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The Impact of Entry Regulations on Venture Capital Investment: An Empirical Study

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Abstract

This thesis investigates the impact of entry regulations on venture capital (VC) investment, employing fixed effects panel regressions on comprehensive data from 72 countries over 10 years (2010-2019). The study explores how different national barriers to firm entry influence the volume of VC funding, discussing the unique effect on early-stage and late-stage investments, the distinction between developed and emerging markets, and variations in VC investments among countries with different legal origins. The findings of this paper suggest a relationship between increased regulations to entry and reductions in VC investment. Moreover, the effect appears to be slightly stronger for early-stage investment compared to late-stage investment. Partial confirmation of developed markets experiencing more substantial negative effects from regulatory burdens is additionally present, followed finally by countries of German and French legal origins displaying a stronger negative effect of entry regulations on VC funding than countries of English legal origin.

Contents

1 Introduction

Throughout the entrepreneurial process, uncertainty and asymmetric information are inherent qualities that make it challenging to gather the necessary capital required for firm creation (Mcmullen & Shepherd, 2006; Gompers & Lerner 1999). The endogenous risk associated with startups often warrant interest rates from banks and other forms of debt financing that exceed those authorized by law (Zider, 1998). Additionally, the prevalent lack of tangible startup assets makes it dually challenging for banks to acquire loan collateral. These fundamental challenges associated with capital acquisition bring rise to Venture Capital (VC) as a financial intermediary, whereby the costs of adverse selection, moral hazard, information asymmetries, and uncertainty may be mitigated by VC investment (Jeng & Wells, 2000). Given that the key role filled by VC firms comes via their funding of startups and new projects, such an industry is inherently highly dependent on the entrepreneurial health of an economy. This reliance brings rise to mechanistic pathways by which variables that influence entrepreneurial activity may induce knock-on effects on the volume of VC funding in a market. Such a variable with theorized influence on entrepreneurial activity is the regulatory systems firms must navigate to enter the country's official market. These *entry regulations* play a crucial role in shaping the entrepreneurial landscape, and are often outlined in three prominent ways, namely the number of procedures required to start a business, the time needed to complete these procedures, and their associated costs (Djankov et al., 2002). These regulations can either facilitate or hinder the entry of new firms into a market, thereby influencing the level of entrepreneurial activity. High entry barriers may deter potential entrepreneurs due to increased costs and time delays, whereas a more streamlined regulatory process can encourage firm creation by reducing the initial hurdles faced by startups (Klapper et al., 2006).

By examining the relationship between entry regulations and VC investment, this thesis aims to investigate whether more stringent entry regulations correlate with lower levels of national VC investment, and whether this effect is more pronounced for early-stage investments. Additionally, the research will analyze how the impact of entry regulations varies between developed and emerging markets and among countries with different legal origins. Such analysis contributes to the existing entry regulation and venture capital literature by providing a comprehensive study of how a nation's regulatory environment may influence VC activity. Understanding this relationship is crucial for policymakers aimed at fostering a conducive environment for entrepreneurial activity and innovation, as well as individuals reliant on the success and advancement of the VC industry. By identifying the barriers posed by entry regulations, this study offers insights into how regulatory reforms may enhance VC investment and support the growth of startups.

The data garnered for this study spans 72 countries over a 10-year period, utilizing panel data regression models to analyze the hypothesized impacts. Two categories of independent variable are used

and discussed throughout this paper (excluding the measures of entry regulations), being either traditional determinants of VC funding commonly cited in previous literature (will be referred to as the model 'control' variables), or secondary determinants acting as theorized mechanisms between entry regulations and VC investment (will be referred to as the model 'mechanisms'). The model controls include GDP growth, capital gains tax rate, IPO divestment, and political stability, followed by mechanistic variables of market capitalization, unemployment rate, R&D expenditure, and control of corruption.

The findings of this study suggest that greater entry regulations, particularly the number of regulatory procedures, are associated with lower VC investment. Additionally, the results reveal that the negative impact of entry regulations is more pronounced among early-stage investment, likely due to early-stage firms' greater vulnerability to regulatory and economic fluctuations (Groh & Wallmeroth, 2016). The conclusions also show the varied impact of entry regulations between developed and emerging markets, with developed markets displaying a greater negative effect from regulatory procedures and time delays, while emerging markets show greater sensitivity to regulatory costs. Finally, the findings suggest a potential influence of country legal origin on the proposed negative effect, displaying the slightly larger negative impact of regulations on funding in countries of German and French legal origins compared to those of English legal origin.

The thesis is structured as follows: Section 2 will discuss the theoretical overview regarding the main topics of the paper, as well as the supplementary literature. Section 3 will outline the datasets used, variables of interest, and notes surrounding data alterations and additions. Section 4 provides the methodology and subsequent assumptions and considerations regarding the analysis techniques used. Section 5 shows the final results provided by the utilized methodology, followed by relevant discussion regarding the limitations and conclusions of the paper in section 6.

2 Theoretical Overview & Relevant Literature

2.1 – The Venture Capital Process

VC firms/funds[1] have been a driving force in the financing of startups over the past half century, acting as the required fundraisers needed for inherently high-risk investments that startups often are. VC firms manage these high-risk situations by taking an 'active investor' equity position in the companies they invest in, allowing them to strategically aid the target firm from an unbiased perspective

1 – The terms VC firm and VC fund will, for the most part, be used interchangeably throughout this paper. Although not entirely synonymous, the intuition that a VC firm has a (or multiple) fund/s, represents a connection that will, for simplicity, be maintained throughout.

(Jeng & Wells, 2000; Jensen, 1993). This form of investing is dissimilar to most others as, rather than passive monitorization of a firm's finances, it provides active strategic and investing advice (Gompers & Lerner, 1999). This can be accomplished due to the often extensive experience of VC managers, allowing them to effectively steer and often aid their investment's managerial decisions (Rosenbusch et al., 2013; Gompers, 1995). This risk mitigation ensures widespread financial viability, enabling financial stability for the venture capitalist, their invested firm, and the overall health of economic innovation (Cherif & Gazdar, 2011).

The VC cycle begins with the acquisition of funds, usually provided by independent investors aiming to make sufficient returns. This fund is subsequently used as the financial means by which VCs invest in potential equity positions. When a VC invests, three overarching time-specific categories are used: Seed, startup, and expansionary/growth investment. These forms of investment each refer to specific stages of development of the target firm (Jeng & Wells, 2000). Other forms of equity financing exist, such as angel investing, however these will be intentionally differentiated as per theoretical reasoning provided by Mason & Harrison[2] (Rosenbusch et al., 2013). Once a deal is established, the common aim of a VC is to help cultivate value. Certain literature points to two predominant pathways in which VCs create value, either through their ability to select, or monitor investments. These are often referred to as their scout and coaching functions (Baum & Silverman, 2004). These comparative advantages allow them to create value especially in industries of high information asymmetry where traditional financial providers may fail (Amit et al., 1998). Supplementary research on the influence of VC investment on startup growth indicates a potential relationship between VC funding and high growth startups, pointing to a potential signaling effect of gathering VC funding as supplementary to the effects of purely monetary and managerial aid (Davila et al., 2003). Irrespective of potential value-added, the desired eventuality of such a VC deal is the divestment of their equity position. This exit, usually culminating in an IPO or other divestment strategy, intends on providing the VC firm with their initial investment and any potential returns, whereby the generated returns are then repaid to the initial investors (Gompers & Lerner, 2001). Often, such steps are not mutually time-exclusive, with each step in the process often occurring in tandem to strike an efficient balance between liquid funds and illiquid investment.

2.2 – Venture Capital Determinants

The VC industry, as with any market, presents a delicate balance between a product/service

2 – They describe reasons behind the structural investing differences between VCs and angel investors (Mason & Harrison, 2002). This intentional differentiation will be further discussed in the Data section of this paper.

supplier and its respective consumers, and such a relationship must be discussed before delving into the specific factors that may be of influence. In the VC market, supply of funding is characterized by the willingness of investors to provide funds to a prospective target firm, with this being dependent on the returns said investors are expected to generate on the potential VC investments (Gompers & Lerner, 1999). The demand of this market is derived from entrepreneurs' willingness to start a firm, and their subsequent need for funding (Romain & de La Potterie, 2004; Gompers & Lerner, 1999). This market is thus contingent on factors that influence either the expected returns of an investment, and/or factors that impact the willingness of entrepreneurs to create startups. This brings forth the equilibrium of the VC market, identified as the final volume of VC investment available.

2.2.1 – Introduction to Venture Capital Determinants

To most accurately map this relationship and establish the prominent factors of influence, the correct models and data must be used. Previous literature has outlined many of the likely determinants, categorizing them as either micro-, or macro-factors. Micro-factors outline specific firm-level differences, however given limitations in data availability, as well as the cross-country aggregation analysis employed, many such factors become difficult to accurately implement and study. Certain literature, however, focuses primarily on such micro-factors, outlining that these factors must still be discussed to identify their potential for influence.

The common goal for the majority of VC funds consists of generating tangible returns for investors, what we consider as being a strictly 'financial investor'. This type of VC investor is predominantly geared towards the long-term goal of investment return through their financial and managerial aid. Certain VCs, however, express alternative intentions, acting more as 'strategic investors'. This would be done with the aim of providing investors with a potential view into new technological innovations (Elango et al., 1995). This induces a potential problem in standardizing VC firms, as each may have different goals, intentions, or investing strategies that could alter the amount they invest, the stage at which this investment is provided, and the industries or project they invest in.

In tandem with such findings, Gompers (1996) examines how VC firm age, and how 'established' a firm is, may play a complementary role in determining the strategic decisions of an investing fund. Although not studied in an international context, using solely US VC backed IPOs, he reports that younger, less established VC funds perform divestment decisions (in this case IPO) earlier, in order to signal to potential investors their ability to exit effectively. Moreover, he finds a significant relationship between the number of previous IPOs and the size of future investments, presenting that more established VC firms may report, on average, larger investments. This grandstanding by younger firms illustrates that there may be structural decision-making differences for VC funds of different ages.

Xuan Tian (2011) introduces the idea of potential proximity effects that arise due to distance between the lead VC investors and their invested startups and its effect on strategy and investment decisions. He finds that larger geographical distances are associated with more financing rounds and smaller incremental investments. This supports a 'monitoring hypothesis', whereby VCs will shorten investment durations between stages, as to "keep a tight leash" on their investment (Xuan Tian, 2011). Although not necessarily generalizable to an international context due to, again, strictly US firm analysis, this research does, however, give a glimpse into the potential influence that investor and investee proximity may have on VC funding.

2.2.2 – Relevant Venture Capital Determinants

As opposed to the above-mentioned factors being difficult to actively implement given data unavailability and analysis techniques, the following section will pertain to the relevant determinants, theories, and models specific to the methodology of this paper.

As previously discussed, the main stages of VC investment, namely early, late, and growth/expansionary are the main forms by which VCs fund their target firms. Jeng & Wells (2000) were the first to analyze the influence of investing stage on the amount of VC investment, showing that the funding decisions for different investment stages are uniquely affected by VC determinants, with early-stage investment being more significantly influenced by potential determinants. They discuss how fund source, management approach, and size of investment can be influenced by stage of investment. Their findings were acquired using panel data from 15 countries over 10 years with fixed effects regressions. Many succeeding research maintained the distinction of early- and late-stage funding, such as those of Balboa & Marti (2001), Felix et al. (2013), Groh & Wallmeroth (2016), and Bonini & Alkan (2016).

Next, when discussing divestment strategy, one of five approaches are predominantly used by VCs to exit their equity position, being: (1) an IPO, (2) an acquisition exit (selling of the firm to a third party strategic buyer, (3) a secondary sale (selling of the VCs shares to a third party), (4) a buyback (selling of the VCs shares *back* to the company/entrepreneur), and (5) a write-off (used if a failure of the entrepreneurial firm occurs) (Cummings & MacIntosh, 2003). The most common of these divestment strategies is broadly considered to be the IPO and is thus used as the primary variable for divestment strategy in much of the relevant literature. Whether IPO activity is significant in determining VC funding is a point of contention amongst such papers, with there being compelling evidence for both points. Gompers & Lerner (1999) show the significant positive effect that IPO activity has on the amount of future VC funding. This finding is derived from US based panel analysis from 1972 to 1994 and supports the grandstanding effect of younger VC firms as described in Gompers (1996) (VC firms recognize that quick and efficient exits induce more VC funding in the future). In congruence with their findings, Jeng & Wells (2000), Felix et al. (2013), and Bonini & Alkan (2014), find IPO activity to be

a significant determinant of VC funding, with the first two showing significance for early-stage investment, and Bonini & Alkan (2014) showing significance solely for late-stage investment. In opposition with these findings, Balboa & Marti (2001), and Groh & Wallmeroth (2016) find no significance, irrespective of investment stage.

Further widely discussed determinants of VC funding surround the broader economic landscape rather than firm level variables, with the majority of relevant research going to these factors. The following papers of Gompers & Lerner (1999), Romain & de La Potterie (2004), Jeng & Wells (2000), Balboa & Marti (2001), Groh & Wallmeroth (2016), Felix et al. (2013), and Bonini & Alkan (2014) are considered.

Gompers & Lerner (1999) illustrate the effects of fundraising patterns on eventual VC investment using data from 1294 VC funds. They find that R&D activity, GDP growth, and capital gains tax influence the demand for VC funds. They show that capital gains tax has an inverse relationship with demand for venture capital, as a reduction in such a tax induces a more conducive environment for entrepreneurs to start a business.

Using data of 16 OECD countries from 1990-1998, Romain & de La Potterie (2004) find that macroeconomic indicators such as GDP growth and short-term interest rates, too, positively impact the demand side of VC funding, with supplementary effect from indicators of technological opportunity such as R&D expenditure growth and patents filed also showing a positive effect. The influence of GDP growth is in line with that of Gompers & Lerner (1999), however additional insights are gained by indicating that the influence of GDP growth is diminished when in the presence of high labor market rigidities.

When utilizing investing stage as a categorizer, Jeng & Wells (2000) find that market capitalization growth is not significant, while their findings regarding GDP growth oppose previous literatures such as Gompers & Lerner (1999), showing non-significance irrespective of investing stage. Labor market rigidities, capital gains tax, and the financial reporting standard of the nation are also considered, finding a negative effect of labor market rigidities on early-stage investment, no effect on late, a negative effect of financial accounting practices, and no statistical significance of capital gains tax.

Balboa & Marti (2001) discuss the primary determinants of private equity fundraising in Western Europe, with their cross-sectional time series regressions on 16 European countries suggesting no statistical significance of GDP growth but do conclude that the larger the initial invested amount is by fund managers, the easier future funds can be raised.

Expanding on the literature of Jeng & Wells (2000), Groh & Wallmeroth (2016) provides the first segmentation between emerging markets and prosperous markets. This addition to the VC determinant literature shows that relative wealth of a country influences which determinants impact VC

investment. Using random effects regressions from 118 countries, they display that variables such as M&A investment volume and shareholder suits index have a positive influence on VC funding, however this effect is diminished in emerging markets. Conversely, variables such as corruption or innovation are more influential in emerging markets.

Felix et al. (2013) add to existing literature by quantifying the influence of information asymmetries on VC investing as well being the first to inquire into the direct effect of entrepreneurial activity on VC investment. With aggregated data of 23 European countries from 1998 to 2003 as well as investment stage segmentation, they find that unemployment, M&A activity, and the degree of asymmetric information (as measured by market-to-book ratio) are all significant in determining the level of VC funding. An intriguing finding that compliments those of Jeng & Wells (2000) and Groh & Wallmeroth (2016) shows that macro-economic factors are highly influential for early-stage investment in comparison to late-stage, as such firms gathering early-stage investment are particularly sensitive to economic expectations & outcomes.

Bonini & Alkan (2014) were the first to focus primarily on the political and legal determinants of venture capital, highlighting the importance of political stability and a strong entrepreneurial environment as key factors for high VC investment. Using panel data of 16 countries from 1995 to 2002, employing investment segmentation as per Jeng & Wells (2000), they find that the social and political conditions of a country are significant determinants for an active VC market. They also find corruption and legal origin of the country to be significant factors, showing that countries of English and French law origins have significantly larger VC markets than those of German and Scandinavian. Additionally, their controls align with those of previous works, with R&D spending, IPO activity, and interest rates being significant.

2.3 –Literature For Potential Influencing Mechanisms of Entry Regulations

Entry regulation is a relatively broad term that encapsulates the legal process undertaken by firms to begin official operations. As previously mentioned, this process can be viewed from three lenses, namely: (1) The specific number of actual procedures a prospective firm or entrepreneur must complete, (2) the cost associated with completing such processes as a proportion of GDP per Capita, and (3) the time, in business days, taken for the process to be completed (Djankov et al., 2002). In much of the relevant literature on entry regulations, these three interpretations are either used individually, as substitutable robustness checks, or simply as synonymous terms[3]. Initial reasoning for the implementation of such regulations stems from their use as vetting and information garnering systems, screening out potential fraudulent firms or individuals, and collecting information for tax, judicial, or

3 – Klapper et al. (2006) use the tems regulatory costs of entry and entry regulations interchangeably throughout their paper.

other governmental authorities (Klapper et al., 2006). Such entry regulations have been shown to have a multitude of effects on many distinct aspects of the economy, introducing many potential mechanisms by which they could influence VC investment. The most studied common factors that will be discussed below are that of firm creation/entrepreneurial activity, innovation/R&D expenditure, market productivity, unemployment, and corruption.

Klapper et al. (2006) outlines three specific influences of entry regulations, underlining their effect on firm creation, market growth/productivity, and incumbent size. Using firm-level data in 34 European countries, they find that entry regulations hamper firm creation, with a greater effect in industries of naturally high entry, and a diminished effect in the presence of highly corrupt economies. Regarding market productivity, they find that productivity growth of value-added per employee over firms aged two or older are relatively lower in higher entry barrier countries. This lends to their 'screening hypothesis', that such regulations "screen out small, young firms, and inhibit the disciplinary effects of competition" (Klapper et al., 2006, page 594), believed to diminish the creative destruction brought on by young firms. Finally, they find evidence that greater regulatory costs increase the size of entering firms. Overall, their findings provide a view on the potential influence of entry regulations on firm entry, productivity, and size.

Adjacent to these findings, Evans and Jovanovic (1989) utilize a static entrepreneurial choice model and probit regression to investigate whether liquidity constraints influence entrepreneurial activity. The main insights of their paper show a significant, positive effect of existing assets on the likelihood of pursuing entrepreneurship, suggesting that individuals with greater access to capital having higher future entrepreneurial returns, are more likely to start a business, and allocate a smaller proportion of their resources to the startup. This illustrates a potential relationship between prosperity (individual or economic), and entrepreneurial activity.

Djankov et al. (2002) introduce highly impactful findings regarding regulatory barriers and their subsequent influence on entry, analyzing 85 countries and their respective startups. Their work shows a significant relationship between stringent entry regulations, higher corruption, and larger unofficial economies. They find that these factors reduce the level of official employment, and lend to reduced social benefit overall. Such analysis shows the relationship between higher regulation, raised corruption, and higher unemployment.

Opposing these findings, however, Van Stel et al. (2007) discuss reviewed analysis regarding these claims, outlining the influence of entry regulations on nascent and opportunity entrepreneurship and their external costs. Using data from 39 countries, they show that, in contrast to the findings of Djankov et al. (2002) and Klapper et al. (2006), entry regulations do not have a significant effect on the rate of entrepreneurship or new firm creation, but rather affect the distribution of businesses across the informal and formal sectors.

Next, Nicoletti & Scarpetta (2003) investigate the impact of regulatory barriers on productivity and growth within OECD countries. They conclude that reduction of entry regulations and state control accelerates the adoption of technological innovations, inducing productivity growth, especially in manufacturing sectors yet at the technological frontier. Such regulations reduce competitive pressures and entry of high-tech startups, with these findings suggesting that regulatory reforms (particularly those aimed at easing entry barriers), can significantly boost entrepreneurial activity and, in turn, market productivity.

Further describing the influence of entry on productivity, Poschke (2010) explore how differences in entry costs affect aggregate productivity, specifically total factor productivity (TFP) in Europe compared to the US. Utilizing a dynamic stochastic model of heterogeneous firms with technology choice, he argues that small differences in administrative entry costs can account for approximately one third of the observed TFP differences between these economies. The study reveals that higher entry costs reduce competition, lower wages, and decrease the number of firms, which leads to greater product differentiation but diminishes the market share and incentives for highly productive firms to adopt advanced technologies, thus reducing aggregate productivity.

Finally, in addition to the impacts on productivity, Aghion et al. (2009) illustrate the potential influence of deterred entry on innovation of incumbent firms using United Kingdom panel data. They show that in technologically advanced industries, the threat of entry stimulates innovation and productivity growth among incumbents, whereas in less technologically advanced industries, the opposite is true. These findings suggest that while reducing entry barriers can promote growth, such actions should be accompanied by supportive labor and capital market policies to ensure the effective reallocation of resources towards more advanced sectors where incumbents are more likely to benefit from increased competition.

2.4 – Developed Hypotheses

Entry regulations and the procedures, time, and costs associated have been shown to have a multitude of impacts on many aspects of the economy. As illustrated in Klapper et al. (2006), Nicoletti & Scarpetta (2003), and Aghion et al., (2009) respectively, higher barriers to entry have the potential to reduce entrepreneurial activity, which in turn limits competition and entry of high-tech startups, ultimately stifling innovation and technological advancement. In addition to this, such barriers may also lead to increased unemployment, with fewer firms operating in the formal sector resulting in less formal employment, as well as bolstering the potential for corruption by creating opportunities for bribery to circumvent the regulatory procedures of entry (Djankov et al., 2002). Given these theorized influences, potential mechanisms by which entry barriers may affect VC investment can be derived. Romain & de La Potterie (2004) showed a positive influence of innovation and productivity on VC funding, with Groh & Wallmeroth (2016) observing similar findings regarding innovation, and a supplementary

negative influence from corruption. Felix et al. (2013) also discussed the negative influence of unemployment as a significant factor. Given that entry regulations display a negative impact on innovation and productivity, both of which likely positively affect venture capital (VC) investment, and considering that entry regulations are associated with higher corruption and unemployment, a negative impact of entry regulations on VC funding is hypothesized. This leads to the first hypothesis.

Hypothesis 1: *Higher Entry regulations correlate with lower venture capital investment irrespective of funding stage.*

As described by Jeng & Wells (2000), Groh & Wallmeroth (2016), and Felix et al. (2013), the influence of macroeconomic factors are highly pronounced on early-stage investment, as such startups hold greater risk and are thus more beholden to economic expectations (Felix et al., 2013). This distinction between early and late-stage investment induces a potential hypothesis regarding a greater negative influence from macroeconomic mechanisms influenced by entry regulations. This produces the second hypothesis.

Hypothesis 2: *The effect of entry regulations on venture capital funding is larger in early-stage investment than in late-stage investment.*

Next, a potentially ambiguous differentiator in the form of economic prosperity should be discussed. Groh & Wallmeroth (2016) showed the divergent effect that determinants have on VC investment given whether the country is considered emerging or developed. A stronger effect of VC determinants was found among developed countries, however corruption and unemployment were increasingly impactful in emerging markets. These together, mean higher entry regulations may be associated with a greater negative impact in emerging markets through corruption and unemployment, with a potentially parallel negative impact in developed markets through other determining factors. The hypothesis is therefore quite ambiguous as to whether the effect of entry regulations is greater for each respective category. The third hypothesis is thus as follows.

Hypothesis 3: *The effect of entry regulations on venture capital investment is different for emerging and developed countries.*

As per Djankov et al. (2002), the legal origin of a country outlines underlying differences in the approach to regulation and legal governance, with each having unique levels of entry regulations. In

addition to this, certain legal systems may be associated with higher or lower VC investment, as shown by Bonini & Alkan's (2014) findings of broadly larger VC investment in English and French origin countries. The influence of legal origin is a potentially intriguing point of analysis in order to evaluate the extent to which such differences may affect VC investment. The fourth and final hypothesis is thus below.

> ***Hypothesis 4:*** *The effect of entry regulations on venture capital funding is different based on country's legal origin.*

3 Data

The data for this paper is derived from 80 countries over a span of 10 years from 2010 to 2019. The data is non-exhaustive with 3442 total missing observations for all variables, meaning the working data is therefore an unbalanced panel set. As certain countries from the original set of 80 did not have available VC deal data, Malawi, Burkina Faso, Venezuela, Mali, Ecuador, Madagascar, Mozambique, and the Dominican Republic were dropped, leaving a final set of 72 countries. A multitude of sources were used to collect the data, the details of which are compiled in Tables 9 and 10 along with relevant variable descriptions and observation counts. VC data was both inconsistent and non-present for certain countries, resulting in large discrepancies between the sample size per country per year.

3.1 – Dependent Variable of Interest

The main dependent variable of interest consisted of data regarding the size of a Venture Capital deal between VC funds and a respective target startup firm, normalized by GDP of the target firm's country. This primary venture capital deal data was compiled from the Preqin private equity database through the Erasmus online databank library and is expressed in millions of dollars, however it is unspecified as to whether these amounts are in (for example) 2015 dollars, or simply represent the numeric amount in that years' dollar. The data was however converted to singular dollars in order to standardize the unit that currency variables use. Reasoning in accordance with Jeng & Wells (2000) on exclusivity of the venture capital investments as opposed to including buyouts was used. Two subsets of VC investment data are available within the Preqin database, namely venture capital investment, and buyouts. Due to the alternative means of investments by which each operate[5], as well as the specificity

5 – Jeng & Wells (2000) describe the structural differences between venture capital investment and a leveraged buyout. They discuss that buyouts are more prominent among mature firms, and utilize debt to acquire the firm in order to lower their equity position. Although drastically reducing the observations available, this distinction was intentionally made to increase model specificity and keep consistency with regards to venture capital definition.

of this papers proposed question, solely venture capital investment was used. Next, only early-stage, late-stage, and growth stage investment were included, excluding all exits, buyouts, mergers, or other forms of investment / exit. Early, late, and growth stage investment include the following stages: Seed and Series A within early-stage, Series B, Series C, Series D, and Series E+ in late-stage, and finally growth stage,[6] with an explicit exclusion of Angel investment. VC firms are categorized as predominantly focused on less liquid, riskier equity deals, investing in a wide time range of stages (Rosenbusch et al., 2013; Dimov et al., 2007). This is systematically different to the habits of angel investors, who invest smaller amounts of money at generally earlier stages (Jeng & Wells, 2000; Gompers, 1994). In addition, it is theorized that angel investors are more likely to allocate a greater amount of time to their investment compared to VC managers, making the investing decisions of angels structurally different to those of VCs (Mason & Harrison, 2002). The final observation count for the 72 countries over the 10 year period is 60327 unique VC deals.

In addition to macroeconomic country-specific effects, the definition of venture capital is uniquely differentiated based on international context, specifically differences between the European and North American definitions (Groh & Wallmeroth, 2016; Jeng & Wells, 2000). The US definition for venture capital excludes other forms of private equity, namely buyouts, whereas the European Venture Capital Association (as of 2004) defines it as including management buyouts as well as management buy-ins[7] (Romain & de La potterie, 2004). As previously mentioned, buyouts were not included, meaning the US definition of venture capital was used. Given the specific longitudinal models as will be described in Section 4, the GDP normalized sum of venture capital spending is consistent with works such as Groh & Wallmeroth (2016), Jeng & Wells (2000), among others. The reason for GDP normalization of the sum of VC deals is to account for two predominant problems. The first comes in the form of a lack of data homogeneity. Heteroskedasticity is defined as the variance of error residuals being inconsistent and thus not random, which can introduce standard error and other biases, ultimately leading to potentially incorrect inferences of the data (Astivia & Zumbo, 2019). Due to country specific differences such as in economic prosperity, growth, and venture capital spending, heteroskedasticity is a prevalent concern, for which GDP normalization helps reduce its potential influence. Secondly, GDP can be used as a natural deflation factor, potentially providing a solution to the problem of VC deal non-specificity with regards to whether it is nominal or real. This may be less influential in this instance as the GDP data is expressed in 2015 constant USD rather than unadjusted nominal GDP.

6 – The defined segmentation of early vs late-stages as per the Preqin Database will be used throughout the paper, however growth and late-stage investment will be grouped, conforming to the methodology of Jeng & Wells (2000).

7 – Romain & de La Poterie (2004) also express how fund and management makeup may also differentiate based on country.

3.2 – Independent Variables Used

The independent and control variables of this paper encapsulate a majority of the readily attainable variables in most of the previous VC funding research, overviewing the potential factors that influence either the supply or demand of investment. Certain effects from variables that are firm-specific such as firm-intention, age, or proximity to VC investor will not be implemented in this methodology. This is largely due to data unavailability and country wide aggregation techniques. The available variables outline the regulatory procedures, the main macroeconomic and country-wide factors, and finally relevant political determinants. The main variables of interest outline the regulatory barriers to entry. These are the number of legal procedures needed for individuals to officially start a Limited Liability Company, the median time taken for such individuals to go through these processes, and finally the cost associated with such procedures. These variables are specifically for men starting a business. The option for female specific equivalents for these variables are available, however the choice of choosing the male procedures was purely arbitrary[9]. The most commonly used variable for entry regulation analysis is the variable for distinct *regulatory procedures*, however *time* and *cost* will be used as robustness checks throughout the analysis of this paper. Depending on the country, certain governments exhibit unwavering entry regulations, with it being constant over the 2010-2019 time range; other countries however have slight regulatory changes over this period. The largest amount of deregulation comes from Greece, with a 12 procedure reduction from 2010 to 2019. This differs from works of Djankov et al. (2002) or Klapper et al. (2006), as their derived regulatory variables are time-invariant. The work of Djankov et al (2002) in particular had stark regulatory impact, pushing many countries to reduce such barriers (Van Stel et al., 2007). The subsequent spout of deregulation requires variables that readily capture any changes in regulatory system. Therefore, the variables from The World Bank's Doing Business dataset were chosen in accordance with Van Stel et al. (2007).

Next, a variable for divestment strategy must be included given it's found significance in previous works (see Gompers & Lerner (1999), Jeng & Wells (2000), Felix et al. (2013), and Bonini & Alkan (2014)). For this, data on *IPO* deals were chosen. 17274 unique deals were derived from the Preqin & Orbis datasets and converted from millions of Dollars to singular Dollars. Deals were aggregated on the national level based on country of the target firm and normalized by the national and year GDP, in accordance with the methodology of Balboa & Marti (2001), and Felix et al. (2007). These variables are hypothesized to positively influence both the demand and supply of venture capital, with the demand influence stemming from the existence of a viable exit mechanism aimed at pushing the firm to go public, acting as an additional incentive for entrepreneurs to form a startup; similar reasoning for supply is present, with there being greater confidence in ability to recoup investment plus returns given an effective exit (Jeng & Wells, 2000).

9 – Analysis on the impact of gender on entrepreneurial activity has been studied in the past (see Ardagna & Lusardi (2010)). A potential direction for future research could be in the influence of gender of entrepreneur on VC funding.

GDP growth outlines the annual growth of an economy, expressed in local currency and converted to 2015 Dollars. This variable was gathered from the World Bank World Development Indicators. Used in much previous research, it proxies as an expression for better economic conditions, thus implying more attractive opportunities for entrepreneurs due to the positive association between macroeconomic variables and entrepreneurship (Acs & Audretsch, 1994). As per studies such as Gompers & Lerner (1999) and Romain & de La Potterie (2004) it is expected to have a positive influence on the demand of VC funding.

Similar to GDP growth, *market capitalization* outlines an economic prosperity proxy, more specifically the size of the stock market for a country normalized by GDP. This was gathered from the World Bank World Development Indicators. An increase in market capitalization has been shown to be associated with a more conducive environment for investors, thus increasing the supply of VC investment. Although conflicting evidence as to its significance is present (see Jeng & Wells (2000) & Cherif & Gazdar (2011)), it will be included due to its mechanistic potential on VC funding through entry regulation's effect on market productivity.

Two additional variables that have theorized influence on both supply and demand of VC funding are that of the *real interest* and *capital gains tax rates*. Both variables are garnered from the World Bank World Development Indicators, however due to an extremely large proportion of missing values for real interest rate this variable was not included in the final regressions. The effects of interest rates have mechanisms via supply & demand of VC funding, potentially influencing the appeal of outside options for investors investing into VC funds, or increasing the attractiveness of VC financing versus base credit from traditional financial institutions such as banks (Romain & de La Potterie, 2004; Gompers & Lerner, 1999). Secondly, capital gains tax influence the supply and demand of VC investment; Poterba (1989) expresses that tax reductions raise VC supply, as after-tax returns on equity/asset investment are the returns gathered by investors as opposed to traditional interest or dividend income. Additionally, the majority of initial wages for entrepreneurs in a startup are likely to be taxed by capital gains, while, as an employee in an established firm, wages earned are likely income wages and thus exempt. This reasons that reductions in the capital gains tax make entrepreneurial activity more appealing, as the costs associated with undertaking entrepreneurship are reduced (Poterba, 1989).

Unemployment rate outlines the proportion of the total available workers without work, and was gathered from the World Bank World Development Indicators. A less exhaustive list of papers have looked into the effect of unemployment, however its significance has been shown in its influence on the demand for VC funding, with higher unemployment associated with lower economic expectations and thus lower entrepreneurial activity. A potential opposing effect discusses the employment status of the entrepreneur themselves, stating that if an entrepreneur is unemployed before starting a business the opportunity cost of creating a business is lower as opposed to an employed individual. This lends to

higher unemployment rates increasing the likelihood for an entrepreneur to be unemployed prior to initiating a startup process, in turn reducing opportunity costs of entrepreneurship. These conflicting effects lead to an ambiguous outcome, however previous works illustrate the stronger effect of the initial negative impact (Felix et al., 2007). Due to data unavailability, the influence of labor market rigidities cannot be determined or controlled for in this research, however as per Felix et al. (2007), unemployment rate is viewed as an appropriate proxy for labor market rigidities.

A further proxying variable is that of *R&D expenditure*, being used as a measure for innovation in an economy as the proportion of GDP spent on R&D. Given VC funding's usefulness in supporting new, high-risk ideas and research, as opposed to more traditional financing methods, rates of higher research and innovation and subsequent startup activity would inherently require more VC funding (Felix et al., 2007; Gompers & Lerner, 1999). This therefore increases the demand for VC investment.

A measure of country *development* is included, in line with that of Groh & Wallmeroth (2016). This variable is a binary variable that indicates whether a country is under or above a specific threshold of GNI per Capita. Four categories are presented by the World Bank, with low income, lower-middle income, and higher-middle income being considered as emerging, and high income being considered as developed.

In addition to influential macroeconomic variables, political variables must also be considered. The first of which outlines the *political stability* of a country, given as the country's score on a normal distribution based on an aggregate indicator. This numerical variable ranges from -2.5 to 2.5, with the larger the value describing a more politically stable society. A more politically stable economy has been shown to positively influence the level of VC spending (Bonini & Alkan, 2014), specifically on creating a more conducive entrepreneurial environment, thus potentially increasing demand for VC investment.

The final variable of interest is that of *control of corruption*. This variable, as opposed to a numerical variable on the level of corruption in a country, details a country's control on corruption, implying that a highly corrupt country has a low value for this variable. Much like the variable of political stability, control of corruption falls on a normally distributed range from -2.5 to 2.5. Many papers have included the influence of corruption on venture capital investment, with the majority finding a negative influence of corruption, stemming from its potential reducing impact on VC demand. This is due to two potential mechanisms, either in increasing costs associated with starting a business due to additional costly bribes needed, or through corruption induced boosts in market uncertainty (Cherif & Gazdar, 2011). Given the corruption variable used is inverse to a normally represented corruption variable, a positive relationship between corruption control and VC investment should be expected.

4 Methodology

4.1 – Main Techniques Employed

From the relevant theory, as well as the available data, the hypothesized determinants can be synthesized to a supply-demand reduced form equation. Using the unbalanced panel data, longitudinal models are formed, with the most robust full model being an individual fixed effects, within-country regression:

$$Deal\ Size_{it} = \alpha_i + \beta_1 Procedures_{it} + \beta_2 IPO_{it} + \beta_3 GDP\ Growth_{it} + \beta_4 Market\ Capitalization_{it} + \beta_6 Capital\ Gains\ Tax_{it} + \beta_7 Unemployment_{it} + \beta_8 R\&D\ Expenditure_{it} + \beta_9 Political\ Stability_{it} + \beta_{10} Control\ of\ Corruption_{it} + \varepsilon_{it} \quad (1)$$

In addition to this exhaustive model, a secondary model without mechanisms is considered as potentially of use:

$$Deal\ Size_{it} = \alpha_i + \beta_1 Procedures_{it} + \beta_2 IPO_{it} + \beta_3 GDP\ Growth_{it} + \beta_6 Capital\ Gains\ Tax_{it} + \beta_9 Political\ Stability_{it} + \varepsilon_{it} \quad (2)$$

A highly important difference between the two fixed effects models come in the inclusion vs exclusion of mechanisms. As previously mentioned, these mechanisms are the main theorized factors by which entry regulations may have an effect on VC investment. Both models present potentially useful findings, however they clarify the strict balance between model complexity and model interpretability. Including such mediators would increase the complexity and explanatory power based on previous theoretical evidence[10]. Given that such mechanistic variables are time-variant, excluding them may violate assumptions of fixed effects regressions if independent variables in the model are correlated with variables captured in the error term, in turn inducing potential omitted variable bias (OVB). In contrast however, including such mechanisms may increase multicollinearity and intermediary influence issues, given the potential correlations between entry regulations and mechanisms. In addition, excluding them may help illuminate the specific effect that entry regulations have on VC funding, without having this effect clouded by intermediary variables. Given that both positions have theoretical positives and negatives, both regressions are used and analyzed. To understand if the

10 – The mechanisms have been shown in certain research to be significant determinants of VC funding, thus including them would be theoretically grounded.

multicollinearity issues would pose a problem, variance inflation factors (VIF) were calculated for the full model, with all VIFs being under 2, except for political stability and control of corruption at 3.01 and 4.27 respectively. Table 8 shows a correlation matrix outlining pairwise correlations between the regulatory indicators and the theorized mechanisms, with control of corruption additionally showing the highest potential for inducing multicollinearity issues. Log transformation of this variable was attempted in order to reduce such issues, however doing so produced no significant improvements in pairwise correlation or VIF. Although posing the highest risk, the relatively low VIF lends to the assumption that multicollinearity does not pose a highly significant threat to the analysis.

Model explanations regarding the fixed and random effects regression methodologies predominantly reference the work of Felix et al. (2013). Consistent for both models (1) and (2), i refers to each specific country, where $i = 1, 2, \dots, 72$, with t illustrating the specific year, in $t = 2010, 2011, \dots, T;\ T = 2019$. α_i represents the country-specific fixed effects. In such fixed effects regressions, this constant endogenously captures and controls for time-invariant unobserved characteristics. The constant likely controls for characteristics that "include cultural or institutional factors which influence venture capital activity and [which] differ across countries" (Felix et al., page 270, 2013). An example of this are the effects of a country-specific industry, such as certain natural resources predominantly found in one country. Such an industry would produce startups exclusive to this country-specific resource or industry. Although it cannot be availably know whether such characteristics vary throughout time, an assumption must be made that they are time-invariant to adhere to model specifications. With regards to the constant of the fixed effects model, a prominent assumption outlines the need for α_i to be correlated with the model independent variables. If uncorrelated, the constant term is best appropriated by the random effects estimator due to its consistency as a result of its normal distribution derivation. To test α_i's correlation with explanatory variables the Hausman Test was performed. The subsequent P value was significant (<0.01), indicating that the random estimator is likely biased and inconsistent, providing credence to the use of the fixed effect model as the prominent model.

4.2 – Model Specifications & Additions

In order to increase model specificity, explanatory power, and help meet certain assumptions, alterations to data were occasionally produced. Certain natural logarithmic transformations were performed, namely on the variables of Deal Size, Cost, market capitalization, unemployment rate, and IPO. These transformations were done primarily to meet assumptions of an Ordinary Least Squares regression (as fixed effects and random effects models are still considered linear regressions). First, logarithmic transformations compress the scale of data, reducing the range at which variables are expressed, aiding in affirmation of the lack of large outliers assumption. Secondly, natural logarithms aid in normalizing model residuals, in turn stabilizing residual variance and reducing heteroskedasticity.

Figures 1 & 2 show the fixed effect model residuals before and after logarithmic transformations, and although not fully indicative of the distinct heteroskedastic residual 'funnel', the increase in residual consistency is very visible. Next, a secondary transformation towards reducing heteroskedasticity comes in the form of heteroskedastic robust standard errors. To account for inherent within-country correlation between different time periods, clustered standard errors were used, inducing greater robustness against country specific heteroskedasticity and autocorrelation issues. This is especially useful given that the data is unbalanced.

Next, subsample analysis was performed to determine the potential answer to hypothesis 2 regarding differing effects by investment stage. All fixed effects regressions were performed on all investment stages (defined as Total), solely early-stage investment (defined as Early), and finally on exclusively late-stage investment (defined as Late). A consideration for this analysis stems from the discrepancies in observations between stages[11], inducing potential bias due to sample size differences.

Additional subsample analysis was conducted to determine structural differences in effect between emerging and developed markets, as well as the inclusion of interaction effects between the variables of interest and a binary dummy in the main fixed effects model. Groh & Wallmeroth (2016) utilized a dummy for emerging vs developed in their standard models to determine the relative effect that country prosperity has on determinants of VC investment. This strategy was employed, and supplemented with subsample analysis as a robustness check. Two final implemented strategies utilizing country legal origin were considered. First, an instrumental variable approach was attempted using legal origin as an instrument to control for any inherent endogeneity in the utilized models. Using the Sargan-Hansen test statistic to determine instrument validity and no correlations with the model error term, a positive rejection of the statistic was found, indicating unviability of the instrument. Given the rejection of the null hypothesis, the instrumental variable regressions will not be included in the analysis results. Secondly, legal origins were used for subsample analysis to examine if the effect of entry regulations on VC investment differed based on legal origin. This influence is hypothesized off work of Djankov et al. (2002).

5 RESULTS

5.1 – Theoretical Consistency of Controls

Tables 1 – 7 outline the fixed effects regression analysis used to answer hypotheses 1, 2, 3, and 4. Before outlining the specific effect of the regulatory indicators, the independent control variables and

11 – Early investment deals sum to 39104 observations, late-stage with 21223 observations, combining for a total of 60327 observations.

their respective consistency with past literature must be discussed. Certain variables presented as insignificant, with market capitalization, political stability, GDP growth, capital gains tax, and IPO variables showing little significance throughout the majority of the analyzed regressions.

Market capitalization showed both directional consistency and inconsistency with previous literatures such as Felix et al. (2013), & Cherif & Gazdar (2014), as well as no statistical significance. Political stability also displayed both positive and negative effects, with only regressions 6.2 (10% significance), 6.4 (5%), and 8.2 (10%) having positive, negative, and positive influences respective.

GDP growth was broadly negative and insignificant and exhibited an inverse effect than shown in previous works such as Gompers & Lerner (1999), Felix et al. (2013), & Romain & de La Potterie (2004).

Capital gains tax posed quite odd results, showing positive and predominantly insignificant results for most regressions. Minor positive significance at the 10% was found for the early-stage investment subsample, as well as late-stage investment (*3.4, 3.5,* and *3.*6) at the 5% level. The most unexpected results came in Table 6's subsample analysis of emerging vs developed markets, where in emerging markets an insignificant negative relationship is seen, in contrast to a significant positive effect for developed markets at the 1% level. The negative insignificance is consistent with work of Groh & Wallmeroth (2016), however the highly significant positive coefficient for developed markets is not consistent with any literature.

Finally, the variable for divestment strategy, namely IPOs, was predominantly insignificant, but directionally consistent with past literature, having a predominantly positive effect (see Gompers & Lerner (1999), Jeng & Wells (2000), Felix et al. (2013), and Bonini & Alkan (2014)). Significance of IPO divestment was found in one regression (*8.1*) at a 10% level, namely the mechanism excluding model of English legal origin subsample analysis.

Mechanistic variables were found to be directionally inconsistent with previous research but show occasional significance, namely corruption control and unemployment. Although being significant for multiple all-stage regressions (*3.7, 3.8, 3.9*), as well as early-stage regressions (*4.1, 4.2,* and *4.*3) at the 5% level, control of corruption indicates a relationship between less corruption and less VC funding, which opposed previous works of Groh & Wallmeroth (2016) & Cherif & Gazdar (2011). Unemployment rate showed slight varied directional significance, with theoretically consistent negative coefficients found for almost all regressions, specifically regression *2.7* and *2.8*, early- and late-stage subsample regressions *4.1 – 4.6*, developed country subsample *7.4 – 7.6*, and finally German law regression *8.6*. The most consistent and significant determinant was that of R&D expenditure, with all regressions on all investment stages being significant at the 5% and 10% level, and early-stage investment regressions showing a large influence of R&D expenditure, significant at the 1% level. In contrast to this, late-stage investment was not significantly influenced by R&D expenditure. This many stem from R&D expenditure cultivating a more conducive environment for small early-stage startups

in comparison to more established young firms. Due to the lack of theoretical conformity of the control determinants, additional regressions were run without entry regulation indicators to determine if the inclusion of such variables had an effect on the directionality or significance of the variables. These regressions were run and no differences in directionality were seen.

Table 1
Regressions regarding the effect of entry regulations on VC funding for all investment stages

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**(1.1)**	**(1.2)**	**(1.3)**	**(1.4)**	**(1.5)**	**(1.6)**	**(1.7)**	**(1.8)**	**(1.9)**
Regulatory Procedures	-0.388***			-0.437***			-0.225		
	(0.100)			(0.135)			(0.145)		
Time		-0.050***			-0.059***			-0.041***	
		(0.015)			(0.022)			(0.010)	
Cost ln			-1.134***			-1.208***			-0.873*
			(0.280)			(0.324)			(0.496)
IPO ln				0.013	0.012	-0.016	0.040	0.014	0.011
				(0.068)	(0.074)	(0.076)	(0.086)	(0.087)	(0.083)
GDP Growth				-3.109	-5.612*	-5.075	-6.276	-7.653*	-6.463
				(3.182)	(3.220)	(3.182)	(4.487)	(4.420)	(4.447)
Capital Gains Tax				7.232	6.770	6.929	5.746	4.869	7.234
				(4.855)	(5.158)	(5.087)	(5.550)	(5.665)	(5.498)
Political Stability				-0.135	0.178	0.218	-0.080	0.067	0.022
				(0.623)	(0.595)	(0.627)	(0.645)	(0.599)	(0.646)
Market Capitalization ln							0.140	-0.105	-0.055
							(0.314)	(0.277)	(0.339)
Unemployment Rate ln							-1.041**	-1.170**	-0.859
							(0.466)	(0.457)	(0.514)
R&D Expenditure							131.302**	149.694**	150.005*
							(64.351)	(69.314)	(75.071)
Control of Corruption							-1.968**	-2.021**	-2.009**
							(0.838)	(0.832)	(0.836)
Constant	-6.594***	-8.444***	-12.916***	-8.341***	-10.111***	-14.850***	-13.231***	-14.069***	-17.503***
	(0.673)	(0.227)	(0.912)	(1.763)	(1.695)	(1.905)	(2.574)	(2.788)	(3.043)
Observations	531	531	521	379	379	374	262	262	262
Countries Used	72	72	71	57	57	57	43	43	43
Within R^2	0.095	0.051	0.079	0.143	0.111	0.118	0.245	0.271	0.253

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, political stability, log-transformed market capitalization (Market Capitalization ln), log-transformed unemployment rate (Unemployment Rate ln), R&D expenditures, and control of corruption. The analysis uses data from 42 to 72 countries, with the number of observations ranging from 262 to 531 across regressions.*

Table 2
Regressions regarding the independent effects of entry regulations on VC funding among subsamples of early-stage investment and late-stage investment excluding mechanisms

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**Early**			**Late**		
	(2.1)	**(2.2)**	**(3.3)**	**(2.4)**	**(2.5)**	**(2.6)**
Regulatory Procedures	-0.414***			-0.338**		
	(0.111)			(0.139)		
Time		-0.051**			-0.049**	
		(0.019)			(0.018)	
Cost ln			-1.220***			-0.808**
			(0.267)			(0.335)
IPO ln	0.030	0.031	0.007	0.011	-0.016	-0.031
	(0.059)	(0.066)	(0.064)	(0.099)	(0.104)	(0.105)
GDP Growth	-0.798	-3.152	-2.001	0.012	-1.632	-0.692
	(2.649)	(2.762)	(2.673)	(6.032)	(5.906)	(6.387)
Capital Gains Tax	8.008*	7.767	7.106	10.321**	9.757**	11.494**
	(4.551)	(4.923)	(4.456)	(4.356)	(4.613)	(4.860)
Political Stability	-0.577	-0.302	-0.230	-0.381	0.099	-0.014
	(0.598)	(0.561)	(0.587)	(0.575)	(0.598)	(0.616)
Constant	-9.912***	-11.749***	-16.273***	-9.875***	-10.689***	-14.611***
	(1.572)	(1.676)	(1.809)	(2.155)	(1.931)	(2.160)
Observations	374	374	369	291	291	286
Countries Used	57	57	57	42	42	42
Within R^2	0.150	0.102	0.128	0.097	0.101	0.067

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum for subsamples of early-stage investment and late-stage investment excluding mechanisms. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, and political stability. The analysis uses data from 42 to 57 countries, with the number of observations ranging from 286 to 374 across regressions.*

Table 3
Regressions regarding the independent effects of entry regulations on VC funding among subsamples of early-stage investment and late-stage investment including mechanisms

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**Early**			**Late**		
	(3.1)	**(3.2)**	**(3.3)**	**(3.4)**	**(3.5)**	**(3.6)**
Regulatory Procedures	-0.204			-0.255		
	(0.134)			(0.170)		
Time		-0.036***			-0.041***	
		(0.011)			(0.009)	
Cost ln			-0.851*			-0.366
			(0.448)			(0.486)
IPO ln	0.039	0.016	0.011	0.087	0.051	0.071
	(0.082)	(0.084)	(0.079)	(0.133)	(0.137)	(0.137)
GDP Growth	-2.323	-3.592	-2.471	-4.434	-5.495	-3.797
	(3.763)	(3.783)	(3.758)	(5.559)	(5.225)	(5.670)
Capital Gains Tax	5.643	4.837	7.112	6.408	5.545	7.734
	(4.604)	(4.715)	(4.431)	(6.239)	(6.772)	(6.506)
Political Stability	-0.543	-0.408	-0.454	0.494	0.764	0.652
	(0.531)	(0.502)	(0.534)	(0.543)	(0.540)	(0.593)
Market Capitalization ln	0.238	0.019	0.053	0.398	0.053	0.230
	(0.411)	(0.396)	(0.406)	(0.422)	(0.382)	(0.433)
Unemployment Rate ln	-0.814**	-0.925***	-0.636*	-1.369**	-1.444**	-1.232*
	(0.309)	(0.302)	(0.347)	(0.566)	(0.531)	(0.614)
R&D Expenditure	151.751***	169.004***	167.422***	70.331	96.355	109.115
	(47.407)	(44.547)	(49.555)	(77.114)	(96.671)	(100.849)
Control of Corruption	-1.476**	-1.544**	-1.484**	-0.808	-0.929	-1.174
	(0.651)	(0.654)	(0.708)	(0.894)	(0.885)	(0.968)
Constant	-14.328***	-15.085***	-18.390***	-15.193***	-16.067***	-18.319***
	(2.408)	(2.500)	(2.682)	(2.887)	(3.121)	(2.973)
Observations	260	260	260	210	210	210
Countries Used	42	42	42	35	35	35
Within R^2	0.246	0.267	0.257	0.173	0.200	0.153

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum for subsamples of early-stage investment and late-stage investment including mechanisms. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, political stability, log-transformed market capitalization (Market Capitalization ln), log-transformed unemployment rate (Unemployment Rate ln), R&D expenditures, and control of corruption. The analysis uses data from 35 to 42 countries, with the number of observations ranging from 210 to 260 across regressions.*

Table 4
Regressions regarding the effects of entry regulations on VC funding using interaction effects of developed vs emerging market dummies.

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**(4.1)**	**(4.2)**	**(4.3)**	**(4.4)**	**(4.5)**	**(4.6)**
Regulatory Procedures	-0.347**			-0.092		
	(0.161)			(0.141)		
Regulatory Procedures x Dev.	-0.305**			-0.341**		
	(0.141)			(0.126)		
Time		-0.045**			-0.034***	
		(0.018)			(0.007)	
Time x Dev.		-0.123***			-0.078**	
		(0.033)			(0.033)	
Cost ln			-1.315**			-0.792
			(0.514)			(0.555)
Cost ln x Dev.			0.194			-0.138
			(0.578)			(0.545)
Developed	4.062**	3.077***	1.896	4.149**	2.358***	0.692
	(1.553)	(0.840)	(2.528)	(1.568)	(0.823)	(2.279)
IPO ln	0.015	0.011	-0.022	0.041	0.007	0.004
	(0.065)	(0.071)	(0.076)	(0.084)	(0.086)	(0.085)
GDP Growth	-3.352	-6.812**	-4.710	-6.744	-8.352*	-6.392
	(3.093)	(2.952)	(3.437)	(4.481)	(4.353)	(4.495)
Capital Gains Tax	6.223	3.217	7.029	5.727	4.322	7.393
	(4.687)	(5.104)	(5.035)	(5.298)	(5.673)	(5.426)
Political Stability	-0.055	0.273	0.235	0.023	0.059	0.062
	(0.590)	(0.559)	(0.641)	(0.633)	(0.618)	(0.666)
Market Capitalization ln				0.431	-0.043	-0.009
				(0.335)	(0.305)	(0.337)
Unemployment Rate ln				-0.976**	-0.933*	-0.856
				(0.471)	(0.523)	(0.525)
R&D Expenditure				113.882*	135.064*	151.403**
				(60.754)	(67.640)	(74.830)
Control of Corruption				-1.503*	-1.418*	-1.879**
				(0.799)	(0.837)	(0.808)
Constant	-10.334***	-10.405***	-15.899***	-15.384***	-14.402***	-18.054***
	(1.969)	(1.740)	(2.360)	(2.844)	(2.815)	(3.158)
Observations	379	379	374	262	262	262
Countries Used	57	57	57	43	43	43
Within R^2	0.180	0.167	0.129	0.292	0.302	0.267

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect interaction regressions examining the impact of various regulatory indicators and their interaction term counterparts on the natural logarithm of GDP normalized deal sum. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, political stability, log-transformed market capitalization (Market Capitalization ln), log-transformed unemployment rate (Unemployment Rate ln), R&D expenditures, and control of corruption. The analysis uses data from 43 to 47 countries, with the number of observations ranging from 262 to 379 across regressions.*

Table 5
Regressions regarding the independent effects of entry regulations on VC funding among subsamples of emerging and developed markets investment excluding mechanisms

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**Emerging**			**Developed**		
	(5.1)	**(5.2)**	**(5.3)**	**(5.4)**	**(5.5)**	**(5.6)**
Regulatory Procedures	-0.289			-0.628***		
	(0.184)			(0.094)		
Time		-0.047***			-0.125***	
		(0.015)			(0.029)	
Cost ln			-1.440**			-0.904**
			(0.573)			(0.331)
IPO ln	0.051	0.064	0.027	0.067	0.017	-0.002
	(0.080)	(0.090)	(0.099)	(0.097)	(0.114)	(0.111)
GDP Growth	-7.049	-11.622***	-7.976	-4.228	-5.683	-4.761
	(6.203)	(4.179)	(6.276)	(3.769)	(4.192)	(4.649)
Capital Gains Tax	-11.248	-11.215	-11.284	15.889***	12.772***	17.007***
	(9.545)	(9.696)	(9.898)	(3.247)	(4.489)	(4.156)
Political Stability	0.720	1.081*	1.001	-1.311**	-1.039	-1.113
	(0.662)	(0.551)	(0.728)	(0.597)	(0.762)	(0.816)
Constant	-4.231	-5.611*	-10.073***	-10.044***	-10.181***	-15.982***
	(3.339)	(2.732)	(2.895)	(1.640)	(1.968)	(2.719)
Observations	127	127	127	252	252	247
Countries Used	27	27	27	33	33	33
Within R^2	0.139	0.170	0.168	0.330	0.242	0.220

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum for subsamples of developed and emerging markets, excluding mechanisms. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, and political stability. The analysis uses data from 27 to 33 countries, with the number of observations ranging from 127 to 252 across regressions.*

Table 6
Regressions regarding the independent effects of entry regulations on VC funding among subsamples of emerging and developed markets investment excluding mechanisms

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**Emerging**			**Developed**		
	(6.1)	**(6.2)**	**(6.3)**	**(6.4)**	**(6.5)**	**(6.6)**
Regulatory Procedures	0.240			-0.547***		
	(0.179)			(0.112)		
Time		-0.029**			-0.084***	
		(0.013)			(0.022)	
Cost ln			-0.652			-0.794
			(0.989)			(0.596)
IPO ln	0.097	0.035	0.040	0.119	0.074	0.083
	(0.091)	(0.099)	(0.120)	(0.144)	(0.169)	(0.163)
GDP Growth	-8.707	-10.436	-8.484	-7.382	-7.369	-6.367
	(9.322)	(9.582)	(10.393)	(4.643)	(4.639)	(4.484)
Capital Gains Tax	6.642	0.795	3.120	8.698*	7.340	10.005*
	(9.869)	(9.481)	(8.694)	(4.412)	(5.842)	(5.054)
Political Stability	1.074	0.864	0.854	-0.487	-0.372	-0.313
	(0.777)	(0.815)	(0.968)	(0.622)	(0.744)	(0.749)
Market Capitalization ln	-0.139	-0.517	-0.391	0.399	0.030	-0.011
	(0.892)	(0.827)	(0.955)	(0.244)	(0.261)	(0.312)
Unemployment Rate ln	2.298	1.159	2.102	-1.419***	-1.237**	-1.222**
	(2.122)	(2.386)	(2.126)	(0.394)	(0.513)	(0.509)
R&D Expenditure	226.688***	122.973**	72.273	54.394	116.537	132.803
	(73.835)	(57.368)	(136.596)	(61.770)	(81.487)	(85.982)
Control of Corruption	-0.788	-1.006	-1.053	-0.757	-1.246	-1.618**
	(2.949)	(2.925)	(2.874)	(0.681)	(0.750)	(0.758)
Constant	-10.731	-8.057	-8.422	-13.689***	-14.881***	-19.656***
	(6.209)	(5.736)	(6.029)	(2.691)	(3.412)	(4.795)
Observations	84	84	84	178	178	178
Countries Used	20	20	20	26	26	26
Within R^2	0.165	0.184	0.161	0.476	0.392	0.381

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum for subsamples of developed and emerging markets, including mechanisms. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, political stability, log-transformed market capitalization (Market Capitalization ln), log-transformed unemployment rate (Unemployment Rate ln), R&D expenditures, and control of corruption. The analysis uses data from 20 to 26 countries, with the number of observations ranging from 84 to 178 across regressions.*

Table 7
Regressions regarding the independent effects of entry regulations on VC funding among subsamples of English, French, and German legal origins including mechanisms

Dependent Variable: Natural Logarithm of GDP Normalized Deal Sum	**English**		**French**		**German**	
	(7.1)	**(7.2)**	**(7.3)**	**(7.4)**	**(7.5)**	**(7.6)**
Regulatory Procedures	-0.452	-0.025	-0.356**	-0.041	-0.425***	-0.286*
	(0.286)	(0.327)	(0.137)	(0.182)	(0.131)	(0.150)
IPO ln	0.216*	0.271	-0.047	-0.019	-0.223	-0.090
	(0.104)	(0.160)	(0.089)	(0.114)	(0.140)	(0.124)
GDP Growth	-3.735	-6.982	-3.657	-5.949	5.607	6.019
	(4.229)	(5.042)	(6.030)	(7.827)	(10.029)	(6.109)
Capital Gains Tax	-7.521	-8.234	10.137	9.415**	35.625***	13.110**
	(9.540)	(13.775)	(6.895)	(3.574)	(6.418)	(4.738)
Political Stability	1.200	2.542*	0.054	-0.235	-1.208	-0.240
	(1.260)	(1.309)	(0.807)	(0.727)	(1.394)	(0.771)
Market Capitalization ln		0.893		0.047		0.360
		(0.619)		(0.462)		(0.575)
Unemployment Rate ln		-1.338		-0.994		-1.304***
		(1.009)		(0.882)		(0.189)
R&D Expenditure		11.461		19.366		231.849**
		(84.635)		(98.438)		(69.125)
Control of Corruption		-1.830		-3.338***		1.572
		(1.804)		(0.953)		(1.661)
Constant	-6.712	-12.229	-8.572***	-12.917***	-7.931***	-18.663***
	(4.170)	(8.273)	(2.827)	(3.211)	(2.086)	(2.919)
Observations	120	83	141	113	78	56
Countries Used	17	11	25	22	11	9
Within R^2	0.240	0.206	0.118	0.288	0.390	0.701

Note: *Standard errors are presented in parentheses. Statistical significance is indicated as follows: *** p<0.01, ** p<0.05, * p<0.1. The table presents fixed effect regressions examining the impact of various regulatory indicators on the natural logarithm of GDP normalized deal sum for subsamples of French, German, and English legal origin markets respectively, including mechanisms. Notably Scandinavian law origin was excluded due to only 1 available country. Key variables include regulatory procedures, time, log-transformed cost (Cost ln), log-transformed IPO (IPO ln), GDP growth, capital gains tax, political stability, log-transformed market capitalization (Market Capitalization ln), log-transformed unemployment rate (Unemployment Rate ln), R&D expenditures, and control of corruption. The analysis uses data from 9 to 25 countries, with the number of observations ranging from 56 to 141 across regressions.*

5.2 – Resulting Regression Analysis

Table 1 provide the initial regressions of the GDP normalized sum of national VC funding[12] on the relevant independent variables. Regressions *1.1*, *1.2*, and *1.3* are the base models on the exclusive effect of entry regulations indicators on VC funding. These models are included in the initial table to shown the pure interaction effect, however due to their very low explanatory power and significant OVB, these regressions will not be replicated. Firstly, when viewing the entry regulation indicators of regulatory procedures, time, and log cost, all but two regressions (*1.7* and *1.9* being insignificant and significant at the 10% level respectively) display a significant negative relationship between entry regulation indicators at the 1% level. The significant regulatory procedures variable (*1.4*) outlines that an additional procedure leads to an average VC funding reduction of 43.7%. This is consistent with the time indicator (*1.5*), wherein an average of a 5.9% reduction in VC funding is associated with an additional business day of time. Finally, cost (*1.*6) displays consistent results, showing a relationship between a 1% increase in cost of entry and a 1.208% reduction in VC funding on average. The inclusion of mechanisms (*1.7, 1.8, and 1.*9) confirms a reduction in impact for all regulatory indicators, presenting 21.2, 1.8, and 0.335 percentage point reductions for procedures, time, and cost, respectively. For Table 1 regarding all investment stages, the significance of all but one entry regulation indicator lends to the hypothesis that entry regulations are associated with less venture capital funding.

Table 2 presents the results from subsamples of early-stage investment and late-stage investment in the absence of mechanisms. Regulatory procedures (*2.1*), time (*2.2*), an log cost (*2.3*) show significant negative relationships with early-stage VC funding at 1%, 5%, and 10% significance levels, respectively. Notably, each indicator (*2.4, 2.5, and 2.6*) displays significance for late-stage investment, coupled with 7.63, 0.2, and 0.412 percentage point reductions in effect compared to early-stage investment. These findings are consistent with hypothesis 2 regarding a stronger effect among early-stage investment. In line with works of Jeng & Wells (2000), Groh & Wallmeroth (2016), and Felix et al. (2013), this stronger effect among early-stage investment may be due to such early-stage firms having greater susceptibility to economic fluctuations. Table 3's results are less compelling towards this hypothesis due to insignificance of certain regulatory indicators (*3.1, 3.4,* and *3.6*), as well as the effect of late-stage investment showing 5.1 and 0.5 percentage point greater negative effects of regulatory procedures and time indicators respectively. Conflicting evidence regarding the validity of hypothesis 2 makes a definitive answer less suitable, however given the potential for greater influence on early-stage outlined in Table 3, a greater effect of entry regulation may be present on early-stage investment.

12 – For the sake of concision when writing VC funding or investment in the results this will always mean the GDP normalized sum of national VC investment referencing the used dependent variable.

Emerging vs developed market analysis are outlined in Tables 4, 5, and 6. Table 4 illustrates regressions including interaction effects between each regulatory indicator, and a development dummy to segment the unique effect of entry regulations on VC funding in each market independently. Positive and statistically significant coefficients for the developed variable (*4.1, 4.2, 4.3,* and *4.4*) express how developed countries experience inherently more VC funding than do emerging markets. As emerging markets present as the reference category for these regressions, each non-interaction regulatory indicator shows their exclusive effect in emerging markets. Regarding regulatory procedures, the effect appears to be ambiguous, with the emerging market coefficient (*4.1*) having a 4.2 percentage point greater negative influence on VC investment compared to the developed interaction term (*4.1*) (both significant at the 5% level). Opposingly, regulatory procedures (*4.4*) exclusive to emerging markets are not significant and have less effect than that of the developed interaction variable (*4.4*). The time interaction indicators (*4.2* and *4.*5) show significance at 1% and 5% levels, as well as 7.8 and 4.4 percentage point greater influence in developed countries respectively. Log cost shows no significance in the interacted nor un-interacted terms, bar the emerging market term (*4.3*) at a 5% level. Table 5 confers the supposed ambiguity for whether market development influences the effect of entry regulations on VC funding, and appears to present a potential differentiated influence based on the indicator used. The effect of regulatory procedures appears to be larger and significant at a 1% level for developed countries (*5.1*), but insignificant in emerging markets (*5.4*), differentiated by a 33.9 percentage point stronger negative effect in developed countries. This is followed by time indicators presenting a larger negative effect in developed markets (*5.2*) by 7.8 percentage points compared to emerging markets (*5.5*), both significant at a 1% level. Conversely, cost has a greater negative effect in emerging markets (*5.3*), with it having a 0.536 percentage point larger effect than developed markets *5.6*), both at 5% significance. Table 6 illustrates consistency with regards to the influence of regulatory procedures, with the negative effect being larger and significant at the 1% level for developed countries (*6.4*) and, surprisingly, a positive and insignificant effect for emerging markets (*6.1*). The time variable for developed countries (*6.2*) is larger than that of emerging markets (*6.5*) by 5.5 percentage points, with each indicator expressing significance at 1% and 5% levels respectively. Log cost indicates a larger effect of 0.142 percentage points for developed (*6.3*) compared to emerging markets (*6.6*), however both variables express insignificance. The consistently stronger negative effect of regulatory procedures on VC funding in developed countries (other than the findings in Table 4), as well as every time indicator of the aforementioned regressions, inversely followed by stronger cost effects in emerging markets, lend to Groh & Wallmeroth's (2016) explanations between different determinants having unique effects based on the development of the market.

The final discussion outlines Table 7's indication of the potential differences in influence based on country legal origin. Regulatory procedures appear insignificant. German law origin indicates the largest and most significant negative effect of regulatory procedures on VC funding, with the only

additionally significant (albeit smaller) effect being that of French legal origin (*8.3*). Although Bonini & Alkan's (2014) shown significant differences of VC investment among legal origins, the relative insignificance of the regressions of Table 8, and the low sample size of available observations, makes the fourth hypothesis the most difficult to accurately accept or reject.

6 Conclusions & Limitations

6.1 – Relevant Limitations

Although robust techniques, multiple iterations of regressions, and thorough checks for broken model assumptions were employed, several limitations underlying this research must be acknowledged. A primary concern regarding the robustness of this paper's findings lies in the observational consistency of the data, with considerable amounts of missing values among certain variables, producing a relatively unbalanced dataset. Although the fixed effects regression technique partially accounts for, and can provide robust results in the presence of unbalanced sets, both inconsistency in venture capital data availability across countries, and general availability of important variables lead to large discrepancies in sample sizes, potentially influencing the robustness of the final findings. This may be a possible reason for the unexpected results of certain variables such as capital gains tax and control of corruption.

Given proposed endogeneity problems by Tian (2011), the potential effect, particularly with macroeconomic variables such as GDP growth and market capitalization, are likely influenced by unobserved factors concurrently affecting VC investment. This violates a primary assumption of ordinary least squares regressions, and acts as a potential detrimental factor influencing the robustness of the analyzed regressions. Additionally, despite being addressed through the analysis of variance inflation factors, potential multicollinearity between variables such as political stability and control of corruption might still affect the precision of the estimated coefficients. Such limitations pose as key points that must be addressed when discussing the final validity and robustness of the overall findings of this paper.

6.2 – Concluding Remarks

This paper attempted to assess the impact of entry regulations on venture capital investment, employing a dataset involving 72 countries over 10 years. The main questions of interest discussed whether higher entry regulations correlated with lower VC investment, if there was a more pronounced effect on early-stage investment, whether the impact varied between developed and emerging markets, and finally if differences were present based on legal origin.

Regarding hypothesis 1, the findings were largely supported, demonstrating that stringent entry regulations, particularly the number of regulatory procedures, significantly reduce VC investment. The regulatory procedures variable exhibited the largest effect, likely due to the direct barriers it creates for potential entrepreneurs, thereby deterring startup formation and subsequent VC interest. For Hypothesis 2, the results were mixed but indicated a stronger negative impact of entry regulations on early-stage investments compared to late-stage. Among the entry regulation indicators, regulatory procedures again had the most substantial influence, followed by time and cost. Hypothesis 3 suggested a differential impact of entry regulations based on a country's economic prosperity. The results indicated that developed markets are more negatively affected by regulatory procedures and time delays, while emerging markets are more sensitive to regulatory costs. This difference may stem from the significant role that efficient regulatory processes play in highly developed economies, compared to more substantial monetary constraints playing larger roles in less economically prosperous countries. Hypothesis 4 explored the variation in the effect of entry regulations based on legal origin. The findings, although less conclusive, suggested that countries with German and French legal origins are more negatively impacted by stringent entry regulations compared to those with English legal origins. This could be due to the more bureaucratic nature of German and French systems, and the inherent procedural similarity compared to English law origin (La Porta et al., 2008).

Overall, this study provides valuable insights into the broader effects of stringent regulatory systems on VC investment. Policymakers should be cognizant of the significant knock-on effects that entry regulations can have on wider industries, particularly those reliant on entrepreneurial activity and innovation. Given that indicators of entry regulations are consistent and the mechanisms by which they may influence VC investment are directionally aligned with relevant theory, the hypotheses have noticeable evidence to be supported.

Future research could investigate the differences in intra- versus extra-country investment based on regulatory systems, exploring whether higher local regulatory burdens drive local VC funds to invest abroad at higher rates. Additionally, examining the impact of specific regulatory reforms and their implementation over time could provide a more nuanced understanding of how regulatory environments can be optimized to foster entrepreneurial growth, and venture capital investment. Therefore, by understanding these dynamics, countries can better design regulatory environments that foster, rather than hinder, entrepreneurial growth and investment.

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Appendix

Table 8
Correlation Table of Regulatory Indicators and Theorized Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
`Regulatory Procedures	1.000						
Time	0.624	1.000					
Cost ln	0.622	0.521	1.000				
R&D Expenditure	-0.391	-0.247	-0.222	1.000			
Market Capitalization ln	-0.303	-0.154	-0.328	0.330	1.000		
Unemployment Rate ln	0.272	0.191	-0.151	-0.249	-0.237	1.000	
Control of Corruption	-0.586	-0.431	-0.568	0.557	0.489	-0.151	1.000

The correlation table above represents the piecewise correlations between each respective regulatory indicator and the supposed mechanisms.

Table 9
Dependent Variable Description

Variable	Definition	Measure	Observations	Source
Venture Capital Investment Deal	Confirmed deals regarding capital raised and invested in a specified target company. Measured in millions of Dollars. Country of the deal represents the origin country of the target firm, and deal date is the date of completion of the deal.	[#]	60327	Preqin, Private Equity Deals Database

Table 10
Independent Variable Description & Observation Count

Variable	Definition	Measure	Observations	Source
Entry Regulatory Procedures	The number of procedures for men records all the procedures required in practice for five male married entrepreneurs to start and operate a local limited liability company. A procedure is defined as any interaction of the company founders with external parties. Both pre- and post-incorporation procedures that are officially required or commonly done in practice are recorded.	[#]	531	World Bank – Doing Business
Time	The time for men captures the median duration that business incorporation experts indicate is necessary for five male married entrepreneurs to complete all procedures required to start and operate a business with minimum follow-up and no extra payments. It is calculated in calendar days. The time estimates of all procedures are added to calculate the total time required to start and operate a business, taking into account simultaneity of processes. It is assumed that the minimum time required for each procedure is one day, except for procedures that can be fully completed online, for which the time required is recorded as half a day.	[#]	531	World Bank – Doing Business
Cost	The cost for men is the total cost required for five male married entrepreneurs to complete the procedures to incorporate and operate a business. It is calculated as a percentage of income per capita. All the fees and costs associated with completing the procedures to start a business are recorded, including all official fees and fees for legal and professional services, if such services are required by law or commonly used in practice. Only incorporation costs are counted, which excludes value added taxes and bribes.	[%]	531	World Bank – Doing Business
GDP	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 constant 2015 prices, expressed in U.S. dollars. Dollar figures for GDP are converted from domestic	[#]	554	World Bank – World Development Indicators: World Bank national accounts data, and OECD National Accounts data files

	currencies using 2015 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.			
GDP Growth	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. GDP 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.	[%]	554	World Bank – World Development Indicators: World Bank national accounts data, and OECD National Accounts data files
Political Stability	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	[#]	554	World Bank – World Governance Indicators
Control of Corruption	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	[#]	554	World Bank – World Governance Indicators
Market Capitalization	Market capitalization (also known as market value) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Investment funds, unit trusts, and companies whose only business goal is to hold shares of other listed companies are excluded. Data are end of year values.	[%]	438	World Bank – World Development Indicators: World Federation of Exchanges database
Unemployment Rate	Unemployment refers to the share of the labor force that is without work but available for and seeking employment. (% of total labor force ILO estimate)	[%]	497	World Bank – World Development Indicators: International Labor Organization. "ILO Modelled Estimates and Projections database (ILOEST)" ILOSTAT
R&D Expenditure	Gross domestic expenditures on research and development (R&D), expressed as a percent of GDP. They include both capital and current expenditures in the four main sectors: Business enterprise, Government,	[%]	456	World Bank – World Development Indicators: UNESCO Institute for Statistics (UIS).

	Higher education and Private non-profit. R&D covers basic research, applied research, and experimental development.			
Capital Gains Tax	Taxes on income, profits, and capital gains are levied on the actual or presumptive net income of individuals, on the profits of corporations and enterprises, and on capital gains, whether realized or not, on land, securities, and other assets. Intragovernmental payments are eliminated in consolidation.	[%]	506	World Bank – World Development Indicators: International Monetary Fund, Government Finance Statistics Yearbook and data files.
IPO	No Source Definition – Confirmed Initial public offerings aggregated from two databases, shown in millions of Dollars, and checked for duplicate database entries.	[#]	17274	Preqin, Private Equity Deals Database & Orbis M&A Database
Emerging vs Developed	For the current 2024 fiscal year, low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method of $1,135 or less in 2022; lower middle-income economies are those with a GNI per capita between $1,136 and $4,465; upper middle-income economies are those with a GNI per capita between $4,466 and $13,845; high-income economies are those with a GNI per capita of $13,846 or more.	[#]	554	World Bank – World Development Indicators: International Comparison Program Eurostat-OECD PPP Programme.
Law of Origin	Definition Derived from Djankov et al. (2002): Identifies the legal origin of each Company Law or Commercial Code of each country. There are five possible origins: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; and (5) Socialist/Communist laws.	[#]	554	La Porta et al. (2008)

The variable definitions of Table 1 were compiled and directly quoted from each respective source.

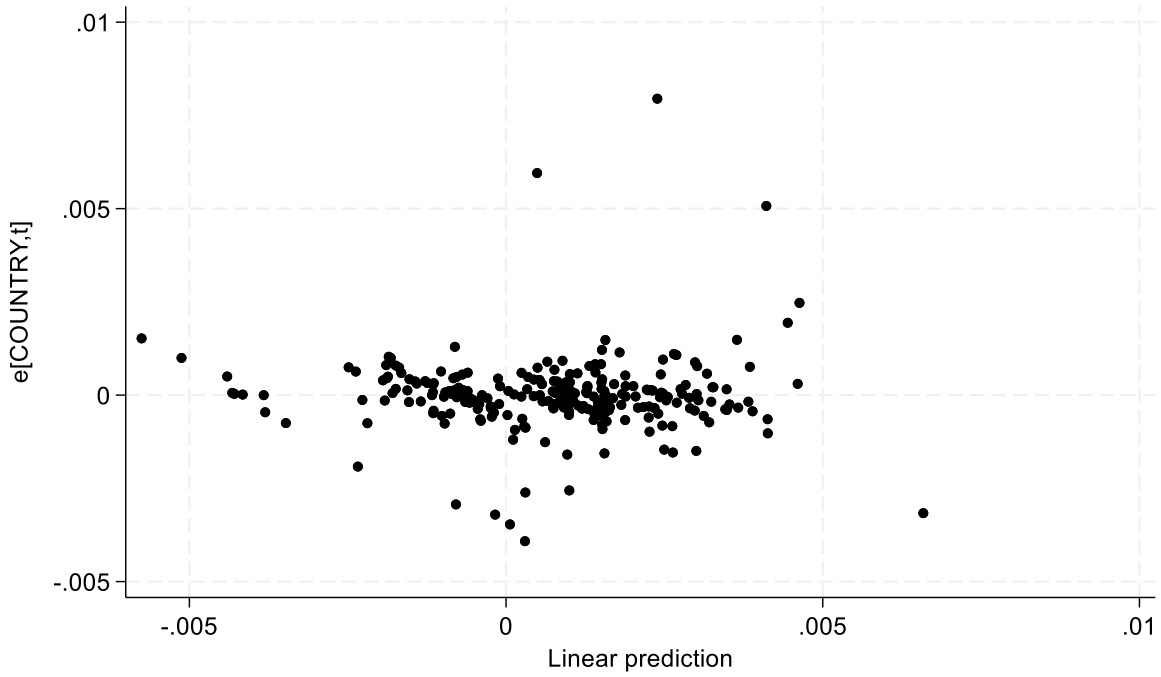

Figure 1. Pre-logarithmic transformation of residuals for the regression of the effect of regulatory procedures on VC investment in all stages

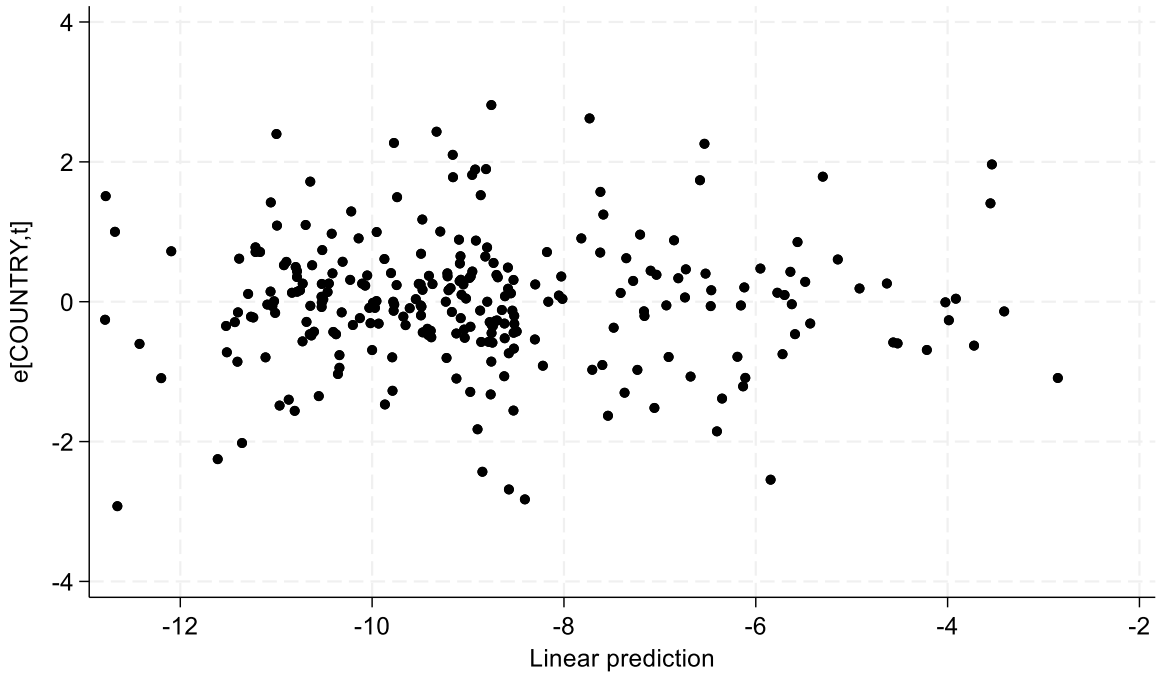

Figure 2. Pre-logarithmic transformation of residuals for the regression of the effect of regulatory procedures on VC investment in all stages