038***	0.034***	0.028***	0.030***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
51-100 Employees	0.046***	0.046***	0.041***	0.032***	0.040***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
101-250 Employees	0.068***	0.068***	0.061***	0.052***	0.063***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
251-500 Employees	0.062***	0.062***	0.056***	0.047***	0.054***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
501-1,000 Employees	0.069***	0.069***	0.064***	0.057***	0.067***
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)
1,001-5,000 Employees	0.071***	0.071***	0.066***	0.055***	0.062***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)
5,001-10,000 Employees	0.070***	0.070***	0.065***	0.059***	0.068***
	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)
> 10,000 Employees	0.047***	0.047***	0.043***	0.050***	0.059***
	(0.009)	(0.009)	(0.009)	(0.007)	(0.008)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
N	72,583	72,583	72,583	60,413	48,945
Chi-squared	2,313.862	2,327.594	2,211.015	1,793.447	1,270.764

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

The dependent variable is closed = 0 and *Survived* = 1.

The coefficients show the average marginal effects with robust standard errors in parentheses.

Table 3: Probit Regression of Venture Survival

The coefficients of *Political Stability* for more complex Models 4 and 5 are found to be positive and significant, suggesting that the probability of ventures to survive increases by 6 to 7 percent when *Political Stability* increases by one. Apart from Model 3, where the effect is positive, albeit not statistically significant, we find evidence for hypothesis 5.

Model 4 includes the binary variable *Institutional Change* and suggests that a change in institutions negatively affects venture survival (p<0.001). This result is in line with our hypothesis 6a. Model 5 suggests that the probability of venture survival after at least one funding decreases by 12 percent with every unit of more *Pace of Change*. Hence, we also confirm hy-

pothesis 6b. To further assess the effects of the direction of this relationship, we ran subsamples but do not find that the direction affects this relationship.

Results of our venture-related control variables *Age*, *Funding Rounds*, and *Employees* reveal further insights: All models suggest that the probability of venture survival decreases by less than 1 percent for every year of operation and *Funding Rounds*. The coefficients of the country-related control variable *ln(GDP per Capita)* is significant and positive. For *Polity Index*, the effects are significant and have a negative effect in all regressions. Accordingly, less economically developed and democratic economies favor venture survival.

4.3. Robustness Tests

We implemented a series of robustness analyses.[9] First, we ran all analyses without the USA, as our sample consists of more than 50 percent US-based ventures. The results of the subsample analysis of the dependent variable *ln(Total Funding)* remain constant for *Political Stability* and *Institutional Change*. Concerning the variable *Rule of Law*, the subsample shows a non-significant value for the linear relationship. The models, however, still show a curvilinear relationship, as suggested in hypothesis 1b. The tests of a curvilinear relationship further confirm the presence of an inverse U-shaped curve ($p<0.001$) at extreme points similar to the full sample, confirming our assumption that investors favor a higher, but not too high, *Rule of Law* for investing larger amounts of money. As opposed to our hypotheses and contrary to our prior findings, our robustness test suggests that the large number of US-firms has a negative impact on the *Pace of Change* ($p<0.05$). Accordingly, investors avoid large investments in countries with disruptive change. Regarding venture *Survival*, the results for the subsample analysis remain stable for *Rule of Law*, *Institutional Change*, and *Pace of Change*. Our models, however, report non-significant results for *Political Stability*.

Second, we ran all analyses with variables referring to different time-points (for the static variables *Rule of Law*, *Political Stability*, and *Polity Index*) and periods (for the dynamic variables *Institutional Change* and *Pace of Change*). Although the meaning of this robustness test is limited since the chosen points in time are already the most reasonable, it mostly reveals a similar picture. For total funding, we find consistent results from the test using these alternative measures. For survival, we find that the chosen time-points regularly affect the significance of especially *Political Stability*, which slightly limits the validity of this result.

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[9] Results of the robustness checks are available upon request.

Third, in order to test for possible selection or survival bias, we ran all models that include *Political Stability* with a dependent variable that measures the variance of ln(Total Funding) in a given country. We conduct this robustness test with regard to the negative relationship between *Political Stability* and *ln(Total Funding)*, to rule out that instable environments prevent smaller ventures with less funding, which on average would lead to higher funding. If this assertion would hold true, countries with lower values of *Political Stability* should not exhibit small amounts of funding, which would decrease the funding variance in these countries. However, our robustness test consistently shows a significant negative relationship between *Political Stability* and the funding variance within a country. This result indicates that instability is not connected to a smaller variance in *ln(Total Funding)* and contradicts the alternative explanation that instable countries only support large ventures with higher funding.

Fourth, we ran all regressions without our self-classified industry dummies, which reveals that our results remain broadly the same in terms of statistical significance and direction.

5. Discussion

5.1. The Influence of Institutional Development on New Venture Funding

Motivated by the shortcomings in the conceptualization of institutional features and the inconclusive findings regarding their effect on entrepreneurial activities, we aim to advance the understanding of the influence of institutional development and its dynamics on entrepreneurship. In this study, we have shown that these institutional effects on entrepreneurial activities are more complicated and ambiguous than has been assumed up to now. In doing so, we offer an conclusive explanation for the contradicting results in literature that general higher developed institutions increase entrepreneurship (Henrekson, 2006), albeit entrepreneurship is declining in developed economies (Decker, Haltiwanger, Jarmin, & Miranda, 2017). Thus, this article contributes to the increasing literature on entrepreneurship and institutions and traces down the source of this ambiguity by revealing the opposing effects of transaction costs and uncertainty reduction as fundamental outcomes of institutional development.

First, we suggest a generally positive relationship between reduced transaction costs and new venture funding, which complies with the prevailing view on institutional effects and results of previous studies (e.g. Ahlstrom & Bruton, 2006; Li & Zahra, 2012). Subsequently, we test for a curvilinear relationship to refine our understanding and show a significant quadratic relationship indicating diminishing marginal effects. Although this refined result does not com-

promise the generally positive relationship, it already indicates that the hitherto assumed linear effect of institutional development, used in international business, might be oversimplified.

Second, this notion intensifies with respect to our results regarding the effects of uncertainty. Our findings suggest that uncertainty reduction, in contrast, decreases new venture funding. This positive effect of uncertainty on new venture funding challenges the established view of literature on uncertainty-reducing institutional development and questions the generally positive association of higher developed institutions. Instead, we suggest that the effects of institutional development differ between business purposes as some actors highly depend on stability while others, such as actors in an entrepreneurial context, value change and uncertainty. Although the heterogeneous impact of institutions on different types of firm-governance has been studied intensively (Lohwasser & Hoch, 2019; Whitley, 2000), the literature on entrepreneurship neglected the unique risk-seeking nature of new ventures and investors and assumed similar institutional effects on new ventures and established firms when it comes to reduced uncertainty. Beyond this dependence on the type of firm, the influence of institutional development is ambiguous in itself as the effects of reduced uncertainty and reduced transaction costs can be conflicting. This result seemingly contradicts previous studies that almost unanimously show purely positive effects of institutional development (e.g. Bonini & Alkan, 2007; Bruton, Ahlstrom, & Yeh, 2004; Gaur & Lu, 2007; Grilli, Mrkajic, & Latifi, 2018). However, we argue that these studies either did not capture the opposing effects of reduced uncertainty and transaction costs due to too broad or too specific measures of institutional development (Bjørnskov & Foss, 2016; Bruton *et al.*, 2010) or applied circular logic by outright assuming the general superiority of higher developed institutions (e.g. Yamakawa *et al.*, 2008). As the only case we are aware of, Bonini and Alkan (2012) included political stability as institution related variable into their analysis of venture capital investment and found results similar to ours but ultimately dismissed them as driven by statistical noise. We, however, find our results to be constant throughout all model specifications as well as a battery of robustness tests including alternative variable coding, alternative time structures and a subsample analysis.

Third, our interpretation of reduced uncertainty as a major institutional outcome with negative effects on entrepreneurship is further reinforced by our results regarding the effects of institutional change. Overall, our results that uncertainty created by both political instability and institutional change increases new venture funding demonstrates that the view of higher developed institutions as better institutions is oversimplified. Furthermore, the distinct effects of

reduced transaction costs and reduced uncertainty, which both are outcomes of higher developed institutions, show that institutional development produces different institutional outcomes that may result in conflicting effects.

Fourth and fifth, the relationship between institutional development and new venture survivability is more aligned to the current view of entrepreneurial literature. We show positive effects of both institutional outcomes, namely reduced uncertainty and reduced transaction costs. However, the negative effect of uncertainty is less robust since it is not significant in all model specifications. This lack of robustness slightly weakens the support for the expected negative effect of uncertainty on new venture survival but strengthens the notion of ambiguous effects of uncertainty on new venture success. That said, the positive effect of uncertainty on funding, in turn, increases new venture survival thus diminishing the direct negative effect.

Sixth, this interpretation is reinforced by our results regarding the institutional change: Institutional change causes uncertainty that, in turn, decreases the survivability of new ventures. Accordingly, our results on survivability match the traditional expectations and, consequently, comply with previous analyses of comparable effects of institutional development. Nevertheless, they further highlight the complexity of institutional effects on economic performance since the effect of reduced uncertainty on new venture success differs between funding and survival chances.

In sum, we suggest that, first, distinct institutional outcomes lead to different effects, second, the effect of one institutional outcome depends on the business purpose, and third, the effect of the same institutional outcome differs between funding and survival as distinct measures for entrepreneurial activity.

5.2. Limitations and Further Research

Although the firm-level information in our database is very rich, it also lacks some information, which slightly limits the generalizability of our results. First, we can only access venture success and performance by funding and the distinction between the individual status: operating, acquired, or closed. Although these measures undoubtedly represent the success of entrepreneurial activities to a certain degree, a more specific indicator, such as growth in revenue or specific performance measures, would offer even more detailed insights. Second, as we only use a snapshot, based on the year 2018, we cannot asses the longitudinal development of these ventures. Even though we try to approximate institutional dynamics by calculating the measures of the individual ventures at specific points of their life cycle, we are unable

to compute contemporary values for each funding round. Third, there is no chance to trace down the nationality of the individual venture capital investors (which also consist of multinational consortia) which would allow investigations of the effects of the respective institutional distance and a more detailed analysis differentiating between domestic and international investors. Fourth, we lack detailed information to rule out the possibility that the average funding in more developed countries is merely lower because smaller ventures are additionally funded that are not started at all in countries with higher transaction costs and uncertainty. Although we address this alternative explanation in a robustness test, additional data on ventures without funding would be required to completely exclude such a possibility.

Future research could validate and further extend our research by overcoming these data issues. However, even with all available data, the extension of our results offers promising opportunities for further research. First of all, our strategy of a differentiated analysis of the effects of institutional development through institutional outcomes could be applied to other types of firms featuring a unique relationship to uncertainty and/or transaction costs. Furthermore, the demonstrated effects of institutional outcomes on new ventures can be further refined by investigating possible moderating effects, for instance, of the firm size or specific branches. Another interesting route for future research involves the different exit strategies of new ventures: Initial public offerings, internalization strategies, and acquisitions, all depend on institution-related factors that may appear in a different light when our refinements of the institution-based view on new venture activities are considered.

5.3. Implications

Our insights hold several important implications for the research on the nexus between institutions and entrepreneurship as well as for economic practice in venture capital financing. We show that the notion of straightforward positive effects of institutional development is too simplistic. Instead, institutional development creates distinct institutional outcomes that, in turn, have different effects on economic activities. In the case of entrepreneurship, we identify the reduction of uncertainty and transaction costs as decisive institutional outcomes. This differentiation offers a conclusive explanation for the declining entrepreneurial activities in advanced economies as well as for the increase in emerging economies: On the one hand, the high level of institutional development in advanced economies fosters entrepreneurial activities through reduces transaction costs. On the other hand, however, this high level of institutional development also reduces uncertainty, therefore, constraining both opportunities and necessities for entrepreneurial activities (Acs & Varga, 2005). In contrast, emerging econo-

mies in transition offer the uncertainty created by both lower levels of institutional development and institutional change. This notion is further reinforced by the suggested diminishing marginal reduction of transaction costs for higher levels of institutional development since this narrows the advantage of reduced transaction costs in developed countries compared to emerging economies.

Hence, the efforts of policymakers to promote entrepreneurial activities by institutional means are doomed to fail at least with respect to the overall level of institutional development. Although our findings suggest by no means that weak or even underdeveloped institutions are desirable, they raise doubt whether a highly developed institutional environment has positive effects on all economic activities, including entrepreneurship. Likewise, the key implication for investors and entrepreneurs is that the different outcomes of institutional development have conflicting effects depending on the business purpose: Reduced uncertainty not only increases the chances of survival but, at the same time, also decreases the chances for steep success.

All in all, researchers as well as policy makers, investors, and entrepreneurs have to acknowledge the complex nature of institutional effects and neglect the oversimplified idea that higher developed institutions always show unidimensional, purely positive effects on economic activities.

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Seit Institutsgründung im Oktober 2010 erscheint monatlich ein Diskussionspapier. Im Folgenden werden die letzten zwölf aufgeführt. Eine vollständige Liste mit Downloadmöglichkeit findet sich unter http://www.wiwi.uni-muenster.de/io/de/forschen/diskussionspapiere.