



Policy Making and Regulation to Promote
Entrepreneurship:
Procedural vs. Monetary Policies

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Abstract

Title: Policy Making and Regulation to Promote Entrepreneurship:
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English:

The main objective of this paper is to understand under what circumstances a government should focus on procedural or monetary policies to foster entrepreneurial entry. To do this, we measure entrepreneurship by the entry density of new companies, which counts formally registered entrepreneurs only. However, we also control the effect on opportunity and necessity-driven entrepreneurship rates, which include entrepreneurs of all stages and sectors. Procedural and monetary policies are represented by time and cost to start a business respectively. The variety of control variables used in literature is approached by aggregating explanatory variables from 16 studies, resulting in 44 variables of which 8 are used in the regression analysis. For the empirical analysis, we use country and year fixed effects with country-clustered standard errors. We find a stronger positive impact for lowering cost to start a business, especially in countries with high rates of necessity-driven entrepreneurs or countries which did not belong to the lowest third in cost or time to start a business. However, the findings also suggest, that these policies do not incentivize non-entrepreneurs to engage in entrepreneurship, but rather attract informally operating entrepreneurs to register their business.

Portuguese:

O principal objetivo deste trabalho é compreender sob quais circunstâncias a administração pública deve focar em políticas procedimentais ou monetárias para fomentar novos empreendimentos. Para isso, medimos o empreendedorismo através da entrada de novas companhias no mercado, considerando apenas empreendedores formalmente registrados. Contudo, também verificamos o efeito da oportunidade e necessidade no índice de empreendedorismo, o que inclui empreendedores em todas fases e setores. Políticas procedimentais e monetárias são representadas pelo tempo e pelo custo para começar um negócio, respectivamente. A pluralidade de variáveis de controle utilizada na literatura é abordada pela conjugação de variáveis explicativas de 16 estudos, resultando em 44 variáveis, das quais 8 são utilizadas na análise de regressão. Para a análise empírica, utilizamos efeitos fixos por país e por ano com desvios-padrão agrupados em países. Encontramos um forte impacto positivo para reduzir os custos para começar um negócio, especialmente em países com alto índice de empreendedores impulsionados pela necessidade ou países que não pertenciam ao terço mais baixo de preço ou tempo para iniciar um negócio. Todavia, as conclusões também sugerem que essas políticas não incentivam não-empreendedores a se envolverem no empreendedorismo, mas sim atraem empresários que atuam informalmente no mercado a registrarem seus negócios.

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Abbreviations

ANOVA. <i>Analysis of Variance</i>	PSID. <i>Panel Study of Income Dynamics</i>
AVCAL. <i>Australian Private Equity and Venture Capital Association</i>	ROI. <i>Return on Invest</i>
DARPA. <i>Defense Advanced Research Projects Agency</i>	SBIR. <i>Small Business Innovation Research</i>
FDI. <i>Gross National Income</i>	SME. <i>Small and Medium-sized Enterprises</i>
GDP. <i>Gross Domestic Product</i>	TEA. <i>Total Early-Stage Entrepreneurial Activity</i>
GNI. <i>Gross National Income</i>	VC. <i>Venture Capital</i>
LLC. <i>Limited Liability Company</i>	WEF. <i>World Economic Forum</i>
NES. <i>National Expert Survey</i>	WHF. <i>World Heritage Foundation</i>

Acknowledgements

During my Master studies entrepreneurship has been a fascinating topic for me. Most of my courses on this subject, dealt with practical tools on how to be a successful entrepreneur. Validate your idea, how to pick the right team, how to raise funding etc., were among the most important lectures we were taught. As my scope of knowledge began to widen, I became more curious about this topic. I realized, that one aspect consistently left out in all courses and lectures was “how to deal with regulations as an entrepreneur”. I can think of four reasons why:

1. Because there is no precedence of teaching material on it
2. The regulatory environment is too volatile to produce teaching material on it.
3. Regulations vary too profoundly across countries to create generalized material.
4. It is too boring to keep students awake in a lecture.

While I was traveling in Brazil, I came across the story of a local entrepreneur. He found an underserved niche in the market and started to a venture, making profit within the first year. Yet, his business was still unofficial and he wanted to enter the formal market. The process of registering the business and obtaining an operating license took so much time and money, that in the end he had to go out of business. From this story, I realized, that the subject was not about his (entrepreneurial) mistakes, but the public system to encumber entrepreneurship. Therefore, I understood that it is not only us students who needed to learn about entrepreneurship. It is also policy makers. To this end I would like my thesis to contribute to the clarification of the fruitful frame condition entrepreneurs need, to be able to focus on value creation instead of satisfying bureaucratic agendas.

I would like to thank my parents for all the doors they opened for me, and the freedom of letting me choose which one to walk through. Thanks to my sister Christina Siegert for her attention to detail. To my advisor, Prof. Claudia Costa for her sincere advice and review. To Filipa Reis for sacrificing time to crack numbers. Last but not least, I would like to thank Geovanna Vozikis for always listening to my worries and empowering me to excel.

1. Introduction

Since 2006 the World Bank has recorded 2782 regulatory reforms¹ in the “Doing Business” database, of which 283 were implemented in 2015/16 in 137 countries – an increase of 20% compared to the previous year. The highest amount of reforms were consistently submitted for the “starting a business” category (World Bank, 2017c) – which uses 11 different indicators to measure the ease of starting a business in a country. These reforms involve procedural and monetary reforms, aiming to make entrepreneurship easier and cheaper. The question is, which current policy has the strongest impact for promoting entrepreneurship?

In the academic community entrepreneurship is widely accepted as a driver of job creation and innovation (Bruton et al., 2013), which has made it a political interest and tool to drive economic growth. Though the benefits of entrepreneurship are evident, researchers are still looking for clear instruction on how to promote it. Baumol, (1993) was one of the first to identify specific factors on country level which influenced entrepreneurship. Despite the progress made since then at outlining the impact of the different levers that promote or inhibit entrepreneurship, practitioners still seem to be confused about the reciprocities between different reforms and national idiosyncrasies, which determine the success of entrepreneurial policy making and reformation (Nanda, 2010). For example, a targeted entrepreneurship credit-subsidy policy in the U.S. achieved the expected impact in the targeted group, but had the opposite effect on entrepreneurs not covered by the policy, decreasing their rate of entrepreneurship (Li, 2002). Conversely, policies not directed at entrepreneurs might impact new venture creation. For example, the extension of a healthcare program to underprivileged families, resulted in an over 20% increase in self-employment without even targeting entrepreneurship (Olds, 2014). Singapore noted a 75% increase in annual business registration after implementing an electronic registration system (Klapper et al., 2006). These examples illustrate a certain arbitrariness of the effects governmental policy making can have and underlines the importance of further research in this area.

Researchers acknowledge important trade-offs in policies such as between stimulating or regulating competition (Gilbert et al., 2008) or between protecting incumbents or new

¹ According to the OECD “regulatory reform” is used to refer to: “*changes that improve regulatory quality, that is, enhance the performance, cost-effectiveness, or legal quality of regulations and related government formalities. Reform can mean revision of a single regulation, the scrapping and rebuilding of an entire regulatory regime and its institutions, or improvement of processes for making regulations and managing reform.*” (OECD, 1997, p. 11)

entrants. Uber and Airbnb illustrate such policy trade-offs, since their business models were challenged in the earliest days by regulation to protect the incumbent industry (McGinn, 2017). Also regional idiosyncrasies (Williams and Nadin, 2012) and industrial clusters are crucial to consider, since they can be deciding factors for network creation, knowledge spillover and competition (Gilbert et al., 2008). Government policies mold the constraints, uncertainty and opportunities of the marketplace, that encourage (or discourage) the entrepreneurial activity (Minniti, 2008). Unfit policies can have costly implication for the economy of a country.

The importance of the phenomena is seen in the growing number of published studies on governmental support on entrepreneurship. From 1997 to 2006, 474 articles were published in academic journals on this topic. This increased from 2007 to 2016 to 1759 articles². During this period, the focus of research shifted towards research on government policies (as a subtopic of how governments can support entrepreneurship) with 4,5 times as many articles in this category compared to the previous ten years. Research on governmental entrepreneurship policies can be grouped in the impact of procedural (e.g. Klapper et al., 2006) and monetary (e.g. Li, 2002) policies on entrepreneurial development, and governmental venture capitalism (as a special form of providing support for both) (e.g. Colombo et al., 2016). Extant research has looked at the influence of the boundary conditions of countries (e.g. corruption, size of government etc.) (Aidis et al., 2012) and individual factors of entrepreneurs (e.g. education, gender etc.) (Hopp and Stephan, 2012).

Despite the topic has been well researched (both qualitatively and quantitatively) (Audretsch et al., (2007) Minniti, (2008)), why is there still confusion in governmental policy making? A closer look at the literature provides several hints. First, academics have used very different variables and datasets, making their results hard to compare and to apply across economies. Schott and Wickstrom Jensen, (2008) showed how countries, that tried to replicate successful policy making failed, due to their unfit for the local, cultural, economic, or political situation. Second, the interdependencies (how the effect of a variable changes when varying another) between different policies and their relative strength are still a neglected area of research. Peru jumped from 2009 to 2010 51 places in the global “Starting a Business” ranking, by reducing the *time* needed to register a business by 14 days and the *costs* by USD 121.00 (Klapper and

² As at 15.02.2017 based on searching the EBESCO Database for Peer-Reviewed, English, Journal Articles on the search term: “government* support entrepreneurship”. Accessed via: <https://goo.gl/cRry4O>

Love, 2012). It is unclear, however, which one of these actions triggered this performance on entrepreneurial entry – the time or the cost reduction? Eventually only a combination of time and cost is effective, but how big is the relative strength of the effects?

The main objective of this dissertation is to understand when and under what circumstances a government should focus on procedural or monetary policies to foster entrepreneurial entry. Researching this question has important implications for governments. It sheds light to the question whether for promoting entrepreneurship governments must take monetary actions, often a more complex process in terms of budget approval rather than procedural improvements, which could trigger comparable, eventually better results. For the future, this will allow policy makers to base their decisions on research results and facts. Awareness of such implications are also relevant for entrepreneurs as they can better estimate the opportunities and risks from the regulatory environment influencing their business.

The remaining chapters are organized as follows: In chapter two each governmental instrument will be reviewed and relevant key variables will be elaborated. The chapter will finalize with a review of the gained knowledge to develop the hypotheses. Chapter three provides an overview of the available data and leverages on the acquired knowledge from the previous chapter, to pick the right variables. Following, the empirical analyses and statistical methods applied will be outlined. The findings will be discussed in chapter four, while the chapters five to seven discuss and conclude the results with the according limitations of this study.

2. Literature Review

This chapter reviews the state of knowledge for research on entrepreneurial policy making. The relevant terminology of measuring entrepreneurship from a governments' perspective will be explained. Following the different governmental levers to foster entrepreneurship will be outlined and empirically important variables for predicting it will be identified. The results will be summarized and used to form the hypothesis for the empirical analysis.

2.1. Entrepreneurship and the Government

For a long time researchers have accepted the substantial role of entrepreneurs, taking high risks and uncertainty (Knight, 1921) and being drivers of innovation and competition (Schumpeter, 1942). Entrepreneurship is defined by the habitual creation and innovation to build something of recognized value around perceived opportunities (Bolton et al., 2004). Existing literature distinguishes between the behavioral and occupational view in entrepreneurship. The behavioral approach describes entrepreneurship as an outcome of companies or individuals from their internal and external factors like culture or personal background (Shaker, 1993). In the occupational view, entrepreneurship is seen as a conscious career choice whereas the success factors are similar to other career choices, like becoming a teacher or a nurse (Burton et al., 2016). Both approaches are characterized by the entrepreneurial opportunity:

“Entrepreneurial opportunities are a set of environmental conditions that lead to the introduction of one or more new products or services in the marketplace by an entrepreneur or by an entrepreneurial team through either an existing venture or a newly created one” (Dutta and Crossan, 2005, p. 426).

Shane and Venkataraman, (2000) propose three categories for creating entrepreneurial opportunity. First, entrepreneurial opportunities can arise from new knowledge or technologies. Second, by the compensation of market gaps and inefficiencies and finally, by political, demographic, or regulatory shifts that allow for a different use of existing assets. From a government's perspective, the third category can be influenced. This rises the questions *if* and *how* a government should manipulate the “set of environmental conditions” to create entrepreneurial opportunity. Researchers disagree about governmental intervention on entrepreneurship. Minniti, (2008) argues: *“the fact that entrepreneurship is positively linked to performance does not justify public policy intervention”* (p. 787). Audretsch, (2004) suggests intervention only at fundamental market failures. However, van Praag and Versloot, (2007) explain, that entrepreneurship influences the economy of a country, particularly in the areas of employment creation, productivity growth and high quality innovations. Hart, (2003)

goes a step further, arguing that the level and quality of entrepreneurship makes a difference in the economic vitality of communities, regions, industries, and the nation. Even though there is disagreement, the side of authors in favor of actively promoting entrepreneurship via regulatory intervention predominates (Bruton et al., 2013).

2.2. Entrepreneurial Motivations and Measurements

One could conclude, since entrepreneurship promotes economic growth, that countries with high rates of entrepreneurship have high performing economies and thus governments should intervene if entrepreneurship rates are low. However, not all entrepreneurs have the same motivation, resulting in opposing economical outputs. Besides, in the literature the rate of entrepreneurship is measured in several different ways.

The occupational approach of entrepreneurship described the phenomena of entrepreneurship as a conscious career choice, but careers are chosen for different motivations. Acs, (2006) established a motivational-based differentiation between opportunity and necessity driven entrepreneurs. Opportunity-driven entrepreneurs (as the name says) decide to explore opportunities for their conviction and literally because they see the opportunity as described in the definition of Shane and Venkataraman, (2000). Opportunity driven entrepreneurs are more likely to create the desirable effects of staying sustainably in business and employing people (GEM, 2017), which is why their contribution to the economy is according to the findings of Hart, (2003) or Bruton et al., (2013) positive. Necessity-driven entrepreneurs on the other side engage in entrepreneurship because they have no other choice. This results from different reasons such as the typically lower level of education among necessity-driven entrepreneurs (van Stel et al., 2007) complemented by a lower developed job market. Fittingly, developing countries usually have a much larger share of necessity driven entrepreneurship. Necessity entrepreneurs have a negative impact on the GDP (Sautet, 2013). This roots in the fact, that they are less likely to actually register their business and enter the formal economy (Acs et al., 2008). Hence, a country could have high rates of entrepreneurship, but not a high performing economy.

Entry measurements of these two motivational groups of entrepreneurs result in different rates of entrepreneurship. However, literature uses even more diverse indicators to measure entrepreneurial entry in a country. A widely accepted indicator is the *entry density*, defined as newly registered LLCs measured by the World Bank per 1000 working age people (e.g. used by Klapper and Delgado, 2007). This indicator only measures entrepreneurs which already

entered the formal economy³. Quite the opposite is the indicator of the *nascent entrepreneurship* rate, also called baby entrepreneurs because they are in the earliest stage of entrepreneurship without having earned salaries yet (e.g. used by Koellinger and Minniti, (2009) or Wennekens et al., (2005)). Compared to the *entry density*, *nascent entrepreneurs* include especially entrepreneurs in the informal economy, who did not register their business officially yet. *Nascent entrepreneurship* is measured by the Global Entrepreneurship Monitor consortium (GEM), which also provides the *total early-stage entrepreneurial-activity* (TEA) indicator. The TEA includes nascent, but also owner managers of new businesses less than 42 month old, making it one of the most comprehensive indicators (e.g. used by Aidis et al., (2012)). The Global Entrepreneurship Monitor offers also the previously mentioned distinction between opportunity and necessity-driven entrepreneurship with the TEA as base-indicator. [Appendix 2](#) provides an overview of the entrepreneurial process, which also illustrated the scope of the different measures.

Table 1 Commonly used indicators for measuring entrepreneurship

Variable	Definition	Source
TEA	Total Early-Stage Entrepreneurial Activity; percent of 18-64 age group who are either a nascent entrepreneur (actively involved in starting a new business) or owner-manager of a new business (less than 42 months old).	GEM, (2017)
TEA OPP	Opportunity-Driven Entrepreneurial Activity; Those involved in TEA who claim to be driven by opportunity as opposed to finding no other option for work.	GEM, (2017)
TEA NEC	Necessity-Driven Entrepreneurial Activity; Those involved in TEA who are involved in entrepreneurship because they had no other option for work.	GEM, (2017)
Nascent Entrepreneurship Rate	18-64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months	GEM, (2017)
Entry Density	Number of newly registered limited liability companies per 1,000 working-age people (aged 15-64)	World Bank, (2017b)

There are some important caveats to consider when choosing the variable for measuring entrepreneurship. Many indicators that rely on data of the formal sector, like entry density, tend to under-estimate entrepreneurship, since self-employments and informal companies are left out (Desai, 2009). On the other hand, the GEM data over-estimates entrepreneurship, as it includes next to formally registered companies, also nascent entrepreneurs, that might never actually register their company. The true rate of entrepreneurship lies in between these

³ A LLC (limited liability company) is counted when it has start-up capital of ten times income per capita, and has a turnover of at least 100 times income per capita World Bank (2017c)).

indicators (Acs et al., 2008). This dissertation will use entry density as dependent variable, which will be furtherly discussed later in this dissertation.

2.3. Modes of Governmental Support

A starting point for understanding the role of government to support entrepreneurs was Sotos', (1989) seminal study on informal markets in Peru. Soto describes the rational choice entrepreneurs face when confronted with the costs (time and money) of formal markets as compared to staying informal⁴. He argued, that for all the costs informality poses, such as the loss of formal legal protection or productivity (due to resources used to remain undetected by authorities), a relatively innovative business, even if facing the costs of formality, will be larger than informality ever permits. Therefore, he was a strong advocate for reforming public institutions to lower the barriers of entry into the formal economy.

Following up on Soto, Williams and Nadin, (2012) showed, that informality is neither a problem of the past nor only of the third world, as nearly two-thirds of the global working population and over half in the European Union have worked, at least temporarily, in the informal economy. Public intervention can be categorized into procedural and monetary policies, as well as public venture capitalism⁵. The regulatory environment plays a major role for successful entrepreneurship (Ribeiro and Galindo, 2012). The different mechanisms *how* a

⁴ Whereas informality is defined as “*the collection of firms, workers, and activities that operate outside the legal and regulatory frameworks or outside the modern economy*” Benjamin et al. (2014)

⁵ Public VCs (Venture Capitals) are not part of the empirical evaluation since their punctual influence does not significantly influence the entry density of new companies in a country (Minniti, 2008). For completeness, this passage gives a summary on the state of research on public VCs: Since the economic crisis of 2009 private VCs prefer more risk-safe investments (Colombo et al. 2016). Public VCs are an instrument to bridge the finance gap between the public and the private market. Furthermore, governments can sponsor areas of their political interest (e.g. start-ups of a certain industry). Public venture capitalism is a form of private equity, that combines monetary with procedural policies, by giving selected start-ups a monetary grant (often in exchange for equity), but also guidance in e.g. the incorporation process to let founders focus on their business (e.g. Startup Chile) (Bussang, 2014). Agencies like DARPA and SBIR in the U.S., Yozma (Hebrew for "initiative") in Israel, Sitra and Tekes in Finland or Startup Chile have actively shaped and created markets defying the view, that policy is meant to simply “fix” market failures. These direct investments are more successful at generating new private investment than the same money spent through indirect measures like tax credits (Mazzucato 2016). Governments started participating in this market either by founding their own institutions (Lerner, 1996) or via third party investments like pension funds (Minniti, 2008). As a third option, governments also adjusted legislations to make the work of private VCs easier, which proved also successful to attract more private VC funding (Brander et al. 2015). Common measures of the VC activity by public bodies are the percentage of companies managing to exit the VC program (depending on the VCs individual investment and mentoring strategy), the amount of further investment collected or the jobs created after a certain time period Brander et al. (2015). Since VCs are more focused on their operations as opposed to the macro level of the country’s economy, they eventually are more successful than procedural or monetary policies in making new companies succeed, but in terms of the entry density, their presence can hardly be measured at a country level (Minniti, 2008).

government can alter the conditions of entrepreneurship are well studied by the academic community (Audretsch et al., 2007; Minniti, 2008).

2.3.1. Procedural Policies and Regulations

Procedures are step-by-step instructions on how to complete a task. In every country, there are certain procedural requirements an entrepreneur needs to fulfill to be formally registered as an entrepreneur. Therefore, procedural policy making or reformation describes the setup or alteration of such requirements (Bower and Abolafia, 1996). For a more tangible view on what bureaucratic requirements there are [Appendix 1](#) shows a list of possible procedures necessary to register a company collected from different countries.

Djankov et al., (2002) studied the regulation of entry in formal markets more closely. In their study, they pioneered the first attempt to understand and rank the effect of procedural regulations and entrepreneurial entry. They associated weaker entry of companies into the formal market with less democracy and higher corruption, concluding that regulations benefit only the regulators and incumbents. However, the authors did not provide a clear link between types of regulation and new business formation.

Building on Djankov et al., (2002) work in the following years, further authors dedicated their research to the connection between procedural regulations and entrepreneurship. All of them confirmed the positive connection between procedural and bureaucratic deregulation and entry rate of entrepreneurs. Klapper et al., (2006) findings indicated a lower rate of new ventures in (European) countries with high procedural requirements. A similar conclusion was reached by Demircuc-Kunt et al., (2006), who tested at a company level and combined it with explanatory country level variables. As procedural significant factors, the authors identified a developed formal legal system to ensure contract compliance, efficient bankruptcy processes and an incorporation process with fewer bureaucratic steps.

Also, the effects of procedural requirements on the different motivational groups of entrepreneurs were studied. McMullen et al., (2008) showed in their research, that especially formal property protection has a stronger positive effect for opportunity-driven, but not for necessity-driven entrepreneurs. This seems plausible when recalling the findings that only opportunity-driven entrepreneurs have a positive effect on the economy (Acs, 2006). Since necessity-driven entrepreneurs are less likely to formally register their business they cannot take as much advantage of the benefits like legal protection formality permits, just as Soto, (1989) predicted.

Authors across the field agreed on the benefits of procedural deregulation, but also a system which makes it easy for entrepreneurs to claim their legal rights. Necessity-driven and non-registered entrepreneurs pose an exception. Estrin et al., (2013) summarized this effect by relating it more generally to the quality of a countries' formal institutions – in other words, the locations where bureaucratic or legal protection is enacted. Paradoxically, Aidis et al., (2012) found an inverse relation between entrepreneurial entry and governments' relative size, which they explained by the inability of these governments to collect and allocate resources properly.

The potential of procedural reduction becomes visible when looking at the World Banks', (2017c) indicators of measuring bureaucracy and procedural requirements. If all 3.1 million new LLC companies in 2012 followed the best practices of the leading economies, they would have saved 45.4 million days of work spent for satisfying bureaucratic requirements. Overall, there is consent in the academic community about the positive impact of the reduction of procedural obstacles, property protection and bureaucracy on the entry of new companies (Ribeiro and Galindo, 2012).

Measures

For measuring procedural requirements different approaches have been used in the literature. The GEM consortium offers among others in their NES (National Expert Survey) data, an indicator for “Government Support and Policy” rated on a Likert scale from 1-5⁶. Together with the previously mentioned TEA indicator, several studies have used the GEM database to study the impact of procedural measures on the entrepreneurial entry rate (Estrin et al., 2013; McMullen et al., 2008; Schott and Wickstrom Jensen, 2008). However, this indicator has the disadvantage of not being based on tangible measures but surveys, which makes it more prone to biased data. The World Banks' “Doing Business” dataset uses more tangible measures, such as the number of *steps* and *time* necessary to register a business. Klapper and Love, (2012) used these measures to study the effects of procedural reforms on the entry density of new firms, which, like the authors before, revealed a positive relation between time reduction and new entry formation. This dissertation will use the World Banks' “*time to start a business*” variable to analyze procedural policy making on entrepreneurship, since it has the benefit of being unbiased and based on the institutional performance of a country. The time an entrepreneur needs to register his business affects him at the point of business registration.

⁶ Details on the data collection process are accessible at: <http://www.gemconsortium.org/about/wiki>

This makes sense in combination with a formal measure like *entry density*. Nascent entrepreneurs in comparison are not yet affected by such institutional regulations.

2.3.2. Monetary Policies and Regulations

While the term “monetary policies” usually is associated with the macroeconomic influence central institutions take for balancing money supply to control inflation, growth or consumption (Friedman, 1968), this dissertation uses it to describe the influence a government takes on the rate of entrepreneurship e.g. via the allocation of money to entrepreneurs, either by reducing their costs or subsidizing them on a country-wide scale.

In advanced economies getting access to finance is the fourth most pressing concern for SMEs (Small and Medium-sized Enterprises), while in developing countries it is the number one concern (Daniels et al., 2016). Several studies show that the exploitation of entrepreneurial opportunities is more likely for people with less capital constraints (e.g. Evans and Leighton, 1989; Hurst and Lusardi, 2004). This was also shown by the study of a subsidy program in the U.S. where the provision of health insurances to low income families raised self-employment of such families by 20%-30% (Olds, 2014). Similar findings were observed by James (2015) when studying the expansion of a food stamp program where eligible families were 20% more likely to own a business after qualifying for the new program (James, 2015). Both authors concluded, that small improvements to financial security triggered an increased willingness to start a business. However, recently there has been an increase of new start-up financing opportunities on the private market. Besides the established methods of self-funding, regular loans and the notorious 3 Fs “fools, families and friends”, the most commonly used sources are venture capital firms, crowdfunding, angels and accelerators (Bussang, 2014). However, some sectors, such as cutting-edge medicine, agriculture or energy production, are disproportionate risky or have high start-up costs making them rather unattractive for the private market. Besides, there are often finance gaps for small scale entrepreneurs with low ROI (GEM, 2017). Here lies the reason for monetary policy making: bridging the gap to the private market.

A government has three possibilities to influence entrepreneurs via monetary policy making, of which all have been proven to have a positive effect on entrepreneurs: (1) giving access to finance, (2) lowering financial burdens of running operations or (3) lowering the financial barriers of entry. Popular methods for the first category are microfinancing schemes, mutual credit guarantees or interest subsidies (Minniti, 2008; Sabin, 2015). The most common

method for the second category is taxation. Da Rin et al., (2011) observed a positive effect of lower corporate taxes and new venture creation. The third category describes, similar to the procedural obstacles to found a business, the financial capital needed to start a business. The World Bank, (2017c) estimates every 10% decrease on the *cost to start a business* leads to a 1% increase in entry density of new companies. However, as much as a government can do right with monetary policies directed to entrepreneurs, it is in practice not trivial. Li, (2002) investigated governmental interest subsidies for entrepreneurs and SMEs. It showed a great increase for the targeted income group of entrepreneurs, but due to rising bank rates not-targeted entrepreneurs were worse off, which overall resulted even in lower entrepreneurship rates. Li recommended the allocation of financial programs specifically to poor and capable entrepreneurs to have the biggest impact.

Measures

In the literature, different indicators have been used to study political monetary effects on entrepreneurs. The GEM consortium offers in the NES survey separate indicators on financing and taxation for entrepreneurs (Daniels et al., 2016). Djankov et al., (2002) found high significant effects between costs of business registration (expressed as a percentage of GNI) per capita and entrepreneurial entry. Klapper et al., (2006) used company and industry level data to measure their “*reliance on supplier trade financing*” while controlling “*the ratio of domestic credit to the private sector (scaled by GDP)*” to measure the access to finance on the country level. As a proxy for capital market development, they used the ratio of stock market capitalization to GDP. Klapper and Love, (2012) measured financial barriers to entry more straight forward with *minimum capital* needed for entry⁷ and the *cost to start a business*. Aidis et al., (2012) simplified this even more by reducing the financial proxy to a dummy distinguishing between capital funding received or not.

Compared to procedural policy making the financial side of promoting entrepreneurship seems less straight forward and it is hard to define a framework for the context and combination of the national idiosyncrasies and policies. Research overall agrees on the benefits of giving entrepreneurs easier access to financial assets complemented ideally with lower tax burdens. Since this dissertation aims to compare procedural and monetary policies,

⁷ Daniels et al. (2016) note on this: “*Low start-up costs in Africa and Latin America & Caribbean are probably a reflection of the type of ventures started by entrepreneurs. Many of these entrepreneurs are likely to be in the retail/wholesale and services sectors. Barriers to entry into these sectors, in terms of both skills and capital required, are low*” (p.82). Therefore, there is a potential bias for the types of businesses started.

it is important to pick indicators which target the same group of entrepreneurs (formal entrepreneurs covered in *entry density*) and affect them at the same point in time. Therefore, this dissertation will use the World Banks' "*costs to start a business*" as variable to measure the effect of monetary policy making on entrepreneurship, since it affects entrepreneurs simultaneously as "*time to start a business*". [Appendix 2](#) shows the entrepreneurial process in connection with the different entrepreneurial measures and the effect of time and cost within the process.

2.4. Explanatory Factors for Entrepreneurship

The academic community has dedicated numerous studies to explain the entrepreneurship rate on a country level. While this dissertation focuses on investigating the effect of the amount of *time* and *cost* to start a business on entrepreneurship, there are obviously a variety of other important factors influencing entrepreneurship. Researchers acknowledged this and included diverse explanatory variables to reach robust results. However, results are hard to compare not only because of the different dependent variables (described in table 1), but also because of the disunity about which explanatory variables to include. This chapter intends to shed light on the variety of variables used to explain entrepreneurial entry.

Table 2 Aggregated common independent variables to explain entrepreneurial entry

Category	Variable	Category	Variable
Government	Bureaucracy	Finance	Tax
	Corruption		Minimum Capital for Entry
	Regulation		Credits
	Size of State		Development of System
	Election Year		Unemployment Support
	Fragmentation		Funding achieved
	Governance		Social Security
	Location of Power		Insolvency
Country	Stability	Legal System	Employment
	Industries		Property Rights
	Informality		Protection Index
	Internet Spread		Contract Enforcement
Economy	Population	Individual Data	Development Level
	GDP		Effectiveness
	VC-Investments		Education
	Income		Gender
	R&D-Transfer		Age
	Economic Freedom		Experience
	FDI		Network
	Unemployment Rate		Previous Business Ownership
Investment Horizon	Innovation	Marital Status	
	Investment Horizon	Minority Group	

After reviewing the main studies of entrepreneurial entry, (see [Appendix 3](#) for the complete table) distinct categories and variables related to new venture creation were identified. For this, all explanatory variables of the studies were listed and categorized. Since in many cases, researchers used the same variables, but assigned different names (e.g. contract enforcement and legal protection effectiveness), these variables were aggregated to a common name. Table 2 shows the results of this aggregation process. Overall the variables could be grouped into six categories. The variables per category are ranked from the most (top) to the least often (bottom) used per category.

In the “government” category corruption is seen as an important factor that explains the level of new businesses, with studies clearly indicating a negative influence for development of entrepreneurial activities at a procedural (Klapper et al., 2006) as well as monetary level (Da Rin et al., 2011). Djankov et al., (2002) related corruption to higher regulation, which favors the incumbents and regulators. Aidis et al., (2012) show a relationship between the size of the state, corruption and (lower) quality of institutions.

Variables in the “finance” category are often expressed in development indicators (e.g. Demirguc-Kunt et al., 2006; Lerner and Schoar, 2010). In the “Legal System” category, insolvency and employment rights are considered the most important. The more liberal the higher the benefits for entrepreneurial entry (van Stel et al., 2007). Property protection rights have a positive effect on an entrepreneurial community and should be strict and effectively enforced (Estrin et al., 2013).

Variables from the “country” category often serve as control variables, e.g. when statements are tested across industries (Cumming, 2007) or formality (Williams and Nadin, 2012). However, economic indicators are among the most important categories of influencing variables. Almost every study performed on a cross country level controlled for the GDP. Actually, the majority settled on the conclusion, that GDP and entrepreneurial entry is best described by a logarithmic relationship (Aidis et al., 2012; Estrin et al., 2013; Murdock, 2012). Researchers used further variables (like average income, unemployment rates etc.), to measure the level of prosperity in a country. The distinction of developed and developing countries is especially important when measuring opportunity and necessity-driven entrepreneurship, since it shows a strong correlation (Acs, 2006) between higher rates of necessity-driven entrepreneurship in developing countries. It is noteworthy that developing countries must be particularly careful when trying to replicate the success of developed

countries. As Schott and Wickstrom Jensen, (2008) showed, many developing countries that replicated policy making, failed in their purpose due to their unfit for the local cultural and economic situation and the enforcement used to promote entrepreneurship.

Last but not least, individual factors matter. Research at the company or individual level considers the idiosyncrasies of the entrepreneur as a person. Gender, age, network capabilities of the founders, previous business ownership, and cultural factors have been shown to matter significantly to starting a new business (Cancino et al., 2015; Hopp and Stephan, 2012). Education is one of the most impactful individual measures, but often also used at a country level. In most studies, only higher education plays a role as indicator (Aidis et al., 2012; Cancino et al., 2015). This is consistent with the findings of Acs, (2006) and van Stel et al., (2007), that show that mostly entrepreneurs with higher education are opportunity-driven, while for necessity-driven entrepreneurs education is not a significant factor.

2.5. Hypotheses Development

The literature review reflects the essence of the current state of research for governmental levers to promote entrepreneurship. Having established a clear overview of the most important indicators and influencers, in the next section the main research question of this dissertation will be explored: *“Should a government focus on procedural or monetary policy making and regulation to promote entrepreneurial entry”* or more practically – *will entrepreneurship in a country grow more by making it easier or less costly to pursue?* The literature review has shown how the answer to this may vary drastically depending on the circumstances. This means the research question should be broken down into more hypotheses, which together can answer the main question of this research. The hypotheses are framed to be mutually exclusive, but completely exhaust the main research questions. They outline the different contexts the entrepreneurial entry should be tested on, to conclude in the most robust way possible.

The literature review has shown conflicting views between procedural and monetary policies, regarding the magnitude of benefits to increase new venture creating. However, authors like Djankov et al., (2002) or Da Rin et al., (2011) argue for implementations of monetary reforms. Thus:

H_{1a}: Monetary policymaking, measured by “cost to start a business”, has a stronger impact for incentivizing entrepreneurship, than procedural policy making (ceteris paribus).

Others like Lerner and Schoar, (2010) or Klapper and Love, (2012) recommend to primarily streamline bureaucratic procedures. As Lerner and Schoar conclude quite plausibly in their study, a reduction of procedural burdens can have an automatic impact on costs as well. Thus:

H_{1b}: Procedural policymaking, measured by “time to start a business”, has a stronger impact for incentivizing entrepreneurship than monetary policy making (ceteris paribus).

Daniels et al., (2016) states, that in developing countries access to finance is a far more pressing concern compared to developed countries. We also know that developing countries have a higher share of necessity driven entrepreneurs (GEM, 2017). Since the differentiation of entrepreneurial motivations and their effect on the economy is an impactful concern (Acs, 2006), the second hypothesis will further explore this context. Thus:

H₂: Monetary policies have a stronger effect for incentivizing entrepreneurship than procedural policies, in countries with high necessity driven entrepreneurship rates (ceteris paribus).

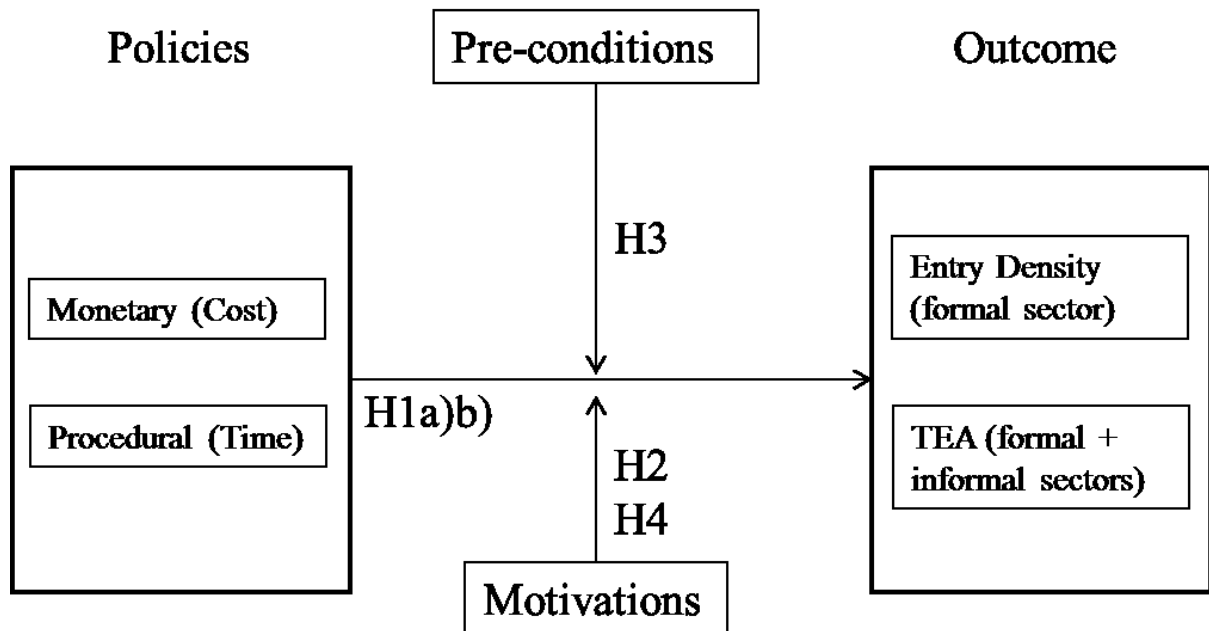
While researchers used all kinds of controls for entrepreneurship, none so far tested on the effects of policies for countries, which already substantially lowered cost and time. Can these countries still affect entrepreneurship rates by lowering cost and time to start a business even more? It is intuitive to say that lowering a condition which already is low, cannot create as much of an impact. On the other hand, eventually in countries with a well-developed business environment, the population reacts even stronger to small changes in the regulatory environment. The hypothesis on this topic is according to the intuitive path:

H₃: Countries with beneficial pre-conditions in cost to start a business or time to start a business cannot affect entrepreneurship with new policies as strong as countries with no pre-condition (ceteris paribus).

Acs, (2006) and Sautet, (2013) have shown the different motives and impacts of opportunity as opposed to necessity driven entrepreneurs. Opportunity driven entrepreneurs are said to be more likely to create the desirable effects of staying sustainably in business and employing people, while necessity driven entrepreneurs even have a negative impact on GDP (GEM, 2017). Policies are naturally directed to support only the positive impacts. *H₄* will help to control whether policies impact the “desired” opportunity entrepreneurs. Thus:

H₄: Governmental policies (monetary and procedural) have a positive impact on opportunity driven entrepreneurship, but not necessity driven entrepreneurship (ceteris paribus).

Graph 1 Hypothesis framework



3. Methodology

Following, the sources and structures of available datasets will be explored. The process of data consolidation and variable selection will be outlined. With this information, the models used for answering the hypotheses and their findings can be explained.

There are a few organizations that are making relevant data on entrepreneurial research publicly available today. The most embracing dataset is offered by the World Bank and the Global Entrepreneurship Monitor, but also organizations like the Heritage Foundation, the OECD or the World Economic Forum offer valuable data. [Appendix 4](#) illustrates the variables used and the corresponding sources and definitions.

3.1. Data Sourcing and Consolidation

Established in 2003, the World Bank “Doing Business” (DB) dataset, one of the largest dataset with entrepreneurial relevant data, measures the ease of starting and operating a business in a country over a time span of 13 years. Since the WB continuously seeks to get a better view of the world economy, its initial 133 economies and 5 indicators were progressively expanded and cover now 190 countries and 11 indicators. Obviously, this means in terms of longitudinal data from each country, that the dataset is unbalanced. The indicators measured include: “*starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency*” (World Bank, 2017a). Doing Business is a dependable source to measure the effect of policy changes on entrepreneurial development, since it measures the regulatory environments faced by SMEs in the formal sector. These SMEs make up the majority of every entrepreneurship indicator (as opposed to e.g. start-ups issued or bought by multinational companies) and they are the most likely to benefit from regulatory reforms that improve the business environment (Acs et al., 2008). Next to the Doing Business dataset, the World Bank also provides a list of economic indicators such as GDP, income per capita, GNI, unemployment rates or internet penetration.

The GEM research was set up in 1997 to investigate different entrepreneurial activities in association with economic growth. By now it embraces individual level ambitions and attitudes towards entrepreneurship (GEM, 2017). Most importantly for research on policy making, it distinguishes between *opportunity-driven* and *necessity-driven* entrepreneurship, which is particularly useful for understanding why certain policies might stimulate

entrepreneurship, but cannot contribute to a better economic outcome. Country level data of the GEM surveys is currently only available up to 2013.

Both sources embrace the economic situation, entrepreneurial activities and individual data on the entrepreneur as a person, but miss important information on judicial effectiveness, property rights or corruption. The Heritage Foundations' index of economic freedom measures these factors, whereas each indicator is put together via a unique formula of different factors. The Index includes 12 variables – from *property rights* to *financial freedom* – in 186 countries over the past 20 years. Countries are ranked on a 0-100 scale on each of the 12 indicators, resulting in an overall score of economic freedom (Miller, 2016).

To create a comprehensive dataset, a unique ID for each country and year was created by connecting the name and year and eliminating all spaces or dashes to prevent ambiguous spellings. Following the datasets were merged according to this ID. The consolidation process was more complicated. Each dataset covers a different set of countries and time spans, including variables that were added over time. The GEM dataset covers only between 28 and 40 countries and was left out from analysis for the first iterations. To create the critical amount of data needed for testing the hypotheses significantly, the goal was to remain with a balanced panel of as many countries over the longest consecutive time period with as many variables as possible. To achieve this, the data was trimmed in several iterations to eliminate variables and years with the least amount of observations. This yielded 31 variables from the World Bank, Heritage Foundation and World Economic Forum with complete observations for 75 countries from 2006 to 2013, leaving 600 rows (country year combinations) and 18600 observations overall. The GEM data, however, was more limited. Reducing the data to an unbalanced panel regarding the availability of observations on *TEA-OPP* and *TEA-NEC*, the data reduced to 64 countries and 335 data rows. Balancing this panel left only 31 countries from 2006 to 2013 equaling to 248 data rows.

3.2. Measures and Data Structure

Table 1 showed common variables to measure entrepreneurship. The choice of the measurement is likely to affect the significance of the regression analysis. *Entry density* measures the number of new registered companies in relative terms, which is a lot more objective when comparing countries of different sizes. Surprisingly, *entry density* and *TEA* (*total early-stage entrepreneurship*) are slightly negatively correlated, which was observed by other authors before as well (Acs et al., 2008). They explained this phenomena by

entrepreneurs that never actually register their company, but are included in the GEM survey. Controlling correlations for a time lag, *TEA-OPP* becomes slightly positive correlated, while *TEA-NEC* is consistently negatively correlated. This indicates a tendency of opportunity driven entrepreneurs to actually register their companies at a later point of time compared to necessity driven entrepreneurs. Therefore, *entry density* captures entrepreneurs that are more likely to stay in business. There are over twice as many observations on *entry density*, which increases the accuracy of regression analyses. Therefore, *entry density* will be used as dependent variable.

The compiled dataset holds one or more variables for each category described in table 2. The table showed a summary of all possible variables, but authors used them in different combinations and with different outcome variables. All together, these variables show multicollinearity. In the first pre-selection, a correlation table was created to identify the most significant variables related to *entry density* and the strongest “competing” variables among them. Following the common econometric approach (Lu et al., 2017), the variables were tested in a progression of regression models (with *entry density* as outcome variable) with additional control variables added at each step and by themselves to control for their significance and the effect on R^2 . To adjust non-linear relation the variables were also tested in different modes (normal, log-normal, normal – log, log-log) (Wooldridge, 2011). It turned out, almost all variables showed a log-log relationship to *entry density*, which sorted out eventual normal-distribution issues and heteroscedasticity (Aidis et al., 2012; McMullen et al., 2008). Table 3 gives an overview of correlations between all selected variables.

Table 3 Correlation table

	Entry Density	Time	Cost	Registering Property	Getting Credit	Profit Tax-	Enforcing Contracts-	Resolving Insolvency	GDP	GNI(pc)
Entry Density										
Time	-0.35***									
Cost	-0.58***	0.55***								
Registering Property	0.29***	-0.37***	-0.46***							
Getting Credit	0.28***	-0.27***	-0.36***	0.29***						
Profit Tax	-0.22***	0.05	0.10*	-0.05	-0.01					
Enforcing Contracts	0.47***	-0.50***	-0.63***	0.43***	0.27***	-0.04				
Resolving Insolvency	0.29***	-0.49***	-0.51***	0.22***	0.38***	0.02	0.39***			
GDP	-0.14***	-0.21***	-0.29***	0.09*	0.31***	0.32***	0.14***	0.31***		
GNI(pc)	0.49***	-0.41***	-0.65***	0.30***	0.27***	-0.06	0.52***	0.57***	0.50***	
Government Integrity	0.50***	-0.41***	-0.64***	0.33***	0.31***	-0.17***	0.53***	0.61***	0.37***	0.85***

Note:

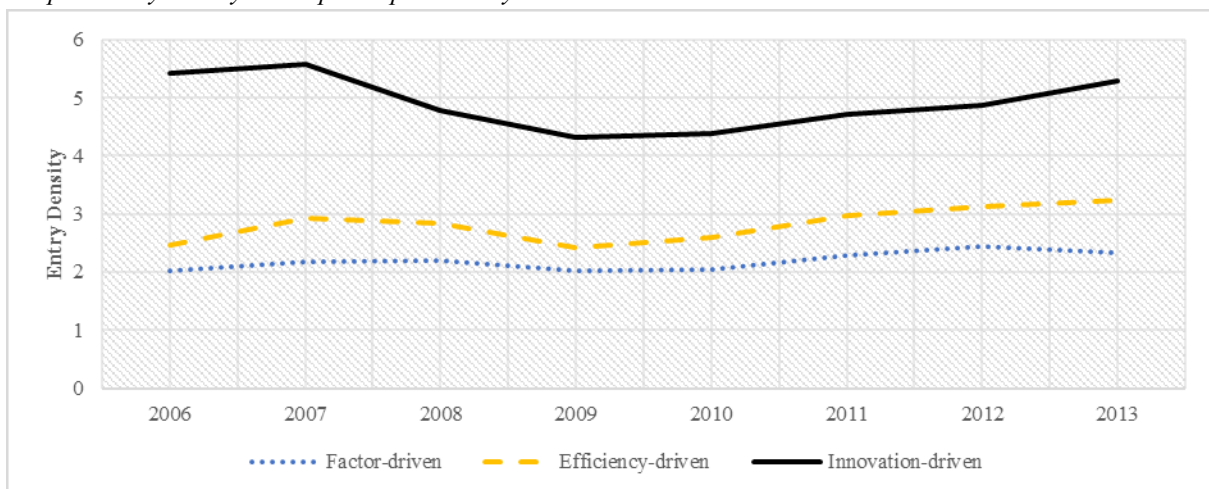
*p<0.1; **p<0.05; ***p<0.01

All variables are significantly correlated to the dependent variables *entry density*. The variables of interest, *cost of starting a business* (measured in % of income per capita) and *time to start a business* (measured in days), are negatively correlated, indicating the expected relationship – the higher the *cost* and *time*, the lower the *entry density*. This intuitive finding also applies to *profit tax*. The negative relation of *GDP* is not as intuitive, but follows previous findings (McMullen et al., 2008). An explanation is, that the higher level of

development, the less people need to rely on entrepreneurship as a source of income, but rather can enter a well-developed job market. *GNI* and *government integrity* still have the biggest issue of multicollinearity, however, all models were tested with and without either one and the results showed that no harm of the predictive quality was caused by keeping both in the model. Previous literature also suggested the importance of both variables (Djankov et al., 2002; Wennekers et al., 2005). Both are positively correlated with *entry density* (whereas *GNI* surprisingly opposes *GDP*).

The influence of *GDP* shows the different realities of policy making on entrepreneurship according to the development of a country (Acs, 2006). The World Economic Forum provides a “Global Competitiveness Index” of countries, which sorts them into three categories depending on the fulfillment of development criteria. 37,3% of the countries in the sample are innovation-driven, 41,3% efficiency-driven and 21,3% factor-driven. Innovation-driven countries, the highest development category, had the strongest *entry density* but were the most affected by the 2009 financial crisis. The crisis increased risk averseness of many financial institutions and therefore the access to investments for entrepreneurs. Factor-driven economies, which are the least developed economies showed almost no impact from the recession in comparison. However, innovation driven countries also recovered quickly due to the higher developed financial systems (World Bank, 2010).

Graph 2 Entry density development per country status

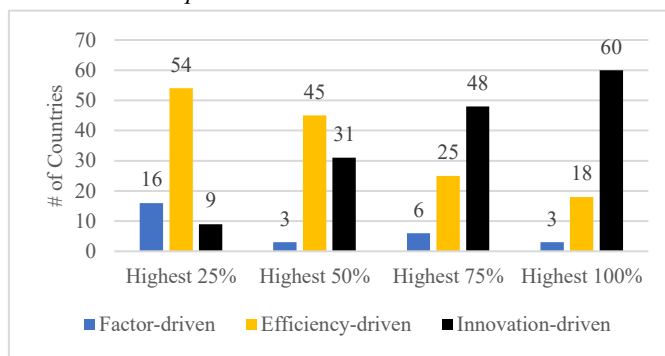


Note: Graph 2 shows the evolution of *entry density* according to the *global competitiveness* assigned by the WEF (see [Appendix 4](#) for definition).

As previously mentioned, data with the distinction of *opportunity* and *necessity driven* entrepreneurship is limited. H_2 (monetary policies have a stronger influence than procedural policies in countries with high rates of necessity-driven entrepreneurship), would be challenging to test with the current data, since the GEM only measures the actual rates of this

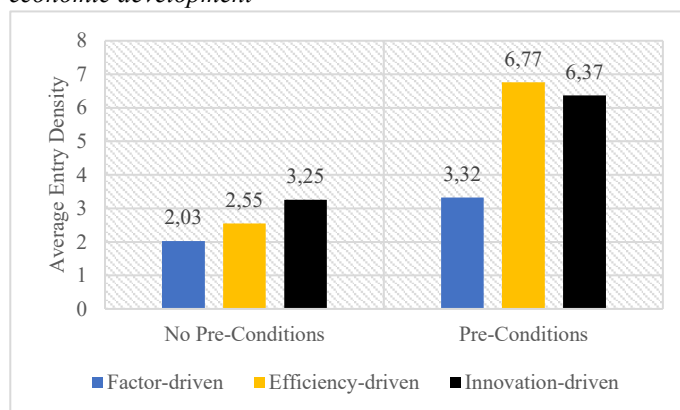
motivational distinction for between 28 to 40 countries in the time frame. In the sample 90% of the above-average necessity-driven countries are factor and efficiency driven economies. Therefore, efficiency and factor driven economies are a good proxy for high necessity-driven entrepreneurship and can be used to leverage the full dataset and make results more robust.

Graph 3 Quartiles of necessity-driven entrepreneurship per economic development



H₃ looks at countries that may have already begun from a low value in *time* or *cost to start a business* at the beginning of the compiled dataset. These are countries with pre-conditions⁸ A country may have preconditions regarding time and cost separately or simultaneously. From the sample half of the countries have at least one pre-condition (and half of these have both). To test H₃, countries with at least one pre-condition have been assigned to the pre-condition dummy. Graph 4 shows the average *entry density* for the two groups: pre-conditional countries and economic development. It is peculiar how factor-driven economies with pre-conditions have a similar average *entry density* as innovation driven economies without ($p < 0,05$ of the according t-test - see [Appendix 5](#), test 1), since graph 2 showed the difference in entry density between factor and innovation-driven economies. These innovation-driven countries still have a more well-developed economy according to the WEF, which underlines the importance of cost and time to start a business as entrepreneurial driver. However, this could also be explained in reversed causality, since on average it is the most costly and timely to start a business in factor-driven economies. The following table shows the descriptive statistics of the selected variables.

Graph 4 Entry density for countries with pre-conditions by economic development



⁸ A country is counted as having a *pre-condition* in *time to start a business*, when in 2006 they had a value of 20 days or less which makes roughly one third of the countries. A country is counted as having a *pre-condition* in *cost to start a business*, when in 2006 they had a value of 10% or less which makes roughly one third of the countries.

Table 4 Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max
Year	600	2,009.500	2.293	2,006	2,013
Entry_Density	600	3.473	3.884	0.027	25.069
SAB_Time	600	34.415	80.291	0.500	697.000
SAB_Cost	600	17.331	25.437	0.100	161.000
Registering_Property	600	68.034	16.523	17.220	99.860
Getting_Credit	600	61.083	20.761	12.500	100.000
Total_Profit-Tax	600	42.685	19.068	11.300	137.200
Enforcing_Contracts	600	62.183	13.447	25.810	93.360
Resolving_Insolvency	600	49.952	25.312	0.480	99.860
GDP	600	474,939,228,646.000	901,033,966,570.000	1,217,467,601.000	6,203,213,121,334.000
GNI(pc)	600	19,973.170	21,668.120	610	104,180
Government_Integrity	600	51.333	22.611	15	97
Precondition_Time	600	0.373	0.484	0	1
Precondition_Cost	600	0.387	0.487	0	1
Precondition_Both	600	0.253	0.435	0	1
TEA	335	10.622	7.517	2.347	41.457
TEA-OPP	318	7.654	5.273	1.872	31.615
TEA-NEC	318	2.720	2.663	0.157	15.484
Only_Time	600	0.107	0.309	0	1
Only_Cost	600	0.213	0.410	0	1
No_Treatment	600	0.173	0.379	0	1
Both	600	0.827	0.379	0	1
No_Precondition	600	0.747	0.435	0	1
High_Necessity	600	0.627	0.484	0	1

Note: The average time to start a business is 25,4 days and the average cost are 80,3 % of pc income. *Precondition_Time*, *Precondition_Cost*, *Precondition_Both* are self-constructed dummy variables stating whether a country belongs to the lowest third in time, cost or both for the year 2006. Around 25% of all countries have pre-conditions in both. *No_Precondition* is the flipped dummy for *Preconditions_Both* to allow a more intuitive interpretation of regression results. *Only_Time*, *Only_Cost*, *No_Treatment*, denotes the regulatory performance for time and cost over the whole time period in reference to 2006. *Both* includes countries, which reduced either time or cost or both. Only 17,3% of all countries did improve neither time nor cost. *High_Necessity* reports factor-driven and efficiency driven countries (see [Appendix 4](#) global competitiveness) and is used as a proxy for countries with above-average necessity-driven entrepreneurship rates.

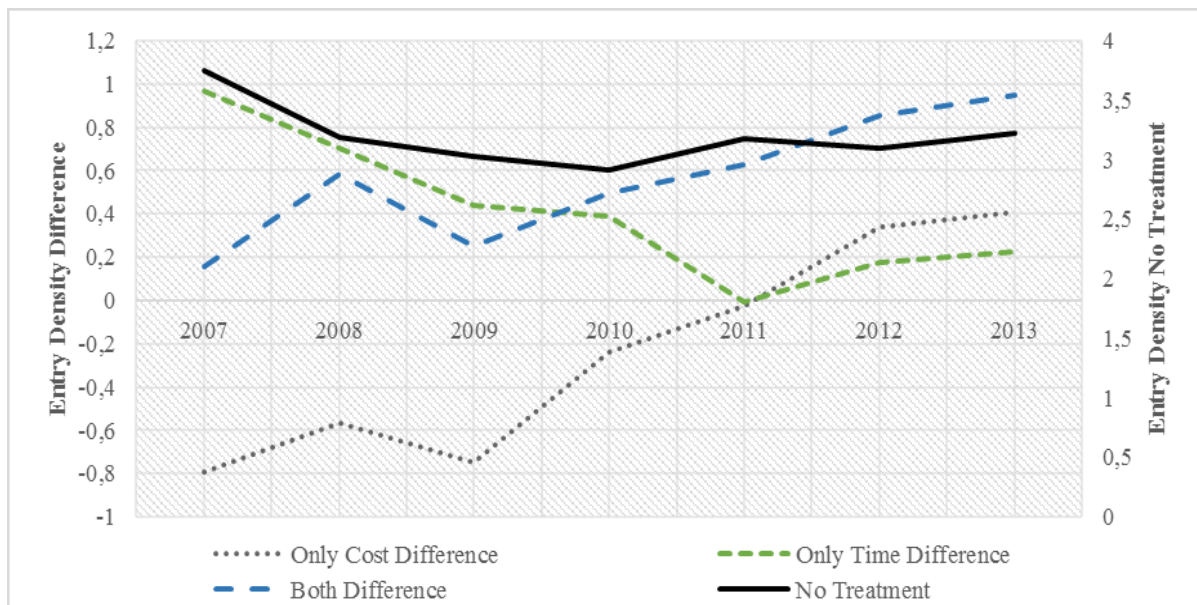
The data includes a few outliers for the measures of *time*, *cost* and *entry density*. Regarding *time* and *cost* Suriname is the biggest irregularity where in 2006 it took 690 days (Z-Score = 8.2) and 161 % (Z-Score = 5.6) of income per capita to start a business. Regarding *entry density*, New Zealand and Panama have Z-Scores above 4. While the *entry density* of New Zealand is explained by its excellent conditions for starting a business (first place on the World Banks' ranking for Doing Business and among others also first in *cost* of starting a business with 0,2 % of cost per capita income). Panama only ranks on place 70. The high *entry density* of Panama could be explained by the publication of the the Panama Papers, (2016) when Panama became known as a tax heaven. An extreme example of this effect can be observed for the Virgin Islands (not included in the sample), where *entry density* of new companies between 2002 and 2009 was between 4300 and 2600, at least 28 times higher compared to the next highest value.

The panel shows negative serial correlation ($p < 0,1$; [Appendix 5](#), test 7). This is not unusual, since regional shocks (such as the financial crisis) have lasting effects not only on one year but also the years after (Wooldridge, 2011). However, negative serial correlation may not affect standard errors as severely. An effective way to deal with this, is to cluster standard errors on country level (Angrist and Pischke, 2009).

4. Empirical Evaluation

Due to strong year effects like the financial crisis and national idiosyncrasies, we controlled for time and country fixed effects. As precedentially used by many researchers in policy analysis (Wolfers, 2003) “fixed effects” is an established method for analyzing the effect of policy changes. “*The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics...[like culture, religion, gender, race, etc]*” (Torres-Reyna, 2007 p.9)

Graph 5 Impact of isolated policy-changes



Note: In a first approach to analyze the isolated impact of single policy treatments, the countries were split into categories based on their regulatory behavior over the whole sample period for their reduction in *time* and *cost* to start a business. Graph 3 shows the performance regarding *entry density* of the four resulting categories over time. Countries in the category “*no treatment*” (therefore no changes in cost or time to start a business) are represented on the secondary axis (right). All other categories are displayed on the primary Y axis (left) in reference (difference) to the “*no treatment*” category. Countries without treatment dropped slightly in *entry density* across the sample period. Countries that improved *time* or *time* and *cost* rose stronger in *entry density*, while countries that only improved *time* performed worse compared to the “*no-treatment*” category. An improvement was considered, when a country reduced the time or cost by at least 20% compared to the base value in 2006. There is no risk of bias in the sample from countries that eventually improved and degraded conditions again. All countries either performed treatments or did not

4.1. Theoretical Models

To test H_1 we used the following regression:

$$\text{Log}(\text{Entry Density})_{ct} = \beta_1 \text{Log}(\text{Time})_{ct} + \beta_2 \text{Log}(\text{Cost})_{ct} + \beta_3 \text{Control}_{ct} + a_c + u_{ct} \quad (1)$$

The bases c and t denote the specific value of country c and year t fixed effects. Time and country effects are included as dummies, allowing for a “dummy variable regression”, that produces identical coefficients and standard errors as the “within” (fixed effects) estimator. β_3 controls for all variables selected in chapter 3.1.2. The term a_c describes the individual intercept for each country c and captures time-invariant unobserved characteristics such as culture. This allows to assess the net effect of the predictor on the outcome variable. The variable u_{ct} denotes the time and country variant error term. (Wooldridge, 2011). Since it is a log – log model the interpretation for the coefficients β_1 and β_2 represent the percentage change in entry density for a 1% increase in time and cost respectively (also called the elasticity of entry density).

To test H_2 and H_3 we ran the same regression but included an interaction term between cost and time with a dummy variable that measures the influence of the hypothesized condition:

$$\text{Log}(\text{Entry Density})_{ct} = \beta_1 \text{Log}(\text{Time})_{ct} + \beta_2 \text{Log}(\text{Cost})_{ct} + \beta_3 \text{Log}(\text{Time})_{ct} * \text{Dummy Variable} + \beta_4 \text{Log}(\text{Cost})_{ct} * \text{Dummy Variable} + \beta_3 \text{Control}_{ct} + a_c + u_{ct} \quad (2)$$

The dummy variables for the interactions are the previously introduced variables *high necessity* and *pre-conditions* (*no-precondition* respectively). As before, for robustness, *cost* and *time* have been tested joint and separately. The interaction with the dummy requires special coding, since the conditions, whether a country has existing *pre-conditions* or high rates of *necessity driven entrepreneurship*, are time constant (countries with high rates of necessity-driven entrepreneurship stayed in this category across the whole time frame) and would get swept away by the fixed effects transformation (Wooldridge, 2011). The interaction can still be shown by leaving out the dummy variable itself and only including it in the interaction term. In this case β_1 or β_2 take the value of the left-out dummy.

In case of the H_2 , interpretation of the resulting interaction is $\beta_1 \text{Log}(\text{Time})_{ct}$ or $\beta_2 \text{Log}(\text{Cost})_{ct}$ as base variable for *High Necessity* = 0 (therefore countries with low share of necessity driven entrepreneurship) and:

$$\beta_1 \text{Log}(\text{Time})_{ct} + \beta_3 \text{Log}(\text{Time})_{ct} * \text{High Necessity} \quad \text{or}$$

$$\beta_2 \text{Log}(\text{Cost})_{ct} + \beta_4 \text{Log}(\text{Cost})_{ct} * \text{High Necessity}$$

for countries with high share of necessity driven entrepreneurship - *High Necessity* = 1. For H₃ interpretation works accordingly with *no-precondition* (Wooldridge, 2011).

To address multicollinearity Klapper and Love, (2012) performed separate regressions for each institutional indicator. While this might be a reliable method to reject irrelevant factors, results can also be biased about magnitude and significance (Acemoglu, 2005). *Time* and *cost* to start a business showed significant correlation, which also raises concerns about the true assessment of their magnitude. Especially the first hypothesis seems difficult to answer by simple comparison of coefficients. Therefore, to accommodate a robust conclusion, regressions will be run in a joint model including cost and time, but also separately. Additionally, these models will be performed including and excluding control variables.

H₄ was tested similarly to H₁ except the dependent variable entry density was exchanged for the rates of opportunity and necessity-driven entrepreneurship.

$$TEA - Opp_{ct} = \beta_1 \text{Log}(\text{Time})_{ct} + \beta_2 \text{Log}(\text{Cost})_{ct} + \beta_3 \text{Control}_{ct} + a_c + u_{ct} \quad (3)$$

$$TEA - NEC_{ct} = \beta_1 \text{Log}(\text{Time})_{ct} + \beta_2 \text{Log}(\text{Cost})_{ct} + \beta_3 \text{Control}_{ct} + a_c + u_{ct} \quad (4)$$

4.2. Results

Table 5 is the first model representing equation 1 to test for H₁. R² are high, which is in dummy variable regressions not surprising, since time and country dummies are included (Wooldridge, 2011). The variables of interest, *time* and *cost*, show no strong variation across the different models, which is a sign of good robustness.

Interestingly, only model 2, shows significance for cost ($p < 0,1$). The interpretation is intuitive. A 1% decrease in cost to start a business is associated with a 0,153% increase in *entry density*. Analyzing the control variables, only GNI per capita shows significant positive impact. This regression gives a first idea for H₁, whether procedural or monetary policies have a stronger influence on fostering entrepreneurship. From the result of regression 2 the conclusion is to accept H_{1a} and reject H_{1b} – monetary policies have a stronger impact for incentivizing entrepreneurship compared to procedural policies. Nevertheless, as the results of all other regressions are not significant we should consider the results of the following hypotheses as well to derive at a final statement about H₁.

Table 5 Regression of time and cost with and without control variables

	Dependent variable:					
	Log Entry Density per 1000					
	(1)	(2)	(3)	(4)	(5)	(6)
Log Time	-0.075 (0.064)		-0.057 (0.053)	-0.064 (0.062)		-0.056 (0.052)
Log Cost		-0.153* (0.086)	-0.146 (0.089)		-0.141 (0.088)	-0.138 (0.091)
Log Profit Tax				-0.038 (0.174)	0.033 (0.182)	0.045 (0.176)
Log Registering Property				-0.174 (0.248)	-0.194 (0.216)	-0.231 (0.223)
Log Getting Credit				0.039 (0.126)	0.038 (0.120)	0.033 (0.119)
Log Enforcing Contracts				0.530 (0.566)	0.355 (0.484)	0.317 (0.489)
Log Resolving Insolvency				0.031 (0.063)	0.024 (0.057)	0.026 (0.055)
Log GDP				-0.382 (0.299)	-0.382 (0.298)	-0.352 (0.296)
Log GNI(pc)				0.706*** (0.268)	0.676** (0.271)	0.647** (0.268)
Log Government Integrity				-0.008 (0.313)	0.036 (0.288)	0.022 (0.281)
Constant	0.098 (0.182)	0.472 (0.337)	0.616* (0.319)	1.547 (5.747)	2.544 (5.564)	2.546 (5.600)
Control Variables	No	No	No	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	600	600	600	600	600	600
Adjusted R ²	0.947	0.949	0.949	0.948	0.950	0.950
Residual Std. Error	0.282	0.277	0.276	0.278	0.274	0.273

Note:

*p<0.1; **p<0.05; ***p<0.01
Clustered standard errors on country level

Table 6 shows the regressions performed for H₂. Results indicate a significant effect of *cost* reductions for countries with high-necessity rates across all regressions and a low to none existing significance of *time* reductions. The model including all controls and interactions in regression 5 indicates a 0,277% increase of *entry density* for dropping the *cost to start a business* by 1% in countries with *high necessity* entrepreneurship. For low necessity countries there is no significant impact of monetary or procedural policies. This result is almost 3 times as high, as the prediction of the World Bank, (2017c) – 1% increase for a 10% drop in *cost*. Notably, in the joint model only *cost*, but not *time* coefficients are significant. In [Appendix 5](#)

the ANOVA tests (number 3 and 4) confirm also the significance of the *cost* variable for regression 5 ($p < 0,001$), and the support of the null hypothesis that both coefficients are zero for the *time* variable ($p > 0,2$) Hence, cost policies have a stronger influence in countries with *high necessity*-driven entrepreneurship and H_2 can be accepted.

Table 6 Regression with interaction for high necessity driven entrepreneurship

	Dependent variable:				
	Entry Density per 1000				
	(1)	(2)	(3)	(4)	(5)
Log Time	0.008 (0.067)	0.006 (0.051)		-0.047 (0.056)	-0.020 (0.072)
Log Cost		-0.132 (0.090)	-0.005 (0.046)	-0.005 (0.047)	-0.009 (0.047)
Log Time:High Necessity 1	-0.153* (0.092)	-0.131 (0.082)			-0.059 (0.110)
Log Cost:High Necessity 1			-0.276** (0.112)	-0.272** (0.114)	-0.257* (0.132)
Constant	2.767 (5.553)	3.545 (5.434)	5.148 (5.733)	5.108 (5.785)	5.415 (5.626)
Control Variables	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	600	600	600	600	600
Adjusted R ²	0.949	0.951	0.952	0.952	0.952
Residual Std. Error	0.277	0.272	0.267	0.267	0.267

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
Clustered standard errors on country level

Table 7 shows the regression results for answering H_3 . For a more intuitive interpretation of the regression (in line with the previous regressions), the dummy of *pre-conditions* has been reversed (“*no pre-condition*” takes the value 1 for countries that do not have pre-conditions).

On this hypothesis, comparable results as in the earlier regression on *high necessity* could be expected, since in fact only 8,5% of *high necessity* countries have beneficial *preconditions*, so the distinction is similar. Nevertheless, results vary. Compared to the previous regression results, also *time* reformation has significance. However, also for these countries, *cost* reformations have a stronger impact on *entry density*. Regression 5, which includes both variables and interactions, shows a 0,068% higher *entry density* for lowering the *time to start a business* by 1% - *ceteris paribus* (the interpretation of the interaction is the same as in H_2).

For *cost* this effect is with 0,172% almost 3 times as high. These results show that we can accept H_3 . A rather surprising finding is the “punishing” effect of time and cost reformation for countries with existing *preconditions*. The findings suggest a reversed effect of further *cost* and *time* reduction for countries with beneficial *pre-conditions* (therefore *no-precondition* = 0). While for *cost*, this finding is not significant across all regressions, for *time* it is. [Appendix 5](#) (tests 5 and 6) show the ANOVA tests performed in order to test the nested regression-models 1 and 5 and 3 and 5 of table 7 against each other. In this case, we can reject ($p < 0,005$) the null hypothesis for cost and time that the coefficients are both 0. Therefore *time* and *cost* to start a business make a significant impact on entry density for countries with no preconditions.

Table 7 Regression including interaction about pre-conditions

	Dependent variable:				
	Entry Density per 1000				
	(1)	(2)	(3)	(4)	(5)
Log Time	0.118*** (0.026)	0.082** (0.042)		-0.015 (0.060)	0.117*** (0.035)
Log Cost		-0.119 (0.098)	0.051 (0.061)	0.045 (0.055)	0.061 (0.049)
Log Time:No Precondition 1	-0.250*** (0.062)	-0.191** (0.090)			-0.185** (0.084)
Log Cost:No Precondition 1			-0.247*** (0.096)	-0.237** (0.109)	-0.233** (0.109)
Constant	2.225 (5.886)	2.923 (5.714)	4.187 (5.631)	4.126 (5.651)	4.462 (5.808)
Control Variables	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Observations	600	600	600	600	600
Adjusted R ²	0.950	0.951	0.951	0.951	0.952
Residual Std. Error	0.275	0.272	0.270	0.270	0.268

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$
Clustered standard errors on country level

H_4 (the influence of *time* and *cost* reformations is only positive for *opportunity* but not *necessity* driven entrepreneurship) is more difficult to research, due to the limited amount of data. Regressions 1-3 in table 7 use the rate of opportunity entrepreneurship as dependent variable, while regressions 4-6 use necessity entrepreneurship. Overall *time* and *cost* reforms do not show much significance. Only *cost to start a business* is significant ($p < 0,1$) in the separate regression of *necessity entrepreneurship*. In tribute to the lower amount of data, the magnitude of the coefficient cannot play a primary role, but rather its algebraic sign. Since the

coefficient is positive, it suggests a higher rate of *necessity driven* entrepreneurship for higher *cost to start a business*. However, coefficients for opportunity-driven entrepreneurship are positive as well, even though not significant. Therefore, our results indicate that H₄ is rejected.

Table 8 Comparison of opportunity and necessity- driven entrepreneurship

	Dependent variable:					
	Opportunity-Driven Entrepreneurship			Necessity-Driven Entrepreneurship		
	(1)	(2)	(3)	(4)	(5)	(6)
Time	0.008 (0.038)		-0.012 (0.038)	0.029 (0.018)		0.012 (0.013)
Cost		0.070 (0.111)	0.096 (0.117)		0.109* (0.059)	0.083 (0.056)
Constant	33.542*** (1.080)	30.735*** (1.526)	32.261*** (1.577)	1.149 (4.861)	1.661 (4.546)	-2.075 (13.151)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	248	248	248	248	248	248
Adjusted R ²	0.802	0.804	0.803	0.828	0.834	0.834
Residual Std. Error	1.793	1.783	1.786	0.864	0.849	0.848

Note:

*p<0.1; **p<0.05; ***p<0.01
Clustered standard errors on country level

5. Discussion

Not only entrepreneurship, but also procedural and monetary policies can be measured in several ways. The review of the present literature exposed the diversity of independent variables used to explain entrepreneurship. Table 2 provided 44 variables commonly used to measure entrepreneurship grouped in 6 categories. The goal of this process was to bring more clarity into the diversity of indicators used to explain entrepreneurship in research. This contribution to a more standardized framework of entrepreneurship research can help further research in the future to achieve more comparable results.

The risk of multicollinearity in this field of research is high, even with variables taken from different data sources. For the specific variable collection in this research, more or less complete variables sets from several data sources for each possible control variable were collected. An extensive consolidation and testing process resulted in a set of 8 control variables additionally to the two main variables *cost* and *time to start a business*. Results seemed robust after comparing regressions including and excluding control variables and clustering standard errors across countries.

When trying to understand whether monetary policies or procedural policies have a stronger impact on entrepreneurship we observed that monetary policies or regulations show a stronger positive influence on the entry rate of companies compared to procedural policies or regulations. Namely the evidence points to a 1,53% increase in *entry density* for a 10% drop in *cost to start a business* (please see Table 5). This finding is in line with the World Bank's finding, which is close to the 1% increase (World Bank, 2017c) and hence a good sign of robust results. As hypothesized, in countries with high share of *necessity-driven* entrepreneurship (which are usually the less economically developed countries), lowering the *cost to start a business* has a stronger impact on the *entry density* than *time to start a business*. The results could not find evidence that *cost to start a business* is also a stronger influence for country with low rates of *necessity-driven* entrepreneurship.

For countries that had *no pre-conditions* (a country was considered to have pre-conditions when it belonged to the lowest third in time, cost or both for the year 2006) in *cost* or *time*, both policy-measures had a significant impact. On the other hand, policies in countries with at least one pre-condition have surprisingly a reversed relationship to lowering *cost* or *time to start a business*. A possible explanation of this effect is the development of the job market and the saturation of new company entry. As already mentioned, having pre-conditions

correlates with a higher economic competitiveness (only 10% of factor driven countries have pre-conditions in *cost* and *time*). This means, *entry density* already is at a higher level, but also that the domestic industry offers a higher amount of jobs which compete with entrepreneurship (Acs et al., (2008)). If it is assumed, that *entry density* could reach a saturation, which depends on the job market equilibrium, countries with pre-conditions seem to be more saturated in entrepreneurial entry. In these countries new entrepreneurial opportunities are filled in quickly and people who might start a company, in less developed economies, see a better opportunity in joining the job market. In this argumentation lowering the *time* or *cost* variable in the dataset for pre-conditional countries triggers reverse causality – hence, it is more likely, that entrepreneurship is oversaturated.

This research could not find evidence to accept H_4 . Only a weak positive relationship between rising *cost* of entry and increasing *necessity-driven* entrepreneurship could be found. However, the results suggest the direction of the findings of Acs (2006) and Soto (1989), that *necessity-entrepreneurship* and the informal markets (which according to Desai, (2009) correlate positively with each other) rise with the *cost* of entry.

We previously discussed the different roles of entrepreneurship measures. While the TEA-oriented measures include also very early stage “baby entrepreneurs”, *entry density* only measures the formally registered ones. The combination between the evidence from H_2 (using *entry density*) which showed the effectiveness of cost policies for countries with *high-necessity* entrepreneurship rates, and the finding of H_4 (using *TEA-OPP/NEC*), that neither *necessity-driven* entrepreneurship nor *opportunity-driven* entrepreneurship are affected by *cost* reductions, rises an interesting implication. If cost policies would incentivise non-entrepreneurs to start a new business we could expect the TEA indicators in H_4 to significantly rise as well when lowering entry barriers (Acs et al., 2008; Djankov et al., 2002; Soto, 1989). As this is not the case, there is only one explanation for the significantly positive impact of cost policies on *entry density* - these policies only help to give incentive to informal entrepreneurs to register their business. In short: Reducing *cost* (and *time* in certain countries) are effective to attract existing entrepreneurs to formality, and not incenting non-entrepreneurs to start a new business. This finding seems also plausible with the illustration of the entrepreneurial process in [Appendix 2](#), considering the impact of *time* and *cost* and the firm-birth-stage.

6. Limitations

This dissertation includes some limitations one might like to address in subsequent research. The cross-country dataset does not control for regional differences. In some countries, regulations are not binding to all states and fluctuations in entry density vary strongly across states (e.g. Silicon Valley in the U.S.). Future research could bring the analysis on industry or company level for further distinctions to identify demographic clusters that respond differently to certain policies. This would allow policymakers to target entrepreneurs more specifically and reach the desired effects. The issue regarding the lack of data for the GEM dataset has been sufficiently discussed. With further countries added and complete observations, in the future more detailed research will be possible on opportunity and necessity-driven entrepreneurship. Also, for the World Bank dataset it would be preferable to have more complete variables and countries. The difficulty to analyze interdependencies between two policies is the variety of possible omitted factors. Some variables, which would have helped to explain entrepreneurship better, did not have enough data or covered enough countries. While for the WEF categorization on economic competitiveness, all three categories were represented in a balanced way. In the World Banks' categorization on income level, no country was represented from the low-income segment. Data collection in third world countries is often a major challenge due to the missing infrastructure. Also, the majority of countries in the data were European. Preferably, the dataset should contain countries of all income groups and regions.

7. Conclusion

This dissertation examines the impact of procedural and monetary policy changes on entrepreneurship under different conditions using fixed effects in 75 countries across 8 years. Procedural policy making is represented by the variable “*time to start a business*” (days), while monetary policies are measured by “*cost to start a business*” (percentage of pc income). Both variables are provided by the World Bank and impact entrepreneurs at the same point in the entrepreneurial process to enter formal markets. Entrepreneurship is measured by the *entry density* of newly registered companies, which measures the formal economy only.

Theoretical Implications

The results contribute to the literature in several important ways. This research provides a review of the most used variables for explaining entrepreneurship. While the composition may still vary for future research, the selection will very likely consist of the 44 variables in table 2. This is important, because so far researchers used an uncontrolled diversity of indicators which made their results very hard to compare. More comprehensive studies as this are needed to uniformize the measure of entrepreneurship so studies can be comparable in the way entrepreneurship is measured and explained.

The positive impact for lowering *time to start a business* and *cost to start a business* have been explored before (Djankov et al., 2002; Evans and Leighton, 1989). Yet, so far it remained unclear which of them has the stronger impact to foster entrepreneurship. Most research on entrepreneurial policy making focused on a single isolated variable. This dissertation provides a different view by comparing explicitly the impact of two variables – *cost* and *time to start a business*. This opens the door for further research on interdependent relations between policy changes of more than one variable. Further important implications for the academic community is the closure of the gap between the findings of Acs, (2006) and Sautet, (2013) on the one hand, that *necessity driven* entrepreneurship has a negative impact on the economy, and Soto, (1989) on the other hand, that higher regulations and entry barriers prevent entrepreneurs from entering the formal economy. We show that lowering entry barriers for entrepreneurs has a positive impact on the entrepreneurship rate and the economy, but mostly by transforming informal entrepreneurs in formal ones. This effect should find deeper attention in future research and could play a deciding role even for re-evaluating existing literature, which uses a formal measure of entrepreneurship such as entry density.

Managerial implications

The implications for governments and policy makers are extensive. Primarily, cost reforms have a higher potential to foster entrepreneurship compared to procedural reforms, which is important for future policies or regulations. However, especially lower developed, factor or efficiency-driven countries – where *costs* or *time to start a business* are usually above average - can create a positive impact on entrepreneurship with procedural policies (like Namibia or Zambia). An unprecedented finding is that the reduction of these entry barriers does not seem to actually incent new entrepreneurship, but only the formal entry of existing ones. This underlines the importance for countries with a big informal sector and high rates of *necessity* entrepreneurs to lower the entry barriers, mainly through monetary reforms. Countries with *high-necessity* rates (like Bolivia, South Africa or Tunesia), which only focused on cost policies showed strong improvements in *entry density*. However, this also means that in order to promote new nascent entrepreneurs, different levers than just lowering entry barriers need to be pulled. Recommendations for efficiency-driven countries depend on the development status, but countries like Costa Rica or Guatemala, which did not pass any policies along the analysed time-frame, noticeably lowered in *entry density*, while every other efficiency-driven country with treatments improved. Innovation driven countries without any *pre-conditions* (like Portugal, Slovenia or Japan) showed great improvements on entrepreneurship after *time* and *cost* reforms. Graph 4 already suggested the strong difference in *entry density* between innovation-driven countries that have a less developed policy environment regarding *cost* and *time* to start a business and countries with a low cost and short procedures. Hence, if these countries catch up in procedural and monetary policies they can have a strong impact on lowering the amount of informally operating entrepreneurs.

Even though procedural regulations seemed less important, they can have strong effects when tackling the right bottleneck. In Mexico the number of registered companies increased by 5% after simplifying business registrations (Bruhn, 2008) and in Singapore an electronic registration system pushed annual business registrations by 75% (Klapper et al., 2006). Policymakers need to be more considerate when planning procedural reduction to have a real impact, while monetary reductions are a more straight-forward and fail-safe method. However, in order to truly create new entrepreneurs instead of transferring existing ones into the formal economy, policy makers need to focus on further things like entrepreneurs as individuals, their education and the allocation of resources to them. Though, easier and cheaper procedures for them certainly will not create any damage.

Appendix

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Appendix 1: List of Procedures for Starting Up a Company

Note: This table provides an overview of common procedures to start a company from 85 countries, adapted from (Djankov et al., 2002)

1. Screening procedures

- Certify business competence	- Obtain certificate of compliance with the company law
- Certify a clean criminal record	- Obtain business license (operations permit)
- Certify marital status	- Obtain permit to play music to the public (irrespective of line of business)
- Check the name for uniqueness	- Open a bank account and deposit start-up capital
- Notarize company deeds	- Perform an official audit at start-up
- Notarize registration certificate	- Publish notice of company foundation
- File with the Statistical Bureau	- Register at the Companies Registry
- File with the Ministry of Industry and Trade, Ministry of the Economy, or the respective ministries by line of business	- Sign up for membership in the Chamber of Commerce or Industry or the Regional Trade Association
- Notify municipality of start-up date	

2. Tax-related requirements

- Arrange automatic withdrawal of the employees' income tax from the company payroll funds	- Issue notice of start of activity to the Tax Authorities
- Designate a bondsman for tax purposes	- Register for corporate income tax
- File with the Ministry of Finance	- Register for VAT
	- Register for state taxes
	- Register the company bylaws with the Tax Authorities
	- Seal, validate, rubricate accounting books

3. Labor/social security-related requirements

- File with the Ministry of Labor	- Register for health and medical insurance
- Issue employment declarations for all employees	- Register with pension funds
- Notarize the labor contract	- Register for Social Security
- Pass inspections by social security officials	- Register for unemployment insurance
- Register for accident and labor risk insurance	- Register with the housing fund

4. Safety and health requirements

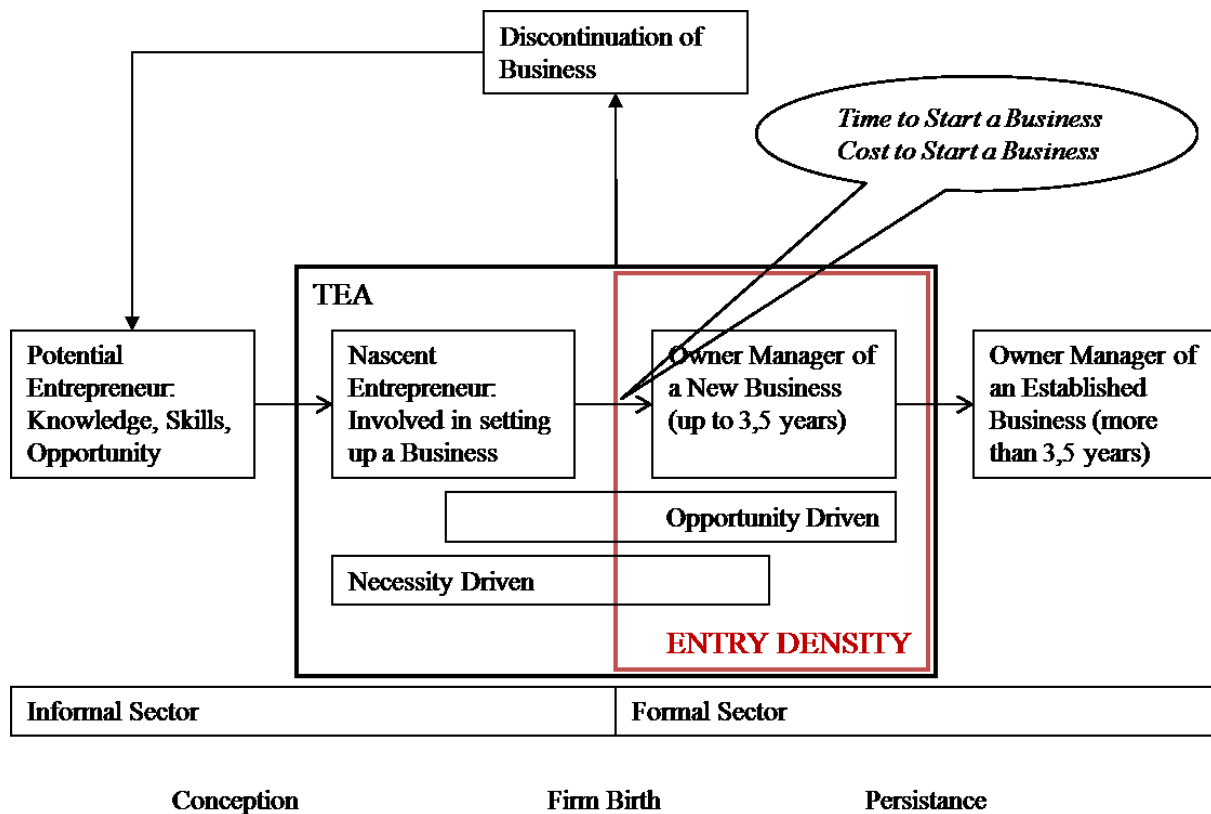
- Notify the health and safety authorities and obtain authorization to operate from the Health Ministry	- Pass inspections and obtain certificates related to work safety, building, fire, sanitation, and hygiene
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5. Environment-related requirements

- Issue environmental declaration	- Pass inspections from environmental officials
- Obtain environment certificate	- Register with the water management and water discharge authorities
- Obtain sewer approval	
- Obtain zoning approval	

Appendix 2: The Entrepreneurial Process

Graph 6 The entrepreneurial process



Note: Source: With changes adapted from (GEM, 2017). This graph illustrates the entrepreneurial process combined with entrepreneurial measures. From this illustration, the difference between TEA and entry density becomes clear. While the TEA captures entrepreneurs from all stages, entry density captures them upon registration and their entry into the formal sector. Time and cost to start a business impact entrepreneurs at the same point of time in the registration process making them ideal for comparison.

Appendix 3: Collection of Empirical Studies about Entrepreneurial Development

Table 9 Collection of empirically relevant studies

Study	Dependent Variable	Independent significant variables	Main Findings	Data
(Cancino et al., 2015)	Sales Development Employee Development Capital Raised (of new companies)	Gender of founders Education Experience Funding subsidy received (treated group)	<ul style="list-style-type: none"> - Impact on sales of treatment was positive significant depending on the model used; - Impact on employee growth of treatment was positive significant; - No influence of the capability to raise capital; 	Own Survey Data
(Estrin et al., 2013)	Employment Growth in new companies (Expected %-change within 5 years)	Level of Corruption Size of State Intellectual Property Rights Quality of Property Rights Economic Characteristics (e.g. GDP, FDIs) Individual Characteristics (e.g. knows Angels Investors)	<ul style="list-style-type: none"> - Entrepreneurs with higher growth aspirations rely more on the formal sector (more influence from e.g. property rights or corruption); - Size of the state effects entrepreneurs negatively; 	GEM WHF
(Murdock, 2012)	Entry Rate of New Firms (ERNF)	General Business Regulations (Index) Location of Policies (Gov Exp to local gov) R&D Investments to higher education Presence of Venture Capital (Likert Scale) Economic Growth Population Growth	<ul style="list-style-type: none"> - The outcomes of policies are very hard to predict; - Business regulations negatively impact entrepreneurship; - The location of policymaking has no significant influence; - Educational spending has significant positive influence; 	Eurostat WEF
(Klapper and Love, 2012)	Entry Density of newly registered companies per 1000 working age adults	Number of steps, Time, Minimum capital necessary to register a business Reforms performed (dummy) GDP growth Registering Property Getting Credit Enforcing Contracts Resolving Insolvency	<ul style="list-style-type: none"> - The ease of starting a business is a highly significant factor for business entry; - Small reforms have generally no significant effect; - Economies with weaker business environment need big reform packages for a significant effect; 	World Bank
(Aidis et al., 2012)	Startup Activity (%) - Dummy Variables of Individuals Engaging in Nascent Entrepreneurship Country Level Startup Rate	Size of Government Freedom of Corruption GDP Secondary Education Higher Education Personal Data (Gender, Age, Network, Employment years...)	<ul style="list-style-type: none"> - Size of state has a negative influence on entry; - Freedom of corruption is significantly related to entry; - Only marginal Influence from market freedom; 	GEM World Bank

Study	Dependent Variable	Independent significant variables	Main Findings	Data
(Da Rin et al., 2011)	Newly incorporated companies by industry	Effective Average Tax Rate Pro-Business Policies (WHF Scale) Bureaucracy Corruption Government Stability Election Year Government Fragmentation	<ul style="list-style-type: none"> - Significant negative effect of corporate income taxation on entry rates; - Concave tax effects, therefore tax reduction effect entry only below a certain threshold; 	Amadeus
(Koellinger and Minniti, 2009)	Country level rates of nascent entrepreneurship split between opp vs. nec	Unemployment support index Unemployment as % of GDP Unemployment rate	<ul style="list-style-type: none"> - Higher unemployment benefits crowd out nascent entrepreneurial activity; - Results robust for opportunity vs. necessity or innovation vs. imitative driven 	GEM
(McMullen et al., 2008)	Country level rates of nascent entrepreneurship split between opportunity and necessity	10 individual factors of economic freedom and GDP	<ul style="list-style-type: none"> - GDP is negatively associated with opp and nec - protection of property rights is associated positively with opportunity motivated entry 	GEM WHF
(Cumming, 2007)	845 Australian entrepreneurial firms in venture capital and private equity funds evaluated by exit success and share price returns of IPOs	Individual Fund Size MSCI Investment Horizon Investment Year + Duration Industry market/book Syndication	<ul style="list-style-type: none"> - The governmental IIF is more successful than private VCs in staging syndication, which leads to higher value added of the investee; - The IIF has at least equal or better success compared to private VCs; 	AVCAL
(Lerner and Schoar, 2010)	Country level entry rates of incorporated firms	Entry costs (incorporation procedures) Employment rights Financial system development Quality of state governance	<ul style="list-style-type: none"> - Financial system matters for per capita entry rate, depending on estimation method; - Entry procedures matter for entry rates per capita, depending on estimation method; 	World Bank
(van Stel et al., 2007)	Country level rates of nascent entrepreneurship & young business Rate	Starting a business Hiring and firing workers Getting credit Paying taxes Closing a business	<ul style="list-style-type: none"> - Minimum capital requirements have negative effect; - Labor market rigidity has a negative effect; - Countries with more nascent entrepreneurs also have more young businesses; - GDP growth rates have a positive effect on opportunity entrepreneurship; - Private bureau coverage has a positive effect; 	GEM

Study	Dependent Variable	Independent significant variables	Main Findings	Data
(Demirguc-Kunt et al., 2006)	Individual level indicator variable related to incorporated form	Entry cost (incorporation procedures) Financial system development Tax disadvantage Legal origin Bankruptcy procedures Legal protection in solving disputes Share of unofficial economy Protection of shareholders' rights	<ul style="list-style-type: none"> - Companies incorporate rather when a country has: - Well-developed financial sector and legal system; - Efficient bankruptcy procedures - Low regulatory and tax burdens 	World Bank
(Klapper et al., 2006)	Market entry (new limited-liability firms), Average size of entrant, Growth	Industry Share Entry CostGDP Corruption R&D Intensity Tax Disadvantage	<ul style="list-style-type: none"> - Costly regulations hamper entry of new firms; - New entrants within such regulations need to be larger; - Incumbents in normally "high-entry" industries grow slower. 	Amadeus
(Wennekers et al., 2005)	Country level rates of nascent entrepreneurship	Entry costs (procedures) Per Capita Income Tax Revenue Internet per Capital Social Security Cost Innovation Index Business Ownership	<ul style="list-style-type: none"> - U-Shaped relationships between nascent entrepreneurship and per Capita Income, Innovation Capacity Index, Incumbent business ownership rate, tax revenues, community growth; - Higher social security expenditure has a negative effect; - Higher government tax revenues have a positive effect; 	GEM
(Djankov et al., 2002)	Corruption Bureaucracy	Number of Procedures for entry Time needed for entry Cost of entry GDP Corruption Effectiveness of legislature	<ul style="list-style-type: none"> - Countries with heavier regulation of entry have higher corruption and larger unofficial economies; - In most countries business entry is extremely expensive (measuring cost + time) 	World Bank, Own Survey Data
(Gentry and Hubbard, 2000)	Self-employment of the head of the household	Tax rate on employment Convexity in tax rate Earning Education Age, Gender, Minority Group, Marital Status	<ul style="list-style-type: none"> - Progressive tax schedules with imperfect loss offsets discourage entry (while proportional tax with full loss offsets do not); - Significant increase in entry when tax rates are less progressive 	PSID

Note: Sorted from newest to oldest (Source: Authors Creation)

Appendix 4: Definitions of Variables Used

Table 10 Variable definitions

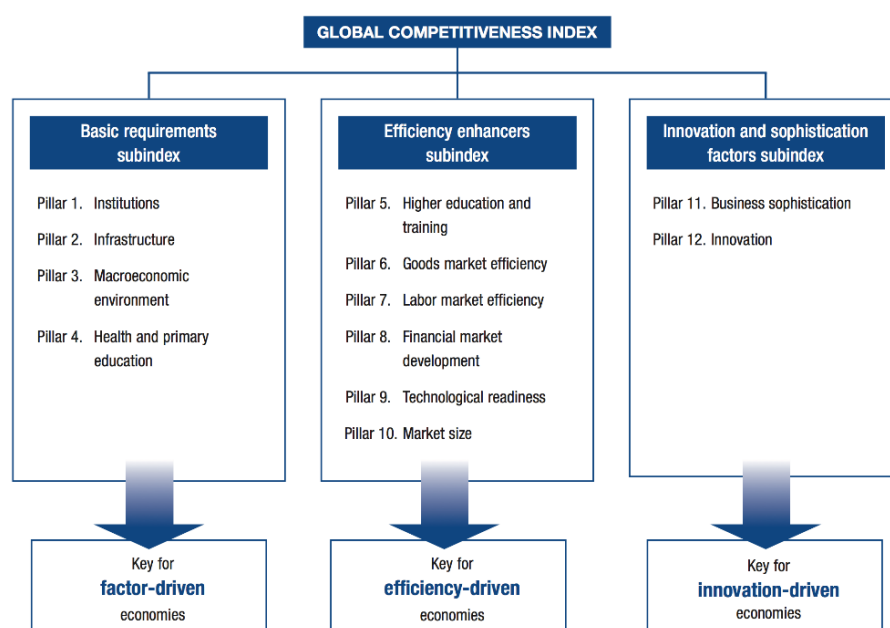
Name	Definition	Source
ID	A unique value for each row created through the connection of country and year and the elimination of spaces	Authors Creation
Country	Name of the country from the pool of 75 countries available in the dataset	
Year	Year within the range from 2006-2013	
Region	Region assigned to country according to the World Bank classification (December 2016)	World Bank
Income Group	Income Group assigned to country according to the World Bank classification (December 2016)	World Bank
Global Competitiveness	Global Competitiveness assigned to country according to the World Economic Forum. To be considered for the next highest category a country must fulfill the basic requirements of their present category, which increase in sophistication. For more information on the pillars of each category see graph below the table. For the precise calculation procedures see: Schwab, (2017).	World Economic Forum
Number of new limited liability companies	The study collected information on all limited liability corporations regardless of size. Partnerships and sole proprietorships are not considered in the collection process due to the differences with respect to their definition and regulation worldwide. Data on the number of total or closed firms are not included due to heterogeneity in how these entities are defined and measured.	World Bank
New Entry rate	The number of newly registered firms with limited liability per 1,000 working-age people (ages 15-64) per calendar year.	World Bank
Starting a Business - Time	Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary in practice to complete a procedure with minimum follow-up with government agencies and no extra payments. The shortest possible duration for a procedure is half a day (this applies only to online procedures).	World Bank
Starting a Business - Cost	Cost is recorded as a percentage of the economy's income per capita. It includes all official fees and fees for legal or professional services if such services are required by law or commonly used in practice. Fees for purchasing and legalizing company books are included if these transactions are required by law. Although value added tax registration can be counted as a separate procedure, value added tax is not part of the incorporation cost. Bribes are excluded from the analysis.	World Bank
Registering Property-DTF	The distance to frontier ⁹ score of registering property is created by averaging the scores in the following categories: Days to transfer property between two local companies, Cost to transfer property as percentage of property value, Steps to transfer property so it can be sold or used as collateral, Reliability, transparency and coverage of land administration system.	World Bank
Getting Credit-DTF	The distance to frontier score of registering property is created by averaging the scores in the following categories: Regulations on nonpossessory security interests in movable security, Scope, quality and accessibility of credit information through credit bureaus and registries.	World Bank
Resolving Insolvency-DTF	The distance to frontier score of registering property is created by averaging the scores in the following categories: Recovery Rate, Strength of insolvency framework index.	World Bank
Enforcing Contracts-DTF	The distance to frontier score of registering property is created by averaging the scores in the following categories: Days to resolve commercial sale dispute through the court, Attorney, court and enforcement cost as % of claim value, Use of good practices promoting quality and efficiency.	World Bank

⁹ About the DTF (Distance to Frontier) variables: The distance to frontier score helps assess the absolute level of regulatory performance over time. It measures the distance of each economy to the "frontier," which represents the best performance observed on each of the indicators across all economies in the Doing Business sample since 2005. One can both see the gap between a particular economy's performance and the best performance at any point in time and assess the absolute change in the economy's regulatory environment over time as measured by Doing Business. An economy's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the frontier.

Paying Taxes - Total tax rate (% of profit)	Total tax rate measures the amount of taxes and mandatory contributions payable by businesses after accounting for allowable deductions and exemptions as a share of commercial profits. Taxes withheld (such as personal income tax) or collected and remitted to tax authorities (such as value added taxes, sales taxes or goods and service taxes) are excluded.	World Bank
GDP (current US\$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates.	World Bank
GNI per capita, Atlas method (current US\$)	GNI per capita is the gross national income, converted to USD using the World Bank Atlas method, divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions.	World Bank
Government Integrity	From the HF Economic Freedom Index, government integrity is a measure of corruption. The score for this component is derived by averaging scores for the following six sub-factors, all of which are weighted equally: Public trust in politicians, Irregular payments and bribes, Transparency of government policymaking, Absence of corruption, Perceptions of corruption, Governmental and civil service transparency.	Heritage Foundation
Total early stage Entrepreneurial Activity	Representing the percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business.	Global Entrepreneurship Monitor
Opportunity Driven TEA	Opportunity-Driven Entrepreneurial Activity; Those involved in TEA who claim to be driven by opportunity as opposed to finding no other option for work.	Global Entrepreneurship Monitor
Necessity Driven TEA	Necessity-Driven Entrepreneurial Activity; Those involved in TEA who are involved in entrepreneurship because they had no other option for work.	Global Entrepreneurship Monitor

Note: Definitions of all variables in the dataset. Sources according to “Data Sources” in the Reference chapter

Graph 7 Criteria used for categorization of global competitiveness



Appendix 5: T-Tests

Test 1: Welch Two Sample t-test: entry density on no precondition

$t = 8.8715$, $df = 205.24$, $p\text{-value} = 3.567e-16$

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

2.726968 4.285394

mean of x mean of y

6.090976 2.584795

→The p-value is lower than 0.05 so we can reject the null hypothesis that the two entry density means of countries with and without pre-conditions are the same.

Test 2: Welch Two Sample t-test: entry density on high necessity

$t = 6.8104$, $df = 364.06$, $p\text{-value} = 4.034e-11$

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

1.646045 2.982545

mean of x mean of y

4.923319 2.609024

→The p-value is lower than 0.05 so we can reject the null hypothesis that the two entry density means of countries with and without high necessity entrepreneurship rates are the same.

Test 3: Analysis of Variance Table: Cost and High Necessity as additional variables

Model 1: Log Entry Density ~ Log Time + Log Time:High Necessity + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

Model 2: Log Entry Density ~ Log Time + Log Cost + Log Time:No Precondition + Log Cost:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	508	38.44				
2	506	36.11	2	2.8095	19.685	5.853e-09 ***

Test 4: Analysis of Variance Table: Time and High Necessity as additional variables

Model 1: Log Entry Density ~ Log Cost + Log Cost: High Necessity + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

Model 2: Log Entry Density ~ Log Time + Log Cost + Log Time:No Precondition + Log Cost:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	508	36.991				
2	506	36.110	2	0.2213	1.5505	0.2131

Test 5: Analysis of Variance Table: Cost and No Precondition as additional variables

Model 1: Log Entry Density ~ Log Time + Log Time:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

Model 2: Log Entry Density ~ Log Time + Log Cost + Log Time:No Precondition + Log Cost:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	508	38.44				
2	506	36.46	2	1.9796	13.737	1.551e-06 ***

Test 6: Analysis of Variance Table: Time and No Precondition as additional variables

Model 1: Log Entry Density ~ Log Cost + Log Cost:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

Model 2: Log Entry Density ~ Log Time + Log Cost + Log Time:No Precondition + Log Cost:No Precondition + Log Profit Tax + Log Registering Property + Log Getting Credit + Log Enforcing Contracts + Log Resolving Insolvency + Log GDP + Log GNI pc + Log Government Integrity + as.factor(Year) + as.factor(Country)

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	508	36.991				
2	506	36.460	2	0.53073	3.6828	0.02583 *

Test 7: Serial Correlation

Table 11 Serial correlation

<i>Dependent variable:</i>	
u	
lag(u, 1)	-0.075* (0.041)
Constant	0.0004 (0.010)
Observations	599
R ²	0.006
Adjusted R ²	0.004
F Statistic	3.349* (df = 1; 597)

Note: *p<0.1; **p<0.05; ***p<0.01
Serial correlation tested with the residuals (u) of Regression 6 in table 5

Appendix 6: Countries Included and Classification

Table 12 Countries in the sample

Country	Region	Global Competitiveness	No Pre-condition	High Necessity	Country	Region	Global Competitiveness	No Pre-condition	High Necessity
Albania	Europe & Central Asia	Efficiency-driven	1	1	Japan	East Asia & Pacific	Innovation-driven	1	0
Algeria	Middle East & North Africa	Factor-driven	1	1	Jordan	Middle East & North Africa	Efficiency-driven	1	1
Argentina	Latin America & Caribbean	Efficiency-driven	1	1	Kazakhstan	Europe & Central Asia	Factor-driven	1	1
Armenia	Europe & Central Asia	Factor-driven	0	1	Latvia	Europe & Central Asia	Efficiency-driven	0	1
Australia	East Asia & Pacific	Innovation-driven	0	0	Lesotho	Sub-Saharan Africa	Factor-driven	1	1
Austria	Europe & Central Asia	Innovation-driven	1	0	Lithuania	Europe & Central Asia	Efficiency-driven	1	1
Belarus	Europe & Central Asia	Efficiency-driven	1	1	Luxembourg	Europe & Central Asia	Innovation-driven	1	0
Belgium	Europe & Central Asia	Innovation-driven	1	0	Malaysia	East Asia & Pacific	Efficiency-driven	1	1
Belize	Latin America & Caribbean	Factor-driven	1	1	Mauritius	Sub-Saharan Africa	Factor-driven	1	1
Bolivia	Latin America & Caribbean	Factor-driven	1	1	Mexico	Latin America & Caribbean	Efficiency-driven	1	1
Botswana	Sub-Saharan Africa	Factor-driven	1	1	Mongolia	East Asia & Pacific	Factor-driven	0	1
Brazil	Latin America & Caribbean	Efficiency-driven	1	1	Morocco	Middle East & North Africa	Efficiency-driven	1	1
Bulgaria	Europe & Central Asia	Efficiency-driven	1	1	Namibia	Sub-Saharan Africa	Efficiency-driven	1	1
Canada	North America	Innovation-driven	0	0	New Zealand	East Asia & Pacific	Innovation-driven	0	0
Chile	Latin America & Caribbean	Efficiency-driven	1	1	Nigeria	Sub-Saharan Africa	Factor-driven	1	1
Colombia	Latin America & Caribbean	Efficiency-driven	1	1	Norway	Europe & Central Asia	Innovation-driven	0	0
Costa Rica	Latin America & Caribbean	Efficiency-driven	1	1	Pakistan	South Asia	Factor-driven	1	1
Croatia	Europe & Central Asia	Efficiency-driven	1	1	Panama	Latin America & Caribbean	Efficiency-driven	1	1
Czech Republic	Europe & Central Asia	Innovation-driven	1	0	Peru	Latin America & Caribbean	Efficiency-driven	1	1
Denmark	Europe & Central Asia	Innovation-driven	0	0	Philippines	East Asia & Pacific	Factor-driven	1	1
El Salvador	Latin America & Caribbean	Efficiency-driven	1	1	Portugal	Europe & Central Asia	Innovation-driven	1	0
Estonia	Europe & Central Asia	Innovation-driven	1	0	Qatar	Middle East & North Africa	Innovation-driven	0	0
Finland	Europe & Central Asia	Innovation-driven	0	0	Romania	Europe & Central Asia	Efficiency-driven	0	1
France	Europe & Central Asia	Innovation-driven	0	0	Serbia	Europe & Central Asia	Efficiency-driven	1	1
Georgia	Europe & Central Asia	Efficiency-driven	1	1	Singapore	East Asia & Pacific	Innovation-driven	0	0
Germany	Europe & Central Asia	Innovation-driven	1	0	Slovenia	Europe & Central Asia	Innovation-driven	1	0
Ghana	Sub-Saharan Africa	Factor-driven	1	1	South Africa	Sub-Saharan Africa	Efficiency-driven	1	1
Greece	Europe & Central Asia	Innovation-driven	1	0	Spain	Europe & Central Asia	Innovation-driven	1	0
Guatemala	Latin America & Caribbean	Efficiency-driven	1	1	Suriname	Latin America & Caribbean	Factor-driven	1	1
Hungary	Europe & Central Asia	Efficiency-driven	1	1	Sweden	Europe & Central Asia	Innovation-driven	0	0
Iceland	Europe & Central Asia	Innovation-driven	0	0	Switzerland	Europe & Central Asia	Innovation-driven	0	0
India	South Asia	Factor-driven	1	1	Thailand	East Asia & Pacific	Efficiency-driven	1	1
Indonesia	East Asia & Pacific	Efficiency-driven	1	1	Tunisia	Middle East & North Africa	Efficiency-driven	1	1
Ireland	Europe & Central Asia	Innovation-driven	0	0	Turkey	Europe & Central Asia	Efficiency-driven	1	1
Israel	Middle East & North Africa	Innovation-driven	0	0	United Arab-Emirates	Middle East & North Africa	Innovation-driven	1	0
Italy	Europe & Central Asia	Innovation-driven	1	0	United Kingdom	Europe & Central Asia	Innovation-driven	0	0
Jamaica	Latin America & Caribbean	Efficiency-driven	1	1	Uruguay	Latin America & Caribbean	Efficiency-driven	1	1
Zambia	Sub-Saharan Africa	Factor-driven	1	1					

Note: Table 12 shows a list of all countries included in the sample with their global competitiveness index and whether they don't have pre-conditions or high-necessity rates.

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