

The determinants of venture creation time: a cross-country perspective

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Abstract:

The purpose of this paper is to examine the impact of macro-institutional and macro-non-institutional factors on the new venture creation time across emerging as well as developed economies in Europe using panel data from 2003 to 2006 in 15 emerging and developed countries. This paper finds significant relationships between the venture start-up time and institutional factors that include lending interest rates, start-up procedures, and taxation and one non-institutional factor, GDP per capita. Additionally, we found differences in the factors between emerging and developed countries. Institutional factors, such as start-up procedures and trade opportunities, are important determinants of new venture creation time in emerging countries, consistent with the findings of recent studies. To encourage business formation, policy makers may need to revise policies concerning these factors which can facilitate or restrict new venture formation. Implications for further research and practice are discussed. An earlier version of this paper has been accepted and presented at the Kauffman International Research and Policy Roundtable 2012, Liverpool, United Kingdom.

Article:

Introduction

The importance of entrepreneurship and the successful launch and sustainability of new ventures for a dynamic market economy and its relation to economic growth have been well documented in previous research (Klapper et al. [2006](#); Martin et al. [2010](#)). There are variations in entry of new firms from country to country that impact entrepreneurial activities (Djankov et al. [2002](#)). For example, a Slovenian entrepreneur in 2006 spends 60 days to complete nine required business start-up procedures to form a firm. In France, the launch time before operating legally is at least 7 days and includes seven start-up procedures to be completed (World Bank Indicator, [2008](#)). Furthermore, venture creation time and the number of start-up procedures required to acquire the

necessary permits varies significantly over time. While the relationship between the time period before the start-up of a new business, which can be an indicator of the level of entry barriers, and a country's macro-economic policies, has been discussed in the literature extensively, there has been little, if any, research that has examined this phenomena. Over the last decade, Europe has witnessed significant changes, particularly concerning fiscal and monetary policies, especially with the latest debt crisis in Greece and other countries, including Spain, Italy, and Ireland (Gali and Perotti [2003](#); Schuknecht et al. [2010](#)). The focus of our study is to determine the time-varying macro-institutional factors (taxation, procedures to register a business, lending interest rates, inflation, and bank credit) and macro-non-institutional factors (unemployment levels, trade levels (import/export, GDP per capita, and education levels) that may facilitate entrepreneurship or create entry barriers for nascent entrepreneurs through extending the time period required to start up a new venture.

New venture start-up remains a challenge for entrepreneurs because it requires a substantial amount of personal perseverance and commitment (Busenitz and Lau [1996](#); Gatewood et al. [1995](#); Markman et al. [2002](#)). The degree of challenge is further elevated in unfriendly institutional environments, which particularly exhibit a relatively longer time period to start up a new business (Bowen and Dirk [2008](#)). Indeed, an excessively long time lag between the initiation of venture preparation and actual start-up can be discouraging for some prospective entrepreneurs by keeping them from starting up or leading some to operate in informal (i.e., unregistered) sectors. The informal economy has become such a major factor in worldwide economic growth that it was the theme of the 2012 Academy of Management Conference, an organization with 18,000 scholars worldwide.

This paper comprehensively investigates the factors that can hinder the formation of new businesses in European economies through extending the waiting time to start up a business. Minimizing the barriers to entry can encourage entrepreneurs to enter into the markets and a higher number of entrants can enhance the standard of living through economic growth (Djankov et al. [2002](#)). Accordingly, entrepreneurship researchers suggest that certain economic, political, and institutional settings, which are objective and community-specific, can be more conducive to entrepreneurship (Minniti and Bygrave [1999](#); Minniti [2004](#)). In addition, entrepreneurship is a self-reinforcing phenomenon since entrepreneurial endeavors also depend on the existing level of entrepreneurial activity (Minniti and Bygrave [1999](#)). Accordingly, entrepreneurship can lead to more entrepreneurship (Bygrave and Minniti [2000](#)). Therefore, it is important for policy makers to create munificent environments for prospective entrepreneurs.

Previous studies (e.g., Walker and Brown [2004](#)) mostly highlighted the importance of financial criteria to start up new businesses, but only a handful of studies (De Soto [1990](#); Klapper et al. [2006](#); Klapper et al. [2008](#)) raised concerns about how various regulations can affect firm formation. We still do not know enough about the impact of regulations on new venture formation.

We provide a more comprehensive look at these phenomena by examining cross-country data to fill the gaps in the extant economic as well as entrepreneurship literature. Specifically, we examine the impact of macro-institutional and macro-non-institutional factors on new venture

creation time across 15 emerging as well as developed economies in Europe. We use cross-country panel data from the World Bank (2008) data set from 2003–2006. This data set was recently published to address the important question of whether institutional, non-institutional, or both factors affect firm birth rates. Recently, there has been a call for entrepreneurship studies drawing upon institutional theory and investigating multiple countries by Bruton et al. (2010). The authors point out that, to date, studies mostly focus on individual countries or examine a few countries in the entrepreneurship field. In order to enhance the generalizability of the findings, we extend this line of research to include 15 countries longitudinally from 2003 to 2006.

This paper finds significant relationships between the venture start-up time and institutional factors such as lending interest rates, start-up procedures, and taxation as well as GDP per capita as a non-institutional factor. The results of this study can inform scholars, policy makers, and practitioners about how a country's institutional or non-institutional factors may block firm formation by extending waiting time to start up a new business which consequently may retard economic growth. Therefore, our study can guide policy makers to provide better new venture friendly institutional mechanisms that can facilitate business formation through diminishing the number of days required to start up a new business thereby encouraging new venture start-up. This study is particularly useful for the 15 countries included in the study to examine the effect of their policies and make needed changes. Indeed, the examination of institutional and environmental factors can be particularly useful for public policy making decisions since they can be more sensitive to policy reforms, whereas individual-level factors may require more time to be influenced by public policy (Acs et al. 2008).

Our paper will proceed as follows. We will provide an introduction and theoretical overview. Next, we present the methodology and results. We also provide a discussion, future research directions, and implications for public policy.

Theoretical overview

Gebremariam et al. (2006) suggest that a country needs to have sound policies which encourage new venture creation. This, in return, can strengthen and diversify the local economy. Policies and economic environments may be substantially different across countries (Reynolds 1994; Fritsch 1994; Johnson and Parker 1996). This may consequently lead to variations in start-up time for new businesses. Hence, one important task to facilitate the formation of new ventures is to make changes to existing policies which can mitigate the time lag entrepreneurs must bear before launching their businesses. However, there is ambiguity surrounding which policies may need to be changed. A starting point would be to identify the factors that are potential barriers for the venture start-ups in the local economies by extending the waiting time in launching a business. Accordingly, an entrepreneur in a country with fewer obstacles is expected to take less time to launch a new venture in comparison to an entrepreneur in a country with more obstacles.

According to the theory of entry regulation (De Soto 1990), the start-up time is the required time to create a business after successfully following through with the legal requirements. Instead of examining only the legal requirements, we are also focusing on the institutional and non-

institutional requirements, because these mandatory processes and procedures can extend the waiting period to launch new businesses.

Several institutional and non-institutional factors determine business success (Walker and Brown [2004](#)), as well as business formation. Institutional criteria are often considered to be the most important criteria to start new ventures (Bruton et al. [2010](#); Nyström [2008a](#)). Institutional theory is concerned with regulative (i.e., legislative issues-laws, regulations, and their enforcement, as well as industrial standards), normative (i.e., social and professional), and cognitive (i.e., subjectively constructed rules and meanings shaping beliefs and actions) forces (Scott [2007](#)). The focus of our study is on the regulative component concerned with the sanctions and conformity requirements for venture start-ups, which can influence new venture creation time (Bruton et al. [2010](#)). Moreover, the impact of these factors together on firm creation time has been under researched. Therefore, a growing interest in the literature is regarding the effects of non-institutional factors on firm birth rates. Furthermore, comparing institutional and non-institutional factors at the time of inception has not been investigated to date. We define macro-level institutional factors for the purpose of this study as laws, regulations, the enforcement of laws and regulations, and industrial standards that must be complied with before launch. In our study the factors include: lending interest rates, start-up procedures, domestic credit provided by the banking sector, and taxes on income, profits and capital gains. Macro-level non-institutional factors for the purpose of this study are the cumulative effect of the institutional factors on business launch that can have a negative overall effect, such as GDP per capita, unemployment rates, overall education levels of the population that effect the start-up business that they have no control over. In our study the factors include: rigidity of employment index, trade (percentage of GDP), labor force with tertiary education (percentage of total population), gross domestic product per capita (constant 2,000 USD), fixed line and mobile phone subscribers (per 1,000 people). In summary, it is essential to employ institutional and non-institutional factors to comprehensively understand the determinants of firm creation time.

Hypotheses

Commons ([1931](#)) defines institution as a form of collective behavior that achieves the control, liberation and expansion of individual action. Institutional factors are not clearly identified and defined in the literature. Several studies (e.g. Bruton et al. [2010](#); Nyström [2008a](#); De Soto [1990](#); Scott [2007](#); Highfield and Smiley [1987](#)) draw attention to the importance of institutional factors in venture creation and examine factors such as legal procedures, fiscal policies-taxes, monetary policies-interest rates, and inflation. Only few studies examine some of the non-institutional factors (e.g. political, social, cultural, technological, natural, and personal factors) to explain entrepreneurship (e.g. Alam et al. [2011](#); Minniti and Bygrave [1999](#); Uhlaner and Thurik [2007](#)). For example, Minniti and Bygrave ([1999](#)) propose a model of entrepreneurs' decision processes concerning acting on perceived opportunities. The impact of institutional and non-institutional factors on entrepreneurship phenomenon has not been investigated comprehensively, giving us an opportunity to do so.

Institutional factors

Lending interest rates

New businesses often obtain start-up financing through credit. Based on the money demand theory, investors borrow less when the interest rate is high (Ilmakunnas and Topi [1999](#)), which can limit the investments into new businesses. Therefore, lending interest rates can be an important factor affecting venture creation time. The level of lending interest rates tend to be influenced by the business client-banker relationships, bank size, and competitive banks' choice of keeping interest rates low and randomly selecting which applicants get loans (Berger et al. [2001](#); De Meza and Webb [2000](#)). Judicial efficiency in a country can also facilitate lending through forcing solvent borrowers to repay when they fail to do so (Jappelli et al. [2005](#)). As a result, interest rates tend to vary from market to market (Berger, et al. [2001](#)).

When lending interest rates are high, they form restrictive borrowing constraints for prospective entrepreneurs, leading them to search for and evaluate cost-effective borrowing opportunities. Therefore, higher lending interest rates are expected to expand the time required to launch a business in a local economy.

Hypothesis 1a. *Lending interest rates are positively associated with new venture creation time.*

Domestic credit provided by the banking sector

Aside from the interest rates, studies suggest that the availability of capital and incentives in the markets can be critical institutional factors influencing entrepreneurship (Foster [1986](#); Kaplan et al. [2006](#); Kashyap and Jeremy [1994](#)). Indeed, external finance tends to be predominantly in the form of bank loans (de Meza and Southey [1996](#)). When nascent entrepreneurs have limitations in their access to credit, the time period to start up their businesses is expected to be extended because of searching and applying for credit. In contrast, when credit is available and easier to obtain, this is expected to speed up the venture start-up process.

Hypothesis 1b. *Domestic credit provided by the banking sector is negatively associated with new venture creation time.*

Taxation

Another institutional factor influencing venture creation time is expected to be taxation. On the one hand, a stream of research suggests that lower taxation determines firm birth in the economy, generating employment opportunities, and fostering investments and economic growth (Brunetti et al. [1997](#); Da Rin et al. [2011](#); Keusschnigg and Nielsen [2002](#); *a*; *b*; Kitao [2008](#); Meh [2005](#); Reynolds et al. [2000](#)). According to the traditional market failure arguments, uniform tax application to firms of all sizes may result in a high tax burden on small and new businesses resulting in market failures. However, according to the taxation proponents, taxation regulates the economy and increases the overall social welfare. In addition, while some researchers acknowledge the impact of taxation on entrepreneurship, they also suggest the effects are not large enough to alter tax policies in favor of entrepreneurs (e.g., Holtz-Eakin [2000](#)). Therefore,

the net effects of taxation on new venture creation are not clear theoretically or empirically (Chen et al. [2002](#); Kitao [2008](#)).

We expect that higher taxation will be associated with longer venture creation time, lowering incentives for entrepreneurial effort through diminished expected capital gains and success.

Therefore, entrepreneurs with taxation concerns are expected to take a longer time to prepare and plan for venture start-up.

Hypothesis 1c. *Taxation on income, profits, and capital gains will be positively associated with new venture creation time.*

Procedures to register a business

As Nyström ([2008b](#)) suggests, availability, flexibility and usability of institutions can vary at the local, regional or national levels and can influence existing or new firms directly or indirectly. In particular, regulations for entry of a new firm include a number of procedures, official time, and official cost (Djankov et al. [2002](#)). Both Pigou's ([1938](#)) Public Interest Theory and Stigler's ([1971](#)) Public Choice Theory explain how government involvement can change market outcomes. Public Interest Theory predicts that to achieve better outcomes, government needs to tighten the entry requirements through implementing and enforcing several bureaucratic procedures. In contrast, Public Choice Theory explains how government can decrease social welfare by creating entry barriers and reducing competition in the market. Accordingly, governments need to remove entry barriers by reducing unnecessary procedures (Bruton et al. [2010](#)).

According to Bruton et al. ([2010](#)), entrepreneurs may be discouraged from starting new ventures in the following extreme cases: when there is no formal institutional structure which may imply lack of stability and security; and when there are an excessive number of rules and regulations and required documentation and reporting delaying the venture start-up. Studies generally suggest a negative relationship between the time devoted to start-up procedures and entrepreneurship (Djankov [2009](#); Djankov et al. [2002](#); Dreher and Gassebner [2007](#); Kaplan et al. [2006](#); Klapper et al. [2009](#)). A recent study by Bruhn ([2011](#)) also shows that a decrease in the number of registration procedures elevated the number of registered businesses in Mexico. Hence, higher number of start-up procedures is expected to increase new venture creation time since each procedure requires time and entrepreneurs' continuing effort.

Hypothesis 1d. *Start-up procedures to register a business will be positively associated with new venture creation time.*

Inflation

Inflation is another non-institutional factor which may influence venture start-up time. Research generally associates lower inflation rates with an increased rate of new ventures (e.g. Highfield and Smiley [1987](#); Brunetti et al. [1997](#)). Indeed, a high inflation rate can interfere with the ability of the financial sector to allocate resources effectively to prospective entrepreneurs (Boyd et al. [2001](#); Rousseau and Wachtel [2002](#); Smith and Van Egteren [2005](#)). Financial intermediation tends to become difficult since the flow of information concerning investment projects and

returns becomes more uncertain and less readily available. Both the entrepreneurs and financiers may be more analytical when faced with an entrepreneurial opportunity owing to the uncertainties concerning future prices, interest rates, and exchange rates deriving from higher levels of inflation (Rousseau and Wachtel [2002](#)), which may result in extended start up time.

Hypothesis 1e. *Inflation will be positively associated with new venture creation time.*

Non-institutional factors

Aside from the institutional factors, it is important to identify the non-institutional factors representing the state of the economy, such as trade, rigidity of employment index, GDP per capita, and education level of workforce, that may affect venture creation time.

Trade

Studies suggest a positive relationship between import and/or export trading and economic growth through an increase in per-capita income, which can facilitate firm entry; (Cieřlik et al. [2010](#), [2012](#); Freund and Bolaky [2008](#); Hausmann et al. [2007](#); Holmes and Schmitz [2001](#)). We expect that increased income through trade can diminish the need to obtain financing and consequently speed up the venture start-up process. Potential earnings facilitated by trade can also encourage nascent entrepreneurs to start up their ventures sooner. Moreover, trade can elevate demand through increased purchasing power, necessitating more supplies through new businesses. Therefore, trade is expected to be negatively associated with new venture creation time.

Hypothesis 2a. *Trade will be negatively associated with new venture creation time.*

Rigidity of employment index

Rigid employment regulations can constitute barriers for entrepreneurship (Brunetti et al. [1997](#); Djankov and Ramalho [2009](#); Henreksen et al. [2010](#); Kanninen and Vesala [2005](#); Robson [2003](#); Nyström [2008b](#)). Studies draw attention to differences in labor protection laws around the world as well (e.g., Djankov and Ramalho [2009](#)). However, we do not know enough about the impact of rigidity of labor laws on entrepreneurship. We expect that strict labor protection may prolong the time to launch a business by restricting entrepreneurs' ability to hire or result in hiring delays.

Additionally, employed nascent entrepreneurs who may be content with labor protection rights also may not have enough incentives to start up their own businesses owing to the higher opportunity cost of being self-employed and greater risk. Within the framework of entrepreneurship literature, a potential entrepreneur is expected to compare the opportunity cost of being self-employed with the expected entrepreneurial benefits when he/she identifies an entrepreneurial opportunity (Johnson [1986](#); Morales-Gualdrón and Roig [2005](#); Shane and Venkataraman [2000](#); Venkataraman [1997](#)). The entrepreneur chooses to exploit entrepreneurial opportunities only if he/she perceives that the entrepreneurial benefit will exceed the opportunity cost of entrepreneurial activity (Amit et al. [1995](#); Gifford [1992](#); Hamilton [1989](#); Hamilton and

Harper [1994](#); Reynolds et al. [1995](#); Reynolds et al. [1994](#); Shane [2003](#)). When a potential entrepreneur has no existing job, hence no labor protection to lose, then the opportunity cost of entrepreneurship is relatively low. This can increase the likelihood of engaging in entrepreneurship (Storey [1991](#)). Within the context of rigid labor laws protecting employees, the employed prospective entrepreneur is expected to be more analytical or even skeptical about starting a business. These are expected to extend the time to start up their businesses.

Hypothesis 2b. *Rigidity of labor laws will be positively associated with new venture creation time.*

GDP per capita

Entries of new firms tend to increase during periods of economic growth (i.e., “pull” hypothesis) and decrease during a recession (i.e., “push” hypothesis) (Ilmakunnas and Topi [1999](#)). The growth of gross domestic product (GDP) is usually significant during economic expansion, which encourages new firms to enter into the market and also reduces the number of existing firms exiting the market (Klapper et al. [2009](#)). In contrast, Ilmakunnas and Topi ([1999](#)) argue that during an economic downturn self-employment through opening a new business can be an appealing option. Moreover, creating a new business may be less complicated because hiring labor, renting capital (buildings), and getting loans may become easier. However, there is not enough evidence to support these hypotheses consistently, which gives us an opportunity to revisit this relationship in this paper. Since an entrepreneur’s higher levels of wealth through increased GDP per capita can mitigate the entrepreneur’s lending or borrowing and consequently minimize the search for funds, we expect a negative association between GDP per capita and new venture creation time.

Hypothesis 2c. *GDP per capita will be negatively associated with new venture creation time.*

Education

Studies within the framework of the theory of endogenous growth suggest a significant link between human capital and economic growth (e.g., Boucekkine et al. [2002](#); Castello and Domenech [2002](#)). Scholars are divided in regards to the direction of the relationship between education level of the labor force and entrepreneurship. On the one hand, a stream of research suggests a positive relationship between education and entrepreneurship since education can promote productivity and creativity (Carter and Collinson [1999](#); Davidsson and Honig [2003](#); Dulleck et al. [2006](#); Ozturk [2001](#); Reynolds et al. [2000](#)). Consistent with the economics scholars’ view, entrepreneurship scholars Minniti and Bygrave ([1999](#)) argue that subjective initial endowment of the entrepreneur is equally important as institutional and economic circumstances in an economy for entrepreneurship to occur. Knowledge is a personal human capital endowment (Alvarez and Barney [2004](#); Chang et al. [2009](#); Nonaka [1994](#)). Mojica et al. ([2009](#)) argue that entrepreneurship is one channel by which knowledge transfers into growth. Gaygisiz and Köksal ([2003](#)) show how an individual’s education level relates to firm formation. Indeed, entrepreneurs obtain knowledge through education as well as work experiences and entrepreneurial activities

existing within their communities (Chang et al. [2009](#); Minniti and Bygrave [1999](#); Shane and Venkataraman [2000](#)). Link and Welsh ([2012](#)) looked at the MIT top 40 young investors starting businesses based on their creative achievements and found no empirical support for age, education and gender to start a new business. Rather, they found entrepreneurial experience as a major influence on them launching a new business. Obviously, the education levels of those named in the MIT top 40 would probably be near the top of the education level worldwide and would be different for most developed or emerging countries' average entrepreneur. Additionally, a workforce lacking education can result in scarcity of skilled workers, preventing or delaying a venture start-up (Begley et al. [2005](#)).

On the other hand, some of the researchers suggest a negative link between education and entrepreneurship since individuals with higher education can perceive higher social status when employed by others (Evans [1989](#); Uhlaner and Thurik [2007](#)). In addition to these polar views, a recent study by Poschke ([2008](#)) shows a U-shaped relationship between education and entrepreneurship, where lower and higher levels of education can lead to entrepreneurship. Since we expect that education can lower the time to search for knowledge and information in regards to business start-up, we expect a negative relationship between education and venture creation time.

Hypothesis 2d. *Education will be negatively associated with new venture creation time.*

In the following sections, we present the methods and the results of our analyses. Then, we conclude with a discussion of results and implications for future research and policy.

Methodology

Data

Research in international businesses has been challenging owing to the data that are not readily available. In our study, data are collected from the World Bank Indicators ([2008](#)), which is one of the largest data sources for the international studies. We analyzed 15 emerging as well as developed European countries from 2003 to 2006 after dropping observations with missing values. The developing economies include Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovenia. The developed countries include Belgium, France, Ireland, Italy, Netherlands, Sweden, and United Kingdom. This sample is representative of the population of European economies since it includes both emerging and developed economies. There is no intention to use neither these countries nor the specified time periods. Therefore, employed countries and time periods or even variables are what we received in complete form from the WBI 2008.

Variables

Dependent variable

We have used the *new venture creation time* as the dependent variable in our empirical model. This variable measures the time that is required for an entrepreneur to start up a business. On average, it takes about 28 days to form a new business, but the range varies from 7 days to 72 days.

Independent variables

We included several institutional and non-institutional determinants to understand the firm formation in a country. The institutional factors include lending interest rates, start-up procedures, domestic credit provided by the banking sector, and taxes on income, profits and capital gains.

In general, private or commercial banks provide loans to prime customers and the interest rate they charge on loans is called *lending interest rates*. The average lending interest rate is 6.06 % and ranges from 2.56 to 12.82 %. The following institutional variable is the *start-up procedures to register a business*. This variable shows how many legal steps, such as getting necessary permits or licenses, completing all inscriptions and verifications, and notifications that are required to start a business. As expected, this varies from country to country and ranges anywhere from 3 to 11 steps that are required, with a mean of 7 steps in this sample. The third institutional variable is *domestic credit provided by the banking sector* which means that the banking sector (i.e., monetary authorities and deposit money banks, savings and mortgage loan institutions) provide credit to various sectors on a gross basis. This variable is collected as a percentage of GDP and the domestic banking sector provides 89 % of loans to the borrowers. The last employed institutional variable is *taxes on income, profits, and capital gains*. This variable is measured as the total amount of taxes payable by businesses as a percentage of total revenue and collected as a percentage of GDP. The mean percentage of taxes is almost 22 %, and the range varies from 5 to 38 % on average. The last macro-institutional independent variable is *inflation* (annual percentage). It is measured by the consumer price index which reflects consumer buying power over a fixed period of time for a specific or fixed basket of goods and services. Inflation is frequently used to manage cash flow in the economy. For example, this includes pensions, Medicare, and adjustments to insurance policies, among other adjustments. As a result, most investors will find that inflation affects them personally in different ways, and hence, business formation and investment are highly correlated. Thus, volatile inflation rates can influence the time to form a business. The mean inflation in the dataset is 2.83 %.

The non-institutional independent variables include rigidity of employment index, trade (percentage of GDP), labor force with tertiary education (percentage of total population), gross domestic product per capita (constant 2,000 USD), fixed line and mobile phone subscribers (per 1,000 people). World Bank developed an index to measure *rigidity of employment*. This index measures the regulation of employment in terms of hiring and firing of workers and the rigidity of working hours and it ranges from 0 to 100, with 0 being least rigid regulations and 100 being most rigid regulations. In our data set, it varies from 13 to 62 with the mean of 42, which indicates there are some countries where it is very hard to get employed and at the same time it is very easy to get fired. *Labor force with a tertiary education* (percentage of total labor force) variable is included to represent the skill and education level of the labor force in each country. It is measured as the percentage of the country's labor force population that has at least a tertiary education (i.e., all post-secondary education including but not limited to universities). Using this variable instead of total population is more reasonable because in natural circumstances, the

labor force population (15 to 64 years) is usually the group of individuals who are interested in forming new businesses. Therefore, education of this group matters in terms of business formation, as higher education level fosters entrepreneurial growth. On average, 25 % people in the labor force have a tertiary education, but in some countries only 12 % of the labor force is tertiary educated, while in other countries almost 41 % of the labor force is tertiary educated. We also investigated *gross domestic product per capita* (constant 2,000 USD), which indicates a country's economic well-being. Each country tends to differ substantially in terms of their economic status. This variable is measured as gross domestic product divided by the midyear population. This variable provides information about economic performance over time. However, the well-being of the population also depends on other factors. For example, these include leisure time, environmental quality, crime rate, or health. Nevertheless, these variables are not readily available to the public. The mean gross domestic product per capita is 16,563 dollars per person and it ranges from 1,839 dollars to 31,178 dollars per person. Hence, there is a high level of variation among the employed countries in terms of their well-being (GDP per capita).

Another non-institutional variable we examined is *trade*. The World Bank defines this variable as the net value of imports and exports of goods and services of a country from the rest of the world as a percentage of GDP. The mean trade for this sample is 112.44 %.

Control variables

Phone subscribers

Fixed line and mobile phone subscribers (per 1,000 people) is used to identify the country's infrastructure. This variable is measured as the total number of fixed and mobile phone line subscribers. This indicator of infrastructure allows evaluation of how solid the technological base for a country is and how it influences business operations. Since the infrastructure of a country indicates an entrepreneurship friendly environment (Abetti [2004](#); Begley et al. [2005](#); Brunetti et al. [1997](#)), which can influence venture creation time, we control for this variable. On average, around 133 people subscribe to either a fixed or mobile telephone line.

Female participation in the labor force

The female labor force participation is an indicator of a country's progressiveness. It is measured as the percentage of females in the labor force. In recent times, women have increasingly participated in the labor force, which has been driving employment trends and minimizing the gender gap in the workplace. Moreover, research suggests that women's labor force participation rates is positively associated with business formation, hence economic growth (Delmar and Davidsson [2000](#); Minniti and Arenius [2003](#); Reynolds et al. [2000](#); Verheul and Thurik [2001](#); Verheul et al. [2006](#)). Since female participation in the workforce indicates the availability of workforce and can influence venture start-up time, we control for this variable. The women's participation rate is 45 % in this dataset.

Proportion of population ages 15–64

This variable is measured using the population ages from 15 to 64 as a percentage of the total population, which indicates the availability of the workforce and hence can influence venture creation time (Reynolds et al. [2000](#)). On average, 67 % of the laborers fall between 15 and 64 years of age, but the range varies from 65 % to 71 %.

More information about these variables and the World Bank Indicators (2008) dataset is available at <http://data.worldbank.org/topic/labor-and-social-protection>.

Methodology

The econometric model is specified after performing several tests. The Breusch-Pagan test is performed to confirm the right estimation technique and then the Hausman test is employed to choose the correct model between random effects and fixed effects. A panel fixed effects estimation procedure is followed to investigate the hypotheses in this paper. The time required to open a business in a country is employed as the dependent variable and the explanatory variables include lending interest rates, start-up procedures, rigidity in the employment index (i.e., regulation of employment), domestic credit provided by the banking sector, trade, taxes, inflation, labor force with tertiary education, GDP per capita, female laborers, and average population age.

Results

Tables 1, 2 and 3 presents the regression results with the required times to form a business as the dependent variable. One of the purposes of this paper is to make a comparison between the institutional and non-institutional factors to form businesses or entry rates. First, we will discuss the macro-institutional factors and then the discussion of macro-non-institutional factors in the following section.

Table 1 Descriptive statistics: the determinants of venture start-up time

Variable/Statistics	Time required to start a business (days)	Lending interest rate (%)	Start-up procedures to register a business (number)	Rigidity of employment index (0 = less rigid, 100 = more rigid)	Domestic credit provided by banking sector (% of gdp)	Trade (% of GDP)	Taxes on income, profits, and capital gains (% of revenue)	Inflation (Annual %)	Labor force with tertiary education (% of total population)	GDP per capita (constant 2000 US\$)	Fixed line and mobile phone subscribers (per 1000 people)	Labor force, female (% of total labor force)	Population ages 15–64 (% of total)
Mean	28.27	6.06	7.01	42.06	89.31	112.44	21.85	2.82	24.87	16,563.37	133.02	45.15	67.86
Standard Deviation	2.32	2.09	2.32	13.82	46.57	38.67	9.82	1.75	7.63	10,523.90	22.81	2.49	1.82
Minimum	3	2.56	3	13	23.24	48.55	5.14	-1.18	12.5	1,839.76	77.74	38.45	65
Maximum	72	12.82	11	62	186.68	172.77	38.56	7.26	41.79	31,178.09	170.53	49.09	71
Count	60	60	60	60	60	60	60	60	60	60	60	60	60
Mean	36.6	7.14	8.03	45.94	51.80	123.9	15.9	3.45	21.68	8849.0	120.9	21.6	69.24

Variable/Statistics	Time required to start a business (days)	Lending interest rate (%)	Start-up procedures to register a business (number)	Rigidity of employment index (0 = less rigid, 100 = more rigid)	Domestic credit provided by banking sector (% of gdp)	Trade (% of GDP)	Taxes on income, profits, and capital gains (% of revenue)	Inflation (Annual %)	Labor force with tertiary education (% of total population)	GDP per capita (constant 2000 US\$)	Fixed line and mobile phone subscribers (per 1000 people)	Labor force, female (% of total labor force)	Population ages 15-64 (% of total)
	6 (18.86)	(4.84)	(5.86)	(37.64)	(132.20)	8 (99.26)	0 (28.66)	(2.11)	(28.52)	0 (25379.79)	6 (146.80)	8 (28.52)	(66.29)
Standard Deviation	14.57 (11.26)	1.86 (1.64)	2.07 (2.07)	12.22 (14.44)	15.54 (29.81)	25.77 (46.56)	3.79 (10.22)	2.10 (0.82)	5.44 (8.22)	8284.13 (3475.72)	22.74 (13.17)	5.44 (8.22)	1.12 (1.05)
Minimum	16.00 (7.00)	4.93 (2.57)	5.00 (3.00)	20.00 (13.00)	23.24 (102.54)	69.27 (48.56)	10.72 (5.14)	-1.18 (0.37)	13.20 (12.50)	1839.76 (19379.54)	77.74 (125.70)	13.20 (12.50)	67.14 (65.01)
Maximum	72.00 (56.00)	12.82 (7.49)	11.00 (9.00)	88.96 (56.00)	88.96 (186.68)	169.35 (172.77)	23.74 (38.57)	7.26 (3.94)	33.50 (41.80)	30736.06 (31178.10)	163.94 (125.90)	33.50 (41.80)	71.20 (68.16)
Count	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)	32 (28)

Table 2 Correlation statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. LR	1.00													
2. START-UP	0.38	1.00												
3. TIMEBUSI	0.57	0.30	1.00											
4. EMPLYINDEX	0.20	0.15	0.09	1.00										
5. DCREDITBANK	-0.64	-0.53	-0.54	-0.33	1.00									
6. PERTTRADE	0.05	-0.19	0.46	-0.07	-0.16									
7. PERTLFFEML	0.13	-0.11	0.18	0.32	-0.42	1.00								
8. PERTURBAN	-0.26	-0.40	-0.36	-0.50	0.48	-0.10	1.00							
9. PERTTAXES	-0.38	-0.18	-0.27	-0.53	0.61	-0.65	0.35	0.52	1.00					

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
10. INFLATION	0.48	0.01	0.19	0.19	-0.21	0.12	-0.27	-0.47	-0.18	1.00				
11. LABORTEEDU	-0.45	-0.65	-0.14	-0.24	0.50	0.10	0.34	0.20	0.40	-0.07	1.00			
12. POPUAGE	0.33	0.54	0.49	0.08	-0.60	0.18	-0.69	-0.57	-0.42	0.33	-0.46	1.00		
13. GDPPCAPITA	-0.53	-0.69	-0.60	-0.12	0.79	-0.27	0.45	0.63	0.41	-0.12	0.43	-0.63	1.00	
14. TELEPHONE	-0.47	-0.37	-0.28	-0.27	0.62	-0.29	0.33	0.59	0.40	-0.12	0.27	-0.40	0.41	1.00

Table 3 Results: the determinants of venture start-up time

Dependent variable		Control	Pooled model	Developing countries	Developed countries
Time required to start a business					
Explanatory variables					
Constant		-126.59 (132.17)	-604.72 (659.14)	-788.71 (1009.62)	-1101.62 (1394.76)
Fixed line and mobile phone subscribers		-0.17** (0.07)	-0.08 (0.16)	-0.44 (0.30)	-0.06 (0.33)
Female participation in the labor force		-1.23 (1.37)	-3.92 (3.64)	1.59 (6.39)	4.55 (11.28)
Proportion of population ages 15–64 years			12.78 (9.37)	10.87 (13.20)	13.77 (20.22)
Lending interest rate			3.04* (1.59)	-0.44 (2.51)	3.77 (2.79)
Start-up procedures to register a business			6.42*** (1.99)	11.47*** (2.67)	-0.34 (5.90)
Rigidity of employment index			0.33 (0.49)	1.19 (0.80)	0.56 (0.99)
Domestic credit provided by banking sector			0.33 (0.22)	-0.12 (0.36)	0.49 (0.72)
Trade		3.43* (1.88)	0.15 (0.19)	1.04** (0.45)	-0.14 (0.37)
Taxes on income, profits, and capital gains			2.01** (0.86)	-1.68 (1.84)	2.72 (1.60)
Inflation			-0.93 (1.29)	1.82 (2.60)	-1.25 (2.06)
Labor force with tertiary education			-1.18 (1.16)	-0.15 (2.47)	-0.41 (1.82)
GDP per capita			-0.01** (0.00)	-0.00 (0.01)	-0.01 (0.01)
Log-likelihood		-244.57	-173.43	-65.48	-92.94
N		60	60	28	32

Please note standard errors are in the parenthesis. Asterisks (*, **, ***) denote significance at the 10, 5 and 1 % level, respectively

In the first model, we ran the analyses with control variables. Fixed line and mobile phone subscription and proportion of population ages 15–64 are significant. Log likelihood function is –244.57. In the second pooled model, we ran the analyses with controls and independent variables. The log likelihood function has improved from –244.57 to –173.43 in the pooled model. The first significant variable in this model is lending interest rates. This variable is significant at the 5 % level and relates positively to the dependent variable. That is, if the lending interest rate is higher, then the required time to form a business automatically increases, while keeping all other variables in the model constant. Thus, when there is a higher lending interest rate, entrepreneurs will tend to borrow less. Owing to the lack of interest in investment in new or ongoing ventures, it will take more time to form a firm.

The new firm entry rates also depend upon the start-up procedures to register a business. This relationship is positive and significant at the 1 % level, which means that entry barriers significantly increase the start-up time to form a business. The start-up procedure has a clear positive connection to the firm creation time. Hence, while keeping other variables at constant, increasing the number of steps to open a business will increase the required time.

The last significant relationship involves the tax rate macro-institutional variable. This variable enters positively into the equation, which means that increasing tax rates diminishes the interest of the entrepreneurs to form a business. Our results suggest that a high tax rate is associated with a low firm formation rate since it increases the required time for a firm to enter into the market. The higher tax rate on firm's revenue forms a significant blockage in firm formation.

The GDP per capita is the only significant variable among the macro-non-institutional variables in this paper. A negative relationship seems to exist between the required time to form a firm and GDP per capita, which is in the predicted direction. This means that an increase of GDP per capita will reduce the required time to create a new firm, while holding all other variables in the model constant. This also suggests that a higher standard of living or greater national income is related to the number of days it takes for a firm to enter the marketplace.

The rest of the explanatory variables are insignificant. Our model predicts that macro-institutional factors that include lending interest rates, the number of procedures, tax rates, and only GDP per capita among macro-non-institutional variables are significant determinants, have critical roles in new venture formation in the European markets.

For robustness, we ran the model for emerging economies. The results of this model are reported in column (2) in Table 3. The start-up procedures and trade variables are significant factors. We ran the same empirical model for developed economies and the results can be seen in column (3) in Table 3. The significant variables in this model are lending interest rate and labor force with a tertiary education.

Variance inflation factors (VIF) are calculated and did not indicate any multi-collinearity problem in the dataset since the VIFs did not exceed 10. The Durban-Watson test is performed to check the serial autocorrelation and the results did not indicate the presence of serial autocorrelation in the dataset. The regressions in this table are estimated using fixed effects estimation technique and we used Wald test to test for heteroskedasticity. Wald test results indicated no issues associated with heteroskedasticity.

Robustness checks

To examine the robustness of the results from the panel model, we also run an OLS (Ordinary Least Square) regression model while keeping the same dependent and independent variables (Table 4). The first OLS model includes control variables and only population age variable becomes significant with an expected sign. In the second OLS model, we include all independent variables along with the control variables which are very similar to the pooled panel model. OLS model 2 (Adj-R-Squared is 53 %) gained a significant amount of explanation power from OLS model 1 (Adj-R-Squared is 21 %). Moreover, the results from this model are not substantially different from the pooled panel model. The lending interest rates and start-up procedures variables are significant in this model with their expected signs as we find in the panel model. Other than that, inflation which is another institutional variable also becomes significant in this model and having an expected sign. Therefore, institutional factors are major players in the venture creation at least in European countries. Henceforth, the overall conclusions remain unchanged regardless of the estimation methodologies.

Table 4 Results from the ordinary least square model: the determinants of venture start-up time

Dependent variable	Control	Pooled model
Time required to start a business		
Explanatory Variables		
Constant	-247.94*** (85.68)	-270.90** (125.89)
Fixed line and mobile phone subscribers	-0.05 (0.09)	0.14 (0.09)
Female participation in the labor force	0.49 (0.76)	0.07 (0.96)
Proportion of population ages 15–64 years	3.84*** (1.09)	3.38** (1.63)
Lending interest rate		5.19*** (1.19)
Start-up procedures to register a business		-0.25 (1.38)
Rigidity of employment index		0.15 (0.14)
Domestic credit provided by banking sector		-0.01 (0.07)
Trade		0.08 (0.07)
Taxes on income, profits, and capital gains		0.16 (0.28)
Inflation		-2.82** (1.14)
Labor force with tertiary education		0.52 (0.39)
GDP per capita		-0.00 (0.00)

Dependent variable	Control	Pooled model
R- Squared	0.25	0.63
Adj-R-Squared	0.21	0.54
N	60	60

Please note standard errors are in the parenthesis. Asterisks (*, **, ***) denote significance at the 10, 5 and 1 % level, respectively

In a separate robustness check we redefined our dependent variable and we used venture creation time per start-up procedure and venture creation time multiplied by number of start-up procedures instead of just venture creation time. The modified dependent variables add more variations to the model. Table 5 reports the results. We ran fixed effects and OLS models with these modified dependent variables. Results from these models are quite similar to the prior models. Therefore, the conclusions of the paper remain the same regardless of the methodologies of estimations or dependent variable specifications.¹

Table 5 Robust check results from fixed effects and ordinary least square model: the determinants of venture creation time

Dependent variable	Fixed effects model	OLS model	Fixed effects model	OLS model
	Time required to start a business by number of start-up procedures	Time required to start a business by number of start-up procedures	Time required to start a business multiply number of procedures	Time required to start a business multiply number of procedures
Explanatory variables				
Constant	-175.87* (102.12)	-9.28 (9.84)	-7582.64 (4696.41)	-1060.12** (495.13)
Fixed line and mobile phone subscribers	0.01 (0.03)	0.02*** (0.00)	1.02 (1.27)	0.62* (0.33)
Female participation in the labor force	0.72 (0.71)	-0.18*** (0.07)	23.75 (32.73)	-3.26 (4.09)
Proportion of population ages 15–64 years	2.23 (1.39)	0.31** (0.13)	83.46 (64.18)	15.71*** (5.68)
Lending interest rate	0.52** (0.24)	0.59*** (0.10)	27.46** (11.13)	22.93*** (6.96)
Start-up procedures to register a business	0.19 (0.30)	-0.78*** (0.13)	74.46*** (13.93)	20.80*** (5.36)

Dependent variable	Fixed effects model	OLS model	Fixed effects model	OLS model
	Time required to start a business by number of start-up procedures	Time required to start a business by number of start-up procedures	Time required to start a business multiply number of procedures	Time required to start a business multiply number of procedures
Rigidity of employment index	0.01 (0.09)	0.00 (0.01)	-0.22 (3.91)	-0.54 (0.66)
Domestic credit provided by banking sector	0.02 (0.03)	-0.01** (0.01)	2.37 (1.55)	-0.34 (0.35)
Trade	0.09** (0.04)	0.01 (0.00)	4.64** (1.89)	0.19 (0.29)
Taxes on income, profits, and capital gains	0.43*** (0.13)	-0.01 (0.02)	17.80*** (6.18)	-1.48 (0.98)
Inflation	-0.21 (0.20)	-0.32*** (0.08)	-14.17 (9.23)	-10.42** (4.20)
Labor force with tertiary education	-0.28 (0.26)	0.09*** (0.02)	-6.71 (12.05)	3.82* (1.91)
GDP per capita		-0.00** (0.00)		-0.00 (0.00)
R- Squared	-0.00 (0.00)	0.91	-0.04 (0.04)	0.97
Adj-R-Squared		0.89		0.97
Log-likelihood	-55.99		-285.70	
N	60	60	60	60

Please note standard errors are in the parenthesis. Asterisks (*, **, ***) denote significance at the 10, 5 and 1 % level, respectively

Discussion and implications

European countries have gone through several transitions in the past two decades and have had several macroeconomic policy adjustments during this time. These macro-institutional or macro-non-institutional policies affect entrepreneurship either directly or indirectly. Since entrepreneurship is the key to economic growth around the world, the main objectives of this study are to identify the factors that block or delay firm formation through prolonging venture start-up time. To do so, we examine 4 years (2003–2006) of data for 15 European emerging and developed countries. Venture creation time is regressed on several macroeconomic institutional

or non-institutional variables. Fixed effects modeling is used to investigate the factors influencing new firm formation.

The results of panel data analysis suggest that the institutional factors such as lending interest rates, the number of start-up procedures, and taxation as well as the non-institutional factors like GDP per capita are the major factors which prolong the new venture creation time in Europe. The institutional factors can discourage many prospective entrepreneurs from actually starting up their businesses and restrict firm births in these countries. The non-institutional factors, except GDP per capita, are not found to be influential on venture creation time. Higher levels of GDP per capita lead to shorter venture start-up time since personal wealth of entrepreneurs may lower the need for external funding or the amount of external. Public policy makers in emerging and developed countries would be wise to examine their current policies and what can be reasonably be revised to encourage new venture development. New venture tax credits, for example, could be used to offset some of the negative non-institutional factors that policymakers have less control over in the short run.

Although not hypothesized, the findings for the emerging countries are interestingly different from the findings for developed countries when we compare them. Institutional factors such as start-up procedures and trade opportunities are important determinants of new venture creation time in emerging countries, consistent with the findings of recent studies (i.e., Cieřlik et al. [2010](#), [2012](#); Demetriades and Fielding [2009](#); Anayiotos and Toroyan [2009](#)). Hence, changing the institutional environment by reducing the bureaucratic procedures to register a business can lower the venture creation time, encouraging nascent entrepreneurs to start up their businesses in developing countries. However, trade affects venture creation time positively in developing countries. This may be because of the requirements for additional procedures owing to the existence of importing and exporting activities. Furthermore, importing and exporting activities may elevate quality expectations, which can extend nascent entrepreneurs' preparation time before the actual start-up. Hence, European policy makers may generally need to minimize bureaucratic procedures to register a business. In addition, policymakers would be wise to increase assistance for small and medium businesses in the trade arena, including import and export assistance, identifying trade partners, lowering barriers to entry, and providing tax incentives. In developed economies, however, both institutional and non-institutional factors do not seem to influence venture creation time. In developed countries, individual factors may be more influential than institutional and environmental factors on venture start-up time. Future studies could examine the potential individual factors that may affect venture start-up time across countries since investigation of other countries was beyond the scope of our study owing to the lack of data regarding countries outside Europe. For example, a recent study by Chang and colleagues ([2009](#)) identifies family support as an important individual factor which can positively influence both venture preparation and actual start-up among Hispanic entrepreneurs in New England in the United States.

Future research can also investigate the outcomes of venture start up time. A better understanding of how venture start up time affects venture success or failure is also important in policy making. A relatively shorter venture creation time may encourage entrepreneurs to actually start up their businesses. However, we do not know enough about whether this can lead

entrepreneurs to new venture success or failure. Therefore, future research could examine the outcomes of shorter versus longer new venture creation time. Countries with a shorter start-up time would be wise to publicize this in the press for widespread dissemination that may have the effect of encouraging more venture launches. This research needs to include longitudinal studies that examine what policies have the most impact on sustaining these start-up businesses.

In conclusion, our study has analyzed the effects of national level characteristics such as macro-institutional or macro-non-institutional factors on new firm creation. Our findings support our main argument that macro-institutional factors have much more influence than macro-non-institutional factors. Overall, venture creation time is associated with institutional factors (i.e. interest rates, start-up procedures to register a business, and tax rate) and GDP per capita as the non-institutional factor. The findings suggest that nations need to revise their institutional policies to foster entrepreneurship and dynamic economic growth, since institutions can both constrain and enable entrepreneurship (Bruton and Ahlstrom 2003; Scott 2007; Bruton et al. 2010). The findings of our study can inform policy-makers concerning the need for an entrepreneur-friendly environment by reducing the lending interest rates, minimizing and overseeing the bureaucratic procedures to start businesses, and lowering the tax rates, which may encourage new ventures to form through lowering the venture start-up time, and ultimately leading to greater economic growth.

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Footnotes

¹ Probably the time series model (duration model or unit root) may be warrant to use to estimate such type of data, but unfortunately, we have only 4 years data which is less than the desire number of years that we need to require develop a time series model.

Keywords: Venture creation time | Institutions | New venture launch | Entrepreneurship | Macroeconomics