Legal, Regulatory, and Fiscal Determinants of Venture Capital Investments:
A Cross-Country Analysis

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

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Abstract

The question whether and how a country's institutional environment affects unilateral and bilateral venture capital flows in an international context has so far received little attention in the academic literature although it has been the subject of much political debate. Using data on VC investments in 55 countries from 1995 to 2008, this dissertation contributes to that debate by examining the effect of a country's legal, regulatory, and fiscal environment on VC investments. In addition, I explore whether governments can establish a domestic VC industry or attract foreign VC funding via targeted policy reforms. The results of this study suggest that VC investment flows are significantly affected by a country's institutional environment. In addition, they suggest that the judicial independence of a country's courts and the adaptability of its laws have a strong influence on the country's attractiveness for VC investors. Moreover, VC investments are strongly affected by macroeconomic, political, and cultural factors, confirming the results of prior studies in the VC literature. Finally, I show that bankruptcy law reforms, VC-related pension fund regulations, and fiscal reforms are important tools whereby governments can attract and retain domestic and foreign VC investors – a result that should be of much interest to policy makers. A series of sensitivity checks reveals that my results are highly robust to alternative sample compositions, estimation methods, and variable definitions.

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1. Introduction

In many countries around the world, venture capital (VC) is considered to be an important source of financing for young entrepreneurial firms. Given their limited track record and uncertain prospects, these firms frequently fail to satisfy the strict lending requirements implemented by traditional banks and are too small to tap into the broader debt and equity markets, thus preventing them from raising capital via a bond or stock offering. In addition to serving as an important financing tool for young entrepreneurs, VC has gained considerable popularity among investors due to the low correlation of its returns with other asset classes and the resultant diversification benefits it offers. Not surprisingly, many governments have recognized the importance of VC in supporting innovation and entrepreneurial activity as well as in spurring economic growth. Yet, despite these benefits, the market for VC remains relatively small compared to the size of the traditional equity and debt markets in many countries even though it is often hailed as an important instrument for assisting the economic development in emerging countries. Murray (2008), for example, finds that venture capitalists frequently provide initial funding to portfolio firms that have assets that are primarily intangible and have high risk but offer high expected payoffs. In addition, VC typically serves as a source of financing for early-stage and high-technology firms that produce new innovative products and thus have an exceptionally high potential to grow rapidly.

The overall research objective of my study is to explore the key determinants that affect direct VC investments. Specifically, I examine how a country's legal, regulatory, and fiscal environment affects direct VC investments. In addition, I examine whether governments

can effectively attract foreign VC investments and create a domestic VC industry via VC-friendly policy changes.

In this dissertation, I pursue several research goals, First, I seek to explore why venture capital markets are well developed in some countries while they are comparatively small in others. Specifically, I focus on the importance of the legal, regulatory, and fiscal environment in a given country and how it affects the venture capital market in that country, as measured by the total amount of venture capital investments and a series of alternative measures of direct VC investments. My analysis proceeds in two chapters. In chapter two, I perform a cross-sectional analysis of whether and how the legal, regulatory, and fiscal environment in a country relates to the amount of venture capital investments in that country. In particular, I explore whether judicial independence, jurisprudent flexibility, intellectual property rights, and private pension fund regulations as well as other legal and fiscal factors already tested in previous studies can explain differences in direct VC investments among nations. In chapter three, I perform a fixed-effects and lag-effects analysis of how policy-reform induced changes in the legal, regulatory, and fiscal environment of a given country affect direct VC investments in that country. In particular, I examine whether changes in a country's bankruptcy laws as well as changes in private pension fund regulations and corporate income taxes affect changes in direct VC investments made in that country.

As noted above, this dissertation focuses on legal, regulatory, and fiscal factors as well as a series of macro-economic, entrepreneurial, political, and cultural variables and examines how they can explain cross-sectional (i.e., cross-country) and temporal variations in VC investments. Using a sample of 55 countries tracked over the period 1995 to 2008, I find

that the institutional (legal and regulatory) and fiscal environment in a country are important determinants of direct VC investments. Including these factors in addition to my control variables results in a significant increase in the explanatory power of my estimation models relative to model specifications that only include macro-economic, entrepreneurial, political, and cultural factors. In addition, I observe that policy reforms that are targeted at improving creditor rights, reducing corporate income tax rates, or increasing the proportion of pension fund investments in alternative asset classes such as VC have a significant positive impact on VC investments from both local and foreign VC investors.

To ensure the robustness of my results, I perform a series of sensitivity analyses. These tests make a strong case that my results are robust and that the impact of the legal, regulatory, and fiscal factors that I document is unlikely driven by modeling choices or potentially omitted correlated variables (using different regression methods such as fixed effects and random effects estimations and including potential omitted variables one at a time), alternative sample compositions, and alternative model specifications (using different measures for legal enforcement, using Newey-West heteroskedasticity and autocorrelation corrected standard errors to control for potential cross-sectional correlation, and using alternative dependent variables).

In a study that aims to explore the determinants of direct VC investments in a cross-country context, it is certainly important to have a clear understanding of what VC actually is. Yet, despite the fact that VC has become a common part of the global finance vocabulary for several decades now, there are some surprising discrepancies about the definition of VC. Not only do academic studies frequently differ in their definition of VC, but there are also considerable regional and institutional variations. In this study, I follow

Gompers and Lerner (2001) and define VC as a long-term investment in equity capital in new, potentially high growth, and non-publicly traded companies that are at the early or expansion stage of their corporate life cycle and that produce new or innovative products and services for new customers in new markets in return for capital gains rather than interest income and dividend yields. My VC definition excludes private equity, which is defined as medium to long-term financing provided in return for an equity stake in such companies (BVCA, 2007). In addition, I employ the classic definition of VC as it is typically used in the U.S. and only focus on early (seed and startup) and expansion stage investments. Thus, I exclude late stage investments related to management buy-outs, management buy-ins, mezzanine, turnarounds, and the development of capital. The reason I use the U.S. concept is that the U.S. was the primary birthplace of the VC industry and has the largest and the most mature VC industry in the world. The recent academic literature supports this argument by stating that the largest VC markets in the world are those in the U.S. and the U.K., followed by Israel, Canada, and the Netherlands. Combined, these countries account for about 70% of total VC investment activities in the world (see e.g. Jeng and Wells, 2000).

> In Appendix 5, I discuss the conceptual framework of VC investments and provide an overview of the key players and their roles in the VC industry, the process of VC investments, the VC life cycle, the supply and demand for VC, and the history of VC markets around the world in more detail.

1.1. Advantages of venture capital

Relative to bank financing, VC financing has a number of advantages. First, because venture capitalists generally make long-term capital commitments and impose no immediate repayment schedule on the companies they fund, they may allow firms to pursue research-intensive long-term projects that often take several years to pay back. Bürgel (2000) notes that fixed-term VC projects typically take at least five years before they generate positive cash flows and provide a positive return to VC investors. Second, many VC funds do not only provide capital. They also support the young enterprise through close monitoring and technical and managerial support. As outlined in a research brief by the United Nations, the most important areas of support are 1) strategic decision making, 2) building up the management and administrative organization, and 3) political support, areas where new companies often fail (United Nations, 2001). For the venture capital provider such support is not benevolent. Good support in critical areas increases the survival rate and thereby the return on investment. Given the weak background of many entrepreneurs, the classical VC approach, with strong hands-on support from the capital provider is the ideal model for developing countries. Another observation made by LLSV (1997) is that many developing countries tend to experience poorer legal enforcement compared to developed countries. One may argue that in order to make up for this legal enforcement problem, monitoring activities and strong support provided by capital providers are needed. In addition, Schwartz (1994) argues that developing countries seeking economic vitality should court venture capitalists. Based on these premises, governments may take measures to spur economic development in their country by encouraging more private VC funds to invest in their country, by directly investing in VC themselves through government-sponsored VC funds, or by attracting foreign governments

to invest in their country through VC like sovereign-wealth funds (Shadab, 2008). However, researchers such as Mody and Saravia (2008) point out that government-created enabling frameworks are first needed in developing countries to create an attractive playing field and an entrepreneurial infrastructure for venture capitalists.

1.2. The venture capital industry around the world

In the late 1990s, the VC industry was by many viewed as one of the quickest growth industries in the world. From 1995 to 2000, for example, the amount of global VC investments increased from US$ 44 billion to US$ 250 billion during the 1999/2000 Internet bubble period. During that time, 42 percent of the yearly average growth in VC investments came from developed countries (Zeng, 2009). In spite of this growth and the success of the VC industry in developed countries, it is worth nothing that very few countries have developed VC markets. While some countries such as the U.S., the U.K., Canada, Israel, Japan, Australia, and Brazil have achieved a sustainable VC industry, many have failed to do so. And while the VC industry in many of those countries suffered a somewhat poor investment performance and decreased capital flows in recent years as a result of the burst of the 1999/2000 technology bubble and the recent credit crisis, each of these countries continues to attract a substantial amount of VC capital from both domestic and foreign investors. For instance, in the U.S. – which arguably has the most developed VC industry in the world – the proportion of capital provided by foreign VC investors to portfolio countries increased from approximately 10% to 26% in 2000. Since 2002, it remains at about 20% (Zeng, 2009). Many developing countries aim to replicate the success of the U.S. by passing reforms that are targeted both at building up a domestic VC industry and at attracting foreign VC funds. Yet – with some exceptions – there is still a

large discrepancy between the relative development of different VC markets around the world.

Recent statistics show that the amount of VC investment flows from developed countries to developing countries has been continually increasing in the past two decades, and particularly so in emerging market countries such as China, India, and countries in Latin America. Approximately 50 percent of all venture capital investments in Asia come from the transnational flow of venture capital among nations and from foreign flow investments (Zeng, 2009). Nevertheless, many developing countries in Africa, Eastern Europe, South America, and the Far East do not have a VC industry. As a result, in most developing countries, equity financing is practically impossible for SMEs to obtain as local VC markets are either nonexistent or vastly underdeveloped. In their study on emerging VC markets, Ahlstrom and Bruton (2006) argue that one of the main reasons why Asian VC markets have not enjoyed the same dramatic growth as the U.S. and European VC markets is the lack of an institutional infrastructure including a suitable legal, regulatory, and fiscal environment which the authors view as a fundamental requirement for VC market development.

Clearly, not all firms can receive venture capital and become portfolio firms. Whether or not enough VC funds are available and whether a specific entrepreneur receives VC funding depends on the VC investment process and the interactions among the three key players in the industry: 1) capital providers or institutional investors (which for legal reasons usually serve as limited partners or LPs), 2) capital users or portfolio firms to be, and 3) allocating intermediary agents or venture capitalists (which serve as general partners

or GPs).[1] Given that there are three key players, there are two important relationships: first that between the limited partners and the venture capitalists, and second that between the venture capitalists and the portfolio firms. This dissertation is based on the second relationship and thus explores a key aspect of entrepreneurial finance (for more details see Bottazzi et al., 2008). Once venture capitalists, who act as agents for their institutional investors, sign a contract with a portfolio firm, some problems may arise between these two players. A first problem is related to agency costs or conflicts of interest. On one hand, there may be a conflict of interest between venture capitalists and their portfolio firms that may arise when entrepreneurs pursue their own interests, while ignoring the interest of the capital providers. While monitoring and an active participation by venture capitalists in the firm's management (e.g., via a seat on the board of directors) may mitigate some of these problems, an over-monitoring may be counterproductive if it inhibits the entrepreneurs' work. A second problem arises when there is information asymmetry. This may be the case when full and equal information is not available to the venture capitalists and the portfolio firms, e.g., when there is incomplete fund disclosure and a lack of review procedures. For example, a venture capitalist may act in a manner which adversely affects the supply or demand of capital. Similarly, a portfolio firm's management has better knowledge about its operations and industry prospects than venture capitalists. A third problem that may arise is the moral hazard problem and hidden behavior. This problem exists when an agent is unable to monitor a portfolio firm and the firm acts in a manner that is disadvantageous for the venture capitalist (Bergemann and Hege, 1998).

[1] For details, please refer to Figure 5.1 which provides details about the VC investment process and Figure 1.1 which outlines the human capital involved in entrepreneurial firms.

Furthermore, even if some entrepreneurs are successful in obtaining VC funds, many of them fail to obtain an adequate amount of financing and may be underfunded or may be hard-pressed to obtain additional funds through family and friends, private angel investors, or their own internal operations. In addition, banks – a traditional source of funds for many companies – may be unwilling to make a loan to an entrepreneur if they view his firm as being overly risky. This is also the reason why VC is considered a form of risk financing, which is very different from credit financing where loans are only made if companies have sufficient assets to serve as collateral for the loan and pay a fixed rate of interest. Because such assets are typically lacking in young start-up firms, entrepreneurs need a source of financing that can accommodate a high level of risk and uncertainty. This is where venture capitalists come in. Given that they are more speculative than most banks, they are more willing to take on risks on behalf of their institutional investors by investing in these portfolio firms.

Finally, a third phenomenon in the VC industry and a factor that affects the amount of VC funds available to entrepreneurs in a given country relates to the deal flow across countries. Some VC funds invest slower or faster than others, for example, and these differences can often be traced to differences in countries' local cultural norms. Delays may arise, for example, when entrepreneurs are reluctant to share project ideas with VC firms because they view them as outsiders and are reluctant to let outsiders have control over them (Carter, 1996).

In response to the above phenomena in the VC industry, I aim to examine why VC markets around the world have undergone such a differential development and why firms' ability to access VC as a financing source differs so widely from country to country. I take the

perspective of the aforementioned key players in the industry, i.e., entrepreneurs, venture capitalists, and institutional investors, and explore why and how capital flows among these parties are affected by a variety of country-specific factors. In particular, I focus on the relationship between institutional investors and venture capitalists and examine how the legal, regulatory, and fiscal environment of a given country affects the willingness of these parties to invest in portfolio firms in that country.

1.3. Determinants of direct VC investments

1.3.1. Macroeconomic determinants

Prior VC studies (see, e.g., Gompers and Lerner, 1999, 2004; Jeng and Wells, 2000; Romain and De la Potterie, 2004; Cumming and MacIntosh, 2006; Felix et al., 2007; Bonini and Alkan, 2009) have found that macro-economic factors (including, for example, GDP growth, interest rates, unemployment rates, and inflation) as well as other country-specific factors (including law, regulations, taxation, politics, culture, etc.) have a profound impact on the VC market (for more details, please see Appendix 6). One of the main focal points in prior empirical studies has been the question whether differences in macro-economic environments can explain differences in the amount of VC invested by venture capitalists on behalf of institutional investors. Some of the macroeconomic factors that were found to influence the size of VC markets include GDP growth (Gompers and Lerner,1999, 2004; Jeng and Wells, 2000; Marti and Balboa, 2001; Romain and De la Potterie, 2004; Cumming and MacIntosh, 2006; Armour and Cumming, 2006; Felix et al., 2007), short- and long-term interest rates (Gompers and Lerner, 1999; Jeng and Wells, 2000; Romain and De la Potterie, 2004; Cumming and MacIntosh, 2006; Felix et al., 2007), employment growth (Belke et al., 2003), unemployment rates (Felix et al., 2007), and stock market returns (Gompers and Lerner, 1998; Jeng and Wells, 2000; Schertler,

2003; Romain and De la Potterie, 2004; Cumming and MacIntosh, 2006; Felix et al., 2007). Because VC investments tend to be long-term and illiquid[2], VC investors are highly affected by the economic cycle. To avoid having to deal with the typical investment withdrawal made by retail investors during economic downturns (and additional deposits during economic peaks), venture capitalists tend to only accept institutional investors as clients and impose the requirement that these investors commit to a ten-year investment after which the funds are closed out and new funds are raised. Another reason for imposing this fixed-term requirement is that most portfolio firms tend to be unprofitable during their first year of operation. Bürgel (2000), for example, finds that it takes on average five years before a typical portfolio firm has positive net income, and several more years before venture capitalists can exit their investment via an IPO or a sale.

While there have been several previous studies that analyze the role of macro-economic factors in determining why VC investment levels differ across countries (see, for example, Marti and Balboa, 2001; Belke et al., 2003; Schertler, 2003; Romain and De la Potterie, 2004; Cumming and MacIntosh, 2006; Felix et al., 2007; Bonini and Alkan, 2009), very few have examined the importance of legal factors (Allen and Song, 2002; Cumming et al., 2006, 2008; Groh et al., 2007, 2008), regulatory factors (Jeng and Wells, 2000), or fiscal factors (Keuschnig and Nielsen, 2004; Romain and De la Potterie, 2004; Da Rin et al., 2005; Armour and Cumming, 2006; Bonini and Alkan, 2009) and even then they typically investigate a limited number of factors and use only a small cross-section of countries. Thus, in this dissertation, I focus on examining whether international differences in these factors can explain differences in VC investments from both domestic and foreign VC

[2]as opposed to stock market investments which may be short-term and liquid because investors can buy stocks at a given price and immediately sell them when the price rises.

funds in a broad cross-country setting. In addition, I explore whether governments can spur VC investments through the implementation of targeted policy reforms.

1.3.2. Legal factors

Laws play an important role in enforcing business contracts and in protecting investors and entrepreneurs. Thus, it is fair to assume that a country's legal environment influences investors' decision to invest in a company. This view is supported by Armour and Cumming (2006) who note that the legal environment is as important as the economic environment in determining the size of VC markets. In the law and finance literature, there are several theories that aim to explain how law impacts the size of capital markets in different countries. In 1997, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (hereafter LLSV) developed the legal origins theory that states that English common law countries better protect investors' property rights and therefore have larger capital markets than non-English common law countries. Later, in 2003, Beck et al. (2003a) developed a theory that relates laws to financial development. Their theory states that countries in which courts are more independent from the state or whose legal systems adopt quicker to new developments have better developed financial markets. Therefore, in countries with a better developed legal system, investors are more willing to invest in firms. Specifically, if something happens, they can take legal action and sue the firms because they feel well protected by the law. Later studies support the above theories (cf., Beck et al., 2003b, 2005).

Prior studies in the VC literature show that differences in legal origins (common law and civil law), legal protection for shareholders and creditors, and their enforcement affect the

size of a country's VC industry (see Allen and Song, 2002; Balcarcel, 2005; Cumming et al., 2006, 2008; Bottazzi et al., 2008; Groh et al., 2007, 2008; Cumming and Johan, 2009). In particular, they find that common law countries and countries with well developed laws and strong legal enforcement are more attractive to institutional investors and venture capitalists than civil law countries and countries with poorly developed laws and weak legal enforcement.

1.3.2.1. Bankruptcy laws

Bankruptcy occurs when a firm is unable or unwilling to make principal and/or interest payments on its outstanding debt to its creditors. The goal of bankruptcy laws is to keep firms in operation or – if a firm is unable to survive – to regulate the division of the firm's assets among its creditors. In the event of bankruptcy, there are transaction costs such as legal, accounting, and other expenses that are associated with the ownership transfer of assets from debtors to creditors. In addition, there may be indirect costs such as a decrease in sales or an increase in production costs (Higgins and Schall, 1975). Bankruptcy laws – one of the four major types of corporate laws besides company laws, contract laws, and securities laws – have been found to be a significant determinant of capital market development (LLSV, 2000a). Bankruptcy laws are also hypothesized to be related to VC market development. Armour and Cumming (2006), for example, find that VC backed firms in countries with liberal bankruptcy laws have a higher demand for VC funding than those in countries with non-liberal bankruptcy laws[3]. Their findings are in line with an earlier study (Armour, 2003) in which the author argues that besides taxation laws and legal structure, bankruptcy laws are essential for creating VC markets outside the U.S. as

[3] Non-liberal bankruptcy laws refer to laws that grant a bankrupt person a number of years before he or she receives a discharge from pre-bankruptcy indebtedness (Armour and Cumming, 2006).

they give incentives to entrepreneurial firms to do business, and hence augment the demand for VC.

Some authors have argued that changes in bankruptcy laws may have a significant impact on the attractiveness of a country from an investor's stand point (see, e.g., Djankov et al., 2007). While there have been a number of countries that reformed their bankruptcy laws, there is to my knowledge no study to date that examines how the resultant changes in creditor protection affect the amount of VC investments both over time and across countries. As noted earlier, I add to the literature in this area by exploring the legal and regulatory determinants of venture capitalists' investment activity in an international setting both from a static and dynamic perspective.

1.3.2.2. Intellectual property rights

Intellectual property rights protection is another key factor that is hypothesized to affect venture capitalists' decision to invest in a given firm and to influence the performance of their funds. While domestically operating VC funds are typically aware of the financial, managerial, and technological risks their portfolio firms are facing, it is difficult for them to foresee what risks they will face when they invest abroad. A particular concern for hi-tech startups, for example, is the protection of their intellectual property. If that property is infringed upon the value of those firms stands to suffer significantly. This line of thought is supported by Groh et al. (2007; 2008), who find that property rights protection is a primary determinant of how much institutional investors invest in portfolio firms in Central and Eastern Europe.

1.3.3. Fiscal factors

1.3.3.1. Corporate income tax rates

Corporate income taxes are part of the government's tax revenues and are based on a company's taxable income. There are good reasons why governments tax income at the corporate level. For example, corporate income taxes impede companies from receiving excessive income by shifting between capital income and labor income. In addition, they prevent the non-resident shareholders of a company from earning income without paying taxes (OECD, 2007). However, the higher a company's tax burden, the higher the risk of bankruptcy and the lower the expected return for outside investors. As a result, when a country imposes high taxes at the corporate level, it also makes itself unattractive for venture capitalists.

Prior studies in this area have typically performed a static analysis of how corporate income taxes impact the size of VC investments, i.e. the amount that venture capitalists invest in their portfolio firms. Romain and De la Potterie (2004), for example, examine corporate income tax rates in 16 countries and find that the higher the corporate income tax rate, the smaller the amount of funding that portfolio firms receive from venture capitalists. In recent years, corporate income tax rates have been reduced in many countries due to an increase in corporate tax competition as well as in corporate tax planning (OECD, 2007). Governments and public policy makers are increasingly trying to create business-friendly tax environments for institutional investors and venture capitalists in order to persuade them to invest in their countries. In addition, reducing the complexity of tax systems is a continued concern among many regulators and it is often argued that a reduction in the complexity of a country's tax system can stimulate investments in that country (see, e.g., Das-Gupta, 2004). By lowering their corporate income tax rates and reducing fiscal

complexity, countries can create better conditions for companies, attract foreign investments, promote and sustain economic growth, and generate an impetus for employment. While some studies use effective average corporate income tax rates (see, e.g., Devereux and Griffith, 2003; Da Rin et al., 2010), in this study, I employ the maximum corporate income tax rate that takes into account federal, state, and local tax rates as provided by PricewaterhouseCoopers and the OECD.

1.3.3.2. Capital gains tax rates

Capital gains taxes are levied on individuals and companies when they realize a capital gain on a specific investment they made. Besides corporate income taxes, capital gains taxes play a crucial role in encouraging domestic and international investors to invest in a given country and in enticing entrepreneurs to do business. While some countries do not implement this type of tax, many others do. In addition, there are many instances in which countries have not just changed the respective rates but where one can observe full policy shifts that resulted in the introduction or termination of this type of tax (see, for example, Germany's introduction of a 25% capital gains tax in January 2009). Whether or not governments should charge a capital gains tax has long been a debated topic. Critics such as Uppal (2009), for example, argue that, whereas income is foreseen and plannable, capital gains are often not, making income taxation preferable over capital gains taxation. In a VC context, it has often been argued that a high capital gains tax rate discourages not only VC investments, but also reduces entrepreneurial activity (cf., Poterba, 1989; Rigaut, 2002). This is due to several reasons. First, when investors sell their shares before retained earnings are distributed by a firm, they are taxed twice: once because the firm has to pay corporate income tax on its earnings and second when the investors themselves have to pay

taxes on the capital gains they realize when selling their shares. Secondly, a startup firm is taxed on the profits that they have to retain during their early startup phase (Keuschnigg and Nielsen, 2004). Third, capital gains taxes act as a transaction tax for VC firms when they reallocate their funds and reinvest the proceeds of prior investments in their portfolios. Thus, capital gains taxes discourage the intermittent realization of profits and the diversification of the VC funds portfolio that could be achieved through more frequent portfolio shifts. As a result, despite being an important revenue source for the government, many countries have taken steps to reform their tax laws and reduce the capital gains tax rate. Proponents of a reduction or elimination of capital gains taxes often argue that it encourages institutional investors to invest more in portfolio firms, stimulates more entrepreneurs to do business, and subsequently improve productivity and spur economic growth in a country.

There are many academics who support the above arguments. In the economic literature, for example, the argument is sometimes made that taxes should be lower on assets that are easily moved around. In addition, a majority of single-country studies that explore the impact of tax laws on VC investments find a significant negative relationship between capital gains tax rates and the amount of VC investments (see Gompers and Lerner, 1999). However, to the best of my knowledge, there has been no study to date that examines this relationship in a cross-country setting. Therefore, I extend prior research in this area by examining the effects of capital gains taxes and corporate income taxes on direct VC investments both over time and across countries.

1.3.4. Private pension fund regulations

VC-related pension fund regulations are another important factor that explains differences in the amount of risk capital provided by institutional investors to VC funds. Pension fund regulations frequently limit the proportion of assets that a pension fund manager can invest in VC. Recently, private pension fund regulations have received increasing attention among governments and policy makers who aim to enhance their country's attractiveness as a place for business. Burgess (2002), for example, documents that changes in pension fund regulations and an easing of restrictions that prevent pension funds from investing in VC have clearly stimulated VC investments by pension funds and insurance companies in the U.K.

The extant VC literature only includes single country studies that examine the impact of private pension fund investments on VC fundraising (see Gompers and Lerner, 1999; Jeng and Wells, 2000). For example, in their 1999 study, Gompers and Lerner examine the impact of private pension fund reforms in the U.S. (e.g., the 1974 Employee Retirement Income Security Act or (ERISA) and the ERISA's 1980 prudent man rule) on VC fundraising, i.e., capital flows from investors to VC funds. They find that reductions in pension fund restrictions increase the funds available for VC investments. Additionally, Jeng and Wells (2000) find that VC fundraising is affected by the levels of private pension fund assets over time, but not across countries. In this dissertation, I will extend their findings internationally and conjecture that countries that pass legislation aimed at increasing the amount of private pension fund investments in VC have relatively larger VC markets than countries that do not pass such legislation during the same time period.

Given the large cross-country differences in VC investment activities, it is not surprising that the role of country-specific environments has received growing attention among researchers, practitioners, and policymakers around the globe (cf., Shane, 2008). This dissertation seeks to contribute to the literature by performing a study of both the static and dynamic influence of legal, regulatory, and fiscal factors on VC investment activities in a cross-country context. The main research question of this dissertation is: why do VC investments differ so widely from one country to the next? In particular: how are the VC markets and the growth of the VC industry in different countries affected by the legal, regulatory, and fiscal environments of those countries? To answer these questions, I extend the literature on law and finance[4] into the context of VC investments. While differences in VC market development have also been explored by some prior studies (e.g. Schertler, 2003; Allen and Song, 2002; Lerner and Schoar, 2005; Balcarcel, 2005; Armour and Cumming, 2006; Cumming et al., 2006, 2008; Kaplan et al., 2006; Groh et al., 2007, 2008; Felix et al., 2007; Wonglimpiyarat, 2009), they typically only compare few countries at a time over relatively small time horizons. By considering venture capitalists' investment activities in a large sample of countries over a long sample period, I will extend previous studies of how legal, regulatory, and fiscal factors affect venture capitalists' willingness to invest in a given country. In addition, I explore how governmental policy changes in the legal, regulatory, and fiscal environment of a given country influence the growth of VC industry over time in that country.

I use a quantitative research approach to address my empirical research questions. The data employed in this dissertation is gathered from various sources. Most of the VC-related

[4] Specifically, my study extends the seminal work by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998, 1999, 2000a, 2000b, and 2002), which explored whether legal and enforcement factors can explain differences in financial market development (e.g. the relative size of a country's banking and stock market sectors) across countries.

variables required for this dissertation are retrieved from the Securities Data Company's (SDC) VentureXpert database. The VentureXpert database provides detailed information for each venture capital deal that took place worldwide since the 1960s and includes such data items as the date of each financing round, the amount a company received, and detailed information on the venture capitalists that disbursed the funds. The independent variables that I use include a variety of country- and year-specific factors that are obtained from several sources. For instance, I use many of the legal factors that have previously been developed by LLSV (1997, 1998), Beck et al. (2005), and Djankov et al. (2003, 2007, 2008). Information on pension fund regulations is collected by hand from different sources including previous studies, published materials (such as governmental reports, magazines, books, and Internet web sites), supranational organizations (such as the OECD and the World Bank), and a series of surveys with industry professionals and VC associations. To obtain information on the past and current tax regimes in each country, I contacted the respective country representatives of PricewaterhouseCoopers for all countries used in my study. Other explanatory factors include religious factors such as those used by Stulz and Williamson (2003) as well as factors that describe a country's political system and its economic development including the real growth in GDP which are available from various sources such as the United Nations, the World Bank and the IMF. The combined dataset provides an excellent opportunity to study the effects of country-specific factors on VC investments in a large cross-country setting. In addition, they allow me to expand and revisit the findings of previous studies in this area.

Therectical and empirical studies

Institutional factors matter because they affect direct VC investments and investors' expectations about the risk adjusted returns on their portfolio investments. This dissertation explores several relationships that are linked to the economics of entrepreneurial finance. The following table outlines some of these links and relates each institutional variable used in this study to the underlying economic theory. Specifically, it provides an overview of the related investment theories, summarizes my main hypotheses, and lists the empirical variables used in this study, together with their predicted effect.

With respect to the legal framework, the power theory of creditors by Townsend (1979) states that laws and regulations that are efficiently and properly enforced can protect creditors' rights in financial contracts, thus facilitating credit markets and driving economic growth. Furthermore, LLSV (1997) developed the legal origins theory that states that common law countries better protect investors' protection rights and therefore have larger capital markets than civil countries. Accordingly, in this study, I hypothesize that common law countries and countries with strong shareholder rights, creditor rights, legal enforcement, and property rights protection have higher direct VC investments than civil law countries and countries with weak shareholder rights, creditor rights, legal enforcement, and property rights protection. Beck et al. (2003) extend the legal origins theory by LLSV (1997) and develop the so-called law and finance theory that claims that common law countries have better developed financial markets than civil law countries because their supreme court judges are more independent from the State and because their legal system adapts quicker to new circumstances and new financial contracts. In my study, I expect higher direct VC investments in countries where supreme court judges are independent from the State and whose laws are quickly adapted to new circumstances and to financial contracts.

With respect to the regulatory framework, Markowitz (1952) developed the modern portfolio theory that predicts the relationship between diversification and portfolio risk. The theory suggests that by diversifying a portfolio, investors can reduce their risk and maximize their returns. In this study, I look at private pension fund regulations on VC and hypothesize that countries that allow pension funds to diversify their portfolio by investing in alternative risky assets such as VC have higher direct VC investments than countries that prohibit pension funds from investing in VC. I thus expect a positive relationship between these factors.

In regards to the fiscal framework, Hayek (1960) predicts that positive changes in tax policy (i.e., tax reductions) increase capital investments in the sense that the lower the current effective tax rates, the higher the investments. That is, if taxes are high, the return on investments is reduced, thus discouraging investments. Lower taxes allow a firm to reduce the prices of goods and services. When the prices are low, people have more money to invest. In addition, lower taxes should increase the amount of money that is available to shareholders and thus increase shareholder returns. I expect that reductions in corporate income tax rates and in capital gains tax rates attract both domestic and foreign investors to invest in portfolio companies and consequently increase direct VC investments.

With respect to the macroeconomic framework, Stigler (1939) introduces a theory that suggests that start-up firms drive a country's economy to grow because of their flexible production technology and high expected performance. In my study, I consider several macroeconomic factors including GDP growth and stock market size and examine how they impact direct VC investments. I expect a positive relationship between these factors

and VC investments. In addition, according to the Fisher effect, an increase in the inflation rate in a given country causes an increase in the interest rate. In this study, I apply this theory to the concept of investments in the sense that the higher the interest rate due to an increase in inflation, the more costly the bank financing. Thus, when bank financing is costly, VC financing may be a better choice for entrepreneurs. I hypothesize that inflation has a negative impact on direct VC investments in my study. I further use the economic freedom index to measure the macroeconomic environment and expect this variable to be positively related to direct VC investments.

Finally, in terms of the cultural framework, an empirical study by Stulz and Williamson (2003) suggests that religion explains differences in investor protection rights better than legal origins and thus influences investors' decision to invest in portfolio companies in a given country. The authors find that Protestant countries have stronger creditor rights and better legal enforcement of these rights than Catholic and Muslim countries, thus having better financial development. In my study, I expect that Protestant, Buddhist, Hindu, and Jewish countries have higher direct VC investments than Catholic, Orthodox, and Muslim countries.

Investment Theory	Hypothesis	Empirical Variable	Predicted Effect
Institutional framework:			
Legal framework	Common law countries and countries with strong shareholder rights, creditor rights, legal enforcement, and property rights protection have higher direct VC investments than civil law countries and countries with weak shareholder rights, creditor rights, legal enforcement, and property rights protection. Countries where supreme court judges are independent from the State and whose laws are quickly adapted to new circumstances and new financial contracts have higher direct VC investments than countries where supreme court judges are controlled by the State and whose laws do not easily adapt to new circumstances and new financial contracts.	1. legal origins, 2. shareholder rights, 3. creditor rights, 4. legal enforcement 5. intellectual property rights 6. judicial independence 7. jurisprudent flexibility	+
Regulatory framework	Countries that allow pension funds to diversify their portfolios by investing in VC have higher direct VC investments than countries that prohibit pension funds from investing in VC.	Private pension fund regulations on VC	+
Fiscal framework	Taxation reduces the returns on investment..	1. Capital gains tax rates 2. Corporate income tax rates	-
Macroeconomic framework	Countries with high GDP growth, big equity markets, and strong economic freedom have higher direct VC investments than countries with low GDP growth, small equity markets, and poor economic freedom. Countries with a low inflation rate have higher direct VC investments than countries with a high inflation rate.	1. Stock market capitalization, 2. Real GDP growth, 3. Economic freedom 4. Inflation	+
Religion	Protestant, Buddhist, Hindu, and Jewish countries better protect investors' property rights than Catholic, Orthodox, and Islamic countries, thus having higher direct VC investments than Catholic, Orthodox, and Muslim countries.	Religion dummies	Ath/Ind + Bud + Cath - Hin + Jew + Mus - Ortho - Protest +

1.4. Literature review

Prior research in the large literature on law and finance has investigated how the financial development of a given country is affected by its legal environment. In particular, there have been several studies that explore how legal factors affect the relative size of a country's banking sector and stock market at the macro-economic level (see, e.g., Black and Gilson, 1998; Levine, 1997, 1999; Singh et al., 2001), and firms' access to external finance at the micro-economic level (see, e.g., Rajan and Zingales, 1998; Demirgüç-Kunt and Maksimovic, 1998).

Recent research has extended the literature on law and finance into the context of VC investments and has explored how differences in legal environments affect a country's VC industry. Specifically, recent studies have examined the effect of legal factors on the VC fundraising process (Jeng and Wells, 2000; Armour and Cumming, 2006), VC financial contracts (Kaplan and Strömberg, 2000, 2003; Kaplan et al., 2006; Lerner and Schoar, 2005; Subramanian, 2008), the types of VC investments (Cumming and MacIntosh, 2006), VC exits (Armour and Cumming, 2006; Cumming et al., 2006), corporate governance (Allen and Song, 2002; Cumming et al., 2008), cross border investments and investment strategies (Balcarcel, 2005; Coeurderoy and Murray, 2008), allocation of institutional investment funds to VC and private equity as an alternative asset class in their portfolios (Groh et al., 2007, 2008), and the IPO process (Wonglimpiyarat, 2009). Many of these papers extend prior research such as that by LLSV (1997, 1998) who argue that the financial development of a given country is significantly affected by the quality of its legal and regulatory system. Interestingly, all of these studies treat the legal, regulatory, and fiscal environment of a country as fixed and generally ignore the fact that governmental policies may change over time and that, in fact, many governments have passed specific legislation to overcome deficiencies in their domestic markets or to allow foreign venture

capitalists to enter their markets. A good example is Australia that recently changed its legislation regarding the double taxation of capital gains with one of the stated intents of attracting more venture capitalists to invest in their country.

In addition, there have been a number of countries that reformed their pension fund regulations, bankruptcy laws, and tax regimes, and it is likely that these changes had a significant impact on the attractiveness of their country both from an entrepreneurial and venture capitalist stand point. Yet, I am not aware of any studies that have examined the impact of those reforms on direct VC investments in a broader cross-country context.

My study seeks to contribute to the comparative VC literature and – rather than examining factors that influence the overall VC market of a country in relation to predefined static factors – explores the determinants of changes in the size of VC markets in relation to governmental regime shifts over time. To achieve this, I draw on newly available data in the international law and economics literature that explores the evolution of bankruptcy law (Djankov et al., 2007), and private pension fund regulations (the Economist Intelligence Unit database, 1996 -2009; OECD, 1997; O'Shea, 1997; O'Shea and Stevens, 1998; Jeng and Wells, 2000; Heerde, 2001; Burgess, 2002; Kenney et al., 2002; Spieckermann, 2002; Hinz, 2003; Bosut, 2004; Chan-Lau, 2004; Martin et al., 2004; Olivares, 2004; Choi, 2005; Kharas and Steer, 2006; Bayhan, 2007; Mitchell, 2007; Schröder, 2007; Tapia, 2007; Wijana, 2007; Coelho et al., 2009; LAVCA, 2009) over time. In addition, I employ data on tax rate changes as provided by PricewaterhouseCoopers and the OECD, which have previously not been used in an international VC context. Because my study will be the first to measure the impact and the effectiveness of specific regime shifts on the VC industry, my results should be of particular interest to governmental

regulators, law makers, and policy makers. I hope that the insights I provide with my study will help these parties address and overcome potential deficiencies in their VC markets.

Specifically, I extend the literature on law, finance, and VC by considering the impact of legal and institutional differences on the total amount of VC investments scaled by GDP in each country in order to explain why some countries' VC markets have developed better than others and why firms' access to VC financing differs strongly across countries. In the first chapter of this dissertation, I will examine what determines the total size of a country's VC market at a given point in time, i.e. I will focus on the static determinants of VC market development by providing an up-to-date large-sample analysis that covers VC investments in 55 countries between 1995 and 2008. I explore several factors, e.g. legal factors such as proxies for judicial independence, the use of case law vs. statutory law, and bankruptcy laws that have previously not been examined in this literature. These later factors allow me to test theories such as the political and adaptability channel theory developed by Beck et al. (2003a, 2005) which have only been explored in a non-VC context until to date. More importantly, I add to the comparative VC literature by being the first to study the impact of governmental regime shifts on the evolution of a country's VC market over time, i.e. to explore the determinants of dynamic changes in direct VC investments in relation to governmental policy changes that have a direct influence on the VC industry in an given country. While my main focus is on each country's overall VC market, I also distinguish between VC investments made at different stages in a company's life, i.e., at the early (including the seed and start-up stage) and expansion stage. In line with the extant research in this area, I will employ static data provided by LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (henceforth LLSV) and will complement their data with several additional legal and regulatory variables that have been employed in the more

recent literature and a detailed dataset on policy and fiscal reforms that I collected from a variety of different sources.

As noted earlier, I extend Osama's (2005) framework (see Figure 1.2) by creating two indicator-level models in Figure 1.3 for Chapter 2 and in Figure 1.4 for Chapter 3. I consider relationships between country factors (including legal, regulatory, and fiscal factors) and VC investments across countries. The underlying assumption of the indicator-level model is that each indicator has a direct effect despite the potential interrelationships among the indicators. In other words, the indicator-level model attempts to capture in more detail the direct effects that individual legal, regulatory, and fiscal factors have on VC investment activities. This model provides a more comprehensive approach to the country-specific factors that determine venture capitalists' willingness to invest in portfolio firms on behalf of institutional investors.

In chapter two, my primary hypothesis is that the legal, regulatory, and fiscal environments in a given country play a significant role in determining what I will hereafter refer to as the country's VC market development, i.e., the overall size of the country's VC market as measured by the total amount of VC investments made in that country over a specific time period relative to the country's average GDP during that time. In chapter three, my hypothesis is that positive (i.e., VC-friendly) legal, regulatory, and fiscal reforms have a positive effect on VC investments.

1.5. Summary of the key literature and related hypotheses

To provide a better and more concise overview of the key literature in this area, I provide four tables that summarize prior studies examining the legal determinants of capital markets (Table 4.1), as well as the legal, regulatory, and fiscal factors affecting VC investments (Tables 4.2 to 4.4, respectively). Finally, in Table 4.5, I provide a list of my hypotheses for chapter 2 and in Table 4.6 for chapter 3. All of these tables are listed in Appendix 4.

The reminder of this dissertation is organized in two chapters. Each chapter provides its own literature review and hypotheses, data description, empirical methodology, empirical results, robustness checks, and conclusions as well as a discussion of the potential legal, regulatory, and fiscal policy implications of my findings.

2. Legal, Regulatory, and Fiscal Determinants of Venture Capital Investments

2.1. Literature review and hypothesis development

2.1.1. Legal factors

2.1.1.1. Legal origins

The commercial law of almost all countries around the world can be classified as falling under two broad legal traditions: English common law and Roman civil law (David and Brierley, 1985; LLSV, 1997, 1998). English common law has its origins in the 17th century. At the time, it was shaped by the British Parliament as well as British landowners and the country's aristocrats who fought attempts by the British Crown to reinstate feudal privileges in the country. By emphasizing the private and property rights of individuals, common law protects individuals against the State and limits the power of the sovereign (David and Brierley, 1978; LLSV, 1999). According to Beck et al. (2003a, 2005), the common law system provides liberties for private property rights and allows investors to do financial transactions with confidence. The authors argue that this high level of property rights protection ultimately drives financial development (see also North and Weingast, 1989). This English common law is also referred to as case law or precedential law because judges in common law countries tend to base their decisions on prior decisions made by other judges.

In contrast, the civil law system can be traced back to Roman times and the time of Codification that occurred in the 19th century in large parts of continental Europe. It was introduced by nation builders such as Napoleon and Bismarck and is often considered as an instrument of the State in expanding its power, though to a lesser extent than Socialist law

(Finer, 1997; LLSV, 1999; Beck et al., 2003a, 2005). Beck et al. (2003a, 2005) confirm that, by putting State power over the rights of individuals, the French and German civil codes tend to have an adverse impact on countries' financial development. Civil law relies on statutory law and comprehensive codes that are created by scholars and the legislature (LLSV, 1997, 1998). Judges in civil law countries generally base their rulings on a strict interpretation of these written codes and laws.

In my empirical analysis, I follow the approach commonly used by legal scholars in this area and use common law to proxy for the quality of individuals' property rights protection in a given country while I treat civil law as a proxy for the power of the State over its citizens.

The common and civil law systems can be further classified into four legal origin categories, namely, English, French, German, and Scandinavian (Nordic) law (LLSV, 1997,1998) or into five origins by adding Socialist law (see LLSV, 1999). The English origin refers to common law and is primarily found in England and its former colonies such as the U.S., Australia, and Canada. Second, the French origin is based on civil law and the French Commercial Code that was written under Napoleon in 1807. It was first applied in France and later in Portugal and Spain (both of which were conquered by Napoleon) as well as Italy, Lithuania, Romania, Albania, and former French colonies. Third, the German legal origin underlies the civil laws in Germanic countries in Central Europe, former communist countries in central and Eastern Europe including Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Serbia, the Slovak Republic, and Slovenia, as well as some East Asian countries where it was transplanted (see Djankov et al., 2007). It is based on the German Commercial Code that was written in 1897 after Bismarck's

unification of Germany (LLSV, 1998, p.1118). Fourth, the Scandinavian legal origin combines the civil laws of the four Scandinavian countries: Denmark, Norway, Sweden, and Finland. Scandinavian law was reformed in 1734 (Schultz, 2008). It is part of civil law, but less derivative of Roman law than the French and German families (Zweigert and Kotz, 1987; LLSV, 1998). Nowadays, it has no civil codes, though they existed in the 18th century (LLSV, 1998; Schultz, 2008). Finally, the Socialist legal origin falls under the civil law category and is based on the law of the former Soviet Union and its Communist allies. It can still be found in some Eastern European countries and former Soviet republics which retained it even after the collapse of the Soviet Union. Socialist law was used by the State to create institutions that allowed it to maintain its power and to extract resources with little consideration for the liberties of the population. As noted by LLSV (1999), it focuses on keeping the Communist Party in power, not to protect individual property rights or citizens' freedom. Similar to Djankov et al. (2007), I do not apply the Socialist origin category to countries that have gone back to their pre-communist legal systems. As Djankov et al. point out, most Baltic and Eastern European countries reactivated their pre World War II laws after the collapse of communism and should thus not be treated as socialist legal origin countries. I therefore classify these countries according to the origin of the laws they reverted back to following the collapse of the Soviet Union.

The question of how common vs. civil law and the four (five) legal origins affect financial development has received growing attention in the financial literature in recent years. Authors such as LLSV (1999), for example, have developed a legal origins theory that states that many aspects of a country's economic state of development are the result of their legal system. The basic thrust of the theory is that English common law, as opposed to French civil law (and to a lesser degree German and Scandinavian civil law) is

associated with more orientation towards market institutions (instead of state interventionism), which is why, according to proponents of the legal origins theory, common law countries tend to be economically more developed (see also Beck et al., 2005).

Prior VC studies use these legal origins to examine various aspects of the international VC markets. For example, Jeng and Wells (2000) use legal origins as explanatory variables to explain differences in VC fundraising but find no significant relation between these variables. Balcarcel (2005) uses legal origins to investigate international investment performance by U.S. VC firms in foreign portfolio companies and finds that investments in English common law countries provide investors with higher investment performance than those in civil law countries. In addition, Cumming et al. (2008) find that English common law facilitates screening processes, increases the probability of syndication, and solves agency and control problems between venture capitalists and their portfolio firms.

To address the question of whether legal origin affects the relative size of the VC market in a given country, I distinguish between the five legal origins that are prevalent in my sample, that is, English common law, as well as French, German, Scandinavian, and Socialist civil code (Djankov et al., 2007; Cole and Turk, 2007). In line with these studies, I expect that English common law countries have bigger VC markets than French, German, Scandinavian, and Socialist civil law countries. Accordingly, I propose the following hypothesis:

H_1 = Direct VC investments in common law countries are higher than in non-common law countries.

2.1.1.2. Judicial independence and jurisprudent adaptability

Beck et al. (2003a, 2005) extend the legal origins theory and develop two interconnected theories to explain the relation between countries' legal systems (common law and civil law) and their financial development. Specifically, the authors identify two channels, the political and adaptability channel, through which a country's judiciary (legal institutions) and jurisprudence (philosophy of law, meaning what law is and what it should be) influence the financial markets. The authors argue that these two channels provide a better understanding of how law influences the financial markets than a mere distinction between law systems (i.e. common vs. civil law) or legal origins can accomplish.

2.1.1.2.1. Judicial independence

The political channel refers to the political independence of the judiciary to have jurisdiction over cases without interference from the government, i.e. it describes the degree to which the judiciary is independent of the State when judging cases and the degree to which the State controls the judiciary. To measure the judiciary's independence, Beck et al. (2003a, 2005) create two political channel variables that measure Supreme Court power and the tenure of Supreme Court judges[5]. The authors examine how the two variables explain differences in the protection of investors' property rights in a given country, which in turn affect the country's financial market development. The authors argue that investors' property rights are better protected in countries in which politicians can exert better influence on the courts. To the best of my knowledge, there has been no study that examines how judiciary independence using the two political channel variables

[5] I am thankful to Thorsten Beck for providing me with updated data on supreme court power, the tenure of supreme court judges, case law, and legal justification.

affects the VC markets in a given country. I follow Beck et al. (2003a, 2005) who provide the theoretical justification for my hypothesis that firms in countries with a judiciary that is more independent from the state have easier access to external VC financing and that the VC markets in those countries are better developed. To measure court independence from the state, I create a judicial independence index based on two so-called political channel variables from Beck et al. (2005).[6] I then surmise the following hypothesis:

H_2 = Countries that scale higher on the judicial independence index (i.e., that have courts that are more independent from the state) have higher direct VC investments.

2.1.1.2.2. Jurisprudent adaptability

A second channel, the adaptability channel, focuses on the process of law making and refers to the ability of a legal system to adapt its jurisprudence to changing environments. It differentiates countries by the ability to react to changing financial and economic circumstances. In many countries, judges respond case-be-case to changing conditions, base their judicial decisions on previous court decisions, and admit these judicial decisions as a source of law. As a result, these countries enjoy efficient rules that quickly replace inefficient ones. This flexibility allows the country's legal system to quickly react to new developments and therefore promotes financial development. In contrast, legal systems which impose greater requirements that judgements be based on statutory law, rather than on principles of equity, tend to impede a country's financial development. To measure jurisprudent adaptability, Beck et al. (2005) consider two legal adaptability proxies including a case law dummy and a legal justification variable and examine how the two

[6] The judicial independence index is calculated by summing the Supreme Court power dummy plus 0.5 times the tenure of Supreme Court judges.

variables impact a country's financial development. The authors argue that, in British common law countries (and to a lesser extent German civil law countries), legal systems easily adapt to changing environments thus driving countries' financial development, while in most civil law countries, the legal systems are often rigid and fail to adapt quickly to changes, thus inhibiting their financial development. I combine the two variables from Beck et al. (2005) and create a single jurisprudent flexibility index in my analysis.[7] I hypothesize that countries that have a high degree of flexibility in adapting their laws and that require a low degree of legal justification have higher direct VC investments. More formally, I propose that:

H_3 = Countries that scale higher on the jurisprudent flexibility index (i.e., that more easily adapt their laws to changing circumstances) have higher direct VC investments.

It is important to understand that the political and adaptability channels are not mutually exclusive and that they may sometimes make conflicting predictions with respect to a country's financial development. For German civil law countries, for example, the political channel predicts that financial development should be constrained because civil law tradition tends to centralize and intensify state power, making investors more wary, thus restricting the development of free financial systems that is typically observed in common law countries. At the same time, the adaptability channel predicts that German civil law tradition fosters financial development as it is more adaptable to changing environments than the French civil law tradition.

[7] Specifically, the jurisprudent flexibility index is calculated by summing the case law dummy plus (1- the legal justification variable).

2.1.1.3. Investor protection rights

In the law and finance literature (e.g. LLSV, 1997, 1998) investors are classified into two groups: shareholders and creditors. Recent research has established that legal origins are important in explaining protection rights for creditors and shareholders and that both legal origin and investor protection rights determine financial development in the sense that financial intermediaries are better developed in countries with better legal protection. Thus, strong legal rights for outside investors are effective tools for developing the financial sector (LLSV, 1997, 1998, 1999, 2002; Levine, 1999, Demirgüç-Kunt and Maksimovic, 1998, Beck et al., 2004; Djankov et al., 2008). Empirical evidence by LLSV (1998) shows that common law countries give investors the strongest legal protection rights. German and Scandinavian civil law countries rank in the middle, while investors in French civil law countries tend to receive the least protection. In a subsequent study, LLSV (1999) also consider countries with Socialist civil law tradition and find that investors in those countries suffer from even poorer legal protection than those in countries with French civil law tradition.

Of particular interest for my study are the findings by LLSV (1997) and Levine (1997, 1999, 2004) who conclude that differences in investor protection laws explain cross-country differences in the size of the banking sector and the level of stock market development. In addition, Beck et al. (2005) assert that countries with strong private protection rights ease firms' access to external financing because they provide investors with confidence to invest in those firms. Moreover, in her study of cross-border VC investments, Balcarcel (2005) examines how legal protection for investors impacts the performance of VC investments in foreign portfolio companies by U.S. VC firms. Balcarcel uses the type of exit used by VCs as a proxy for VC fund performance because

VC firms must exit their portfolio firms and because the type of exit is connected to their return. She finds that the performance of U.S. VC firms is higher in common law countries than in non-common law countries. Similarly, Kaplan et al. (2006) contend that countries with French legal origins and weaker outside investor protection tend to have smaller and less liquid capital markets.

As noted earlier, LLSV (1997, 1998, 1999, 2000) distinguish between two types of investor protection rights: shareholder and creditor rights. Thus, I analyze these two groups separately as described below.

2.1.1.3.1. Shareholder protection rights

In an international VC study in which they explore the importance of IPOs on VC markets, Jeng and Wells (2000) consider shareholder protection rights as an explanatory variable to explain differences in VC fundraising across countries. Their results suggest that there is no significant relationship between these variables. On the other hand, Cumming et al. (2006) find that the quality of legal systems including shareholder protection rights positively influences venture capitalists' exit choice. In addition, Balcarcel (2005) finds that U.S. VC firms invest more in countries where the rights of shareholders are better protected. Moreover, if they do invest in countries with poor shareholder rights protection, they compensate for the lack of legal protection by taking a larger equity stake in their portfolio firms. However, Kaplan et al. (2006) examine how minority shareholder protection affects a design of VC contracts between entrepreneurs and investors. The key elements of VC contracts include cash flow rights, liquidity rights, and control rights. The authors find a negative relationship between shareholder protection and liquidation

preferences. Finally, Groh et al. (2007, 2008) find that shareholder protection determines the international allocation process of institutional investors in VC and private equity asset classes in 25 European countries.

In this study, I focus my attention on how variations in shareholder protection affect the size of VC markets across countries. LLSV (1997, 1998) note that, in general, common law countries provide better shareholder protection than civil law countries but point out that the level of these rights varies within each legal system. In my empirical analysis, I predict that countries with strong shareholder protection rights, i.e. countries with a high Antidirector Rights Index have higher direct VC investments than countries with poor shareholder rights protection. More formally, I propose the following hypothesis:

H_4 = Countries with stronger shareholder protection rights have higher direct VC investments.

2.1.1.3.2. Creditor rights

Some of the first studies in the law and finance literature that compare creditor protection rights across countries are those by LLSV (1997, 1998). The authors find that in common law countries, creditors enjoy better creditor rights than those in civil law countries. In a recent VC study, Allen and Song (2002) examine the effect of creditor rights protection on the level of VC investments in 33 countries from 1990 to 2001. They find that creditor rights protection is a better predictor of VC investments than shareholder rights protection. The authors explain their findings by noting that VC investment contracts show more resemblance to bond indentures (i.e. creditor contracts) than to shareholder contracts.

Similarly, a later VC study by Cumming et al. (2006) concludes that the rights of VC investors do not depend on general corporate law or shareholder protections, but are based on their investment contracts with entrepreneurs. In VC contracts, there are creditors (venture capitalists) and borrowers (entrepreneurs) who agree on certain activities that should or should not be carried out during the contract term, thus giving VC contracts a similar character as typical bond contracts which have comparable positive and negative covenants (i.e. dos and don'ts). However, Kaplan et al. (2006), in their study on the effect of laws on VC contracts, contend that creditor protection rights have an effect on investors' liquidation rights. As a result, they reflect the efficacy of bankruptcy laws which may not be relevant for VC investments that consist largely of equity securities.

To add new insights to this debate, I explore how countries' creditor rights protection affect direct VC investments. Some of the first studies that compared creditor protection rights across countries were those by LLSV (1997, 1998). In addition, Djankov et al. (2007) find that the creditor rights index developed by LLSV (1998) is associated with higher levels of private sector credit, but note that this relationship does not hold in poorer countries. In a VC context, this index has previously been used by Allen and Song (2002) and Cumming et al. (2006) whose findings are described above. In this study, I predict that countries with strong creditor protection rights have higher direct VC investments. Hence, I propose the following hypothesis:

H_5 = Countries with stronger creditor protection rights have higher direct VC investments.

2.1.1.4. Legal enforcement of VC contracts

Firms that receive VC funding are frequently young, often have assets that are primarily intangible, and have high risk but also high expected payoffs. Given that VC investments have these characteristics, they call for sophisticated financial contracts between venture capitalists and their portfolio firms. In addition, to allow venture capitalists to confidently engage in a VC financing arrangement with a firm, their protection rights must be enforceable through the country's legal system (the best legal system would be worthless if its laws were not enforceable). Thus, the fifth legal environment factor that I will employ in this study measures the legal enforceability of VC contracts and will examine how it is related to the size of a country's VC market.

I again draw on LLSV (1997) who examine how legal enforcement as measured by the rule of law index (an assessment of the tradition of law and order in a country[8]) affects firms' ability to receive external financing via a country's stock and bond markets. Their findings show that good legal enforcement is an important factor that drives a country's capital market size. The better a country enforces contracts between entrepreneurs and investors, the more the investors are protected against expropriation by those entrepreneurs. Strong legal enforcement increases investors' willingness to invest in entrepreneurial firms in exchange for securities and therefore extends the size of capital markets. Similarly, Beck et al. (2004) find that strong legal rights for outside investors and the overall efficiency of contract enforcement are effective tools for developing the financial sector and the economy. Additionally, Levine (2000) studies how the efficiency of a country's legal system in enforcing investor protection rights affects that country's financial development and notes that rather than focusing on bank-based vs. market-based

[8] For details on how the rule of law index is created, please refer to my discussion below.

financial structures as drivers for economic development, researchers should concentrate on the quality of legal systems and the enforcement of laws as the driving forces behind a country's financial development and economic growth.

Related studies also indicate that legal enforcement has an impact on the overall quality of governments (LLSV, 1999), international equity markets (Lombardo, 2001), and cross-border investments (Djankov et al., 2002). As noted by LLSV (1999), the quality of legal enforcement influences government performance across countries. The authors find that civil law countries have weaker law enforcement than common law countries and that governments in countries with weak legal enforcement become more interventionist than countries with strong legal enforcement. Lombardo (2001) finds that the enforceability of financial contracts (rather than shareholder rights) stimulates investors to invest in firms, thus increasing firms' profits and driving demand for equity financing in international equity markets. Finally, Djankov et al. (2002) use data on 85 countries to analyze the direct and indirect costs of setting up a business in foreign countries and find that countries with weak law enforcement have heavy regulations on business entry. Thus, the quality of legal enforcement affects VC firms' ability to monitor their portfolio companies and to write and enforce contracts with them.

VC contracts are between venture capitalists and entrepreneurs and include details on issues such as securities, control rights (for example, rights to replace the founding entrepreneur as the CEO), and veto rights. As described by Cumming and Johan (2009), VC investments are subject to an agency problem where there is a conflict between VCs and entrepreneurs with respect to control rights and veto rights. According to the agency theory, an agency problem arises when there is a conflict of interest between principals and

their agents because they have different goals (see also Arthurs and Busenitz, 2003; Gregoriou et al., 2007). To write contracts is one of many ways to mitigate these agency conflicts. LLSV (1997, 2002) focus on legal enforcement solutions to the agency problem. They explain that in poor legal enforcement countries investors prefer to own more equity to have better control rights over the managers in a firm in order to avoid being expropriated by those managers. The authors conclude that countries with stronger legal protection have larger VC markets and more detailed VC contracts (cf., Cumming and Johan, 2009).

Of particular relevance to my analysis are the results by Allen and Song (2002) who examine the effect of legal enforcement on VC investment levels using data from 33 countries for the period 1990 to 2001. Interestingly, and contrary to what one might expect, they find a negative relationship between legal enforcement and the level of VC investments across countries and conclude that venture capitalists invest more in countries where laws are less enforced. Their results are contrary to those of LLSV (1997) who find that strong legal enforcement countries have larger equity and debt markets. Allen and Song (2002) argue that this inverse relationship is caused by the fact that when it comes to VC financing, written contracts are not as important as conventional wisdom might suggest and conclude that due to this inverse relationship, VC can be a good substitute for debt and equity financing in countries with poor legal enforcement.

Because Allen and Song's (2002) results stand in contrast to many other VC studies (see, e.g., Cumming et al. 2006: Cumming and Johan, 2009), I hope that my analyses provide additional insights with respect to the debate whether contracts and their enforceability play an important role in determining direct VC investments. While I try to avoid taking

sides in this debate, I will phrase my hypothesis in this section in line with LLSV (1997) and propose that good legal enforcement will allow venture capitalists to recover some of their losses in case their portfolio companies defraud them. Thus, I presume that countries with better law enforcement are more attractive for venture capitalists and that, as a result, good law enforcement increases the size of a given country's VC market. Thus, I formulate my hypothesis as follows:

H_6 = Countries with good legal enforcement have higher direct VC investments.

2.1.1.5. Intellectual property rights

Intellectual property such as patents, trade secrets, specialised manufacturing technologies and processes determines the capabilities of hi-tech portfolio firms in a competitive world (Ang et al., 2009). Not surprisingly, laws that govern the protection of intellectual property rights are considered a key factor for venture capital investments besides other legal factors such as a country's law system as well as its bankruptcy laws and taxes. In particular, good intellectual property rights should have a positive impact on VC investment activities because they attract foreign VC funds to invest in portfolio firms and give incentives to entrepreneurial firms to do business, hence augmenting the demand for VC. The effectiveness of intellectual property rights is driven by the genesis of intellectual property protection laws (Ang et al., 2009) and the enforcement of those laws in each country (LLSV, 2006; Jackson and Roe, 2009). From a portfolio firm's perspective, it is difficult for entrepreneurs to protect their intellectual property from being imitated and appropriated by their competitors. Good laws and a strong enforcement of those laws should prevent those competitors from stealing an entrepreneur's ideas. Without good laws or proper

enforcement, entrepreneurs are likely to be reluctant to disclose their ideas even to venture capitalists as they may be afraid that the VC funds may leak some of their confidential information to other portfolio firms. At the same time, poor intellectual property rights protection may also affect a venture capitalist's willingness to finance a given portfolio firm because he may be afraid that he will realize a low return on his investment if the firm's ideas were to be stolen by other competitors in the industry.

Prior research in this area has found that, in countries with an effective enforcement of intellectual property rights, portfolio firms feel more confident in revealing confidential information on their production ideas and innovations to venture capitalists (see, for example, Ueda, 2004). In addition, Obrimah (2005) examines how the quality of property rights affects venture capitalists' asset allocation decisions. The author finds that small firms in poor property rights environments are more financially constrained relative to small firms in better property rights environments. Consequently, the emergence of venture capitalists has a greater effect on small firms' access to external financing in countries with poor property rights protection. From a managerial and strategic perspective, Coeurderoy and Murray (2008) find that the quality of intellectual property rights protection influences the decision by young high-tech firms in the U.K. whether or not to do business in a foreign country. Miletkov and Wintoki (2008) take a different approach and find that the level of financial development determines countries' property rights institutions and hence fosters economic growth. Finally, a VC-related study by Ang et al. (2009) examines how the enforcement of intellectual property rights impacts portfolio firms' ability to access new external equity and debt in China. The authors find that portfolio firms in provinces with better intellectual property rights enforcement receive more external financing than those in provinces with weaker enforcement of intellectual property rights. In addition,

they find that intellectual property rights enforcement plays an important role in reducing the risk of appropriation by competitors as well as agency costs and information asymmetry problems and that, ultimately, they affect a country's economic growth.

While the aforementioned studies present some empirical evidence on how the protection of intellectual property rights affects portfolio firms' decision to do business overseas as well as the ability of portfolio firms to acquire external funds from local venture capitalists, there is a dearth of empirical studies on international differences in the protection of intellectual property rights and how they affect VC investment activities. Specifically, I am not aware of any studies that examine the effect of cross-country differences in intellectual property rights protection on venture capitalists' willingness to finance portfolio firms in those countries. Consequently, this leads to my final hypothesis:

H_7 = Firms in countries with strong intellectual property rights protection have better access to venture capital than those in countries with weak intellectual property rights protection.

2.1.2. Regulatory factors

2.1.2.1. Private pension fund reforms

Pension funds are viewed as an essential source of capital by the VC industry. In recent decades, governments in many countries have created or changed their legislation in order to influence the flow of capital to VC funds and/or directly to entrepreneurial firms (Cumming, 2007). In most developed countries and an increasing number of developing countries, governments now permit pension fund managers, banks, and local and foreign

corporations to freely invest in such risky asset classes as VC or directly in SMEs (see Gompers and Lerner, 1999; Jeng and Wells, 2000; Napier and Mitchell, 2008).

As O'Shea and Stevens (1998) note, governments can affect the supply of VC by allowing or restricting certain parties to invest in VC. In the past, numerous countries prevented pension funds and insurance companies from investing in VC to safeguard their investors against the risk of default. In recent years, however, the trend has been to loosen such restrictions. As part of my data collection, I have performed an extensive analysis of the local regulations in each country by reviewing related academic and practitioner papers as well as information provided by non-profit organizations including VC associations such as the Latin American Venture Capital Association (LAVCA) for 13 Latin American countries, Associação Brasileira de Private Equity & Venture Capital (ABVCPA) for Brazil, the African Venture Capital Association for Kenya, and the Indian Venture Capital Association (IVCA). Finally, I conduct a survey with over 100 pension fund managers, investment professionals, and governmental regulators to determine which countries passed pension fund reforms during my sample period and how the respective reforms affect pension fund managers'ability to invest in VC. My search revealed that a large portion of my sample countries passed regulatory reforms in recent years that were directly aimed at regulating the flow of capital to the VC industry. In this section, I aim to utilize this rich and – I believe – unique dataset to explore the effectiveness of pension fund regulations in supporting or restricting the development of a country's VC market and to make related policy suggestions. A summary of the private pension fund reforms I identified during my sample is provided below. Responses to my survey questions are omitted here for brevity but are available on request.

In the U.S., the Employee Retirement Income Security Act (ERISA) of 1974 was established by the U.S. Department of Labor to let pension fund managers freely invest in such risky asset classes as VC. Later in 1978, the ERISA was expanded through the implantation of the prudent man rule (Gompers and Lerner, 1999). Gompers and Lerner (1999) study how changes in the ERISA's prudent man rule affect VC fundraising in the U.S. from 1969 to 1994. They find that reductions in pension restrictions increase the funds available for VC investments. Similarly, Kortum and Lerner (2000) find that the passage of ERISA spurred fundraising because it allowed pension fund managers to freely invest in VC funds. In an international context, Jeng and Wells (2000) examine the impact of changes in the levels of private pension fund investments (as measured by the total value of private pension fund assets divided by GDP) and private pension growth (as measured by the annual percentage change in private pension fund levels) on VC funding in 21 countries from 1986 to 1995. They find that VC funding is positively influenced by these two factors. One potential problem in Jeng and Wells' study is that both pension fund levels and their growth are likely to be influenced by a variety of other factors such as stock market returns, interest rates, and GDP growth. These influences make it difficult to derive an unbiased estimate of how pension fund investments affect the VC industry. I add to Jeng and Wells' analysis by focusing on the impact of pension fund-related regulatory policy changes on the VC industry. Specifically, I perform a direct test of whether pension fund reforms are an effective tool through which governments can grow their domestic VC industry.

After the U.S. set a precedence with its ERISA legislation, there have been numerous other countries that followed the U.S. example and instituted similar legislative reforms. For example, in 1996, the Italian government allowed their pension funds to invest in small

firms. Shortly thereafter, Finland passed legislation that encourage both banks and pension funds to invest in SMEs. As a result, the share of VC funds supplied by these institutions went up by 20% in 1995 (O'Shea and Stevens, 1998; Jeng and Wells, 2000). In 2000, the regulations governing Swiss pension fund investments were modified to permit investments in VC funds (Heerde, 2001). In the same year, pension funds in Austria started investing in private equity as they were freed from the limits of day-to-day valuation requirements. Yet, some of these reforms did certainly not have an immediate impact on the VC industry. As Spieckermann (2002), for example, notes, "it will take time until recently established Austrian pension funds are fully funded, develop sophisticated private equity programmes and contribute the necessary resources to them" (Spieckermann, 2002, p.2). In the meantime, many pension funds are likely to choose a fund-of-funds strategy. In 1995, the German government created a scheme called Beteiligungskapital für kleine Technologieunternehmen in which the government started to co-fund (together with the private sector) "with small firms with a distinctly new product or service." (O'Shea and Stevens, 1998, p.27). Later, in 2002, the government changed its accounting rules that apply to pension funds with the stated goal of increasing VC investments (Schröder, 2007). In 2003, the Portuguese government passed a law that set out the general legal framework on undertakings for collective investment (UCI) and allowed for the creation of investment funds that can invest, for a limited period of time, in companies with a high development potential. (Coelho et al., 2009). In 1993, the Turkish government (specifically the Turkish Capital Markets Board) passed the Venture Capital Investment Trust legislation which aims to promote PE investments in Turkey. Specifically, it now allows pension funds to invest a maximum of 5% of fund assets in money and capital market instruments issued by venture capital companies (Bosut, 2004; Tapia, 2007).

In South America, most governments have also been opening the doors for pension funds to invest in VC. The Chilean government, for example, implemented a pension fund reform in 1981. Initially, the reform was aimed at temporarily exempting investors form capital gains taxes (see Chan-Lau, 2004; Olivares, 2004). Later, in 1993, Chile passed a follow-up reform in which it explicitly allowed pension funds to invest in VC (Mitchell, 2007). In 2005, the Brazilian Development Bank (BNDES) launched a program to invest in VC funds (ABVCAP, 2006) and passed legislation that allows pension funds to invest up to 20% of their capital in private equity (Mitchell, 2007). More recently, in 2007, the government of Columbia implemented a pension fund reform. The reform allows pension funds to make both domestic and foreign private equity and VC investments.

In the Middle East, specifically in Israel, the Yozma venture capital program was issued in 1992 to promote the VC industry by encouraging foreign and local corporations to directly invest in technology-based firms and to provide external financing to VC firms (see O'Shea and Stevens, 1998; Jeng and Wells, 2000).

Asian countries such as Korea, Japan, Thailand, and the Philippines have also passed legislation to stimulate pension funds to invest in VC. The Korean government enacted the Financial Assistance to New Technology Businesses Act in 1986 in order to support SMEs. Later, the Small and Medium Business Administration (SMBA) was established in 1996. Then, in 1997, the Act on Special Measures for the Promotion of Venture Businesses was enacted. As a result, 325 VC funds were launched in 2000 (Choi, 2005). Later, in 2001, the National Pension Act was revised and the National Pension Corporation started to invest in VC funds in the following year (Koh, 2005). In the meantime, the Korean government also established the Support for Small and Medium Enterprise Establishment

Act. Under this Act, VC firms are required to invest up to 50% of their paid-in capital into new entreprises (Global Legal Information Network, 2002). In 1997, Japan started changing its pension fund regulation framework by freeing investors from strict limitations on investing in VC (OECD, 1997; O'Shea, 1997; Jeng and Wells, 2000).

Yet, not every pension fund reform has to be positive for the VC industry. Burgess (2002), for example, indicates that as part of the U.K.'s 1995 Pensions Act, the British government introduced a minimum funding requirement that impedes pension funds from investing in VC as it requires them to keep a large amount of their funds in gilts (UK government bonds). The Myners' Report[9] pointed out, "The U.S. pension funds are much more likely to invest in private equity and venture capital than U.K. funds. The report further notes that overseas investors – particularly from the U.S. – provide over 70 percent of the U.K. private equity industry's funding (see also Galer, 2002). In Mexico and Argentina, pension funds are restricted from investing in venture capital (Mitchell, 2007). Similarly, in Pakistan, the regulatory framework does not allow pension funds or insurance companies to participate in venture capital funds (Bayhan, 2007). Finally, as reported by LAVCA (2009), pension funds in Taiwan are undeveloped, few in number, government-run, and invest very conservatively and under opaque procedures.

To the best of my knowledge, there is only one U.S. VC study by Gompers and Lerner (1999) that examines how pension fund regulations (e.g., the prudent man rule of the ERISA Act in 1978) affected VC fundraising. Jeng and Wells (2000) extend Gompers and Lerner's (1999) study, but do not specifically look at private pension fund reforms. Instead, they use data on the level and growth of pension funds in their empirical analysis,

[9] Myners, Paul, 2001. Institutional investment in the United Kingdom: A review

as measured by the total value of private pension fund assets divided by GDP and by the annual percentage change in private pension fund levels, respectively. In addition, they consider pension fund investments over time, not across countries. Thus, this dissertation introduces a first-ever analysis of the impact of pension fund reforms on direct VC investments in a comprehensive international setting. As noted earlier, I use information on pension fund reforms that I collected by hand from various sources to test my hypothesis that private pension fund reforms affect direct VC investments in a given country. Thus, I postulate that:

H_8 = Countries that pass legislation aimed at increasing the amount of capital that private pension funds can invest in alternative asset classes such as VC or private equity will experience an increase in direct VC investments relative to countries that pass no such legislation.

2.1.3. Fiscal factors

Governments in most countries around the world tax capital gains that accrue to individuals as part of their portfolio returns. In addition, in almost all countries, corporations have to pay corporate income tax on their pre-tax income. For VC funds and their investors, both taxes are likely to have a significant impact on their investment performance. The higher the capital gains tax rate, for example, the lower are the after-tax returns they will achieve from their investment. In addition, the higher the corporate income taxes, the lower will be the profitability (e.g., as measured by the return on equity (ROE) or earnings per share (EPS)) of their portfolio firms.

2.1.3.1. Capital gain tax rates

In the context of VC, capital gains taxes are considered to be one of the most important determinants of VC investment flows (Bygrave and Timmons, 1992; Armour and Cumming, 2006). A pioneer study by Poterba (1989) examines the effect of capital gains tax rates on VC investments in the U.S. Particularly, the author examines how differences in capital gains tax rates explain differences in VC investement levels. The author provides the first theoretical framework that models the supply and demand for VC and an individual's decision to become an entrepreneur. The author finds that changes in capital gains taxation have a significant impact on investors who incur a personal tax liability when they realize their gains, but not on investors who are tax-exempt (e.g., pension funds, endowments, and foreign companies). This finding is also confirmed by Anand (1996), Gompers and Lerner (1999), Da Rin et al. (2005), and Armour and Cumming (2006) whose results show that an increase in the capital gains tax rate negatively impacts the level and composition of VC investments. Similarly, in a study on the determinants of VC fundraising, Gompers and Lerner (2004) find that reductions in capital gains taxes lead to greater VC commitments. Their findings are significant at the firm, industry, and country levels.

Keuschnigg (2003) and Keuschnigg and Nielsen (2004) predict that reductions in capital gains taxes enhance VC activity. They argue that the underlying reason is that high capital gains taxes reduce VC investors' returns and their willingness to provide financial and managerial supports to portfolio companies. Moreover, focusing on the relationship between risk and return, Schertler (2003) notes that taxation has an impact on the investment decisions of VC providers in the sense that an increase in capital gains tax rates reduces VC providers' returns, while their risk level remains constant. In addition, Da Rin

et al. (2005) examine how capital gains tax rates in 14 countries from 1988 to 2001 impact high-tech investments as well as early stage VC investments, as measured by "innovation ratios" (defined as the ratio of early stage (or high-tech) investments to total VC investments). The authors find that reductions in capital gains tax rates increase both the high-tech and early stage ratios although the economic effect is not very large. Finally, Armour and Cumming (2006) point out that capital gains tax rates are an important economic factor that determines the number and amount of VC investments made in a given country.

Rather, I add to the VC literature by providing a static analysis of how differences in capital gains tax rates affect direct VC investments in a cross-country setting. In line with the findings of Gompers and Lerner (1999 and 2004), Da Rin et al. (2005), and Armour and Cumming (2006), I expect a negative relationship between capital gains tax rates and direct VC investments. I thus propose the following hypothesis:

H_9 = Countries with lower capital gains tax rates have higher direct VC investments.

2.1.3.2. Corporate income tax rates

In almost all countries, corporations have to pay corporate income taxes on their pre-tax income. For VC funds, corporate income taxes are likely to impact their investment decision. The higher the corporate income tax, the lower will be the profitability (e.g. as measured by the return on equity (ROE) or earnings per share (EPS) of their portfolio firms. The corporate income tax rate is far from stable in most countries and is frequently

changed by governments in an attempt to increase fiscal revenue, influence economic growth or influence investment activity.

Corporate income taxes are also considered a significant determinant of venture capitalist investments. An increase or decrease in the corporate income tax rate has a direct impact on a company's after-tax profitability and thus on the value of the firm (if valued using a standard discounted cash flow (DCF) analysis). If governments decrease the corporate income tax rate, a firm's value will likely increase and will thus also increase the firm's sales value and eventually the return a VC fund can garnish from its investment in a company.

Romain and De la Potterie (2004) examine the impact of corporate income tax rates on VC investments in OECD countries over the period 1990 to 2000. They show that the lower the corporate income tax rate, the higher the total amount of VC investments made in that country. Similarly, Bonini and Alkan (2009) examine the impact of corporate income taxation at all stage VC investments using data from 16 countries between 1995 and 2002. Their findings show that corporate income tax rates are only significant in predicting early stage investments. The authors contend that in countries with high corporate income tax rates, VC investment amounts are reduced only at the early stage, but not at the expansion stage. I extend their analysis by examining whether corporate income tax rates affect both stages of VC investments in a larger country sample that also includes non-developed countries. I expect to find a negative relationship between corporate income tax rate and the total amount of VC investments. This leads to my last hypothesis:

H_{10} = Countries with lower corporate income tax rates have higher direct VC investments.

2.2. Data

My main data set contains annual data on VC investments in 55 countries for the time period from 1995 to 2008. I only consider countries that had some type of the size of VC markets during my sample period, i.e. they continuously had (or were in the process of establishing) an active VC market during my sample period. To ensure that my sample countries show an adequate dispersion in terms of both economic and VC market development as well as legal, cultural, and political background, I aim to impose as few constraints as possible on my sample and consider both developed and emerging market countries. Countries are excluded if they had no VC investment activity during my sample period or if I was unable to obtain important country characteristics needed for my analysis. I choose 1995 as the starting date for my sample to allow countries of the former Warsaw Pact to be included in my sample (see also Armour and Cumming (2006) who employ 1990 as a starting data due to data availability and reliability concerns during earlier time periods). In addition, while VC has been popular in the U.S., the U.K., Japan, and Israel in prior years, it has not enjoyed the worldwide popularity I can observe today until it boomed in the early and mid 1990s (cf., Allen and Song, 2002).

2.2.1. Sample selection

My sample of venture capitalist investments is derived from the Securities Data Company's (SDC) VentureXpert administered by Thomson/Reuters. I use this dataset in my study because it provides comprehensive information on worldwide VC investments throughout my sample period. The data coverage provided by the VentureXpert database is extensive and includes detailed information such as the date of each financing round, the name of the portfolio companies, the estimated investment amount in each portfolio

company, their location and industry classification, their current status, i.e. private or public, and a categorization of portfolio companies into early, expansion, and late stage firms (see also Han, 2006; Alter, 2008; Gompers et al., 2008). In addition, the database provides researchers with detailed information on professional investment firms behind each VC deal including data on VC firms, corporate VC divisions, and investment banks including their founding dates, geographical location, and investment preferences (Hallen and Eisenhardt, 2008). The VentureXpert database has been used by numerous prior research studies in the area of entrepreneurship, finance, and management including, for instance, the studies by Gompers and Lerner (1999 and 2004), Laine and Torstila (2004), Kaplan and Schoar (2005), Han (2006), Hochberg et al. (2007), Alter (2008), Bottazzi et al. (2008), Gompers et al. (2008), , Hallen and Eisenhardt (2008), Aggarwal and Hsu (2009), and Bartkus and Hassan (2009), and. Bottazzi et al. note that they consider the database to be the leading commercial database for venture finance because it is one of the main commercial sources of detailed investment information on venture capital.

However, as for many other databases in this area, researchers have also pointed out some shortcomings of the VentureXpert database. First, it provides information that is directly reported by venture capitalists, venture capital firms, and entrepreneurial organizations (Hallen and Eisenhardt, 2008), which could misrepresent their performance if they misreport information on their funds that perform poorly or overemphasize those that perform well. In addition, the database lacks a standardized system for reporting by those institutions. However, the authors point out that these concerns are mitigated if researchers use a large sample for their analysis. Furthermore, as Gompers and Lerner (2004) and Gompers et al. (2008) point out, VentureXpert provides incomplete data on companies that merged or were acquired prior to 1975. Also, there is missing information on the estimated

dollar amounts that investors invest in portfolio companies during each financing round (Han, 2006). Finally, the database does not report any information about the age of each VC fund. Rather, it reports information about the dates when a VC fund or a VC management firm made its first and last investment (cf., Han, 2006). Given the focus of this dissertation, it is unlikely that any of these shortcomings will affect my analysis.

Additional data on a variety of country factors are obtained from previous studies that make their datasets available (see Ginarte and Park, 1997; LLSV, 1998, 1999, 2000a, and 2000b; Stulz and Williamson, 2003; Beck et al., 2003, 2005; Djankov et al., 2003, 2007, 2008), and from statistical reports provided by such non-profit organizations as the OECD, the United Nations, the World Bank, the International Monetary Fund (IMF), the Fraser Institute, the Property Rights Alliance, and Freedom House. In addition, I obtain data on historical tax rates for my sample countries through PricewaterhouseCoopers. My data collection with respect to these independent variables is discussed in more detail below.

The combined dataset allows me to examine the driving forces behind venture capitalists' investment activities and expand and revisit the findings of previous studies in this area. In addition, and perhaps more importantly, the results of this study provide the basis for a number of detailed policy recommendations that should be of considerable interest for governments trying to boost entrepreneurial activity and firms' access to finance in their countries.

2.2.2. Variable description

A summary of the variables used in this study together with their sources is presented in Appendix 7. My key variables are categorized into three main groups: dependent variables,

key independent variables, and control variables. My main dependent variable measures the total amount of venture capitalist investments during a given year in each country and is constructed from the VentureXpert database. In addition, I employ a series of alternative dependent variables that differentiate between early, expansion, and late stage investments or measure the size of VC markets by considering the number of financing rounds rather than total transaction amounts. My key independent variables aim to characterize the institutional environment in each country and cover a large spectrum of legal, regulatory, and fiscal factors. My control variables are non-legal factors including macro-economic, political, and cultural variables that are derived from prior studies and freely accessible online databases. Details on the variables in each of these groups are provided in the section below:

2.2.3. Data description

To examine how a country's legal, regulatory, and fiscal factors affect VC investments, I perform a panel data analysis which employs a dataset of 770 country-year observations (55 countries x 14 years). There are benefits of employing a large sample such as this. First, the greater country coverage provides statistically more reliable results on the role of legal, regulatory, and fiscal factors on international VC markets. Second, the larger sample allows us to analyze the effectiveness of otherwise somewhat infrequent institutional reforms with respect to VC market development.

2.2.3.1. Dependent variables

2.2.3.1.1. Direct VC investments

In measuring firms' access to external risk capital in a given country, I focus my attention on direct VC investments in that country. As noted earlier, the VentureXpert database provides comprehensive coverage of all venture capital deals during my sample period, making it more objective and arguably more reliable than survey-based data.

Similar to Bonini and Alkan (2009), I follow the NVCA definition of venture capital and adopt the sum of early and expansion stage investments, expressed in 2008 US$.

In addition, as noted earlier, I use two alternative measures of direct VC investments, namely early stage investments (at the seed and start-up stages) and expansion stage investments. Following the definition by Armour and Cumming (2006, p. 604), early stage investments may be characterized as "financing provided to research, assess, and develop an initial concept before a business has reached the start-up phase, plus the total amount of financing provided to companies for product development and initial marketing". Similarly, the expansion stage investments include financing provided for the growth and expansion of a company that may be used to finance increased production capacity; assist in market or product development or provide additional working capital. By differentiating between the two stages, I will be able to gain more detailed insights into the factors that drive these two types of VC investments. As pointed out by Schetler (2003), during the seed stage, firms formulate their initial business concept and develop prototypes of new products which they compare with competing products in the market. In the start-up stage, firms set up their production, launch initial marketing campaigns, and analyze the market reaction to these campaigns. Compared to other stages of development, such as the

expansion stage, the seed and start-up stage are generally considered to be very risky. In the context of this dissertation, I assume that investors who invest at those stages likely require a well-developed institutional framework that provides them with the ability to take legal recourse in case they are defrauded. In the expansion stage, enterprises typically require large amounts of external funding because they are not yet able to generate large enough cash flows to finance their growth internally.

Since countries differ considerably in size, I scale the total amount of VC investments (VC_AMT) in each country by its gross domestic product (GDP), which proxies for the overall size of an economy. Specifically, I calculate $(VC\_AMT_{it})/(GDP_{it})$, where VC_AMT_{it} is the total amount of VC investments in country *i* during year *t* and GDP_{it} is the corresponding yearly GDP for that country. I employ GDP information from the Global Market Information Database (GMID) by Euromonitor International and from the World Development Indicators (WDI) Database by the World Bank. As such, I follow Marti and Balboa (2001), Schertler (2003), Romain and De la Potterie (2004), Armour and Cumming (2006), Felix et al. (2007) and Bonini and Alkan (2009) who also normalize the country-level VC investments by the countries' GDP value. As noted by Marti and Balboa (2001) and Felix et al. (2007), this adjustment is necessary for two reasons. First, the variation in the economic level and economic growth may create a heteroscedasticity effect. Felix et al. note that the higher the economic level, the higher will be the observed variability. Normalizing my country-level VC measured by GDP allows me to control for this problem. Second, if all variables are expressed in nominal terms, then an observed increase in a variable over time may simply reflect an increase in price levels. As a result, my parameter estimates may be influenced by differences in inflation rates across countries.

By normalizing my VC measures with respect to GDP, these inflation effects are removed because both the VC amounts and GDP measures incorporate the inflation effect of each country. Another way to adjust for inflation is to express direct VC investments in each country in a common currency such as the US $. This does not resolve the aforementioned heteroscedasticity problem, however. To account for both the heteroscedasticity and inflation problem, and to make my results easily comparable across countries, I consider all variables that relate to VC investments and economic activity on a converted US$ basis and employ the aforementioned scaling approach.

To ensure that my results are robust with respect to the way I define my dependent variables, I employ data on the number of VC financing rounds in each country (VC_ROUND) divided by the stock market capitalization (SMC) of that country as an alternative measure to capture direct VC investments in a given country. This alternative dependent variable is categorized into three groups: 1) both early and expansion stage investments, 2) only early stage investments, and 3) only expansion stage investments. To obtain this variable, I aggregate VC financing rounds by country and by year from the VentureXpert database.

In particular, I calculate $(VC\_ROUND_{it})/(SMC_{it})$, where VC_ROUND_{it} is the number of VC financing rounds in country *i* during year *t* and SMC_{it} is the corresponding yearly stock market capitalization for that country. I employ SMC information from country statistics provided by the World Bank's World Development Indicators (WDI) database. As noted earlier, by using the total amount of the number of financing rounds relative to a country's

SMC rather than the total amount of the number of financing rounds itself I adjust for difference in the size of each country's economy.

2.2.3.2. Independent variables

2.2.3.2.1. Legal variables

To examine the legal determinants of differences in VC investment amounts in different countries, I select seven country-level variables, which include a country's legal origin, shareholder protection rights, creditor protection rights, law enforcement, intellectual property rights, judicial independence, and legal adaptability.

2.2.3.2.1.1. Legal origins

To test my first hypothesis, i.e. whether legal origin affects direct VC investments in a given country, I classify my sample countries based on their legal origin. Specifically, I adopt the legal regime classification by Djankov et al. (2007) and Cole and Turk (2007) who extend LLSV's (1997, 1998) work on legal origins. Djankov et al. (2007) group countries into five legal origins (LAW), i.e., English common law, French commercial code, German commercial code, Scandinavian civil law, and Socialist civil law. LLSV (1997) also identify two legal systems for each country, i.e., common law and civil law.[10]

2.2.3.2.1.2. Judicial independence

To proxy for a country's judicial independence in my second hypothesis (H_2), I use two indicator variables that have previously been considered in non-VC studies that explored

[10] Note that countries with French commercial code, German commercial code, Scandinavian civil law, and Socialist civil law are subcategories of the civil law system, while the common law system includes only English common law countries.

factors that drive a country's financial development. Specifically, I follow Beck et al. (2005) and employ variables that proxy for Supreme Court power and the tenure of Supreme Court judges in a given country. In their study, Beck et al. (2005) refer to these two variables as the political channel. Supreme Court power is a dummy variable that takes on a value of 1 if Supreme Court judges have lifelong tenure and jurisdiction over administrative cases, and 0 otherwise. The tenure of Supreme Court judges measures the length of tenure of Supreme Court judges and takes on a value of 0 if tenure is less than six years, 1 if it is more than six years but not lifelong, and 2 if it is lifelong. Judicial independence index (JI) is an index that combines the two political channel variables from Beck et al. (2005): the supreme court power and the tenure of supreme court judges. This judicial independence index ranges from 0 to 2 and is calculated by adding the supreme court power dummy plus 0.5 times the tenure of supreme court judges.

2.2.3.2.1.3. *Jurisprudent flexibility*

To test my third hypothesis (H_3), I consider two variables that proxy for how flexible a country's laws are in adapting to new circumstances. Specifically, I consider a case law dummy and a proxy for legal justification based on earlier studies by Beck et al. (2003a, 2005). The case law dummy equals 1 if judges base their decision on case law and 0 otherwise. Legal justification indicates whether judgments have to be based on statutory law rather than on principles of equity. It is a dummy variable that equals 1 if judgements have to be based on statutory law rather than on principles of equity, and 0 otherwise. Jurisprudent flexibility index (JF) is an index that combines the two adaptability channel variables from Beck et al. (2005): case law and legal justification. I calculate the

jurisprudent flexibility index by summing the case law dummy variable and (1 - the legal justification dummy variable). The resultant measure thus ranges from 0 to 2.

2.2.3.2.1.4. Shareholder protection rights

To test my fourth hypothesis (H_4), I employ LLSV's (1997, 1998) measurement of shareholder rights protection (SH), namely the antidirector rights index. This index measures the amount of voting powers possessed by stockholders and the strength of legal support for shareholders and is based on whether or not certain legal mechanisms are in place to ensure that shareholders are adequately protected. It ranges from 0 to 6, with 0 representing the lowest and 6 the highest level of stockholder rights. This index increases by 1 when each of the following is true: 1) the country allows shareholders to mail their proxy vote to the firm, 2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, 3) cumulative voting or proportional representation of minorities on the board of directors is allowed, 4) an oppressed minorities mechanism is in place, 5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 percent, or 6) shareholders have pre-emptive rights that can be waived only by a shareholders' vote (see LLSV, 1998, p.1126-1127).

While the LLSV (1997, 1998) antidirector rights index has been widely used as a proxy for a country's legal environment as it pertains to equityholders, Pagano and Volpin (2005) raise some concerns about this measure, pointing out that it is subject to conceptual ambiguities and coding mistakes. In response to these concerns and in an attempt to create a more accurate measure of shareholder rights protection, Djankov et al. (2008) develop a

revised antidirector rights index. The revised antidirector rights index is highly correlated with the original index, but is designed to overcome the weaknesses identified by Pagano and Volpin (2005). This revised index has been used by Bryan et al. (2007) who examine the effect of a country's legal environment on executive compensation and is also used in my study.

2.2.3.2.1.5. Creditor rights

To proxy for creditor protection rights in my fifth hypothesis (H_5), I use creditor rights index (CR) first developed by LLSV (1998). LLSV calculated the index for 49 countries and it is later extended to 129 countries by Djankov et al. (2007). In both studies, the authors analyze bankruptcy and reorganization laws to capture the relative strength of creditor rights. Specifically, the index measures the powers of secured creditors in a corporate bankruptcy case. The index ranges from 0 to 4 with 0 being the lowest and 4 being the highest. A value of one is added to the index when a country offers creditors the following: 1) the power to give consent when a debtor files for reorganization, 2) the power to seize collateral once the petition for reorganization is approved (in other words, no 'automatic stay' or 'asset freeze' is imposed by the court), 3) the power to be paid first out of proceeds from liquidating a bankrupt firm, and 4) the power not to allow a debtor to run the business during the reorganization (see LLSV, 1998, p. 1124 for details). Djankov et al.'s (2007) data has to the best of my knowledge not been used in any VC-related studies. It has been used in a different law and finance context by Cole and Turk (2007), however, who study the effect of debt contract enforcement and legal origin on banks' willingness to grant credit to the private sector.

2.2.3.2.1.6. Law enforcement

The index of procedural formalism or Lex Mundi formalism (LE), as developed by Djankov et al. (2003), is used to test my sixth hypothesis (H_6). The authors calculate the index based on data from Lex Mundi member law firms in 109 countries. Among other things, the index captures how many days it takes to collect a bounced check and how many days it takes to evict a tenant for nonpayment of rent. The authors find that this index is greater in civil law countries than in common law countries, and also higher in poorer countries than in rich countries. In civil law and poor countries, this index is associated with a higher expected duration of judicial proceedings, less consistency, less honesty, less fairness in judicial decisions, and more corruption. This index has previously been used in the finance and VC literature. For example, Bryan et al. (2007) use the index as a control variable when measuring the quality of law enforcement in their analysis of the effect of law on executive compensation. In addition, Balcarcel (2005) employs this index together with two additional legal factors including legal origin and the rule of law to examine the effect of the quality of a country's legal environment on the amount of equity stakes that U.S. VC firms take in foreign portfolio companies. The same three factors are also used by Bottazzi et al. (2009) who study how the quality of a country's legal system impacts the relationship between venture capitalists and entrepreneurs. They find that investors provide more non-contractible support in common law countries and countries with better legal protection than in civil law countries and countries with weaker legal protection.

In addition, as an alternative law enforcement proxy, I employ the rule of law (RL) that measures the law and order tradition in a given country. According to the International Country Risk guide (ICRG), the rule of law "reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and

adjudicate disputes" (Knack, 1999, pg. 27). LLSV (1998) rescale the ICRG index from a range of 0-6 to a range of 0-10 with a higher number representing a higher law and order tradition. For consistency with my other litigation risk measures, I use this rescaled variable in my study.

2.2.3.2.1.7. Intellectual property rights

I use the 2008 intellectual property rights (IPR) index for 115 countries from the Property Rights Alliance (www.internationalpropertyrightsindex.org) to proxy for the quality of intellectual property rights protection in my seventh hypothesis (H_7).

The IPR index covers all areas of intellectual property rights including patent protection, copyright piracy, and trademark protection. The protection of intellectual property rights variable is measured by the World Economic Forum's 2007-2008 Global Competitiveness Index in the form of annual surveys to reflect a country's intellectual property rights protection. The patent protection variable is obtained from Ginarte and Park (1997). The authors create an index of patent rights, which measures the strength of national patent laws and considers five characteristics of patent laws for each country: 1) the extent of coverage, 2) the participation in international patent agreements, 3) restrictions on patent rights, 4) enforcement mechanisms, and 5) the duration of protection. The copyright piracy variable is based on data provided by the 2008 U.S. Trade Representative's 301 Watch List Report and contains information of the piracy level of four separate industries including Business Software, Records & Music, Motion Pictures, and Entertainment Software. Finally, the trademark protection variable is collected from the International Trademark Association's 1998 Report on trademark counterfeiting and infringement. It covers a

country's registration, maintenance, and enforcement of trademark rights. The IPR index ranges in value from 0 to 10. A higher score indicates better protection of intellectual property rights in a given country.

The index has been employed in the VC study by Ang et al. (2009) who find that portfolio firms in Chinese provinces with better intellectual property rights enforcement receive more external financing than those in provinces with weaker enforcement of intellectual property rights.

2.2.3.2.2. Regulatory variables

2.2.3.2.2.1. Private pension fund regulations

To proxy for private pension fund regulations on VC (PPF) in my eighth hypothesis (H_8), I construct a dataset that captures restrictions on institutional pension fund investments in VC and laws on VC fund formation and operation. The data stems from a variety of different sources including prior research papers as well as other published materials such as governmental reports, magazines, books, and Internet web sites. Detailed studies that have examined private pension fund reforms in different countries include, among others: Jeng and Wells (2000) for Israel and Italy; Dossani and Kenney (2001) for India; Schröder (2007) for Germany; Chan-Lau (2004) and Olivares (2004) for Chile, and Au and White (2008) for Hong Kong. In addition, there are some non-profit organizations including OECD (see O'Shea and Stevens (1998) for Australia, Finland, Germany, and Italy, and Wijana (2007) for Indonesia), World Bank (see Kharas and Steer (2006) for Indonesia), and VC associations such as the Latin America Venture Capital Association (LAVCA) which provides data for 13 Latin American countries and Associação Brasileira de Private

Equity & Venture Capital (ABVCPA) which provides data for Brazil. Finally, I retrieve data from numerous non-academic papers and reports such as the Economist Intelligence Unit (EIU) country reports from 1996 to 2008 for Hungary, Italy, Japan, New Zealand, the Philippines, Sweden, and Thailand, Spieckermann (2002) for Austria, Kenney et al. (2002) for Korea; Burgess (2002) for the U.K.; Hinz (2003) and Martin et al. (2004) for the U.S.; Bosut (2004) and Tapia (2007) for Turkey; Mitchell (2007) for Brazil and Mexico; Bayhan (2007) for Pakistan; Heerde (2001) for Switzerland; and Coelho et al. (2009) for Portugal. Finally, I conducted a series of surveys with industry professionals (including pension fund managers, mutual fund managers, investment directors, investment managers, investment advisors, owners and partners of VC firms) and VC associations in 23 countries.

My data covers 50 countries over the period 1995-2008. Among them, there are 33 countries that have passed legislation to allow pension fund managers to invest in VC. These include Australia, Austria, Brazil, Canada, Chile, Columbia, Denmark, Finland, France, Germany, Hong Kong, Hungary, Ireland, Israel, Italy, Japan, Kenya, Latvia, Lithuania, New Zealand, Norway, Peru, the Philippines, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, and the U.S. Seventeen countries that do not allow pension funds to invest in VC or have tightened their restrictions on VC investments are Argentina, Bulgaria, the Czech Republic, Ecuador, Egypt, Greece, India, Indonesia, Japan, Malaysia, Mexico, Nigeria, Pakistan, Poland, Taiwan, the U.K., and the Ukraine. To the best of my knowledge, there has been no study that examines how changes in private pension fund regulations impact direct VC investments in a cross-country setting. For the missing five countries, I was unable to obtain any information on VC-related pension fund regulations. Given the uniqueness of this data, I hope that my study will provide important new insights in this area as it allows

for a more detailed analysis of the effect of pension fund regulations on VC investments than would otherwise be possible in a single-country context.

2.2.3.2.3. Fiscal variables

2.2.3.2.3.1. Capital gains tax rates

To proxy for capital gains taxation (CGT) in my ninth hypothesis (H_9), I obtained tax data from PricewaterhouseCoopers for all countries in my database. Specifically, I contacted the respective country representatives of PricewaterhouseCoopers for all countries used in my study and obtained information on the tax regimes in each country.

2.2.3.2.3.2. Corporate income tax rates

To test my last hypothesis (H_{10}), I obtained yearly tax data on corporate income tax rates (CIT) from PricewaterhouseCoopers for all countries in my dataset. Specifically, I contacted the respective country representatives of PricewaterhouseCoopers for all countries used in my study and obtained information on the past and current tax regimes in each country. In addition, to ensure data accuracy, I cross-referenced the data with corporate income tax information provided by the OECD. From this data, I extracted information on each country's maximum corporate income tax rate over time from 1995 to 2008. To the best of my knowledge, this data has never been employed by any previous VC studies to examine the impact of corporate income tax rates in a comparative cross country context.

2.2.3.3. Control variables

2.2.3.3.1. Macro-economic variables

Prior studies show that capital market development (see, for example, Levine and Zervos, 1998; Rajan and Zingales, 1998; and Demirgüç-Kunt and Maksimovic, 2000) as well as to VC market development (see Gompers and Lerner, 1999, 2004; Jeng and Wells, 2000; Marti and Balboa, 2001; Allen and Song, 2002; Romain and De la Potterie, 2004; Armour and Cumming, 2006; Felix et al., 2007; Füss and Schweizer, 2009). To control for the state of a country's overall economy, I use several macro-economic variables that are based on previous findings in the VC literature.

2.2.3.3.1.1. Average stock market capitalization scaled by GDP

First, I control for the level of economic development across countries measured as the average stock market capitalization in US$ million from 1995 to 2008. Since countries differ substantially in size, I scale the stock market capitalization by it gross domestic product (GDP), which proxies for the overall size of an economy. Schertler (2003) documents that stock market liquidity is significantly and positively related to early stage VC investments in 14 European countries. To proxy for the liquidity of stock markets, Schertler employs both the stock market capitalization and the number of firms listed in the equity market. In a similar vein, Bonini and Alkan (2009) find a positive relationship between stock market capitalization and VC investments in 16 countries. They argue that, in their sample, stock market capitalization is the most important driver of the growth of VC in those countries. Following Bonini and Alkan (2009), I proxy for the stock market capitalization in a given country by the total value of stocks traded (based on data provided in the World Development Indicators (WDI) database by the World Bank) as a percentage

of GDP. I expect that countries with a well-developed financial system (i.e., a high relative stock market capitalization) provide an investment climate that is suitable for venture capitalists. Specifically, I assume that countries with a strong equity market make it easier for venture capitalists to exit their investments through an IPO.

2.2.3.3.1.2. Real GDP growth

Second, I control for real economic growth defined as the percentage growth rate in a country's GDP adjusted for inflation. Prior research has found that economic expansions are related to periods of high profitability and high level of VC investment (see Gompers and Lerner, 1999 and 2004; Romain and De la Potterie, 2004; Armour and Cumming, 2006; and Felix et al., 2007). In contrast, Jeng and Wells (2000) and Marti and Balboa (2001) indicate that GDP growth has no impact on the growth of VC funding in both early and late stage investments. More recently, Bonini and Alkan (2009) find that GDP growth can help explain discrepancies in early stage VC investments across countries. Consistent with Gompers and Lerner (1999 and 2004), Armour and Cumming (2006), and Felix et al. (2007), I expect that countries with a higher GDP growth rate enjoy greater amount of VC investments than countries with a lower rate of GDP growth.

2.2.3.3.1.3. Economic freedom

Third, I employ an index called the economic freedom of the world index from the Fraser Institute (www.freetheworld.com), which proxies for the consistency of a country's institutions and policies as they relate to property rights protection, contract enforcement, low taxes, and freedom for an individual to enter and compete in the market and trade domestically and internationally. Gwartney and Lawson (2009) describe this index in their

2009 edition of the Economic Freedom of the World Report. The index is available since 1970 and covers 141 nations. During the period from 1970 to 2000, the index is calculated on a quinquenial (5-year) basis, while from 2001 to 2008 it is reported annually. The index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to trade internationally, and 5) the regulation of credit, labour and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom.

The index has previously been used by LLSV (1999 and 2002), Miletkov and Wintoki (2008), and Atanasov et al. (2010) in their studies of the relationship between a country's individual property rights and financial market development. All of these studies document a significant relationship between economic freedom and the size of a country's equity markets. Consistent with these findings, I expect that the index will be significantly positively related to VC investment amounts in a given country.

2.2.3.3.1.4. Inflation

Fourth, I control for inflation as measured by the GDP deflator as provided in the World Bank's World Development Indicator database. Due to missing data for Taiwan, I calculate changes in the average consumer price index (CPI) in Taiwan (also provided by the World Bank) and use them as an alternative inflation proxy.[11] Prior researchers such as Gompers and Lerner (1999) and Romain and De la Potterie (2004) argue that inflation is influenced by GDP growth in the sense that the larger the GDP growth, the higher the inflation. In a

[11] Note that data on GDP inflation is more complete than data on the consumer price index, making it a better starting point for my analysis.

similar fashion, Groh et al. (2008) examine how inflation and other economic variables such as GDP, unemployment rates, and foreign direct investments affect the attractiveness of European entrepreneurs to receive VC funding from institutional investors. The authors find that inflation has no significant influence in attracting investors to commit their capital to VC-funded start-ups. In addition, Bonini and Alkan (2009) study how inflation impacts VC investments in 16 countries. Their findings show that the higher the inflation, the lower the total VC investments (Bonini and Alkan, 2009). Similar to Bonini and Alkan (2009), I expect a negative relationship between inflation and the amount of VC investments.

2.2.3.3.2. Cultural variables

2.2.3.3.2.1. Religion

Finally, prior research has considered religion to examine what effect it has, e.g., on countries' government quality (LLSV, 1999), the development of financial markets (Beck et al., 2004; Stulz and Willamson, 2003; Djankov et al., 2007; Miletkov and Wintuki, 2008), and an individual's decision to become an entrepreneur (Guiso et al., 2006). To capture the religion effect in my study, I incorporate data on religions from Djankov et al. (2007) in my analysis. Djankov et al. (2007) extend prior data from Stulz and Williamson (2003) and the CIA Factbook and extend it to 133 countries. In my empirical analysis, I treat religion as a series of dummy variables that identify the religion practiced by the largest proportion of a country's population. There are nine religious classifications: Atheist, Buddhist, Catholic, Hindu, Indigenous, Islamic, Jewish, Orthodox Christian, and Protestant.[12] Stulz and Willamson (2003) suggest that religion explains differences in investor protection rights better than legal origin. They find that creditor rights and the

[12] In regression analysis, I combine the Atheist and Indigenous religion groups into one. Specifically, I believe that, in my sample, there is no reason to expect any significant difference between the impact of Atheism (China and Czech Republic) and Indigenous religion (Hong Kong).

enforcement of these rights are stronger in Protestant countries than in Catholic countries. However, they find that shareholder rights are stronger in Catholic countries than in Protestant countries because Catholic countries have more pre-emptive rights and cumulative voting than Protestant countries. However, Djankov et al. (2007) find that religion has no significant effect on the size of private credit markets when they put both religion and legal origin together in their regression. Following Stulz and Willamson (2003), I expect that Catholic, Orthodox, and Muslim countries have lower VC investments and that Buddhist, Jewish, and Protestant countries have higher VC investments.

2.3. Methodology

2.3.1. Panel data analysis

Given that my data has both a cross-sectional and time series component (55 countries with annual data from 1995-2008) I use panel data analysis technique to empirically test my hypotheses. According to Marti and Balboa (2001), using panel data techniques when having data with both a cross-sectional and time series character is more efficient and provides for more reliable inferences than using individual cross-sectional or time series analyses. In addition, it allows researchers to control for heterogeneity problems that may arise when country-specific (individual heterogeneity) factors affect the dependent variable in each country, that are unobservable and fixed over time. Specifically, panel data technique help researchers overcome any unobserved heterogeneity problems by controlling for omitted unobserved variable biases that may occur in ordinary multiple regressions (Stock and Watson, 2003).

Greene (2003, chapter 13) proposes the following equational structure when analyzing a panel data regression or a mixing model:

(1) $Y_{it} = \alpha_{it} + \beta_{it} X_{it} + \varepsilon_{it}$, i = 1, 2, …, N ; t = 1, 2, …, T

where i = 1,... N relates to individual countries for one period of time (the cross-sectional dimension) and t = 1,... T, relates to the different years (the time series dimension).

My dataset tracks 55 countries tracked over 14 years, thus comprising 770 country-year observations, with no missing years or countries. In contrast to prior studies that usually focus on one or few countries at a time, the large number of observations in my dataset should lead to more efficient estimators of the parameters and should allow me to devise meaningful tests for my hypotheses while considering both cross-sectional relationships and also time relationships (cf., Greene, 2003).

2.3.1.1. Supply structural equation

As mentioned in my introduction section, I only consider supply factors that drive venture capitalists' incentives to invest in portfolio firms. Given this premise, I refrain from specifying any models that describe the demand of VC funds or that aim to provide an equilibrium specification. Instead, I follow prior studies such as Gompers and Lerner (1999), Jeng and Wells (2000), Romain and De la Potterie (2004), and Felix et al. (2007) and focus on the supply side of VC funds by estimating how country-specific factors impact the availability of VC funds.

Following the base model above, I estimate direct VC investments using the following linear specification:

$$(2)\quad Direct\_VC\_Investments_{it} = \alpha_0 + \sum_{m=1}^{M} \alpha_{mi} C_{mi} + \sum_{n=M+1}^{N} \alpha_{nit} C_{nit} + \varepsilon_{it}$$

where $Direct\_VC\_Investments_{it}$ is the total amount of VC fund investments disbursed to their portfolio companies in country *i* during period *t*, scaled by the country's GDP during the same period, *M* is lag length that varies with *t*, C_{mi} are time-invariant legal, fiscal, regulatory, and control variables, C_{nit} are similar time-variant factors, α represents the alpha of the constructs respectively, and ε represents the uncorrelated error with C_{mi} and C_{nit}.

As explained in my data section, I believe that several factors influence the supply of VC in my study: legal origin (LAW), judicial independence index (JI), jurisprudent flexibility index (JF), investor protection rights (shareholder rights (SR) and creditor rights (CR)), legal enforcement (LE), intellectual property rights (IPR), private pension fund regulation (PPF), capital gains tax rates (CGT), corporate income tax rates (CIT), stock market capitalization scaled by GDP (SMC_GDP), GDP growth (ΔGDP), economic freedom index (EF), non-corruption perception index (NCP), inflation (INF), and religion (RL).

Using these variables abbreviations, direct VC investments in a given country can thus be expressed as follows (control variables omitted):

$$(3)\quad Direct\_VC\_Investments_{it} = f(\underset{(+/-)}{LAW_i} + \underset{(+)}{JI_i} + \underset{(+)}{JF_i} + \underset{(+)}{SR_i} + \underset{(+)}{CR_i} + \underset{(+)}{LE_i} + \underset{(+)}{IPR_i} + \underset{(+)}{PPF_{it}} + \underset{(-)}{CGT_i} + \underset{(-)}{CIT_{it}})$$

Note that the signs in the brackets represent the expected outcomes for my explanatory variables based on previous findings in the literature or on assumptions I made in my hypothesis section. With respect to legal origins (*LAW)*, the positive sign (+) denotes my expectation for English common law countries, while I expect a negative (–) relationship for civil law countries.[13]

2.3.1.2. Between (cross-sectional) regression

Between (cross-sectional) regressions are used in prior VC studies (see, for example, Jeng and Wells, 2000; Felix et al., 2007; and Bonini and Alkan, 2009) to explain differences in VC investments between countries as a result of differences in characteristics across countries. That is, it compares variations in VC investments across countries, but not across time. Specifically, I aggregate venture capital investments by country and regress the resultant country observations against a series of country-specific explanatory variables including all explanatory variables (legal, regulatory, fiscal, macroeconomic, political, and cultural factors) that are also aggregated over time.

I follow prior VC studies and estimate the between regression (cf., Bonini and Alkan, 2009). Next, in order to allow variables to represent each country's 14 year average (1995 – 2008), I collapse all time-variant variables over time.

I base my between (cross-sectional) regression on the panel data equation (1). Following Jeng and Wells (2000), Felix et al. (2007), and Bonini and Alkan (2009), I do not consider temporal variance, but perform a cross-sectional comparison as shown below:

[13] Please note that while I was able to obtain yearly data on corporate income tax rates for all sample countries, I was unable to obtain historical data on capital gains tax rates. I thus employ the capital gains tax rate, measured in 2008, as a time-invariant variable in my analysis.

(4) $\overline{Direct\_VC\_Investments}_i = \beta_0 + \overline{\beta}_1 \overline{X}_{1i} + \overline{\beta}_2 \overline{X}_{2i} + ... + \overline{\beta}_k \overline{X}_{ki} + \varepsilon_i$

where $\overline{Direct\_VC\_Investments}_i$ is the average of venture capital investments over time (scaled by the corresponding average GDP for each country), *i* denotes the cross-sectional dimension, and *Xi* is the *i*th observation on *k* explanatory variables.

I employ the above regression (4) to specify a linear estimation model of the effect of my independent variables on direct VC investments as shown in equation (5):

(5) $Direct\_VC\_Investments_{i,t}/GDP_{i,t} = \alpha + \sum_{m=1}^{M} \beta_m C_{m,i,t} + \varepsilon_{i,t}$

where Direct_VC_Investment$_{i,t}$ is the total amount of VC investments disbursed to portfolio companies in country *i* during year *t* relative to the country's GDP in the same year, $C_{m,i,t}$ are legal, regulatory, and fiscal factors (e.g. legal origin, judicial independence index, jurisprudent flexibility index, investor protection rights, shareholder rights, creditor rights, legal enforcement, intellectual property rights, pension fund regulation, capital gains tax rates, and corporate income tax rates) and control variables (e.g. stock market capitalization scaled by GDP, GDP growth, economic freedom, non-corruption perception index, inflation, and religion) during year *t*.

I hypothesize that the total amount of venture capitalist investment activity is a function of legal, regulatory, and fiscal factors (i.e. legal origin, judicial independence index, jurisprudent flexibility index, shareholder rights, creditor rights, legal enforcement,

intellectual property rights, pension fund regulations, capital gains tax rates, and corporate income tax rates).

I employ three models based on permutations of my right-hand-side variables. Model 1 includes all 55 countries, but excludes the judicial independence index and the jurisprudent flexibility index because these variables are not available for all sample countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43[14] out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available.

2.3.1.3. Handling of estimation problems

2.3.1.3.1. Collinearity problems

To address any potential collinearity problems in my analysis, I examine the correlation coefficients among all dependent and independent variables. Then, I performed a series of OLS regressions in which I estimate variance inflation factors (VIFs). Because some of the explanatory variables I initially included in my models are highly correlated (correlation above 0.7 in absolute terms and VIFs higher than 10), I drop them from my main models and consider them in separate robustness tests (see Table 2.14).

*** Insert Table 2.14 about here ***

[14]Specifically, model 2 only includes Argentina, Australia, Austria, Brazil, Canada, Chile, Columbia, Denmark, Ecuador, Egypt, Finland, France, Germany, Greece, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Malaysia, Mexico, the Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, the Philippines, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the U.K, the U.S., and Venezuela.

2.3.1.3.2. Heterogeneity problems

Another problem that often arises when working with panel data is that when I have both time-variant and time-invariant variables in the equation, the time-invariant variables may be correlated with the time-variant variables. The time-invariant variables are cross-sectional or country-level factors that are different in each country, but are constant and fixed over time. Thus, they tend to cause results to be biased, i.e., they cause a different effect on the dependent variable for each country that is unobservable or heterogeneous (in statistics, this phenomenon is often referred to as an individual heterogeneity or unobservable individual effect). The time-invariant variables in my analysis include several key variables such as legal origins as well as capital gains tax rates and control variables such as religion.

2.3.1.3.3. Random vs. fixed effects

2.3.1.3.3.1. Hausman test

In order to control for any potential heterogeneity problems in my analysis, I follow Anderson and Hsiao (1982) and use a Hausman test to examine the correlation between the time-variant and time-invariant variables. The null hypothesis (H_0) under the Hausman test states that there is no correlation between those two variables. If the Hausman test rejects the null hypothesis (H_0), then the cross-sectional variables are correlated with the explanatory variables and the most suitable estimation method is a fixed effects estimation. Otherwise, a random effects estimation approach should be used (see Stock and Watson, 2003 for details). I provide the results of the Hausman test in Table 2.7c.

2.4. Empirical results

2.4.1. Summary statistics

2.4.1.1. Main dependent variables

I start my empirical analysis by providing summary statistics for my main variables of interest across countries. In Table 2.1, I focus my attention on my main dependent variable, which measures the total amount of VC investments (both early and expansion stage investments) made in a given country *i* during year *t*, scaled by the country's GDP during the same year. For brevity, I only report aggregate information for each country, i.e., I provide information on the mean, median, standard deviation, minimum, and maximum of my scaled VC investment variable – calculated across my entire sample period. To offer some insight into direct VC investments across my sample countries, column 2 provides information on the (unscaled) direct VC investments in each country. The results in column 2 are in line with prior research in this area (see, e.g., Allen and Song, 2002) and suggest that the U.S. has by far the biggest VC market with average annual VC investments totaling US$ 34,154 billion during my sample period. Interestingly, once I scale VC investments by GDP (total VC investments$_{it}$/GDP$_{it}$), Israel emerges as the global leader, outranking the U.S. Also, the VC market in other highly developed countries (e.g., Singapore, Ireland, Sweden, the U.K., and Denmark) rank very highly when considering scaled VC investments. Interestingly, Japan only ranks 43rd among my 55 sample countries. Also, some other interesting patterns arise. For instance, I find that – relative to its overall economy – the VC market in India ranks on 9th place, just below Canada, among my sample countries. The reason for India's high rank can be illustrated by comparing it, for instance, to Germany. Specifically, India's GDP was approximately US$ 1.2 trillion in 2008 and thus about three times smaller than that in Germany (2008 GDP = US$ 3.7

trillion), while Indian portfolio firms attract roughly the same amount of VC investments (unscaled) as German firms (India = $570 million vs. Germany = $554 million). I observe a similar pattern when comparing the unscaled VC investment amounts in column 2 with the scaled VC investment amounts in column 3 for other countries. Similar to India, I find that many emerging countries such as Portugal, Poland, Lithuania, South Africa, and a number of Asian countries rank relatively high in terms of my scaled VC investment variables, even though their overall VC markets as reported in column 2 are relatively small. Again, this can be explained by the relatively small GDP these countries have when compared to developed countries that have VC markets of a similar size.

*** Insert Table 2.1 about here ***

Readers who take a careful look at my summary statistics in Table 2.1 may wonder why I include some countries such as Columbia and Peru – countries which attracted negligibly small or no VC investments during my sample period – in a study that aims to explore what factors drive VC market development around the world. My rationale is straightforward: rather than restricting my sample to countries that are preselected ex-ante based on the size of their VC markets, I construct my country sample based on the availability of the country-level factors that make up my right-hand side (independent) variables. I believe that this approach is beneficial for two reasons. First, as argued by a number of prior studies in the areas of finance and economics, this approach avoids any selection/survivorship bias that may arise if I only selected "winners" for my sample and purposefully excluded "losers".[15]

[15] The main explanatory variables I later use in my regression analysis have been derived from a variety of data sources (see Appendix 7). While I can not exclude the possibility that some of the studies and databases I derived my data from were themselves biased with respect to their country coverage, any selection bias that I inherit from these third party studies should be comparatively small because of the large number of

Second, by including countries in my sample that cover the whole spectrum of VC market development (e.g., from highly active VC markets such as those in Israel and the U.S. to non-existent VC markets in Columbia and Peru), my empirical analysis benefits from the increased variation in my left-hand side variables and a larger overall sample size. In addition, and perhaps most important, it allows us to answer not just the question of why some countries have bigger VC markets than other countries, but also why VC markets have not developed in some countries at all.

There are several countries in my sample that have experienced an almost explosive growth in VC investments during my 14 year sample period, i.e., VC funding was practically unobtainable in those countries in 1995, but became well accessible to local entrepreneurial firms by 2008. By examining the development of the VC markets in those countries over time (see my analysis in chapter 3), I aim to explore whether specific regime shift in a country's legal, fiscal, and regulatory environment help spur such growth. In that chapter 3 of my analysis, countries with very small or non-existent VC market again serve as a good base benchmark.[16]

different data sources I accessed, and should not be causally related to my study since none of these studies and/or databases were in any way related to VC markets.

[16] To alleviate any concerns related to the fact that the VC markets in some countries are younger and have thus had less time to develop, I append my analysis by performing robustness tests in which I consider VC Age, i.e., the age of a country's VC market, as an additional control variable. That variable is not included in my main regression models, however, because – as noted earlier – I try to avoid preconditioning my sample by only selecting countries which already have developed VC markets. As such, my empirical analysis assures that each country has an equal chance to create a legal, fiscal, and regulatory environment that is attractive for venture capitalists. Yet, there are clearly some countries in my sample which did not have the opportunity to estimate a VC friendly environment, even if they wanted to. In particular, this applies to all countries of the former Warsaw Pact that only adopted free market capitalism after the former Soviet Unions collapse in 1990. I control for this fact by adding a dummy variable to my model that identifies all countries whose legal origin is based on former Socialist law.

2.4.1.2. Main independent variables

Table 2.2 provides an overview of the key independent variables I will employ in my subsequent regression analysis. Specifically, I provide summary statistics for the variables that describe the legal, regulatory, and fiscal environment in each country. The variables are drawn from a variety of different sources (see Appendix 7). For time invariant variables (legal origin, shareholder rights, creditor rights, legal enforcement, and intellectual property rights), I report the latest available data values. For instance, the shareholder rights variable listed in Table 2.2 is based on Djankov et al. (2008) who revise the earlier shareholder rights measure initially defined by LLSV (1997). To control for collinearity problems that arise when I first employed Beck et al.'s (2005) variables including two indicators for the political channel (supreme court power and tenure of supreme court judges) and two indicators for the flexibility channel (case law and legal justification), I create two separate indices. The first one, called the judicial independence index, is calculated as follows: (the supreme court power dummy variable + ½ the tenure of supreme court judges). By calculating the index in this fashion, I give equal weight to both variables that take on values of 0 or 1 in the case of the supreme court power dummy or values of 0, 1, or 2 in the case of the tenure of supreme court judges. The second one, called the jurisprudent flexibility index, is calculated as follows: the case law dummy variable + (1 - the legal justification dummy variable). This calculation is based on the fact that case law is hypothesized to have a positive impact on direct VC investments while the legal justification dummy is expected to negatively influence direct VC investments (see Appendix 7 for more details). For time-variant variables, i.e., variables for which I have complete annual data coverage during my sample period (e.g., corporate income tax rates) I report the average value during my sample period.

*** Insert Table 2.2 about here ***

To provide some indication of how the legal, regulatory, and fiscal environment varies across my sample, I partition my sample countries into five subsets based on the legal origin of each country (English common law, French civil law, German civil law, Scandinavian civil law, and Socialist civil law (see Panels A and B)). Consistent with the prior literature in this area (see LLSV, 1997, 1998, and Walker et al., 2010), I observe that English common law countries tend to score higher than civil law countries in terms of shareholder rights, creditor rights as well as intellectual property rights.[17]

To see the variation of my legal explanatory variables within each of the five legal systems, the box plots in Figures 2.1 to 2.6 show the distribution of my legal variables across the five legal origins identified by Djankov et al. (2007). I sort the legal origins from left to right as follows: Socialist, French, German, Scandinavian, and English origins. This order is inspired by the common belief that Socialist origin countries have the poorest legal environment, while English common law system provides investors, entrepreneurs, and other business people with the strongest legal protection, with French, German, and Scandinavian legal origin countries in between.

As expected, I observe that – in most box plots – there is an increase in my variables of interest (i.e., the judicial independence index, the jurisprudent flexibility index, shareholder

[17] To ensure that the positive correlation among these variables does not create any multicollinearity problems in my multivariate analysis, I examine the correlation coefficients between these variables and employ variance inflation factors in my regression analysis. The coefficient estimates in my regression models are not unduly affected by collinearity among the regressors as all variance inflation factors lie below the threshold of 10 beyond which multicollinearity is usually seen as a problem. At the same time, I should note, however, that in preliminary tests in which I included additional explanatory variables such as legal justification and the corruption perception index in my regression models, multicolliniarity was indeed a concern. I will elaborate on this issue when discussing the correlation matrix in Table 2.6 as well as my initial regression results in Table 2.13

rights, creditor rights, and intellectual property rights) from left to right. In particular, in almost every graph, I observe that English common law countries score among the highest when compare to civil law countries. Also, as expected and in line with Allen and Song (2002), I find that the relationship is inverse for legal enforcement, i.e., English common law countries tend to have weaker legal enforcement relative to the four civil law country groups.

2.4.1.3. Control variables

In Table 2.3, I provide summary statistics for my main control variables including the 1995-2008 sample averages for stock market capitalization scaled by GDP, GDP growth, the economic freedom index, and inflation as well as the most recent data on each country's predominant religion.

*** Insert Table 2.3 about here ***

2.4.1.3.1. Stock market capitalization

As noted in my data section, I employ the stock market capitalization divided by GDP to control for the economic development of a given country. I observe large differences in the stock market development across my sample countries ranging from a value of 0.06 for Venezuela to 3.32 for Hong Kong.

I expect that economically well developed countries, i.e., countries with a high stock market capitalization attract more VC investments (cf., Schertler, 2003; Bonini and Alkan, 2009). Not surprisingly, given the composition of my data set which includes both highly

developed as well as developing countries, I observe considerable country differences within my sample. As noted earlier, Hong Kong ranks first in terms of economic development, with a stock market capitalization scaled by GDP of 3.3219, followed by Switzerland (2.3125), South Africa (1.8764), Singapore (1.5831), and Malaysia (1.5552). At the bottom of my sample are Venezuela and Latvia which have stock market capitalizations scaled by GDP of only 0.0602 and 0.0783, respectively.

2.4.1.3.2. GDP growth

I assume that countries with strong economic growth offer attractive investment opportunities for venture capitalists. Consistent with anecdotal evidence and sample statistics provided by the World Bank, I observe that emerging market economies such as Brazil, Russia, India, and China (often referred to as the BRIC countries) were among the countries that enjoyed the strongest economic growth during my sample period. In addition, other developed countries such as Ireland and Singapore saw a significant rise in the size of their economies. In contrast, most of the highly developed countries in North America and Europe as well as Japan experienced relatively modest growth in their GDP.

2.4.1.3.3. Economic freedom

Column 4 of Table 2.3 provides information on the economic freedom index as calculated by the Fraser Institute. The index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to Trade internationally, and 5) the regulation of credit, labour and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom. Not surprisingly, I observe that economic

freedom tends to be higher in highly developed countries such as Hong Kong, Singapore, New Zealand, the U.S., Switzerland, the U.K., and Ireland, all of which have index values that are well above 8. Developing or emerging countries such as the Ukraine, Venezuela, Columbia, India, and Nigeria, on the other hand, rank comparatively low in terms of economic freedom with index values around 5.

2.4.1.3.4. Inflation

Column 5 provides information on the average inflation rate during my 1995 - 2008 sample period based on the GDP deflator as reported in the World Development Indicator database by the World Bank. Several of my sample countries including Bulgaria, the Ukraine, Turkey, Venezuela, and Russia experienced very high inflation during my sample period with average inflation rates well above thirty percent. At the same time, there are some countries such as Japan and Hong Kong which experienced deflation between 1995 and 2008. Again, I find some indication that more developed countries experience lower inflation, which may be related to the typically higher level of political independence of their central banks.

2.4.1.3.5. Religion

Finally, the last column of Table 3 lists the predominant religion in each of my sample countries. In my subsequent analysis, I will employ a series of dummy variables to capture these religions. While I will discuss the anticipated impact of religion on direct VC investments in more detail in my multivariate analysis, I would also like to refer interested readers to the study by Stulz and Williamson (2003) who examine the role of religion on stock market development in a cross country context.

Being Jewish appears to be a very important predictor of VC investments. As noted earlier, Israel (the only Jewish country in my sample) ranks first in terms of VC investments scaled by GDP, even higher than the U.S.

2.4.2. Univariate tests

In Tables 2.4 and 2.5, I start my empirical analysis by performing univariate tests for differences in mean and median VC investments between different legal and fiscal environments as well as between different realizations of my control variables, i.e. between subsamples of my dataset that are based on macroeconomic and cultural factors.

In Table 2.4, I examine mean and median VC investments scaled by GDP for various subsets of my country sample. For each group of subsamples presented in Panel A, B, and C, I report the number of country-year observations (N), mean VC investments, and median VC investments. In Panel A, I form subsamples of my dataset based on legal variables. Panel B forms subsamples based on fiscal factors while in Panel C, I form subsamples based on my control variables. For binary variables, the subsets are based on the two dichotomous variable outcomes. For all other variables, the subsets are formed around the median of the respective variables. I employ t-tests and Kruskal-Wallis tests to test for the equality of means and medians between each set of subsamples. The last column reports the *p*-values for the respective subsample comparisons.

*** Insert Table 2.4 about here ***

My results in Panel A provide a strong indication that direct VC investments are higher in countries that have a well developed legal system and that provide shareholders and creditors with ample protection. Specifically, the results for my mean and median tests in the last column of Table 2.4 suggest that common law countries, countries with independent supreme courts (as measured by the judicial independence index), countries with jurisprudent flexibility, as well as countries with strong shareholder, creditor, and intellectual property protection rights command higher direct VC investments. However, contrary to the extant literature in this area, I find that direct VC investments are smaller in countries with strong legal enforcement. In Panel B, I examine whether countries that allow pension funds to invest in VC have higher VC investments. My results suggest that countries that allow pension funds to invest in VC have significantly higher direct VC investments that those that prohibit VC investments by pension funds. In Panel C, I explore whether direct VC investments differ between countries with high/low capital gains and corporate income tax rates. Interestingly, I observe that the level of capital gains tax rates in a given country appears to be positively associated with VC investment activity. This may be driven by the fact that many of the developing countries in my sample (which also have lower VC investments) do not impose a tax on capital gains. My univariate results support my expectations with VC investment activity being higher in low income tax countries. This later result is only significant in the mean, not in the median, however.

Most of my control variables in Panel D also come in as expected. Consistent with prior studies in this area, I find that VC investment activity is higher in countries with better economic development (i.e., in countries with a higher stock market capitalization scaled by GDP as well as in countries with higher economic freedom and lower inflation). In

addition, I observe that countries with corrupt governments experience significantly lower direct VC investments than countries with non-corrupt governments. Interestingly, however, direct VC investments appear to be higher in countries that experience low GDP growth, although the difference is only significant in the median, but not the mean. Again, the fact that my sample is dominated by some highly developed countries with relatively low GDP growth may drive this result. I will explore this issue in more detail in my multivariate analysis while controlling for other factors.

To provide some additional insights into the effect of taxation and corruption on VC investments, Figures 2.1 to 2.3 provide a graphical representation of the relationship between these variables. Specifically, in Figure 2.7, I rank countries in descending order by their direct VC investments and provide the corresponding information on the non-corruption index. The figure shows that countries with high direct VC investments tend to be less corrupt than countries with lower direct VC investments. In Figures 2.8 and 2.9, I provide the same graphs for the relationship between VC investments and capital gains tax rates (corporate income tax rates), respectively. Interestingly, despite the fact that my univariate tests suggested some significant differences in VC investment amounts between low tax and high tax countries, these differences are difficult to spot in these figures.

In Table 2.5, I perform pairwise mean and median tests to examine whether VC investment activity differs among countries of different legal origins or religions. As expected, VC investment activity is highest in English common law countries, followed by countries of Scandinavian legal origin. German, French, and Socialist legal origin countries tend to have the lowest VC investment activity among my sample countries. With the exception of the English vs. Scandinavian legal origin groups, all of my pairwise comparison tests are

significant at the five percent significance level or higher. My comparison of religions in Panel B suggests that countries whose citizens are predominantly Jewish have the highest VC investment activity, followed by Hindu, Protestant, Buddhist, Atheist/Indigenous, Catholic, Muslim, and Orthodox countries. Again, almost all of my pairwaise comparison tests are highly significant.

*** Insert Table 2.5 about here ***

2.4.3. Correlation analysis

A high correlation among the regressors is a common problem in cross-country studies (see, e.g., Bushman and Smith, 2001). To ensure that my empirical results are not affected by any multicollinearity problems, I employ two methods. First, I examine the correlation coefficients among all dependent and independent variables used in my study (see Table 2.6 for a complete correlation matrix). Second, I examine the variance inflation factors (VIFs)[18] for all variables used in my multivariate analysis.

*** Insert Table 2.6 about here ***

I observe some disconcertingly high correlation coefficients (above 0.6 in absolute magnitude) among several of my explanatory variables. Specifically, I find that the non-corruption perception index is highly correlated with intellectual property rights (correlation = 0.91). Consequently, I exclude the non-corruption perception index from my regression models and examine it as part of the potentially omitted variable analysis in my

[18] Variance inflation factors (VIFs) are a method of measuring the level of collinearity between the regressors in an equation and show how much of the variance of a coefficient estimate of a regressor has been inflated due to collinearity with the other regressors.

robustness test section.[19] Despite the high correlation coefficient between French civil law and Catholic religion (correlation = 0.62), the inclusion of these variables does not appear to cause any multicollinearity problems in my regression analyses (based on VIFs). Thus, I retain both variables in my regression models. Moreover, it should be noted that the correlation coefficients between both Socialist legal origin and the Atheist/Indigenous, Jewish, and Orthodox religions with the judicial independence and jurisprudent flexibility Indices are undefined because none of the countries covered by Beck et al. (2005) are of socialist legal origin or of orthodox religion.[20] Finally, it should be noted that not all of the correlation coefficients in Table 2.6 are necessarily meaningful. For example, the correlation coefficients among the legal origin dummies and among the religion dummies are uninformative as the legal origins and religions are mutually exclusive (see my rationale for performing an ANOVA rather than a two-sample t-test and median tests for these variables).

2.4.4. Regression analyses

Tables 2.7a and b report results for my different regression analyses in which the total amount of VC investments in a given country per year (including early and expansion stage investments) is regressed on a series of legal variables (legal origins, the judicial independence index, the jurisprudent flexibility index, shareholder rights, creditor rights, legal enforcement, and intellectual property rights), a regulatory variable related to private pension fund regulations, fiscal variables (capital gains tax rates and corporate income tax rates), and control variables (stock market capitalization scaled by GDP, GDP growth, the

[19] In unreported regression analyses, I further observe that the VIFs for both variables were above 15, thus exceeding the typical cut-off value of 10 that is normally viewed as indicative of multicollinearity in a VIF analysis.
[20] Notes that the judicial independence index and jurisprudent flexibility index are based on the four variables: supreme court power, tenure of supreme court judges, case law, and legal justification defined by Beck et al. (2005).

economic freedom index, inflation, and religions). VC investment amounts are measured as the total amount of funding provided to local firms in a given country per year, relative to the country's GDP during the same year. I employ three models based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available.

*** Insert Tables 2.7 a and b about here ***

My findings in Tables 2.7a and b provide strong evidence in support of the notion that the legal and fiscal environment of a given country affects direct VC investments in a cross-country setting. They consistently suggest that countries with an independent judiciary, more legal flexibility, stronger shareholder and creditor protection as well as better intellectual property rights, and legal enforcement have a higher level of VC investment activity. To ensure the robustness of my results across different estimation methods, I perform two different estimations including a between (cross-sectional) regression (Panel A) and a random effects regression (Panel B). The between regression allows for a cross-sectional comparison across my sample countries without considering temporal variations among my regressors. I estimate a random-effects model which controls for the potential impact of omitted correlated variables and potential cross-sectional correlation among my regressors.

My findings, presented in Tables 2.7a and b, are qualitatively and quantitatively comparable across my estimation approaches and are largely consistent with the results of my univariate tests in Tables 2.4 and 2.5. Specifically, they suggest that civil law countries have lower VC investment activity than common law countries. Moreover, I observe that VC investment activity is positively related to shareholder and creditor rights, legal enforcement, intellectual property rights, economic development as measured by a country's GDP-scaled stock market capitalization as well as Judaism. Countries with high corporate income tax rates as well as Catholic, Muslim, and Orthodox Christian countries tend to have lower VC investment activity. Capital gains tax rates, GDP growth, economic freedom, and inflation show no significant impact of VC investment activity in most of my models.

When adding the judicial independence and the jurisprudent flexibility index in Model 2, I observe a somewhat reduced explanatory power for several of my regressors, which can be explained due to the unavailability of Beck et al.'s (2005) underlying data. Model 2 can only be estimated for 43 out of my 55 sample countries. As expected, the judicial independence index and the jurisprudent flexibility index power relate positively to VC investment amounts, although the later is marginally significant in some models. In Model 3, I consider the impact of private pension fund regulations on VC investment but exclude the judicial independence index and the jurisprudent flexibility index. The underlying regression is thus based on 50 out of my 55 sample countries with five countries for which pension fund regulations are unobtainable. In the last four rows of each panel, I report the adjusted R^2 or a comparable Chi^2 test, the p-value for an F-test, the number of country-year observations as well as the number of countries for each model. All model specification tests are highly significant with p-values well below 0.01. In each panel of Table 2.7, I

regress VC investment activity on different subsets of my explanatory variables (e.g., legal factors, private pension fund regulations, fiscal and economic factors, religions, and all factors combined). The adjusted R^2 for the between regressions in Panel A as well as the random regressions in Panel B suggest that my models can explain about 6 to 81 percent of the variation in VC investment activity in Panel A and 5 to 41 percent in Panel B. These adjusted R^2 ranges compare well (and in several cases exceed) comparable figures in other cross-country studies which use similar estimation methods.

When comparing the explanatory power of my different regression models, I observe that legal factors and private pension fund regulations add considerably to the adjusted R^2 relative to models that only employ fiscal and economic factors or religions. The intellectual property rights variable appears to dominate in the legal group, while the stock market capitalization scaled by GDP matters most in the macroeconomic and taxation group. The Jewish religion is the most important driver of VC investments in the religion group.

2.4.4.1. Hausman test

To decide which regression model (i.e., a fixed-effects or a random effects model) is more suitable for my analysis, I perform a Hausman test (see Table 2.7c). My null hypothesis is the random effects assumption that states that there is no correlation between individual effects (time-invariant variables or country-specific factors) and regressors (time-variant or lagged endogenous variables). The decision rule for the Hausman test is that the null hypothesis will be rejected if the *p*-value of the Hausman test (Prob>Chi^2) is significant and is smaller than 0.05, meaning that the random effects model is inconsistently estimated

(its coefficients are not the same as those of the fixed effects model) and that the fixed effects model is the model of choice. In Table 2.7c, the *p*-value of the Hausman test is insignificant (the *p*-value is 0.3073 in Model 1 and 0.4295 in Model 2). Thus, the Hausman test fails to reject the null hypothesis, which leads to the conclusion that I should use the random effects rather than the fixed effects.

*** Insert Table 2.7c about here ***

2.4.5. Robustness tests

In this section, I perform numerous sensitivity analyses to confirm the robustness of my findings in Table 2.7[21]. First, I conduct a series of tests to assess the impact of omitted correlated variables by including them as additional control variables. The results are presented in Tables 2.8 and 2.9. Then, in Table 2.10, I explore the impact of alternative sample compositions by excluding the two global VC leaders (the U.S. and the U.K.) as well as the top three and bottom three countries in terms of VC investments. In addition, I explore the sensitivity of my findings with respect to different sample periods by performing two subsample tests based on data prior to and after December 2000. Next, I examine whether my results are robust when I employ an alternative legal enforcement measure and when I control for potential cross-sectional correlation by using Newey-West heteroskedasticity and autocorrelation corrected standard errors. The results are reported in Table 2.11. Finally, I examine if my results are sensitive to alternative definitions of my dependent variables by considering alternative VC investment measures. The results are

[21] In an unreported robustness test, I also perform a fixed effects regression to ensure the robustness of my results across different estimation methods. The fixed effects method allows me to examine how changes in some of my explanatory variables affect concurrent VC investments over time. The results suggest that the choice of a fixed effects estimation method has no significant influence on my main findings.

summarized in Tables 2.12 and 2.13. Note that the number of observations varies from test to test due to data availability constraints and changes in sample composition.

2.4.5.1. Potentially omitted correlated variables

One of the common limitations of cross-country studies is that regression results are likely affected by omitted correlated variables (Bushman and Smith, 2001; Bushman et al., 2004). I address this problem by examining what impact the inclusion of additional control variables has on my results in Models 1 to 3.

To assess the impact of these potentially omitted correlated variables, I include various country-level control variables in equation (5) that I believe to affect my dependent variable (the total amount of VC investments). The regression results are summarized in Tables 2.8a-h and Table 2.9. Specifically, I explore the impact of 11 different variables that I discuss in detail below. I include these variables one by one in my main regression models (models 1 to 3). I do so for two reasons. First and foremost, the data sources from which I obtain these control variables do not cover all the countries and/or the full sample period for each country in my sample. Including them jointly in my main models would thus result in a significant reduction in my sample size and a loss of many country-year observations. Second, Hail and Leuz (2006) argue that country-level variables are frequently correlated. Investigating the impact of each variable separately allows me to avoid or reduce any potential multicollinearity problems that may arise if the omitted variables are correlated with each other and are jointly included in my models.

Insert Table 2.8 and Table 2.9 here

(a) Real interest rates

In theory, the level of real interest rates should relate negatively to direct VC investments. As discussed by Bonini and Alkan (2009), this is due to the fact that a high level of interest rates reduces the attractiveness of VC and thus direct VC investments. Yet, Gompers and Lerner (1999) and Füss and Schweizer (2009) show that real interest rates positively affect VC investments in the U.S. They argue that interest rates also impact bank financing costs in the sense that the higher the interest rate, the more costly the bank financing. Thus, when bank financing is costly, VC financing may be a better choice for entrepreneurs. On the other hand, Cumming and MacIntosh (2006) find that real interest rates in Canada relate negatively to both the supply and demand for VC. More recently, Felix et al. (2007) and Bonini and Alkan (2009) examine how real interest rates affect VC investment in 16 countries and find a positive relationship between them. I obtain data on real interest rates from the World Development Indicator database, the World Bank's primary database for cross-country development data. The World Bank calculates real interest rates based on nominal interest rates adjusted for inflation where inflation is based on changes in the GDP-deflator. The variable is available for 52 out of the 55 countries in my sample with Kazakhstan, Taiwan, and Turkey missing. When I add this variable as an additional control, the coefficients on my remaining variables are little affected. The coefficient for the real interest rate itself is significantly positive in Models 1 and 2, but insignificant in Model 3, suggesting that real interest rates have a weakly positive impact on VC investment amounts. This is consistent with the findings by Gompers and Lerner (1999), Felix et al. (2007), Bonini and Alkan (2009), and Füss and Schweizer (2009).

(b) Nominal long-term interest rates

Similar to prior studies in this area, I hypothesize that long-term nominal interest rates may have an impact on VC investments. Gompers and Lerner (1999), for example, argue that the level of interest rates in the economy may affect VC funsdrasing. Since investing in bonds is an alternative to VC investments, when the interest rate increases, the attractiveness of investments in VC funds diminishes. Consequently, for a given expected return on a VC investment, there will be lower VC fundrasing. However, despite this theoretical argument, their empirical results show a positive relationship between interest rates and VC investments. This leads the authors to conclude that VC supply is affected by variations in interest rates because the VC supply is affected by substitute offers of VC financing. Romain and De la Potterie (2004), Felix et al. (2007), and Bonini and Alkan (2009) follow Gompers and Lerner (1999) and find that the level of long term real interest rates has a positive and statistically significant impact on VC investments. In my study, I use nominal long-term interest rates derived from Bloomberg. To coincide with the typical 10-year investment horizon of VC funds, I use 10-year government bond interest rates in my analysis. If information on 10-year bond rates is unavailable, I use the rate of the closest maturity bond. The data were recorded at the end of the year from 1995 to 2008.

As shown in Table 2.8a, my findings remain intact with respect to this potentially omitted variable. The coefficient for the nominal long-term interest rates variable itself is positive, but only significant in Model 1.

(c) Unemployment rates

Next, I examine whether my results are robust when I control for differences in the unemployment rate across countries. Felix et al. (2007) provide a first-ever analysis of how the unemployment rate affects VC investments in European countries. The authors argue

that the larger the proportion of unemployed people, the larger will be the proportion of people who will have an incentive to become entrepreneurs, thus implying a positive relationship between unemployment and the demand for VC. This may happen either because the unemployed find themselves in a situation they are trying to escape from or because the government provides incentives for self-employment. In the past, several governments have implemented such incentive programs, including, for example, the programs offered through the Job and Professional Formation Institute in Portugal.

On the other hand, when considering the impact of unemployment on VC investments, the authors document a negative relation between these variables. Empirically, this later effect appears to prevail as Felix et al. (2007) document a significant negative relation between unemployment and VC investments. Consistent with their findings, I expect that countries with a higher unemployment rate have lower direct VC investments.

To control for the effect of unemployment on VC investment amounts, I include this variable in my regression analysis of equation (5). This variable is obtained from the IMF and covers all of my sample countries and my full period of analysis. As indicated in Table 2.8a, my finding is robust to including this control. Unemployment itself appears to have a negative impact on VC investment activity and is significant in all three models. This finding is consistent with Felix et al. (2007).

(d) Non-corruption perception index

Due to multicollinearity problems I encountered during my preliminary analysis, I examine the non-corruption perception index separately as part of my potentially omitted variable tests. A cross-country analysis of the relationship between politics and stock market

development is carried out by Kim (2008) who finds that a country's political institutions have a significant impact on its stock market development. In addition, Coeurderoy and Murray (2008) examine the link between political uncertainty and VC investments. Based on statistics from the U.S. and Germany, they conclude that political uncertainty (or political risk) influences the decision of young hi-tech firms whether or not to invest in a given country. Finally, Bonini and Alkan (2009) find that political risk factors (corruption and socioeconomic conditions) are significant in all stage investments. The level of corruption in a given country may affect an investor's decision to invest in a portfolio firm. I expect that countries that suffer from a high level of corruption are unattractive for venture capitalists as corruption may impose some serious difficulty for entrepreneurs and may inhibit the growth of their business. In addition, I expect that corruption negatively affects venture capitalists as it complicates and raises the costs of financial transactions. As one would expect, I observe a high level of corruption in many developing countries in South America and Asia while corruption appears to be less of a problem in developed countries.

In an attempt to control for the effect of corruption on VC investment amounts, I add the 2000 corruption perception index as provided by Djankov et al. (2003) to my model. The index draws on 14 data sources from 7 institutions: the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, PricewaterhouseCoopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit, and Freedom House's Nations in Transit. The index ranges from 0 (highly corrupt) to 10 (highly clean). To avoid that my results are unduly affected by multicollinearity, I exclude the intellectual property rights variable that is highly

correlated with the non-corruption perception index from my base models in Table 2.8b and reestimate them while including the non-corruption perception index.

Tables 2.8b shows my regression results after including the non-corruption index in Models 1 to 3. As expected, I find that less corrupt countries (i.e., countries with a high corruption perception index) are more attractive to VC investors, as indicated by a significant positive coefficient on the non-corruption perception index in Models 1 and 2. The inclusion of the variable does not change the essence of my main findings, however.

(e) Political freedom index

I also examine whether my results are robust when I control for corruption as measured by the political freedom index. The index has been used in many non-VC studies. For example, the Economist Intelligence Unit employs this index as part of a series of indicators to measure differences in the quality of life among countries. In addition, Anatasov et al. (2010) examine how the political freedom index affects firms' valuations by controlling for equity tunneling methods (dilutive equity offerings and freezeout tender offers). The authors find no significant relationship between the political freedom index and firms' value. I follow Anatasov et al. (2010) and include this variable in equation (5) to control for the effect of corruption on VC investments. The index is calculated by Freedom House (www.freedomhouse.org) and is based on a survey which measures political rights and civil liberties. Specifically, it describes individuals' rights and freedoms to "act spontaneously in a variety of fields outside the control of the government and other centers of potential domination" (www.freedomhouse.org). The index is based on an evaluation of three characteristics of a country's political system, i.e. the electoral process, political pluralism and participation, and the functioning of government. The index covers

a period from 1992 to 2009. The index is assessed on a scale from 1 to 7, with 1 being the most politically free and 7 being the least politically free.

Table 2.8b shows that the inclusion of the variable does not change the essence of my main findings, although it weakens the effect of my economic development variable (i.e., stock market capitalization scaled by GDP). The political freedom index variable itself is not significant in any of my models.

In Tables 2.8c-f, I explore the impact of corruption and political freedom further by focusing on subsets of my country sample that are based on whether or not a given country is a BRIC country or belongs to the 28 OECD[22]. My results suggest that corruption continues to play a role in both BRIC vs. non-BRIC and OECD vs. non-OECD countries. The political freedom variable, on the other hand, is only significant in a small setting that excludes OECD countries. Interestingly, in a non-OECD setting, both the corruption and political freedom index become highly significant predictors of VC investments, while in an OECD setting the two variables are largely insignificant.

The stronger heterogeneity of developing countries relative to OECD countries may play an important role in this concept. Furthermore, it is worth noting that the significance of my main independent variables is considerably stronger in the OECD subsample than in the non-OECD subsample although both subsamples have approximately the same number of observations. All variables retain their expected signs, however.

[22] Note that my sample only includes 28 out of 33 OECD countries. They comprise Austria, Australia, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, Turkey, the U.K., and the U.S. (see http://www.oecd.org/document/58/0,3343,en_2649_201185_1889402_1_1_1_1,00.html)

Given the small size of my BRIC subsample, I refrain from drawing any conclusion from the regressions that only employ the four underlying countries. It is worth noting, however, that the exclusion of the BRIC countries does not significantly affect my overall findings.

In summary, my analysis suggests that while my legal, fiscal, and regulatory variables drive direct VC investments and are likely to affect the overall economy, other institutional factors such as corruption and political freedom are also important in determining VC investments.

(f) Total Entrepreneurial Activity (TEA) index

Furthermore, I control for entrepreneurial activity in a given country using the total Entrepreneurial Activity (TEA) index. The index suggests that entrepreneurial activity is highest in Thailand and New Zealand, while it comes in very low in Hungary and Japan. Consistent with previous studies in the VC literature, I expect that entrepreneurial activity provides a good foundation for a strong VC market. Gompers and Lerner (2004) argues that the higher the entrepreneurial activity, the higher the level of VC investments. Van Stel et al. (2005) find that while the TEA index negatively affects economic development (as measured by GDP per capita) in less developed countries, it positively impacts economic development in developed countries. Finally, Bonini and Alkan (2009) examine how this index impacts early stage VC investments. Contrary to Gompers and Lerner (2004), they find a negative relationship between the level of entrepreneurship and VC investments at the early stage. Similar to Bonini and Alkan (2009), I expect that countries with a lower level of entrepreneurial activity experience greater VC investment activity than those with a higher level of entrepreneurship.

To control for the impact of entrepreneurial activity, I include the level of entrepreneurship across countries, as measured by the total entrepreneurial activity (TEA) index in 2005 in equation (5). The index is calculated by the Global Entrepreneurship Monitor (GEM) and measures the percentage of new entrepreneurs aged 18 to 64 who are actively starting a business or are running a company that has been in business for less than 42 months, relative to the adult population in a country. Specifically, the index is computed by adding the proportion of adults involved in the creation of emerging firms and the proportion involved in new firms. Thus, it captures two aspects of entrepreneurial activity within a country's population: 1) nascent entrepreneurship (i.e. the proportion of the population that actually starts a business), and 2) the proportion of the population that manages/runs these businesses. The index ranges from 1 to 20, with 1 being the lowest and 20 the highest level of entrepreneurial activity. Consistent with my expectations and the findings of Bonini and Alkan (2009), I find that entrepreneurial activity is negatively related to VC investment activity in Models 1 and 3, but not in Model 2. A closer look at the underlying data reveals that entrepreneurial activity is highly correlated with several other variables. These confounding results may thus be driven by multicollinearity. In unreported tests (not included here for the sake of brevity), I excluded these correlated variables. The resulting models consistently suggested a positive relation between entrepreneurial activity and direct VC investments.

(g) Ease of doing business ranking

The ease of doing business measures the quality of a country's regulatory environment and how it affects the ability of the country's citizens to operate a business. The variable has previously been used in a non VC context (see Stading and Altay, 2007). To examine

whether a business-friendly environment affects VC investments, I include the ease of doing business ranking as reported in the World Development Indicators (WDI) database in equation (5). The index ranges from 1 to 183, with 1 representing the most business-friendly environment. A high ranking on the ease of doing business index means that the regulatory environment is conducive to operating a business.

As reported in Table 2.9, my results are largely unaffected after including the ease of doing business ranking in my models. In addition, the variable itself is only significant in one out of my three models, providing some weak evidence that business-friendly regulations are beneficial for VC investments.

(h) Age of the VC industry

I perform another robustness test that addresses the possibility that the age of a country's VC industry may affect the number and size of investments that venture capitalists make in that country. The VC industry has been one of the fastest growing types of financial intermediaries in recent years. Prior VC researchers (see, for instance, Allen and Song, 2002; and Söderblom and Wiklund, 2005) argue that the U.S. VC industry has a much longer history and is more developed than the VC industry in other countries. They point out that the older the industry, the higher the amount of VC investments.

To assure that equation (5) provides meaningful insights when comparing VC investment activities between developed and developing countries, I control for the age of the VC industry using two alternative measures. First, I measure the number of years between the date the first portfolio firm received VC funding in a given country and 1995 (the start of my sample period). Next, I create a dummy variable for communist countries to account

for the fact that they have had no time to establish their own VC industries before 1990s. After that time, all formerly communist countries should have an opportunity to establish a VC industry. The Socialist dummy that I previously introduced as part of my legal origin factors should control for the special economic history of these countries and should account for the delay in these countries' ability to establish a functioning VC industry.

My results in Table 2.9 are positively affected when controlling for the age of the VC industry in my models in the sense that the coefficients for my main variables of interest retain the same sign as in Table 2.7, but in some cases become statistically more significant. As expected, the coefficient on the age of the VC industry itself is highly significant and positive in all models considered.

While the Socialist legal origin was negative and significant in several of my estimations in Table 2.7, it loses its significance when the VC age is introduced as an additional control variable.

(i) Patent rights index

Another robustness check revolves around the possibility that differences in countries' property rights protection influence my results. To control for this possibility, I include a patent rights index in equation (7). This index is obtained from Ginarte and Park (1997) who examine trends in property rights protection in 110 countries from 1960 to 1990 and calculate an index variable that measures the respective protection level in five-year increments. Specifically, this index measures the quality of national patent laws. Five characteristics of patent laws are considered for each country: (1) the extent of coverage, (2) the participation in international patent agreements, (3) provisions for loss of

protection, (4) enforcement mechanisms, and (5) the duration of protection. Each of these categories is assigned a value that ranges from zero to five (the average of the five subindices). The higher the value, the stronger the level of intellectual property rights protection. The resulting index variable, also called the patent rights index, is then defined as the sum of its five subcategories and thus ranges from zero to five. The index has previously been employed in the VC study by Coeurderoy and Murray (2008) who analyze hi-tech firms' decision to do business overseas. From a managerial and strategic perspective, the authors find that patent rights, as a proxy for the quality of intellectual property rights protection, influence the decision by young high-tech firms whether or not to invest in a foreign country. As indicated in Table 2.9, my main findings are robust to this control. As expected, patent rights are positively related to VC investment amounts, with the coefficient being significant at the one percent level in both Models 1 and 3.

(j) R&D expenditures

Using a sample of VC transactions in the U.S. and OECD countries, Gompers and Lerner (1999 and 2004), Schertler (2003), and Romain and La Potterie (2004) find that academic and industrial R&D expenditures have a positive impact on VC fundraising. Similar results are found in Europe by Felix et al. (2007) who note that increased R&D expenditures drive the demand for VC funds. To control for these findings, I include a variable that measures the total R&D expenditures in a given country as a percentage of the country's GDP between 1996 and 2006 from the World Development Indicators (WDI) database in equation (5).

Table 2.9 shows that the inclusion of the variable somewhat attenuates the magnitude of the legal variable coefficients. It does not change the essence of my findings, however. As

expected, the coefficient on R&D expenditures itself is highly significant and positive, suggesting that countries that are highly active in research are also very attractive to VC investors.

(k) Disclosure index

The last potentially omitted correlated variable I examine is the disclosure index as reported by LLSV (2006). The index measures the strength of a country's prospectus disclosure regulations as of December 2000 in 45 countries. It equals the arithmetic mean of six subindices that consider disclosure requirements related to (1) prospectuses, (2) compensation, (3) shareholders, (4) inside ownership, (5) irregular contracts, and (6) transactions. The higher the index value, the more stringent the disclosure regulation. The index values are measured on a 100-point scale. In the private equity study by Beuselinck et al. (2008), the authors find that when portfolio firms disclose more on a voluntary basis, the amount of investment increases. To examine the potential impact of disclosure regulations on VC investment, I include this variable in equation (5).

My results in Table 2.9 suggest no significant relation between disclosure and VC investment activity. In addition, the inclusion of the disclosure variable does not affect the results for any of my main variables of interest.

In summary, none of the omitted variables I consider in Tables 2.8a-h and 2.9 have any detrimental influence on my main results as they pertain to the overall impact of a country's legal or fiscal environment on VC investment activity. As such, my results appear to be highly robust when considering additional control variables in my main regression models.

2.4.5.2. Alternative sample compositions

In addition to exploring the impact of potentially omitted variables, I perform a number of robustness tests aimed at ensuring the independence of my results from the sample selection criteria I employed. In this section, I thus provide results for a series of sensitivity checks based on alternative sample compositions. My results are presented in Tables 2.10a-b.

*** Insert Tables 2.10a-b about here ***

2.4.5.2.1. Exclusion of the U.K. and the U.S.

To ensure that my results are not driven by any potential outliers or the dominance of specific countries, I start my sensitivity checks in this section by excluding the U.K. and the U.S. – the countries with the largest overall VC markets – from my sample. Although the exclusion of these countries reduces the significance of several of my legal and regulatory variables, my overall results in Table 2.10a remain intact.

2.4.5.2.2. Windsorized sample

Another concern that arose during my empirical analysis is that there are substantial variations in VC investments per country. For example, Israel, the U.S., and Singapore, rank considerably above most other countries in terms of scaled VC investments (VC investments divided by GDP). At the other extreme of the sample spectrum lie countries such as Columbia, Peru, and Turkey with none or very few VC investments during my

sample period. This may raise concerns about my results being unduly influenced by these countries. To address these concerns, I re-run my analysis of equation (5) using a subsample that excludes Israel, the U.S., and Singapore on the top as well as Colombia, Peru, and Turkey on the bottom. When I windsorize my sample by excluding these countries, the number of my country-year observations drops by 6*14 = 84 to 770-84 = 686. As indicated in Table 2.10a, altering my sample in this manner does not change my findings and, if anything, slightly strengthens the relationships documented in Table 2.7.

2.4.5.2.3. Robustness across time periods

In addition to exploring the sensitivity of my results with respect to the sample composition across countries, I perform a robustness test that arise to ensure that my results hold across different time periods. Specifically, I perform a robustness test in which I divide my sample period into two parts centered around the end of the dot com period in late 2000, i.e. January 1995 to December 2000 and January 2001 to December 2008, and test whether I have similar findings in each sub-period.[23] As shown in Table 2.10b, although the magnitude and significance of the legal variables in the 2001-2008 regression is higher than in the 1995-2000 regression, my findings are little affected as my sub-period results are quantitatively and qualitatively consistent with the results of the full sample. In addition, while not shown here, my results are robust when choosing alternative cutoff dates or when using yearly dummies.

[23] Note that, instead of separating my 14-year sample period into two halves of 7 years each (1995-2001 and 2002-2008), I set the breakpoint in December 2000. The technology bubble in 1999/2000 is typically assumed to have lasted until the end of 2000, thus providing a natural breakpoint between the two sample halves.

2.4.5.3. Alternative model specifications

Finally, I aim to ensure that my results are robust with respect to how I define my dependent and independent variables and how I specify my estimation models. In this section, I thus provide results for a series of sensitivity checks based on alternative variable definitions and model specifications. My results are reported in Tables 2.11 and 12.

*** Insert Tables 2.11 and 2.12 about here ***

2.4.5.3.1. Alternative legal enforcement measure

Prior research shows that legal enforcement is associated with the effectiveness of securities laws (LLSV, 1998). Consistent with prior studies in the law and finance literature, I measure legal enforcement with the formalism index of Djankov et al. (2003). As noted in Table 7, legal enforcement as measured by the formalism index is significantly and positively related to VC investment activity in a given country. To confirm the robustness of this result, I estimate a model in which I include the rule of law index from LLSV (1998) as an alternative measure of legal enforcement. Several studies use this variables as a measure of the quality of a country's legal enforcement system (Dyck and Zingales, 2004; Choi and Wong, 2006; Hail and Leuz, 2006).

Table 2.11 presents my findings. As in Table 2.7, the legal enforcement retains its predictive power even when I employ this alternative definition. In addition, my other results remain qualitatively unchanged.

2.4.5.3.2. Potential cross-sectional correlation

If the error terms of equation (5) were correlated, it would lead to an underestimation of the standard errors and an overstatement of the significance of the coefficient estimates. The extant VC literature tends to ignore this potential problem and treats the total amount of VC investments across countries as independent observations. Nonetheless, to ensure that my results are not affected by any potential cross-sectional correlation, I repeat the regression analysis of equation (5) using Newey-West heteroskedasticity and autocorrelation corrected standard errors. Because Newey-West standard errors are (by construction) higher than the White heteroscedasticity-consistent standard errors that underlie the results in Table 2.7, the significance of my results is slightly reduced when using this estimation technique. The loss in significance is almost unnoticeable and thus dose not affect any of my conclusions.

2.4.5.3.3. Early vs. expansion stage VC investments

To ensure that my results are robust when considering VC investments at different stages of a portfolio firm's life cycle, I replace my main dependent variable (the total amount of VC investments at all stages in each country divided by the GDP of that country) with (a) the total amount of early stage VC investments in each country divided by the GDP of that country (thereby excluding expansion stage investments) and (b) the total amount of expansion stage VC investments in each country divided by the GDP of that country (thereby excluding early stage investments). By differentiating between the two stages, I should be able to gain more detailed insights into the factors that drive these two types of VC investments. As pointed out by Schertler (2003), during the seed stage, firms formulate their initial business concept and develop prototypes of new products which they compare

with competing products in the market. In the start-up stage, firms set up their production, launch initial marketing campaigns, and analyze the market reaction to these campaigns. Compared to other stages of development, such as the expansion stage, the seed and start-up stage (together called early stage investments) are generally considered to be very risky. In the context of this dissertation, I assume that investors who invest at those stages likely require a well-developed institutional framework that provides them with the ability to take legal recourse in case they are defrauded. At the expansion stage, enterprises typically require large amounts of external funding because they are not yet able to generate large enough cash flows to finance their growth internally.

My results as reported in Table 2.12 – together with those of some similar robustness tests – are discussed in the following section.

2.4.5.3.4. Alternative measures of VC investments

One of the concerns I encountered during my analysis is that the total amount of VC investments is just one possible way to measure VC investment activity. If venture capitalists make few but very large investments in a given country, then this measure may suggest that the VC market in that country is very active even though most smaller firms in the country never received any VC financing. To avoid this bias and to ensure that scaling VC investments by GDP while at the same time using GDP growth as regressors does not create any problems, I employ two alternative measures to capture direct VC investments in a given country: 1) the number of financing rounds provided to early (seed and startup) and expansion stage portfolio firms in each country divided by the stock market capitalization (SMC) of that country, and 2) the number of firms that received VC

financing rounds in early (seed and startup) and expansion stage portfolio firms that received VC financing in each country divided by the SMC of that country. To obtain these two variables, I aggregate the number of VC financing rounds (VC_ROUNDS) by country and by year based on information provided by VentureXpert and then scale them by dividing them by the country's stock market capitalization.

To the best of my knowledge, these two alternative dependent variables have never been used in previous studies in the VC literature. For example, Jeng and Wells (2000) define VC investment as venture capitalists' total amount of investments with and without government funds provided to early and expansion stage portfolio firms divided by the country's average GDP. In addition, in a recent study by Gompers et al. (2008), venture capital investments are only classified as such if a venture capital firm invests its capital in a particular company for the first time.

In my subsequent analysis, the above two alternative measures intend to capture VC investment activity and the overall size of the VC market in a given country. In addition, I employ SMC information from yearly country statistics provided by Euromonitor, which I find in the Global Market Information Database (GMID), and the World Bank's World Development Indicator Database. As noted earlier, by using the number of financing rounds relative to a country's SMC rather than the total amount of VC investments I am able to explore the determinants of VC investment volume in a given country rather than total VC investment flows.

*** Insert Table 2.12 about here ***

Table 2.12 provides my results. Specifically, it replaces my main dependent variable (the total amount of VC investment in a given country divided by the GDP of that country) with (a) early stage VC investments, scaled by GDP, (b) expansion stage VC investments, scaled by GDP, (c) the number of financing rounds in a given country divided by the SMC of that country, (d) the number of financing rounds in early stage portfolio firms in a given country divided by the SMC of that country, (e) the number of financing rounds in expansion stage portfolio firms in a given country divided by the SMC of that country (f) the number of portfolio firms funded at all stages in a given country divided by the SMC of that country, (g) the number of early stage portfolio firms in a given country divided by the SMC of that country, and (h) the number of expansion stage portfolio firms in a given country divided by the SMC of that country.

The results I obtain from the respective regressions are very similar to those I obtained when using VC investments scaled by GDP. That is, my results remain qualitatively similar when using any of these alternative dependent variables instead.

2.4.5.3.5. VC investments scaled by population

When I constructed my dependent variables, I decided to follow the extant VC literature and scaled the total amount of VC investments in a given country by the country's GDP. While this approach controls for differences in wealth across countries, it is only one potential scaling method. To ensure that my results are not unduly affected by the scaling method I employed. I perform a robustness test in which I scaled the total amount of VC investments in a given country by the country's population, which serves as an alternative control for the country's size.

My results, presented in Table 2.13a, are qualitatively very similar to my findings in Table 2.7 and, if anything, increase in statistical significance. In addition, the hold for both early and expansion stage investments (column 5 to 10 in Table 2.13a) and when excluding the highly populated BRIC countries (Table 2.13b).

*** Insert Tables 2.13a-b about here ***

To summarize, the sensitivity analyses I conduct in this section indicate that my findings do not appear to be driven by the exclusion of potentially omitted correlated variables, are robust when employing alternative definitions of my dependent and independent variables, and are unaffected by changes in sample composition and or the use of alternative model specifications and estimation methods.

To provide potential readers a better overview of the many results presented in this chapter, Tables 2.15 and 2.16 summarize my main regression results as well as the results of all robustness tests. In these tables, I omit the coefficients and *p*-values from all previously discussed tables and only indicate the direction and significance of each regressor. These two tables suggest that my findings are highly consistent across all models employed, thus attesting to their qualitative consistency.

3. Nurturing the Nurturers: On the Effectiveness of Governmental Policy Reforms in Establishing a Viable VC Industry

Introduction

While the cross-country analysis I performed in Chapter 2 helped answer the question why some countries have higher direct VC investments than others, it did not take into account any potentially unobserved heterogeneity that frequently affects cross-country studies such as this. In addition, it paid little attention to dynamic drivers of VC investments such as policy reforms and macroeconomic developments . In this chapter, I acknowledge the limitations of the cross-country analysis I performed in Chapter 2 and extend it with a dynamic analysis of VC investments. By looking at time-variant rather than country-specific (time-invariant) factors, I can avoid the unobservable individual effect problem that may be present in Chapter 2. Specifically, I consider a series of lagged endogenous (time-variant) factors including lagged data on legal, regulatory, and fiscal factors that build on the variables I used in Chapter 2.

3.1. Literature review and hypothesis development

3.1.1. Legal factors

3.1.1.1. Bankruptcy laws and bankruptcy law reforms

As noted earlier, both financial market development in general and VC market development in particular have been linked to the quality of a country's creditor rights. Yet, creditor rights are not static and can undergo significant changes over time – primarily when countries implement changes to their bankruptcy laws. Thus, I introduce a

bankruptcy law variable that identifies whether countries implemented bankruptcy law in a given year and whether these bankruptcy laws had a negative or positive effect on creditor rights. Townsend (1979) states that, when a firm declares bankruptcy, the cost of auditing that firm in bankruptcy proceedings depends on investors' outstanding claims. In addition, different bankruptcy procedures across countries explain differences in the priority of creditors in a bankruptcy case. Bankruptcy laws impact the rights of creditors, for example, to foreclose on debtors' assets and to liquidate those assets. They also impact the ranking of secured creditors' claims in liquidation, regulating, for example, whether these creditors are first in line to be paid out of the proceeds of bankruptcy. Finally, Djankov et al. (2007) argue that countries with better developed and more functional systems of bankruptcy have better creditor protection rights than countries with poor systems of bankruptcy.

Prior studies also relate creditor rights to bankruptcy laws, i.e., laws that deal with bankruptcy and reorganization procedures (see, e.g., LLSV, 2000a). In a VC context, Jeng and Wells (2000) note that bankruptcy procedures can explain variations in VC investments across countries. Armour and Cumming (2006) examine how personal bankruptcy laws affect the demand for VC in Western Europe and North America. They focus on how liberal these bankruptcy laws are in granting a bankrupt individual a 'fresh start', i.e. how many years it takes before this individual can receive a discharge from pre-bankruptcy indebtedness. The authors find that bankruptcy laws are a significant determinant of VC investments and fundraising. VC-backed firms in countries with liberal bankruptcy laws have a higher demand for VC funding than those in countries with non-liberal bankruptcy laws. In addition, Kaplan et al. (2006) study the effect of creditor protection rights and bankruptcy laws on VC contracts and contend that the strength of countries' creditor protection rights and bankruptcy laws affects VC contracts.

Of particular interest for my paper is the study by Djankov et al. (2007). They argue that the power of creditors determines how much investment capital a firm can receive to finance their projects. This argument is supported by creditor power theories that state that creditors or lenders are more willing to extend credit to a firm when they can easily force repayment, seize collateral, or gain control of a firm. Djankov et al. (2007) extend earlier papers by Townsend (1979), Aghion and Bolton (1992), and Hart and Moore (1994, 1998) and examine how creditor rights and information on private credit registries impact the size of private credit markets in 129 countries from 1978 to 2003[24]. In addition, the authors explore how these bankruptcy law reforms affect the rights of creditors over time. Their findings suggest that creditors are willing to lend more money to a firm in countries where creditor rights undergo positive changes. In addition, both creditor rights and information on private credit registries drive the size of countries' private credit markets.

While Djankov et al. (2007) present important evidence on how changes in creditor rights affect the size of countries' private credit markets, they do not explicitly focus on VC markets. In addition, I am not aware of any other papers that examine the effect of bankruptcy law reforms or other policy changes that are targeted at improving creditor rights on direct VC investments. The rich dataset provided by Djankov et al. (2007) gives me the unique opportunity to examine the dynamic impact bankruptcy law reforms may have on direct VC investments, and to provide policy makers with insights as to how they affect a country's VC market. In my empirical analysis, I will specifically focus on changes in creditor protection rights following bankruptcy law reforms and will measure

[24] I am thankful to Andrei Shleifer, one of the authors in the article by Djankov et al. (2007), for providing updated data about bankruptcy laws and creditor rights on his www.economics.harvard.edu/faculty/shleifer/dataset.

how they affect venture capitalists' investment activities. As an added benefit, my empirical analysis enables me to examine the validity of the creditor power theories in a VC context by testing whether countries that show an improvement in creditor rights enjoy an increased influx of foreign VC funds and/or an increase in domestic VC fundraising. Thus, my hypothesis is as follows:

H_{11} = Countries that experience an improvement in creditor rights following a bankruptcy law reform will experience an increase in venture capitalist investment activity relative to countries that pass no such reform during the same time period.

As noted earlier, I employ Djankov et al.'s (2007) data on bankruptcy law reforms. The authors collect information on these reforms from different legal resources such as the Foreign Law Guide, the Lexis-Nexis database, the online library of the International Bar Association, the European Restructuring and Insolvency Guide, the Asia-Pacific Restructuring and Insolvency Guide, as well as through a series of surveys with local bankruptcy lawyers in each of their sample countries to estimate the effect of different reforms on the creditor rights index. They exclude reforms that are purely procedural in nature as well as those that only affect the bankruptcy of financial institutions, state enterprises or persons. Their resultant data thus consists of all law reforms that affect corporate reorganizations, liquidations, foreclosures, and secured transactions.

3.1.2. Regulatory factors

3.1.2.1. Private pension fund reforms

As discussed in the literature review on pension fund reforms in chapter 3, we know relatively little about how changes in pension fund regulations affect VC investments. Thus, I extend the analysis of the impact of pension fund reforms over time on VC investments and examine whether and how regulatory reforms in this area affect direct VC investments by both local and foreign VC funds. Therefore, I postulate that:

H_{12} = Countries that pass legislation aimed at increasing the amount of capital that private pension funds can invest in alternative asset classes such as VC or private equity will experience an increase in direct VC investments over time.

3.1.3. Fiscal factors

3.1.3.1. Corporate income tax reforms

There are only few studies (see Romain and De la Potterie, 2004; Bonini and Alkan, 2009) that examine the impact of corporate income tax rates on VC investment activity. Even then, they only look at the static relationship between corporate income tax rates and VC investments. Aside from some single country studies, there has – to the best of my knowledge – been no comprehensive study that examines how fiscal reforms and changes in corporate income taxation affect VC investments over time and across countries. My study seeks to contribute to the literature by examining how changes in corporate income tax rates affect venture capitalist investment activity in a broad cross country analysis. I hypothesize that tax reforms that lead to an increase in the corporate income tax rate in a

given country will decrease the total amount of VC investments in that country. My hypothesis thus reads as follows:

H_{13} = An increase/decrease in the corporate income tax rate of a given country exerts a negative/positive influence on direct VC investments in that country.

3.2. Data

In Chapter 3 of this dissertation, I examine how the legal, fiscal, and regulatory environment that is in place in a given country affects VC investments in that country. In chapter 3, I add to this static analysis by exploring whether governments can take active steps to increase direct VC investments in their country, i.e., I focus on the dynamic determinants of direct VC investments over time. Specifically, I explore whether legal, fiscal, and regulatory reforms provide an efficient means for governments to attract venture capitalist investments to local entrepreneurs and / or set up an active VC industry in their country. As in Chapter 3, my data set covers annual data from 55 countries over the period 1995 to 2008. I work with panel data for those 55 countries, which leads to a dataset of 770 country-year observations (55 countries x 14 years) or 715 (55 x 13) annual changes in my dependent and independent variables over time.

3.2.1. Dependent variables

3.2.1.1. Direct VC investments

In this chapter, I start my sample construction by identifying all VC investments (captured by my variable VC_AMT) made by domestic and/or foreign VC funds (identified based on the SDC data item FIRM_NATION) to domestic and/or foreign portfolio firms (based on

the SDC data item COMPANY_NATION). In other words, I separate VC investments into three different categories including 1) domestically headquartered VC firms investing in domestic portfolio companies (Domestic -> Domestic), 2) foreign based VC firms investing in domestic portfolio companies (Foreign -> Domestic), and 3) domestically headquartered VC firms investing in foreign portfolio companies (Domestic -> Foreign). The third category is of little interest for my empirical investigation and is thus excluded from subsequent analyses. For the other two categories, I consider the total VC investment amounts, aggregated by country and by year, and calculate the annual changes in VC investments using a log ratio.[25] Specifically, following Barabanov et al. (2010), I measure changes in VC investments from period T-i to T-j as the natural logarithm of (1 + VC investments at T-j)/(1 + VC investments at T-i). More specifically, since my analysis is based on changes in consecutive year data, I define the log change in VC investments from time 0 to time 1 as follows: ln [(1 + VC_amounts at time 1)/(1 + VC_amounts at time 0)].

Due to data availability restrictions for some of my data items, I perform a series of separate analyses to test my hypotheses. While changes in corporate income tax rates are available throughout my full sample period and for all sample countries, changes in creditor rights (i.e., bankruptcy law reforms) are only available during the period 1995 to 2004.changes in private pension fund regulations are only available for 50 out of my 55 sample countries. In my subsequent analysis, I thus consider three alternative models in which I include creditor rights changes and pension fund reform first separately and then together.

[25] I use log changes instead of regular percentage changes in the form change in VC investments = (VC_1 - VC_0) / VC_0 because the later may be undefined if VC amounts in the prior year (VC_0) are zero.

3.2.2. Independent variables

3.2.2.1. Changes in creditor rights (bankruptcy law reforms)

To address the question of whether changes in creditor rights affect direct VC investments in a given country in the eleventh hypothesis (H_{11}), I examine how VC investment amounts are affected by the occurrence of actual bankruptcy law reforms in each country. To proxy for the impact these bankruptcy law reforms have on the rights of creditors, Djankov et al. (2007) track annual changes in the creditor rights index and make the data available in their study.[26] Djankov et al. (2007) extend the earlier study by LLSV (1998) and analyze bankruptcy and reorganization laws to capture the relative strength of creditor rights. They create an index that measures the powers of secured creditors in a corporate bankruptcy case. The index ranges from 0 to 4 with 0 being the lowest and 4 being the highest. A value of one is added to the index when a country offers creditors the following: 1) the power to give consent when a debtor files for reorganization, 2) the power to seize collateral once the petition for reorganization is approved (in other words, no 'automatic stay' or 'asset freeze' is imposed by the court), 3) the power to be paid first out of proceeds from liquidating a bankrupt firm, and 4) the power not to allow a debtor to run the business during the reorganization (see LLSV, 1998, p. 1124 for details). Djankov's (2007) data have previously been employed in a law and finance context by Cole and Turk (2007) who study the effect of debt contract enforcement and legal origin on banks' willingness to grant credit to the private sector.

[26] In addition to the data provided in their study (which covers 129 countries over the period 1978-2003), Andrei Shleifer, one of the authors in the article by Djankov et al. (2007), also provides an updated data file on his website (http://www.economics.harvard.edu/faculty/shleifer/dataset) which covers bankruptcy law reforms and the resultant creditor rights changes until 2004.

3.2.2.2. Changes in private pension fund regulations

To proxy for changes in private pension fund legislation in my last hypothesis (H_{12}), I construct a dataset that captures restrictions on institutional pension fund investments in VC and laws on VC fund formation and operation. The data stems from a variety of different sources including prior research papers as well as other published materials such as governmental reports, magazines, books, and Internet web sites. Detailed studies that have examined private pension fund reforms in different countries include, among others: Jeng and Wells (2000) for Israel and Italy; Dossani and Kenney (2001) for India; Schröder (2007) for Germany; Chan-Lau (2004) and Olivares (2004) for Chile, and Au and White (2008) for Hong Kong. In addition, there are some non-profit organizations including the OECD (see O'Shea and Stevens (1998) for Australia, Finland, Germany, and Italy, and Wijana (2007) for Indonesia), World Bank (see Kharas and Steer (2006) for Indonesia), and VC associations such as the Latin America Venture Capital Association (LAVCA) which provides data for 13 Latin American countries and Associação Brasileira de Private Equity & Venture Capital (ABVCPA) which provides data for Brazil. Finally, I retrieve data from numerous non-academic papers and reports such as the Economist Intelligence Unit (EIU) country reports from 1996 to 2008 for Hungary, Italy, Japan, New Zealand, the Philippines, Sweden, and Thailand, Spieckermann (2002) for Austria, Kenney et al. (2002) for Korea, Burgess (2002) for the U.K., Hinz (2003) and Martin et al. (2004) for the U.S., Bosut (2004) and Tapia (2007) for Turkey, Mitchell (2007) for Brazil and Mexico, Bayhan (2007) for Pakistan, Heerde (2001) for Switzerland, and Coelho et al. (2009) for Portugal. Finally, I conducted a series of surveys with industry professionals (including pension fund managers, mutual fund managers, investment directors, investment managers, investment advisors, owners and partners of VC firms) and VC associations in 23 countries.

My data covers 50 countries over the period 1995-2008. Among them, there are 33 countries that have passed legislation to allow pension fund managers to invest in VC. These include Australia, Austria, Brazil, Canada, Chile, Columbia, Denmark, Finland, France, Germany, Hong Kong, Hungary, Ireland, Israel, Italy, Japan, Kenya, Latvia, Lithuania, New Zealand, Norway, Peru, the Philippines, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, and the U.S. Seventeen countries that do not allow pension funds to invest in VC or have tightened their restrictions on VC investments are Argentina, Bulgaria, the Czech Republic, Ecuador, Egypt, Greece, India, Indonesia, Japan, Malaysia, Mexico, Nigeria, Pakistan, Poland, Taiwan, the U.K., and the Ukraine. To the best of my knowledge, there has been no study that examines how changes in private pension fund regulations impact direct VC investments in a cross-country setting. For the missing five countries, I was unable to obtain any information on VC-related pension fund regulations. Given the uniqueness of this data, I hope that my study will provide important new insights in this area as it allows for a more detailed analysis of the effect of pension fund regulations on VC investments than would otherwise be possible in a single-country context.

3.2.2.3. Changes in corporate income tax rates

To proxy for changes in corporate income tax rates in my eleventh hypotheses (H_{13}), I obtained data on annual corporate income tax rates from PricewaterhouseCoopers. Specifically, I contacted the respective country representatives of PricewaterhouseCoopers for all countries used in my study and obtained information on the past and current tax regimes in each country. The resultant dataset covers my full sample period and is available for all sample countries. I identify major tax rate changes by calculating changes in corporate income tax rates between consecutive years. While the impact of corporate

income taxes on VC investments has been examined in some single country studies, I am not aware of any VC studies that explore the impact of corporate income tax changes on VC investments in a broader cross-country context.

My resultant dataset provides information on levels and changes in the maximum corporate income tax rates in my sample of 55 countries between January 1995 and December 2008. It is based on information provided by individual county representation of PricewaterhouseCoopers. I present information on the maximum corporate income tax rate in each year, measured as a percentage of a company's maximum taxable income.

3.2.3. Control variables

3.2.3.1. Macro-economic variables

3.2.3.1.1. Stock market growth

In addition to the overall size of a country's stock market, I also control for market returns as they reflect the expectations of investors about a country's economy. I expect that the performance of the stock market in a given country is an important factor that can help explain differences in direct VC investments across countries. Prior VC studies have indicated the need to control for market capitalization growth for several reasons. First, Black and Gilson (1998) study the relationship between capital markets and VC markets. They argue that a strong IPO and equity market stimulate the VC market due to the fact that IPOs allow VC investors to exit their investments with high returns. That is, IPOs are an important exit strategy used by venture capitalists (Jeng and Wells, 2000; Allen and Song, 2002). Thus, a well-developed stock market implies a better exit channel. Second,

Jeng and Wells (2000) add that a well performing stock market may reflect a country's future economic condition and signal some good investment opportunities to venture capitalists. Prior research that investigates the impact of stock market growth on VC investments provides somewhat inconclusive results. Jeng and Wells (2000) find that this variable is not a significant factor in their analysis. Similarly, Allen and Song (2002) find that the market capitalization growth is rarely significant in their regression models. However, Gompers and Lerner (1999), Schertler (2003), and Felix et al. (2007) find that it has a significant positive impact on VC investments. Similarly, Bonini and Alkan (2009) note that stock market returns are the most important determinant of VC investment activity across countries. In addition, they find that countries with high trading volume enjoy higher VC investments. In my dataset, the variable ranks from an average annual stock market growth of 1.71% for New Zealand to 75.99% for Russia.

3.2.3.1.2. Real GDP growth

Second, I control for real economic growth defined as the percentage growth rate in a country's GDP, adjusted for inflation. Prior research has found that economic expansions are related to periods of high profitability and thus attract VC investments (see Gompers and Lerner (1999 and 2004), Romain and De la Potterie (2004), Armour and Cumming (2006), and Felix et al. (2007). In contrast, Jeng and Wells (2000) and Marti and Balboa (2001) indicate that GDP growth has no impact on the growth of VC funding in both early and late stage investments. More recently, Bonini and Alkan (2009) find that GDP growth can help explain discrepancies in early stage VC investments across countries. Consistent with Gompers and Lerner (1999 and 2004), Armour and Cumming (2006), and Felix et al.

(2007), I expect that countries with a higher GDP growth rate enjoy greater VC investment growth than countries with a lower rate of GDP growth.

3.2.3.1.3. Economic freedom

Third, I consider the changes in the Economic Freedom of the World Index from the Fraser Institute (www.freetheworld.com), which proxies for the consistency of a country's institutions and policies as they relate to property rights protection, contract enforcement, low taxes, and freedom for an individual to enter and compete in the market and trade domestically and internationally. Gwartney and Lawson (2009) describe this index in their 2009 edition of the Economic Freedom of the World Report. The index is available since 1970 and covers 141 nations. During the period from 1970 to 2000, the index is calculated on a quinquenial (5-year) basis, while from 2001 to 2008 it is reported annually[27]. The index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to trade internationally, and 5) the regulation of credit, labour, and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom.

The index has previously been used by LLSV (1999 and 2002), Adkins et al. (2002), Carlsson and Lundström (2002), Miletkov and Wintoki (2008), and Atanasov et al. (2010) in their studies of the relationship between a country's individual property rights and financial market development. All of these studies document a significant relationship between economic freedom and the size of a country's equity markets. Consistent with

[27] In my subsequent analysis, I employ an interpolation to fill in 1996-1999 index data based on the index values in 1995 and 2000.

these findings, I conjecture that the positive index changes are associated with positive changes in VC investments.

3.2.3.1.4. Inflation

Fourth, I control for inflation as measured by the GDP deflator as provided in the World Bank's World Development Indicator database. Due to missing data for Taiwan, I calculate changes in the average consumer price index (CPI) in Taiwan (also provided by the World Bank) and use them as an alternative inflation proxy.[28] Prior researchers such as Groh et al. (2008) examine how inflation and other economic variables such as GDP, unemployment rates, and foreign direct investments affect the attractiveness of European entrepreneurs to receive VC funding from institutional investors. The authors find that inflation has no significant influence in attracting investors to commit their capital to VC-funded start-ups. In addition, Bonini and Alkan (2009) study how inflation impacts VC investments in 16 countries. Their findings show that the higher the inflation, the lower the total VC investments. Similar to Bonini and Alkan, I expect a negative relationship between inflation and the amount of VC investments.

3.3. Methodology

When examining how policy reforms affect VC investments over time in chapter 3, I use a panel data set that contains 715 observations that capture changes in VC investments in 55 countries between 1995 and 2008 (13 annual changes) and examine how they relate to legal, regulatory, and fiscal policy reforms while controlling for other control variables. That is, my time observations are composed of 55 countries and 3 explanatory variables

[28] Note that data on GDP deflation is more complete than data on the consumer price index, making it a better starting point for my analysis.

dealing with 1 legal, 1 fiscal, and 1 regulatory factor. They are collected annually for 14 years from 1995 to 2008. I combine them with my 4 control variables. Thus, I come up with an aggregate panel data set, which consists of 55 countries and 7 explanatory variables dealing with 1 legal, 1 regulatory, 1 fiscal, and 4 control variables.

3.3.1. Structural equation

In this section, I investigate how direct VC investments are affected by specific governmental reforms. In particular, I examine how legal, regulatory, and fiscal reforms in a given country affect direct VC investments as measured by the amount of VC investments made by both domestic and foreign VC funds in a given country. My structural equation can thus be written as follows:

$$(6)\quad \Delta\_Direct\_VC\_Investments_{it} = f(\underset{(+)}{\Delta CR_{it}} + \underset{(-)}{\Delta CIT_{it}} + \underset{(+)}{\Delta PPF_{it}})$$

where $\Delta\_Direct\_VC\_Investments_{it}$ denotes the change in the total amount of venture capital investments made in country *i* during period *t*, Δ*CR* denotes changes in the creditor rights index (proxied for bankruptcy law reforms), Δ*CIT* denotes changes in corporate income tax rates, and Δ*PPF* denotes changes in private pension fund regulations.

In my estimation, I use a similar approach as other studies in the VC literature (c.f., Jeng and Wells, 2000; Schertler, 2003; Leleux and Surlemont, 2003; Armour and Cumming, 2006; Bonini and Alkan, 2009) and perform a panel data analysis using a fixed-effects regression approach. In addition, to explore how quickly VC investors react to policy

reforms, we employ lag-effect OLS regressions, which we differentiate between concurrent, one-year lagged, and two-year lagged reforms.

3.3.1.1. Within (fixed-effects) panel regression

In the context of many VC investment studies, within (fixed-effects) regressions are used to capture differences in venture capitalist investment activity over time due to changes in independent variables (Jeng and Wells, 2000). In my study, it allows me to understand how variations across time in my explanatory variables (changes in a country's legal, regulatory, and fiscal environment) affect my dependent variable (venture capitalist investment activity in early and expansion stage portfolio firms). Furthermore, as noted earlier, I differentiate between two effects: 1) how the reforms affect a country's local VC market (i.e., investments in domestic portfolio companies by domestic VC firms) and 2) how they affect the attractiveness of a country from the viewpoint of foreign VC investors (i.e., investments in domestic portfolio companies by foreign VC firms).

My within (fixed effects) regression model is formulated below:

$$(7)\ Y_{it} = \beta_0 + X_{it}\beta_{it} + Z_i\lambda_1 + a_i + u_{it},\ i = 1, 2, \ldots, N\ ;\ t = 1, 2, \ldots, T$$

where $i = 1,..., N$ identifies my samplee countries, $t = 1,..., T$ represents the different time periods (years), X_{it} are the time-variant (lagged endogenous) observations, Z_i are the time-invariant (country-specific) observations, β_{it} are the coefficients on the time-variant observations, λ_i are the coefficient on the time-invariant observations, a_i is the unobserved individual effect that is fixed over time and represents institutional factors such as country-

level data, and u_{it} is the idiosyncratic (time-varying) error. This error represents unobserved factors that change over time and affect Y_{it}.

3.3.1.1.1. Perfect collinearity/individual heterogeneity problems (fixed-effects and omissions of time-invariant variables)

In the cross-country VC studies by Romain and De la Potterie (2004) and Bonini and Alkan (2009), a fixed-effects assumption is that the unobserved individual effect (a_i) depends on time-variant variables (X_{it}) and time-invariant variables (Z_i). The authors perform a robustness test to examine whether or not there is any correlation between X_{it} and Z_i. If there is no correlation, the random effects model (where N is random from a large population) will be more appropriate for my methodology than the fixed effects model, since a random effects model assumes that the unobserved individual effect (a_i) does not depend on X_{it} and Z_i.

The studies by Romain and De la Potterie (2004) and Bonini and Alkan (2009) examine a heterogeneous relationship between their right-hand-side variables including X_{it} and Z_i. Bonini and Alkan (2009) apply Anderson and Hsiao's (1982) approach and use a Hausman test to test the null hypothesis (H_0) stating that there is no correlation between those two variables. However, in this second chapter, the right-hand-side variables only include X_{it} (time-variant observations), including my key variables (changes in creditor rights, changes in corporate income tax rates, and changes in private pension fund regulations) and my control variables (changes in the stock market capitalization scaled by GDP, GDP growth, changes in the Economic Freedom Index, and inflation). For this reason, I am not concerned about any collinearity problem caused by the inclusion of time-invariant variables in my regression.

My study employs a fixed-effects panel model with exogenous regressors on pooled cross-sectional and times series data. I follow Bonini and Alkan (2009) and define a linear estimation model of the effect of changes in my independent variables over time on direct VC investments as shown in equation (8):

$$(8)\ \Delta\_Direct\_VC\_Investment_{i,t} = \alpha + \sum_{m=1}^{M}\sum_{s=0}^{1} \beta_{m,s}\Delta C_{m,i,t-s} + \varepsilon_{i,t}$$

where $\Delta(Direct\_VC\_Investment_{i,t})$ is the annual log change in VC investment activity using in country *i* during year *t* (i.e. from year t-1 to year t), *M* is the total number of variables, *S* is lag length that varies with *t*, and $\Delta C_{m,i,t-s}$ are changes in legal, regulatory, and fiscal factors (e.g. changes in the creditor rights index invoked by bankruptcy law reforms, changes in corporate income taxes, indicator variables that measure positive/negative changes in a country's pension fund regulations) and changes in control variables (i.e., changes in a country's stock market capitalization, GDP growth, changes in the Economic Freedom Index, and inflation) during year *t* and the prior year.

I hypothesize that changes in venture capitalist investment activity are a function of changes in legal, fiscal, and regulatory factors (i.e. changes in bankruptcy laws, changes in corporate income taxes, changes in capital gains taxes, and changes in private pension fund reforms).

The annual change in direct VC investments using a log ratio in the form ln [(1 + VC_amounts at time 1)/(1 + VC_amounts at time 0)] is expressed as a function of the following key legal, fiscal, and regulatory factors as well as control variables (time-variant variables):

$$(9)\ \Delta\left(Direct\_VC\_Investment_{i,t}\right) = \begin{bmatrix} \Delta CR_t + \Delta CR_{t-1} + \Delta PPF_t + \Delta PPF_{t-1} + \Delta CIT_t + \Delta CIT_{t-1} \\ + \Delta GDP\_PER\_CAPITAL_t + \Delta GDP\_PER\_CAPITAL_{t-1} \\ + \Delta GDP_t + \Delta GDP_{t-1} + \Delta EFI_t + \Delta EFI_{t-1} + INF_t + INF_{t-1} \end{bmatrix}$$

As noted earlier, I estimate two different models. In Model 1, the dependent variable is calculated as the change in a country's direct VC investments (including both early and expansion stage investments scaled by GDP) made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic). In Model 2, the dependent variable is calculated as the change in direct VC investments made by foreign-based VC companies in domestic portfolio firms (Foreign -> Domestic).

3.4. Empirical results

In this chapter, I examine whether governments can effectively attract foreign VC investors and/or establish a domestic VC industry via specific legal, fiscal, and regulatory policy reforms. Specifically, my goal in this chapter is to examine whether and how

governments can effectively influence both a country's domestic VC industry as well as VC investment flows into the country via such policy reforms. For this purpose, I distinguish between two different types of VC investment flows. First, I identify VC investments made by domestically headquartered VC firms in domestic portfolio companies. I then aggregate all VC investments that fall within this category by year and by country. For brevity, this first category of VC investments is labeled *domestic -> domestic* in my subsequent analysis. Second, I identify VC investments made by foreign (non-domestic) VC firms in a country's domestic portfolio companies. This category is labeled *foreign -> domestic*. A final category, i.e. VC investments made by domestically headquartered VC firms in foreign portfolio companies, is unlikely to provide any meaningful insights with respect to my research question and is thus excluded.

When categorizing VC investments flows under the two aforementioned groups, I employ data on the location of each VC firm and portfolio company as provided by the SDC VentureXpert database. Because I aim to explore how policy reforms affect different types of VC investment activity, I employ two separate models throughout my subsequent analysis that distinguish between these two types of VC investments.

3.4.1. Summary statistics

3.4.1.1. Main dependent variables

Table 3.1 presents information on the mean and median annual log changes in unilateral and bilateral VC investment flows for my sample of 55 countries between 1995 and 2008 as captured by the two categories above. In my calculations, I follow Barabanov et al. (2010) and measure changes in VC investments from period T-1 to T as the natural

logarithm of (1 + VC investment at T)/(1 + VC investment at T-1). For each county in my sample, I thus have 13 annual changes in VC investments (715 country-year observations).

*** Insert Table 3.1 about here ***

I observe considerable differences in the growth of VC investments across countries and between the two investment flow categories. For instance, in most developed countries, I find that VC investments made by domestic and foreign VC firms rose strongly during my sample period. In the U.S., for example, domestic -> domestic VC investments grew by a log ratio factor of approximately 9.5% per year. Investments made by foreign VC firms in domestic portfolio companies (foreign -> domestic) rose by about 9.9%. In many other developed countries, particularly in Western Europe, the average annual log growth was even higher, often in the 30% to 80% range. In emerging countries such as Brazil, Russia, India, and China (i.e. the so-called BRIC countries), domestic VC markets also grew considerably (with growth rates of 27% to 108% on average).[29]

To show how VC investments develop over time, Figure 3.1 and 3.2 plot the yearly grand sample averages of global VC investments during my sample period. Specifically, in Figure 3.1, I focus on domestic->domestic VC investments, while in Figure 3.2 I explore foreign ->domestic VC investments. Both figures show that global VC investment activity

[29] Please note that the log ratio changes I report in Table 3.1 differ somewhat from the percentage changes one would obtain by using the standard percentage change calculation (VC investment$_T$ - VC investment$_{T-1}$) / VC investment$_{T-1}$. They do allow for a good comparison of relative VC growth rates between countries, however, and, as noted above, are well defined for all possible realizations of VC investment amounts at time T-1 and T. To provide a brief comparison of how my reported log ratio results differ from the results I would obtain by using standard percentage change calculations, note that in the U.S., for example, my log ratio results suggest that VC investments grew by 9.5% per year during my sample period. The comparable annual percentage change was 17%. Similarly, the log ratio change for China is reported as 108% per year in Table 3.1. The comparable percentage change figure is approximately 174%. The large magnitude of some of the observed changes is due to the fact that in 1995, many countries such as China had virtually non-existent VC markets that then grew rapidly during our sample period.

spikes during the 1999/2000 Internet boom. After the burst of the Internet bubble, VC investment activity bottomed out in 2002, but has steadily increased since then. In Figure 3.3 and 3.4, I provide similar graphs in which I explore trends in domestic->domestic and foreign ->domestic VC investments within a subside of my sample that only considers the BRIC countries. The figures show that the BRIC countries experience a strong increase in domestic VC investment activity since 2005, suggesting that they are on the best way to establish a viable domestic VC industry. In addition, Figure 3.4 suggests that foreign investors have supplied more VC funds to these countries in recent years, although the increase is by far not comparable to the rise in domestic investments.

3.4.1.2. Main independent variables

In Tables 3.2 to 3.4, I provide summary statistics for my key independent variables. Specifically, Table 3.2 provides information on bankruptcy law reforms as captured by Djankov et al.'s (2007) creditor rights index. Table 3.4 provides information on corporate income tax rates, while Table 3.3 describes changes in pension fund regulations as they relate to pension funds' ability to invest in VC. Table 3.2 shows that nine of my sample countries experienced changes in creditor rights (some of them multiple changes), while 46 remained the same during my sample period. The countries that implemented multiple bankruptcy law reforms are Kazakhstan and Russia. In these countries, the creditor rights index experienced both positive and negative changes during my sample period. All other countries implemented no major bankruptcy law reform according to Djankov et al. (2007). With respect to my analysis, one should note that Djankov et al.' s 1995 to 2004 sample period does not fully overlap with my 1995 to 2008 sample period.[30] As a result,

[30] Note that Djankov et al. (2007) provide information on bankruptcy law reforms until 2002. The data for 2003 and 2004 are available through Andrei Shleifer's website at www.economics.harvard.edu/faculty/shleifer/dataset.

any subsequent tests in which I consider the effect of bankruptcy law reforms on VC investments are based on data from 1995 to 2004, resulting in a somewhat reduced sample period in these tests.

***Insert Table 3.2 about here ***

In Table 3.3, I provide information on VC-related private pension fund regulations for 50 out of my 55 sample countries between 1995 and 2008. Specifically, the table provides information on whether the respective governments in those countries implemented regulations to allow VC investments by private pension funds. Countries that prohibit private pension funds from investing in VC in a given year are identified by a dummy variable value of zero. The dummy variable takes on a value of 1 if the country allows VC investments by private pension funds. The data presented in Table 3.3 is derived from various sources including O'Shea and Stevens (1998), Jeng and Wells (2000), Heerde (2001), Burgess (2002), Han et al. (2002), Spieckermann (2002), Hinz (2003), Bosut (2004), Chan-Lau (2004), Martin et al. (2004), Olivares (2004), ABVCPA (2006), Bayhan (2007), Mitchell (2007), Schröder (2007), Tapia (2007), Coelho et al. (2009), and LAVCA (2009) as well as a series of surveys with industry professionals (including pension fund managers, mutual fund managers, investment advisors, and partners of VC firms) in 23 countries and VC associations including the Latin American Venture Capital Association (LAVCA) for 13 Latin American countries, Associação Brasileira de Private Equity & Venture Capital (ABVCPA) for Brazil, the African Venture Capital Association for Kenya, and the Indian Venture Capital Association (IVCA). For the remaining 5 out of my 55 countries, I was not able to obtain reliable information on whether and when VC investments were allowed for private pension funds. I observe that there were 40 countries

that restricted private pension funds from investing in VC in 1995, but that 23 of them implemented regulatory reforms between 1995 and 2008 through which they opened up VC as an alternative asset class for private pension fund managers. In addition, I observe that there are 5 countries which consistently prohibited VC investments as well as 7 countries which consistently gave private pension funds the option to invest in VC during my sample period.

***Insert Table 3.3 about here ***

In Table 3.4, I consider changes in the maximum corporate income tax rate across all sample countries between 1995 to 2008, as provided by PricewaterhouseCoopers and the OECD. The table shows that most countries around the world reduced the taxation of corporate income considerably during my sample period. For instance, the average mean tax rate across all sample countries in 1995 was about 33.5%. By 2008, this average decreased to approximately 27%. The reduction in corporate income tax rates is perhaps most noticeable among countries of the former Warsaw Pact. Bulgaria, the Czech Republic, Poland, and Russia, for instance, all reduced their corporate income tax rates from about 40% in 1995 to approximately 20% by 2008. Developed countries such as Australia, Japan, and most Western European countries also reduced their corporate income tax rates, albeit to a smaller extent.

***Insert Table 3.4 about here ***

3.4.1.3. Control variables

Table 3.5 provides information on four time-variant variables that I assume affect changes in VC investments over time. I will include these four control variables in my subsequent analysis to control for macroeconomic determinants of VC investment activity across countries and over time in addition to my key variables of interest. Specifically, I consider each country's stock market growth, real GDP growth, changes in the Economic Freedom Index, and inflation in Table 3.5. Not surprisingly, I observe a strong increase in the stock market capitalization and a high GDP growth in emerging countries such as Brazil, Russia, India, and China (BRIC) as well as other developing countries such as Nigeria, Lithuania, Latvia, and Kazakhstan.

On the other hand, many of the developed countries in Western Europe, North America as well as Japan experience comparatively little growth in GDP and only modest (or in some cases negative) stock market returns during my sample period. All four of the BRIC countries as well as many developing countries such as Nigeria, Lithuania, Bulgaria, the Czech Republic, Latvia, Poland, and the Ukraine experience a strong improvement (above 10%) with respect to the Economic Freedom Index. For developed countries, the picture is somewhat mixed with the Economic Freedom Index experiencing changes in the low single digit range, and with some countries such as Germany, the U.K., and the U.S. in fact undergoing a decline in economic freedom. In the last column of Table 3.5, I provide information on each country's average inflation rate during my sample period. While the annual inflation figures are in the single digit range among most of my sample countries, there are some high inflation countries such as Bulgaria, Indonesia, Kazakhstan, Nigeria, Russia, Turkey, and the Ukraine that stand out because they have average annual inflation

rates in excess of 10%. Japan experiences the lowest price increase during my sample period with an average inflation rate of 0.025%.

*** Insert Table 3.5 about here ***

3.4.2. Preliminary empirical analysis

3.4.2.1. Event study methodology

In Figures 3.5 to 3.10, I display the results of an event study in which I examine how changes in my key independent variables (changes in creditor rights, corporate income tax rates, and private pension fund regulations on VC investments) that result from governmental policy reforms affect VC investments by both domestic and foreign VC funds in a given country. I investigate three types of events: 1) bankruptcy law reforms as provided by Djankov et al. (2007); 2) pension fund reforms that allow pension funds to invest in VC; and 3) fiscal reforms that result in corporate income tax rates changing by least five percent. Because creditor rights and corporate income tax rates can either increase, decrease, or remain unchanged, I provide three curves in the respective graphs that illustrate how VC investments change around the corresponding bankruptcy law and fiscal reforms. With respect to pension fund reforms, my sample only contains policy reforms that allowed pension funds to invest in VC (i.e., there are no reforms that started to disallow VC investments). As a result, the corresponding graphs contain two curves that illustrate how VC investments change when there is a positive policy reform or no reform.[31] In each graph, I depict trends in mean scaled VC investments within +/- five

[31] Note that each figure (Figure 3.5-10) provides a "neutral" trendline, i.e. a trendline that shows how VC investments change when there is no event. This trendline is based on the average scaled VC investments in a sample of matched countries that are closest to a given event country in terms of size (as measured by GDP), but experienced no event during my sample period.

years around the event year (year 0 in which a reform was implemented). For consistency, all trendlines are normalized with year -5 serving as the base year and starting at an index value of 1. Interestingly, all graphs tend to be upward sloping which is not surprising given the rising trend in VC investments over time that I observed in Table 3.1.[32]

In addition, the graphs provide several interesting insights with respect to the impact of policy reforms on VC investments. Figures 3.5 and 3.6 illustrate how bankruptcy law reforms affect VC investments by domestic and foreign VC funds, respectively. The figures suggest that bankruptcy law reforms that improve creditor rights attract both domestic and foreign VC investors while reforms that have a negative impact on creditor rights tend to decrease direct VC investments from both domestic and foreign VC funds.

Pension fund reforms, depicted in Figures 3.7 and 3.8, paint a more mixed picture. When governments allow pension funds to invest in VC, VC investments by domestic VC funds tend to increase and remain at elevated levels relative to countries that pass no reform. As would be expected, pension fund reforms appear to have no significant impact on direct VC investments from foreign VC funds, however (see Figure 3.8).

Fiscal reforms, shown in Figures 3.9 and 3.10, suggest an opposite effect: while reductions in corporate income tax rates appear to provide a short-term boost to domestic VC investments, they do not appear to have any long-term impact. Foreign VC funds, on the

[32] Note that, in contrast to the typical event study approach that is employed in other areas of finance, there is insufficient data on VC investments prior to 1990 to estimate "normal" changes in VC investments during an estimation period in which no event took place. Rather than attempting to calculate any abnormal VC investments, I thus focus on the aforementioned trendline comparison with the VC investment trend in matched non-event countries serving as a baseline for my analysis. Also note that in cases where a country implemented a reform early during my sample period, e.g. in 1995, I employ VC investment data going back to 1990 to calculate changes in VC investments in the pre-event years -5 to -1. In cases where an event occurred late during my sample period, e.g. in 2007, I only employ data until 2008 to estimate any post-event trends. My results are little affected if I drop the corresponding events from my analysis.

other hand, appear to increase their direct VC investments in countries with a favourable fiscal environment and maintain a high level of VC investments well beyond a tax rate cut.

3.4.2.2. Univariate tests

I continue my empirical analysis by performing a series of univariate mean and median tests to compare changes in VC investments in relation to changes in my control variables during the prior year. None of these changes relate to any specific event and are thus not suitable for the event study/trendline approach I used to investigate changes in my main explanatory variables. In Panel A and B of Table 3.6, I provide results for a series of univariate tests in which I examine changes in VC investment amounts between different subsamples of my data set based on my control variables. In Panel A, I provide test results for VC investments made by domestically headquartered VC firms in domestic portfolio companies (*domestic -> domestic*). In Panel B, I consider VC investments made by foreign based VC firms in domestic portfolio companies (*foreign -> domestic*). For each univariate test, I form two subsamples in which I differentiate between positive, and negative/no changes in stock market capitalization, real GDP, the Economic Freedom Index, and inflation during the prior year. In the first row of each panel, for example, I compare how VC investments evolve during a given year if a country experienced a positive or negative stock market return (based on the country's stock market capitalization) during the prior year. The last column of each panel in Table 3.6 presents *p*-values for a *t*-test and a Kruskal-Wallis test to test for the equality of mean and median VC investment changes between the two subsamples.

Overall, my results are largely as anticipated. Countries that experience positive stock market returns tend to experience a stronger increase in VC investments than countries that experience a stock market decline. Similarly, I observe a positive relation between VC investments and GDP growth. In addition, I observe that changes in the Economic Freedom Index are positively associated with changes in VC investments in the following year. Both the mean and median test results for these three variables are significant at the 10% level or better between the two subsamples. Finally, in the last row, I observe no significant difference in VC investments between high and low inflation countries. The results in Panel B (foreign -> domestic investments) are largely comparable. Good stock market performance and high GDP growth tend to attract foreign VC capital. Changes in the economic freedom index are also positively related to VC investments, but only in the median (not the mean). Inflation – while insignificant in the domestic -> domestic subsample – appears to be a deterrent for foreign VC investors, although the significance is only marginal.

*** Insert Table 3.6 about here ***

3.4.2.3. Correlation analysis

To ensure that my subsequent regression analyses are not affected by any multicollinearity problems and to provide some preliminary insights into the pairwise relationships between my dependent and independent variables, I provide results for a correlation analysis in Table 3.7.

The correlation results are largely in line with the results of my variable analysis and event study results suggesting that creditor rights, corporate income taxes, and private pension fund reforms have a significant impact on VC investments. Among the independent variables, I observe no correlation coefficients in excess of 0.7 (in absolute terms), erasing any concerns about multicollinearity.

*** Insert Table 3.7 about here ***

3.4.3. Regression Analysis

In Tables 3.8 and 9, I perform two different types of multivariate analyses to examine the impact of legal, regulatory, and fiscal reforms on VC investment activity. Specifically, in Table 3.8, I employ a series of OLS regressions in which I regress changes in VC investments during a given year on lagged changes in both my key independent and control variables during the prior year. Next, in Table 3.9, I employ a fixed effects regression that explores how VC investment levels change over time, again in response to changes in my main variables of interest and control variables.

In both tables, I differentiate between domestic -> domestic and foreign -> domestic investments. In addition, to investigate the incremental explanatory power of each key independent variable, I add the variables separately to my models.[33]

The results in Tables 3.8 and 9 suggest that VC investments by both domestic and foreign VC funds are clearly responsive to governmental policy reforms. Table 3.8, for instance,

[33] Note that due to the unavailability of annual creditor rights data after 2004 and of pension fund regulations for five of my 55 sample countries, the sample size varies across the different regression models.

suggests that positive bankruptcy law reforms (i.e., reforms that lead to an improvement in creditor rights in a given year) have a positive impact on VC investments from both domestic and foreign VC funds in the subsequent year. Corporate income tax changes only have an effect on foreign VC investments, while pension fund regulations only impact direct VC investments from domestic VC funds – a result that should be expected given that these reforms only affect domestic pension funds. In addition, my results suggest that countries with high stock market growth and (to a lesser extent) GDP growth experience an increase in both domestic and foreign VC investments. Economic freedom only has a marginal positive impact on domestic VC investments while inflation has no apparent impact on VC investments.

The results of the fixed effects regression in Table 3.9 are highly supportive of the lag-effects analysis in Table 3.8. Perhaps most interesting is that the coefficient on the corporate income tax variable now becomes significant and negative in most regressions. In addition, the coefficient on the inflation variable in several of the foreign -> domestic regressions become significant and negative, suggesting that foreign VC funds show some hesitation to invest in countries that experience a high inflation rate. In addition, it is worth noting that the significance of the creditor rights variable is somewhat reduced relative to the lag-effect OLS regression. All other variables roughly retain their relationship with both domestic and foreign VC investments.

*** Insert Tables 3.8 and 9 about here ***

3.4.4. Robustness tests

In this section, I perform a series of tests to confirm the robustness of my primary findings in Tables 3.8 and 9. First, I conduct a number of sensitivity checks to assess the impact of potentially omitted variables by including them one by one in my main models. The results are presented in Table 3.10. Next, in Table 3.11a, I explore the impact of alternative sample compositions by 1) excluding the U.S. and the U.K. (i.e. the two countries with the largest VC markets) and 2) excluding the top 3 (China, Germany, and Switzerland) and the bottom 3 (Hong Kong, Taiwan, and Czech Republic) countries in terms of annualized changes in VC investment growth. In addition, in Table 3.11b, I explore the possibility that VC investments may react instantaneously or with a longer delay to policy reforms by including non-lagged and 2-year lagged independent variables. Finally, I examine if my results are sensitive to different variable compositions and estimation methods by including squared independent variables that control for the possibility of non-linear relationships (Table 3.12a), by using Newey-West heterokedasticity and autocorrelation corrected standard errors (Table 3.12b), and by employing alternative definitions of my dependent variables (Tables 3.13a and b).

3.4.4.1. Potentially omitted correlated variables

Bushman and Smith (2001) and Bushman et al. (2004) note that one of the common limitations of cross-country studies is that regression results are likely to be affected by omitted correlated variables. I address this problem by examining the impact of additional control variables in Models 1 and 2 that I believe may affect my dependent variables. The regression results are summarized in Table 3.10. Specifically, I explore the impact of two variables that I will discuss in detail below. I include these variables one by one in my

main regression models (models 1 and 2). I do so for two reasons. First and foremost, the data sources from which I obtain these control variables do not cover all the countries and/or the full sample period for each country in my sample. Including them jointly in my main models would thus result in a significant reduction in my sample size as I would have to drop many country-year observations. Second, Hail and Leuz (2006) argue that country-level variables are frequently correlated. Investigating the impact of each variable separately allows me to avoid or reduce any potential multicollinearity problems that may arise if the omitted variables are correlated with each other and are jointly included in my models.

Insert Table 3.10 here

(a) Changes in nominal long-term interest rates

As an additional variable of interest, I introduce changes in long-term nominal interest rates (ΔNI) in both Models 1 and 2. I thus follow prior VC studies such as Gompers and Lerner (1999) who argue that the level of interest rates in the economy may affect VC investments. Since investing in bonds is an alternative to VC investments, when the interest rate increases, the attractiveness of investments in VC funds diminishes. Consequently, for a given expected return on a VC investment, there will be lower direct VC investments. However, despite this theoretical argument, the empirical results show a positive relationship between interest rates and VC investments. This leads the authors to conclude that direct VC investments are affected by variations in interest rates because of their impact on substitute offers of VC financing. Romain and De la Potterie (2004), Felix et al. (2007), and Bonini and Alkan (2009) follow Gompers and Lerner (1999) and find that the level of long term interest rates has a positive and statistically significant impact on

VC investments. In my study, I use changes in nominal long-term interest rates as provided by the Bloomberg database. Specifically, I use the yield on 10-year government bonds as the standard rate. If there is no information for 10-year bonds, I use the interest rate on the bond with the closest maturity.

As shown in Table 3.10, my findings remain intact with respect to this potentially omitted variable. The coefficient for the interest rate variable itself is positive, but insignificant in both models.

(b) Changes in foreign direct investments (net inflows)

Next, I examine the impact of foreign direct investments on VC investment activity. Specifically, I focus on changes in net foreign direct investments, calculated as the difference between inflows and outflows of capital in a given country. Again, the inclusion of this variable does not appear to affect my main findings. Furthermore, as would be expected, net FDI inflows do not have any significant effect on direct VC investments from domestic VC funds but are positively related to investments made by foreign VC funds.

(c) Year dummies

Finally, I examine whether my results are sensitive to including year dummies in my regression models. The inclusion of year dummies may allow me to better capture variations in VC investments over time and any resultant time effects. My results, displayed in the last two columns of Table 3.10, suggest that the inclusion of time effects has no significant influence on my main findings. If anything, the inclusion of year dummies increases the statistical significance of my variables. For instance, the real GDP

(which was insignificant in my main regression models) now becomes statistically significant and positive. Similarly, the economic freedom index – which was only weakly significant in Model 1 – now becomes statistically significant and positive in both regression models. The improved explanatory power of my regression models is also reflected in a higher R^2 value.

3.4.4.2. Alternative sample compositions

One concern that arose during my empirical analysis is that there are substantial variations in the size of VC markets and in the growth of VC investments among my sample countries. For example, China, Germany, and Ireland experienced a considerably higher growth in VC investments than most other countries. At the other extreme of the sample spectrum lie countries such as Hong Kong, Taiwan, and the Czech Republic that actually experienced a decline in VC investments during my sample period. In addition, both the U.K. and the U.S. dominate the sample by having the largest overall VC markets. This may raise concerns about my results being unduly influenced by these countries. To address these concerns, I re-run my analysis of equation (8) using a subsample that excludes China, Germany, and Ireland on the top as well as Hong Kong, Taiwan, and the Czech Republic on the bottom.[34] When I windsorize my sample by excluding these countries, the number of country-year observations drops to 480 (440) respectively. As indicated in Table 3.11a, altering my sample in this manner does not change my findings and, if anything, slightly strengthens the relation documented in Table 3.9.

Insert Table 3.11a here

[34] In Model 2, I use a similar approach and exclude Denmark, Switzerland, Russia (top) as well as Indonesia, the Philippines, and Taiwan (bottom) from my analysis of foreign->domestic VC investments.

3.4.4.3. Alternative variable definitions

3.4.4.3.1. Inclusion of non-lagged and 2-year lagged independent variables

To explain whether VC funds adjust their supply of VC funds instantaneously or with some delay after they become aware of a policy reform, I extend my earlier analysis in which I used data that was lagged by one year by considering unlagged and 2-year lagged independent variables. My results, displayed in Table 3.11b, suggest that VC funds tend to react relatively quickly to policy reforms (possibly because they are anticipated prior to their implementation) but are more reactionary in response to changes in my macroeconomic control variables (and economic freedom). In addition, I observe that most of my independent variables are both economically and statistically more significant when they are not lagged or lagged by one year but that their significance decreases when they are lagged by two years. As noted earlier, this suggests that the VC market reacts rather efficiently to changes in a country's legal, regulatory, or fiscal environment. In addition, reforms are typically preceded by political and legislative discussions so that they are unlikely to hit the market by surprise.

Insert Table 3.11b here

3.4.4.3.2. Inclusion of quadratic terms

In Table 3.12a, I present regression results for two models that include not just my independent variables but also quadratic transformations thereof. This allows me to examine whether there are any non-linear relationships that are not captured by my original models. My results provide some evidence that the linear and quadratic effects are not redundant as both the linear and quadratic terms for many variables are significant.

Insert Table 3.12a here

3.4.4.4. Potential cross-sectional correlation

As in any regression, there is a possibility that my results are affected by cross-sectional correlation when the error terms of equation (8) are correlated. This typically leads to an underestimation of the standard errors and an overstatement of the significance of the coefficient estimates. The extant VC literature treats changes in VC investments across countries as independent observations. Nonetheless, to ensure that my results are not affected by this potential problem, I repeat the regression analysis of equation (8) using Newey-West heteroskedasticity and autocorrelation corrected standard errors. As shown in Table 3.12b, my results are little affected when using this estimation method. The significance of some regressors is slightly reduced, but they remain largely in line with the results I obtained in Table 3.8.

Insert Table 3.12b here

3.4.4.5. Alternative dependent variables

Next, I investigate whether my results are sensitive to employing alternative specifications for my dependent variables. Specifically, I use five variables that measure changes in the amount of early stage investments, changes in the amount of expansion stage investments (see Table 3.13a), and changes in the number of financing rounds for early stage, expansion stage, and all VC investments (see Table 3.13b).

Insert Table 3.13a and b here

My results, displayed in Table 3.12a, are qualitatively consistent with my main regression results. Interestingly, however, I observe that – irrespective of whether I consider VC investment amounts or financing rounds – expansion stage investments are somewhat more susceptible to changes in fiscal reforms and inflation than early stage investments. On the other hand, early stage investments tend to be more affected by bankruptcy reforms.

Given the nature of these two types of investments, my results in Table 3.13b are not surprising: early stage investors typically face a higher default risk than expansion stage investors who invest in more mature companies. Vice versa, expansion stage investors should be more concerned about differences in corporate taxation because relative to early stage companies that often do not generate any profits during the first few years, their target companies are more likely to make money. The different impact of inflation is more difficult to explain, but may again relate to the expected profitability and cash flows of early vs. expansion stage companies.

To provide potential readers a better overview of the many results presented in this chapter, Tables 3.14 and 3.15 summarize my main regression results as well as the results of all robustness tests. In these tables, I omit the coefficients and *p*-values from all previously discussed tables and only indicate the direction and significance of each regressor. These two tables suggest that my findings are highly consistent across all models employed, thus attesting to their qualitative consistency.

4. Conclusions

This dissertation explores whether and how direct VC investments are affected by a country's institutional environment after controlling for known determinants of VC investment flows across countries. Specifically, I explore whether legal, regulatory, and fiscal factors can explain the often large discrepancies in the availability of VC funding one can observe in a cross-country context.

In chapter 2, I perform a static analysis of how both early and expansion stage VC investments are affected by a country's institutional environment. Using panel data on VC investments in 55 countries from 1995 to 2008, I find that legal, regulatory, and fiscal factors are highly significant in predicting VC investment activities in a given country. In addition, when these factors are added to models that only focus on macro-economic, cultural, and political determinants of VC investments they considerably increase the explanatory power of the respective regressions.

In chapter 3, I expand my empirical analysis by focusing on time-variant factors and by exploring whether VC investment react to policy reform-induced changes in a country's institutional environment. Specifically, I examine whether and how direct VC investments are affected by 1) bankruptcy law reforms and the associated changes in creditor rights, 2) pension fund reforms that regulate the ability of pension funds to invest in alternative asset classes, and 3) fiscal reforms that alter the taxation of corporate income. In addition to exploring how these policy reforms affect the aggregate supply of VC investments, I

examine both unilateral and bilateral investment flows and explore whether they affect the capital provided by domestic and foreign investors differently.

My results suggest that VC-friendly policy changes are an effective tool by which governments can establish a viable VC industry and increase their country's attractiveness for foreign investors. Specifically, I find that reforms that lead to an improvement in creditor rights and a lower taxation of corporate income serve as attractants for foreign VC investors. Direct VC investments from domestic VC funds are also affected by these two factors but is particularly responsive to pension fund reforms, i.e. reforms that provide pension funds with the ability to invest in VC. Government regulators who aim to attract VC funds – whether they are foreign or domestic – should benefit from the insights of this study as it shows that venture capitalists are clearly responsive to well-conceived policy reforms.

5. Limitations

As in any empirical study, my results may be affected by data errors or omissions. While the use of multiple independent data sources should have reduced any systematic biases that could be present in a single data source, some biases may still exist. For instance, not every VC fund may necessarily be represented in the SDC VentureXpert database and it could be possible that poorly performing VC funds or VC companies that went out of business did not report their data. In addition to such a survivorship bias, it may be possible that VC funds in some countries do not report as much information as those in

other countries due to laxer disclosure requirements or because the respective countries lack well organized venture capital associations.

In addition to these potential biases that may be associated with fund-specific data, my study may also be subject to data problems that arise in connection with country-level data. While I was successful in obtaining most of the legal, regulatory, and fiscal factors I needed for my analysis, I encountered several variables that either had missing years or were unavailable for certain countries. As discussed in my data section, I chose to address this problem by exploring the impact of these variables in separate sensitivity analyses and as part of a series of potentially omitted variable tests.

Similarly, because two of the variables I used in chapter 3 (pension fund reforms and tax rate changes) were collected by means of a survey and through individual e-mail requests to country representatives at PricewaterhouseCoopers, they may not be as consistent and reliable as data that comes from an official database. To ensure that the data I use is as reliable as possible, I compared overlapping survey answers and tax rate information with publicly available data from prior academic studies and official databases. While not all data could be verified in this manner, I encountered few problems that required any adjustments.

Finally, while my results are supportive of most of my hypotheses and are robust when using alternative sample selection criteria, estimation methods, or variable definitions, there is no guarantee that they accurately portray all causal relationships. For instance, when examining the relation between GDP growth and VC investment activity, I generally assume that growing economies provide an attractive playing field for venture capitalists

and that they may thus attract VC funding from domestic and foreign VC investors. Of course, one may make the argument that there is also a reverse causal relationship as countries in which VC funds provide sufficient funding and thereby allow many young entrepreneurial firms to flourish should experience higher economic growth. While I could reject the presence of such an endogenous relationship for variables such as GDP growth and stock market growth via a series of unreported Hausman endogeneity tests, there are clearly other variables that may be endogenously related in a cross-country setting such as this.

6. Recommendations for Future Research

In this dissertation, I focus my attention on legal, fiscal, and regulatory factors and explore how they affect the supply of venture capital from *private (non-governmental) VC funds*. In future research, it would be interesting to examine whether the establishment of *government-sponsored VC funds* can provide an effective means by which countries can establish a viable VC industry and whether the creation of such funds can serve as a foundation for a private VC industry.

Furthermore, my dissertation focuses on VC investment activity. Even though I measure VC investment activity using a number of alternative variables (e.g., investment amounts and the number of financing rounds provided to both early and expansion stage portfolio firms), there are clearly other aspects of the VC market that could be analyzed in a similar fashion. Future research could, for instance, explore how the legal, fiscal, and regulatory

environment in a given country affects VC exits, VC monitoring activities, or VC investment performance.

Although they were largely introduced to ensure the robustness of my results, it was very interesting to observe that many of the potentially omitted variables I examined as part of my sensitivity analyses in chapters 2 and 3 were significant. While a deeper exploration of the underlying relationships exceeds the focus of this study, future research that further explores these factors may provide some interesting insights and could be the subject for several future research projects. For instance, it would be interesting to further explore how corruption or foreign direct investment flows affect direct VC investments.

Finally, this dissertation only focused on the determinants of VC *supply* and explored how governments can attract and retain domestic and foreign VC investors. Of course, a similar analysis that focuses on the *demand* for VC should provide equally interesting insights and may reveal additional policy reforms that governments could implement to increase entrepreneurial activity and the demand for funds.

7. Appendices

Appendix 1: Tables and Figures for Chapter 1

Figure 1.1: Human capital in entrepreneurial firms

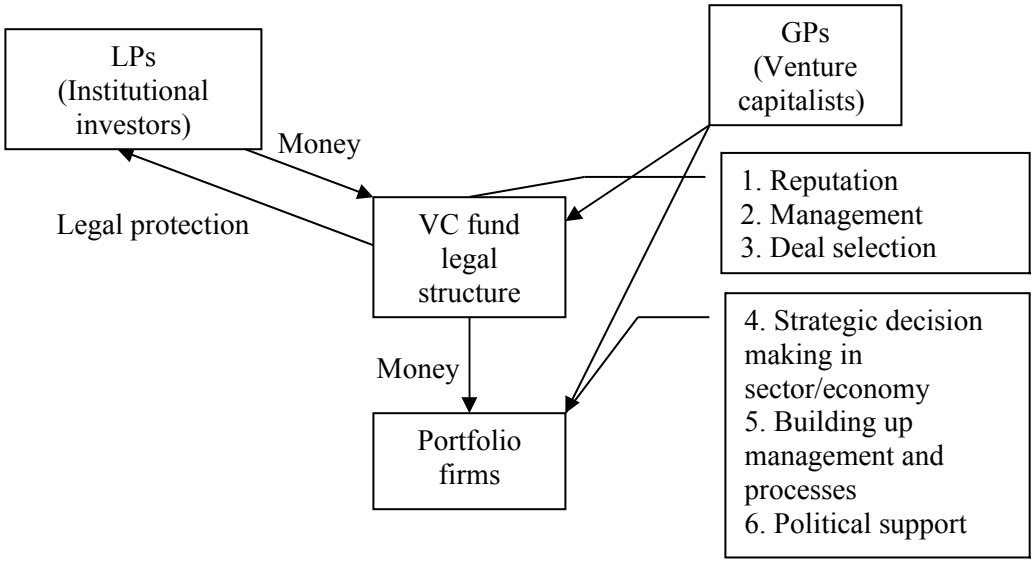
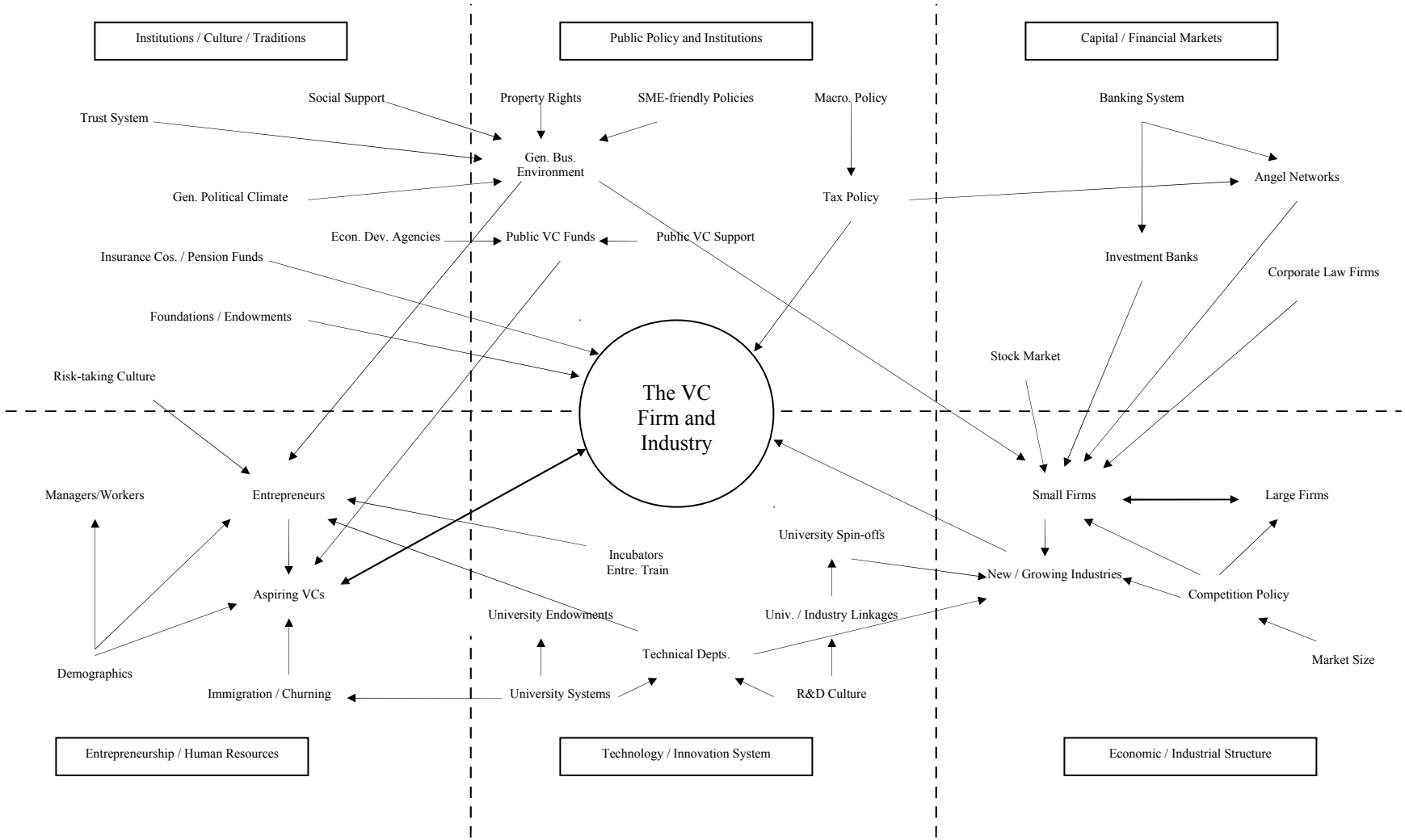


Figure 1.1 provides an overview of the key players and their roles in the VC industry. As indicated in that figure, VC investments are structured as limited liability partnerships (LLPs) that comprise 1) institutional investors who become limited partners (LPs), 2) VC fund managers or venture capitalists who are general partners (GPs), 3) different funds, and 4) portfolio firms (Gompers and Lerner, 2004). The institutional investors are capital providers who typically want to diversify their existing portfolios of equities, bonds, and other assets by investing in VC. The venture capitalists act as allocating intermediary agents who invest the capital they received from the institutional investors in suitable portfolio firms. When funding a firm, they not only provide financial support but also value-added services to the firm's management. For instance, they provide advisory services, monitor the progress of the firm, provide the firm with access to the VC firm's network of suppliers, customers, consultants, investment banks, accountants, and lawyers, and thereby help the portfolio firm develop and grow (Lerner, 1995).

Figure 1.2: A web of complex interactions towards a systems model of venture capital



Source: Osama (2005)

Figure 1.3: Indicator-level model for chapter 2

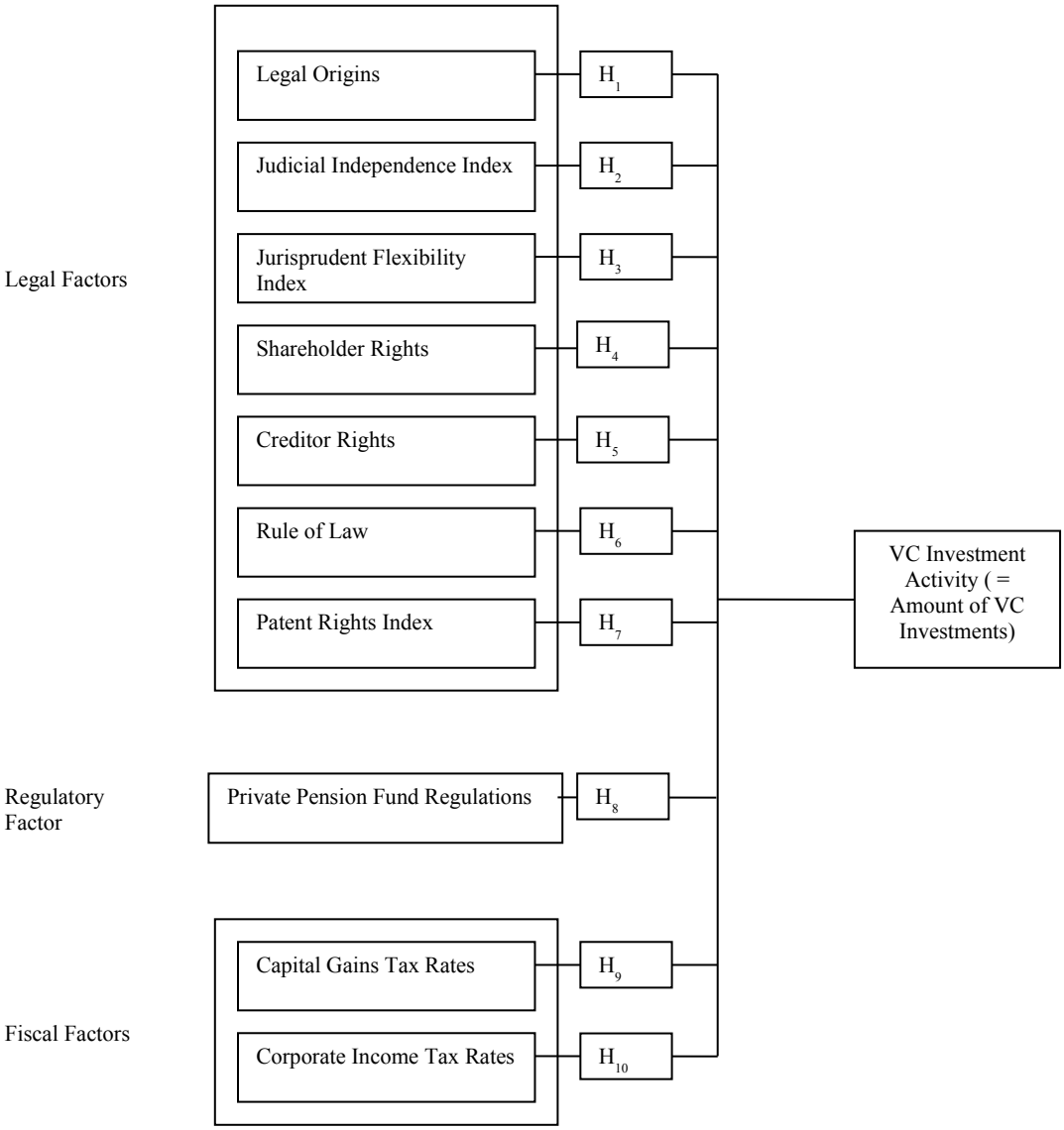
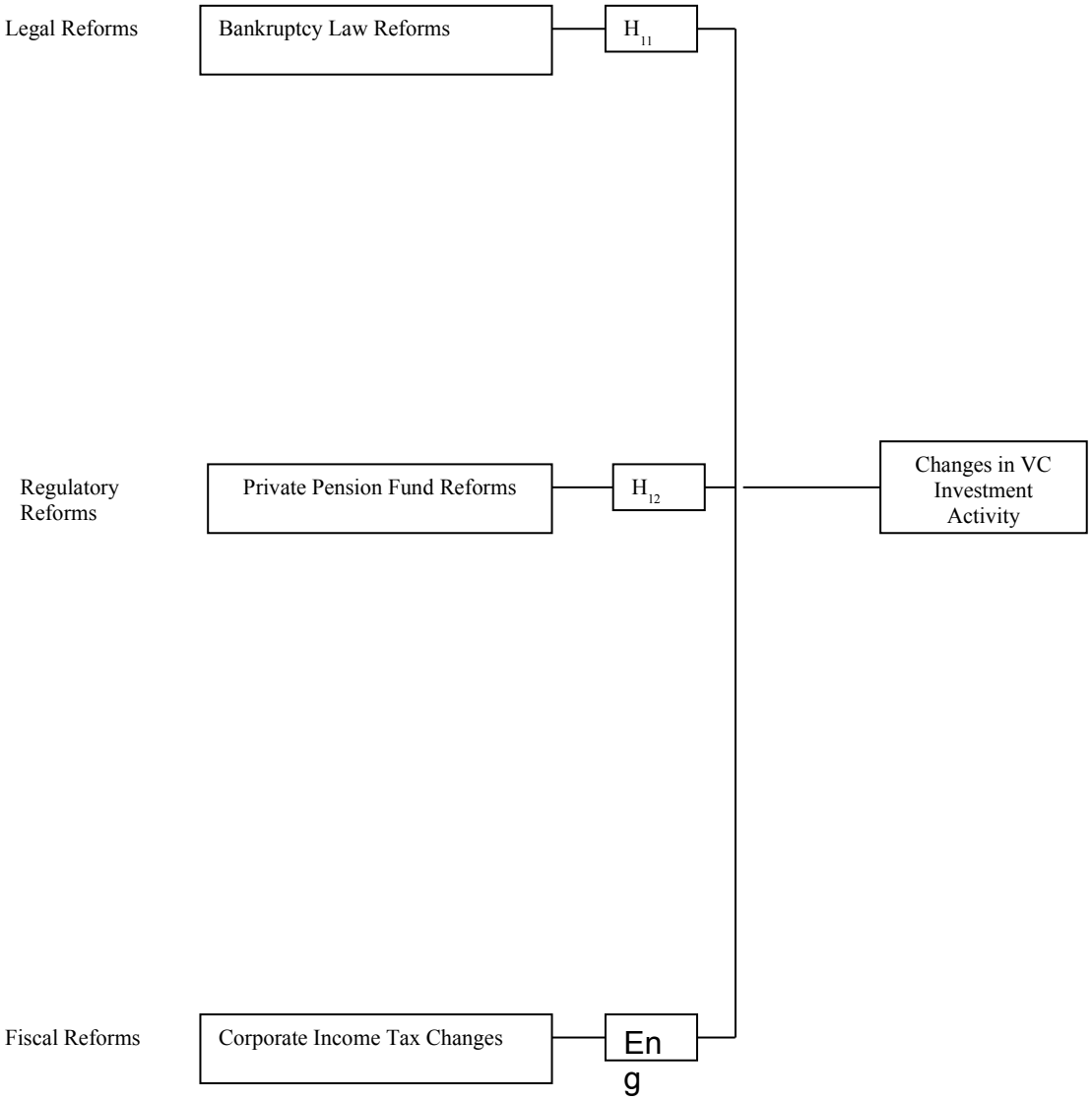


Figure 1.4: Indicator-level model for chapter 3



Appendix 2: Tables and Figures for Chapter 2

Table 2.1: Summary statistics: VC investment amounts as a percentage of GDP (early and expansion stage investments)

I provide summary statistics for my dataset of VC investments at all stages (early and expansion) scaled by GDP for my sample of 55 countries between January 1995 and December 2008. The dataset is based on information contained in the Securities Data Company's (SDC) VentureXpert database. I present various statistics that describe venture capitalist investment activity as described in the column headings. Each statistic provided in the table is based on 14 annual observations for each country.

Country	Total Amount of VC Investments	Total Amount of VC Investments Scaled by GDP From January 1995 to December 2008				
Panel A: Asia	Mean (in US$ thousand)	Mean (%)	Median (%)	Std. Dev. (%)	Min. (%)	Max. (%)
China	808,737	0.421	0.403	0.266	0.081	0.945
Hong Kong	141,161	0.858	0.364	1.090	0.054	3.802
India	569,811	0.957	0.591	0.921	0.060	3.109
Indonesia	18,958	0.103	0.024	0.147	0.000	0.417
Japan	258,168	0.058	0.017	0.100	0.000	0.384
Kazakhstan	1,038	0.057	0.000	0.212	0.000	0.794
Malaysia	29,155	0.279	0.171	0.302	0.000	0.828
Pakistan	1,902	0.025	0.000	0.087	0.000	0.329
Philippines	4,532	0.059	0.014	0.089	0.000	0.312
Singapore	194,335	1.979	1.074	2.500	0.102	9.092
South Korea	354,430	0.642	0.300	0.837	0.005	2.785
Taiwan	117,893	0.394	0.233	0.488	0.000	1.551
Thailand	9,708	0.063	0.047	0.066	0.000	0.191
Panel B: Africa						
Kenya	1,230	0.085	0.000	0.221	0.000	0.710
Nigeria	1,539	0.015	0.000	0.027	0.000	0.086
South Africa	19,039	0.114	0.054	0.146	0.000	0.430
Panel C: Australia						
Australia	425,812	0.941	0.514	0.911	0.070	2.815
New Zealand	34,926	0.430	0.360	0.443	0.000	1.771
Panel D: Eastern Europe						
Bulgaria	1,355	0.082	0.000	0.199	0.000	0.708
Czech Republic	27,023	0.439	0.036	0.916	0.000	3.277
Hungary	41,355	0.672	0.114	1.207	0.000	3.469
Latvia	259	0.020	0.000	0.051	0.000	0.160
Lithuania	3,057	0.126	0.000	0.256	0.000	0.833
Poland	40,430	0.194	0.133	0.243	0.002	0.958
Russia	35,451	0.061	0.044	0.059	0.000	0.175
Ukraine	3,508	0.036	0.000	0.076	0.000	0.236
Panel E: Middle East						
Egypt	661	0.009	0.000	0.035	0.000	0.130
Israel	444,134	3.398	3.313	2.380	0.258	8.476
Panel F: North America						
Canada	770,694	0.974	0.700	0.807	0.104	2.644
United States	34,154,135	3.358	2.390	2.313	1.455	9.504
Panel G: Middle and South America						
Argentina	30,293	0.111	0.037	0.189	0.000	0.588
Brazil	214,603	0.334	0.096	0.419	0.002	1.172
Chile	5,933	0.079	0.013	0.136	0.000	0.431
Columbia	0.000	0.000	0.000	0.000	0.000	0.000
Ecuador	2,218	0.085	0.000	0.298	0.000	1.117
Mexico	10,639	0.018	0.002	0.029	0.000	0.105
Peru	0.000	0.000	0.000	0.000	0.000	0.000
Venezuela	6,613	0.071	0.000	0.191	0.000	0.660
Panel H: Western Europe						
Austria	62,920	0.239	0.160	0.237	0.000	0.796
Belgium	172,597	0.593	0.537	0.545	0.000	1.802
Denmark	224,313	1.018	1.292	0.808	0.001	2.705

Country	Total Amount of VC Investments	Total Amount of VC Investments Scaled by GDP From January 1995 to December 2008				
Panel H: Western Europe (cont'd)	Mean (in US$ thousand)	Mean (%)	Median (%)	Std. Dev. (%)	Min. (%)	Max. (%)
Finland	97,676	0.616	0.503	0.623	0.020	2.194
France	832,746	0.489	0.421	0.448	0.043	1.451
Germany	553,781	0.244	0.187	0.268	0.013	1.008
Greece	4,017	0.029	0.000	0.096	0.000	0.360
Ireland	191,715	1.399	1.119	1.224	0.054	4.048
Italy	74,311	0.054	0.034	0.064	0.000	0.222
Netherlands	281,653	0.523	0.355	0.485	0.030	1.622
Norway	112,210	0.489	0.383	0.568	0.000	2.173
Portugal	26,063	0.175	0.132	0.22	0.011	0.602
Spain	311,401	0.421	0.164	0.693	0.006	2.636
Sweden	407,628	1.326	1.097	1.052	0.043	3.804
Switzerland	256,627	0.808	0.632	0.762	0.003	2.683
Turkey	2,220	0.008	0.000	0.026	0.000	0.098
United Kingdom	1,968,558	1.092	0.952	0.845	0.111	3.244

Table 2.2: Country characteristics: Key variables

I compare legal factors (Shareholder Rights, Creditor Rights, Legal Enforcement, Intellectual Property Rights, Judicial Independence, and Jurisprudent Flexibility) as well as fiscal factors (Capital Gains Tax Rates and Corporate Income Tax Rates) across my 55 sample countries categorized by law system and legal origin. All values listed here are based on the latest available data for each variable. The shareholder rights index (frequently also called the anti-director rights index) from Djankov et al. (2008) ranges from 0 to 6, with a higher rating representing stronger shareholder rights protection. The index increases by 1 when each of the following is true: 1) the country allows shareholders to mail their proxy vote to the firm, 2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, 3) cumulative voting or proportional representation of minorities on the board of directors is allowed, 4) an oppressed minorities mechanism is in place, 5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 percent and 6) shareholders have pre-emptive rights that can be waived only by a shareholders' vote. The creditor rights is from Djankov et al. (2007) and ranges from 0 to 4, with a higher rating representing stronger creditor rights protection. The index increases by 1 when each of the following is true: 1) there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization, 2) secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze", 3) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as the government or workers, and 4) management does not retain administration of its property pending the resolution of reorganization. The judicial independence index is a self-calculated index that combines the two political channel variables (Supreme Court power and the tenure of Supreme Court judges) from Beck et al. (2005) and employs the updated data file from Beck (2010) for 43 countries that match my sample countries. My judicial independence index ranges from 0 to 2 and is calculated by adding the Supreme Court power dummy plus 0.5 times the tenure of Supreme Court judges. The Supreme Court power is a dummy variable that takes on a value of 1 if Supreme Court judges have lifelong tenure and jurisdiction over administrative cases, and 0 otherwise. The tenure of Supreme Court judges indicates the length of tenure of Supreme Court judges (0=less than six years, 1=more than six years but not lifelong, 2=lifelong). The jurisprudent flexibility index is an index that combines two adaptability channel variables from Beck et al. (2005): case law and legal justification. The index is calculated by summing the case law dummy variable and (1 - the legal justification variable). The case law dummy variable equals 1 if judges base their decision on case law, and 0 otherwise. Legal justification measures the level of legal justification required in the process. This variable is calculated as the normalized sum of three subsindices and increases by 0.33 if one of the following statements is true: 1) the complaint must be legally justified, 2) the judgment must be legally justified, and 3) the judgment must be based on law (not on equity). The index ranges from 0 to 1, where higher values mean a higher use of legal language or justification. Legal enforcement, as proxied by the formalism index, measures substantive and procedural statutory intervention in judicial cases at lower-level civil trial courts. It ranges from 0 to 7, with higher numbers indicating more formalism, i.e. a higher level of control or intervention in the judicial process. The index is formed by adding up the following indices: 1) professionals versus laymen, 2) written versus oral elements, 3) legal justification, 4) statutory regulation of evidence, 5) control of superior review, 6) engagement formalities, and 7) independent procedural actions (see Djankov et al., 2003). The intellectual property rights index is calculated for the year 2008 and covers all areas of intellectual property rights including 1) the protection of intellectual property rights from the World Economic Forum, 2) patent rights from Ginarte and Park (1997), 3) copyright piracy, and 4) trademark protection. The index ranges in value from 0 to 10. A higher score indicates better protection of intellectual property rights in a given country. Capital gains tax rates are measured as the maximum tax rate charged by the federal government of a given country. Corporate income tax rates are measured as the maximum tax rate charged by the federal government of a given country. These two tax rates are based on information provided by PricewaterhouseCoopers and the OECD.

Country	Legal Variables						Regulatory Variable	Fiscal Variables	
	Shareholder Rights (SR) 0-6 (Low to High)	Creditor Rights (CR) 0-7 (Low to High)	Judicial Independence Index 0-2 (Low to High)	Jurisprudent Flexibility Index 0-2 (Low to High)	Legal Enforcement (LE) 0-7 (Low to High)	Intellectual Property Rights (IPR) 0-10 (Low to High)	Private Pension Fund Regulation (As of 2008) 1 = allowed 0 = not allowed	Capital Gains Tax Rate (CGT) (As of 2008) %	Corporate Income Tax Rate (CIT) (1995-2008 Average) %
Panel A: Common law (English origin) countries									
Australia	4	3	2	1.67	1.80	7.9	1	23.25%	32.429%
Canada	4	1	2	2	2.09	7.8	1	14.5%	40.040%
Hong Kong	5	4	N/A	N/A	0.73	7.2	1	0%	16.679%
India	5	2	2	1	3.34	5.2	0	0%	38.093%
Ireland	5	1	2	1.67	2.63	7.6	1	15%	21.786%
Israel	4	3	2	1.33	3.30	6.3	1	20%	29.000%
Kenya	2	4	2	1.67	3.09	3.9	1	10%	32.143%
Malaysia	5	3	2	2	2.34	5.8	0	0%	28.929%
New Zealand	4	4	2	1.67	1.58	7.9	1	0%	32.786%
Nigeria	4	4	2	1.67	3.19	3.8	0	10%	30.714%
Pakistan	4	1	2	1.33	3.76	2.8	0	0%	38.621%
Singapore	5	3	2	2	2.500	7.5	N/A	0%	23.571%
South Africa	5	3	2	1.67	1.68	7.0	1	10%	35.614%
Thailand	4	2	1	0.33	3.14	4.6	1	0%	30.000%
United Kingdom	5	4	2	1.67	2.58	8.2	0	18%	30.500%
United States	3	1	2	1.67	2.62	7.9	1	15%	39.646%

Country	Legal Variables						Regulatory Variable	Fiscal Variables	
	Shareholder Rights (SR) 0-6 (Low to High)	Creditor Rights (CR) 0-7 (Low to High)	Judicial Independence Index 0-2 (Low to High)	Jurisprudent Flexibility Index 0-2 (Low to High)	Legal Enforcement (LE) 0-7 (Low to High)	Intellectual Property Rights (IPR) 0-10 (Low to High)	Private Pension Fund Regulation (As of 2008) 1 = allowed 0 = not allowed	Capital Gains Tax Rate (CGT) (As of 2008) %	Corporate Income Tax Rate (CIT) (1995-2008 Average) %
Panel B: Civil law countries									
French origin:									
Argentina	2	1	2	1	5.40	4.8	0	0%	34.000%
Belgium	3	2	N/A	N/A	2.73	7.9	N/A	0%	37.526%
Brazil	5	1	2	0	3.06	5.1	1	15%	34.986%
Chile	4	2	2	0.33	4.57	6.1	1	40%	15.893%
Columbia	3	0	0.5	0	4.11	5.5	1	38.5%	35.286%
Ecuador	2	0	2	1.33	4.92	4.0	0	25%	24.643%
Egypt	3	2	2	0	3.79	4.4	0	0%	35.714%
France	3.5	0	1	0	3.23	8.1	1	27%	36.811%
Greece	2	1	1	0	3.99	5.7	0	25%	32.929%
Indonesia	4	2	2	1.33	3.90	4.2	0	0%	30.357%
Italy	2	2	1	0	4.04	6.5	1	12.5%	34.821%
Lithuania	4	2	N/A	N/A	4.47	4.9	1	15%	12.500%
Mexico	3	0	0.5	0	4.71	5.1	0	0%	32.714%
Netherlands	2.5	3	2	0.33	3.07	8.0	0	0%	32.900%
Peru	3.5	0	2	1	5.60	3.7	1	30%	29.786%
Philippines	4	1	2	1	5.00	5.0	1	10%	33.500%
Portugal	2.5	1	1	1	3.93	7.1	1	0%	33.093%
Spain	5	2	2	0	5.25	6.4	1	0%	34.607%
Turkey	3	2	1	1.33	2.53	5.1	1	20%	29.929%
Venezuela	1	3	0.5	0	6.01	3.4	N/A	5%	34.000%
German origin:									
Austria	2.5	3	1	0	3.52	7.9	1	25%	31.429%
Bulgaria	3	2	N/A	N/A	4.57	4.9	0	10%	25.036%
German origin (cont'd):									
China	1	2	N/A	N/A	3.41	4.4	N/A	20%	33.000%
Czech Republic	4	3	N/A	N/A	4.06	5.8	0	15%	31.143%
Germany	3.5	3	1	1	3.51	8.4	1	0%	45.121%
Hungary	2	1	N/A	N/A	3.42	6.2	1	20%	17.952%
Japan	4.5	2	1.5	1.33	2.98	8.2	1	7%	44.260%
Latvia	4	3	N/A	N/A	3.93	4.2	1	23%	20.786%
Poland	2	1	N/A	N/A	4.15	5.7	0	19%	28.286%
South Korea	4.5	3	1.5	1.67	3.37	6.7	1	11%	31.250%
Switzerland	3	1	1.5	1.33	3.13	8.0	1	0%	23.822%
Taiwan	3	2	2	1.33	2.37	6.4	0	0%	25.000%
Scandinavian origin:									
Denmark	4	3	2	1.33	2.55	8.1	1	45%	30.429%
Finland	3.5	1	2	1.33	3.14	8.5	1	28%	27.571%
Norway	3.5	2	2	1.33	2.95	7.8	1	28%	28.000%
Sweden	3.5	1	1	1.67	2.98	7.6	1	30%	28.000%
Socialist origin:									
Kazakhstan	4	2	N/A	N/A	4.76	2.7	N/A	30%	30.000%
Russia	4	2	N/A	N/A	3.39	3.9	1	0%	31.464%
Ukraine	3	2	N/A	N/A	3.66	4.3	0	15%	28.214%

Table 2.3: Country characteristics: Control variables

I compare my control variables (stock market capitalization divided by GDP, real GDP growth, the economic freedom index, inflation, the non-corruption perception index, and religion) across my 55 sample countries categorized by law system and legal origin. The table provides the 1995-2008 average for stock market capitalization divided by GDP, real GDP growth, the economic freedom index, and inflation. When calculating a country's stock market capitalization, I only consider domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles. The data is based on information provided by the World Bank and the Word Federation of Exchanges. Real GDP growth is the percentage increase or decrease in a country's real GDP during a given year relative to the previous year. The economic freedom index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to trade internationally, and 5) the regulation of credit, labour, and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom. During the period from 1970 to 2000, the index is calculated on a quinquenial (5-year) basis, while starting from 2001 to 2008 it is reported annually. As a proxy for inflation, I employ the GDP deflator as reported by the World Bank. The non-corruption perception index is provided by Djankov et al. (2003) and draws on 14 data sources from 7 institutions: the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, PricewaterhouseCoopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit and Freedom House's Nations in Transit. The index ranges between 10 (highly clean) and 0 (highly corrupt). Religion is identified by a series of dummy variables that identify the religion practiced by the largest proportion of a country's population. See Djankov et al. (2007). There are eight religions: Atheist/Indigenous, Buddhist, Catholic, Hindu, Jewish, Muslim, Orthodox Christian and Protestant.

Country	Macroeconomic Variables				Non-Corruption Perception Index (NCP) (As of 2008) 0-10	Religion (RL)
	SMC Scaled by GDP (SMC_GDP) (1995-2008 Average)	Real GDP Growth (ΔGDP) (1995-2008 Average) %	Economic Freedom Index (EF) (1995-2008 Average) 0-10 (Low to High)	Inflation (INF) (1995-2008 Average) %		
Panel A: Common law (English origin) countries						
Australia	0.9981	3.54%	7.80	1.45%	8.7	Protestant
Canada	1.0595	3.02%	7.99	1.81%	8.7	Catholic
Hong Kong	3.3219	3.79%	8.88	-0.20%	8.1	Indigenous
India	0.5284	6.94%	6.16	5.40%	3.4	Hindu
Ireland	0.5853	6.76%	8.02	3.69%	7.7	Catholic
Israel	0.6579	4.27%	6.48	4.55%	6.0	Jewish
Kenya	0.2330	3.46%	6.50	10.14%	2.1	Protestant
Malaysia	1.5552	5.36%	6.87	4.50%	5.1	Muslim
New Zealand	0.4145	3.06%	8.37	2.50%	9.3	Protestant
Nigeria	0.1598	6.41%	5.43	19.42%	2.7	Muslim
Pakistan	0.2017	4.62%	5.68	9.66%	2.5	Muslim
Singapore	1.5831	5.69%	8.59	0.79%	9.2	Buddhist
South Africa	1.8764	3.57%	6.86	7.93%	4.9	Protestant
Thailand	0.5251	3.61%	6.85	2.86%	3.5	Buddhist
United Kingdom	1.4027	2.79%	8.10	2.62%	7.7	Protestant
United States	1.3543	2.89%	8.24	2.19%	7.3	Protestant
Panel B: Civil law countries						
French origin:						
Argentina	0.3625	3.31%	6.44	7.52%	2.9	Catholic
Belgium	0.7641	2.34%	7.33	1.62%	7.3	Catholic
Brazil	0.4120	3.09%	5.56	14.38%	3.5	Catholic
Chile	0.9650	4.71%	7.58	5.24%	6.9	Catholic
Columbia	0.2122	3.33%	5.46	11.48%	3.8	Catholic
Ecuador	0.0793	3.26%	5.82	4.88%	2.0	Catholic
Egypt	0.4520	5.28%	6.23	7.15%	2.8	Muslim
France	0.7524	2.11%	6.99	1.69%	6.9	Catholic
Greece	0.5897	3.70%	6.66	4.41%	4.7	Orthodox

Country	Macroeconomic Variables				Non-Corruption Perception Index (NCP) (As of 2008) 0-10	Religion (RL)
	SMC scaled by GDP (SMC_GDP) (1995-2008 Average)	GDP Growth (ΔGDP) (1995-2008 Average) %	Economic Freedom Index (EF) (1995-2008 Average) 0-10 (Low to High)	Inflation (INF) (1995-2008 Average) %		
French origin (cont'd):						
Indonesia	0.2771	3.95%	6.14	16.66%	2.6	Muslim
Italy	0.4211	1.39%	6.86	2.83%	4.8	Catholic
Lithuania	0.1651	5.98%	6.41	8.68%	6.6	Catholic
Mexico	0.2588	2.89%	6.75	13.73%	3.6	Catholic
Netherlands	1.1159	2.76%	7.77	2.40%	8.9	Catholic
Peru	0.3510	4.90%	6.90	4.93%	3.6	Catholic
Philippines	0.4835	4.59%	6.91	6.37%	2.3	Catholic
Portugal	0.3981	2.17%	7.30	3.09%	6.1	Catholic
Spain	0.7379	3.56%	6.92	3.60%	6.5	Catholic
Turkey	0.2539	4.61%	5.85	46.19%	4.6	Muslim
Venezuela	0.0602	3.36%	4.75	34.51%	1.9	Catholic
German origin:						
Austria	0.2523	2.27%	7.35	1.45%	8.1	Catholic
Bulgaria	0.1225	2.95%	5.58	86.80%	3.6	Orthodox
China	0.4797	9.68%	5.80	3.99%		Atheist
Czech Republic	0.2511	3.47%	5.49	5.02%	5.2	Atheist
Germany	0.4731	1.53%	7.50	0.89%	7.9	Protestant
Hungary	0.2420	3.64%	6.83	10.19%	5.1	Catholic
Japan	0.7612	1.24%	7.27	-0.91%	7.3	Buddhist
Latvia	0.0783	6.07%	6.60	9.57%	5.0	Protestant
Poland	0.1985	4.78%	6.10	8.44%	4.6	Catholic
South Korea	0.5398	4.50%	6.82	3.17%	5.6	Buddhist
Switzerland	2.3125	1.81%	8.19	0.80%	9.0	Catholic
Taiwan	1.1164	4.45%	7.38	1.25%	5.7	Buddhist
Scandinavian origin:						
Denmark	0.5782	1.96%	7.58	2.19%	9.3	Protestant
Finland	1.1862	3.61%	7.50	1.80%	9.0	Protestant
Norway	0.4688	2.94%	7.22	4.83%	7.9	Protestant
Sweden	1.0546	2.87%	7.29	1.73%	9.3	Protestant
Socialist origin:						
Kazakhstan	0.1416	5.65%	7.31	26.50%	2.2	Muslim
Russia	0.4563	4.07%	5.39	33.08%	2.1	Orthodox
Ukraine	0.1553	2.50%	4.79	49.45%	2.5	Orthodox

Table 2.4: Univariate tests for VC investments

I examine mean and median VC investments scaled by GDP for various subsets of my country sample. For each group of subsamples presented in Panel A, B, and C, I report the number of country-year observations, N, mean VC investments, and median VC investments. In Panel A, I form subsamples of my dataset based on legal variables. In Panel B, I form subsamples based on a country's pension fund regulations. Panel C forms subsamples based on fiscal factors while in Panel D, I form subsamples based on my control variables. For binary variables, the subsets are based on the two dichotomous variable outcomes. For all other variables, the subsets are formed around the median of the respective variables. I employ t-tests and Kruskal-Wallis tests to test for the equality of means and medians between each set of subsamples. The last column reports *p*-values for the respective subsample comparisons.

Subsample 1 (no. of countries)	N, mean, media n	Subsample 2 (no. of countries)	N, mean, media n	Tests of differences means (*p*-value) medians (*p*-value)
Panel A: Legal Variables				
Common law (16)	224 0.998 0.332	Civil Law (39)	546 0.285 0.460	0.000 0.000
Strong judicial independence (= 1) (29)	406 0.545 0.085	Weak judicial independence (< 1) (14)	196 0.245 0.031	0.004 0.032
Strong jurisprudent flexibility (> 0.5) (21)	294 0.721 0.134	Weak jurisprudent flexibility (≤ 0.5) (22)	308 0.193 0.028	0.000 0.000
Strong shareholder rights (> 3.5) (27)	378 0.590 0.111	Weak shareholder rights (≤ 3.5) (28)	392 0.397 0.058	0.008 0.001
Strong creditor rights (> 2) (18)	252 0.688 0.196	Weak creditor rights (≤ 2) (37)	518 0.366 0.056	0.000 0.000
Strong legal enforcement (> 3.37) (27)	378 0.142 0.003	Weak legal enforcement (≤ 3.37) (28)	392 0.830 0.354	0.000 0.000
Strong intellectual property rights (> 6.1) (27)	378 0.863 0.357	Weak intellectual property rights (≤ 6.1) (28)	392 0.134 0.000	0.000 0.000
Panel B: Private Pension Fund Variable				
Private pension funds allowed to invest in VC (33)	462 0.593 0.251	Private pension funds not allowed to invest in VC (17)	238 0.376 0.014	0.023 0.052
Panel C: Fiscal Variables				
High capital gains tax rate (> 12.5%) (27)	378 0.661 0.133	Low capital gains tax rate (≤ 12.5%) (28)	392 0.330 0.065	0.000 0.013
High corporate income tax rate (> 30%) (26.8)	375 0.410 0.086	Low corporate income tax rate (≤ 30%) (28.2)	395 0.570 0.094	0.029 0.967
Panel D: Control Variables				
High stock market capitalization scaled by GDP (> 0.417) (27.5)	385 0.795 0.325	Low stock market capitalization scaled by GDP (≤ 0.417) (27.5)	385 0.190 0.005	0.000 0.000
High real GDP growth (> 3.9%) (27.6)	387 0.476 0.061	Low real GDP growth (≤ 3.9%) (27.4)	383 0.509 0.136	0.649 0.001
High economic freedom index (> 7.021) (27.5)	385 0.683 0.258	Low economic freedom index (≤ 7.021) (27.5)	385 0.301 0.006	0.000 0.000
High inflation (> 3.71%) (27.5)	385 0.247 0.003	Low inflation (≤ 3.71%) (27.5)	385 0.737 0.258	0.000 0.000
High non-corruption perception index (> 5.1) (27)	378 0.856 0.362	Low non-corruption perception index (≤ 5.1) (28)	392 0.141 0.000	0.000 0.000

Table 2.5: Pairwise analysis for legal origins and religions

I examine mean and median VC investments scaled by GDP for different subsets of my country sample. In Panel A, I distinguish between subsamples of my dataset based on legal origins. In Panel B, I distinguish between different religions. The first column labels my subsamples. In the second column, I report the number of observations, N, as well as mean and median VC investments scaled by GDP. The remaining columns provide *p*-values for a series of t-tests and Kruskal-Wallis tests to test for the equality of mean and median VC investments between each pair of subsamples.

Subsample (no. of countries)	N, mean, median	Tests of differences means (*p*-value) medians (*p*-value)			
Panel A: Legal Origins					
		English Origin (Common Law)	French Origin	German Origin	Scandinavian Origin
English Origin (Common Law) (16)	224 0.998 0.332				
Civil Law Origin (39)	546 0.285 0.046	0.000 0.000			
French Origin (20)	280 0.164 0.009	0.000 0.000			
German Origin (12)	168 0.351 0.112	0.000 0.000	0.000 0.000		
Scandinavian Origin (4)	56 0.862 0.591	0.533 0.087	0.000 0.000	0.000 0.000	
Socialist Origin (3)	42 0.051 0	0.000 0.000	0.034 0.034	0.002 0.000	0.000 0.000

Subsample (no. of countries)	N, mean, median	Tests of differences means (p-value) medians (p-value)						
Panel B: Religions								
		Atheist + Indigenous	Buddhist	Catholic	Hindu	Jewish	Muslim	Orthodox
Atheist + Indigenous (3)	42 0.572 0.263							
Buddhist (5)	70 0.627 0.110	0.815 0.153						
Catholic (22)	308 0.338 0.072	0.028 0.001	0.007 0.016					
Hindu (1)	14 0.957 0.059	0.153 0.030	0.391 0.002	0.000 0.000				
Jewish (1)	14 3.398 3.313	0.000 0.000	0.000 0.000	0.000 0.000	0.001 0.003			
Muslim (7)	98 0.071 0	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000		
Orthodox (4)	56 0.052 0	0.000 0.000	0.002 0.000	0.001 0.000	0.000 0.000	0.000 0.000	0.469 0.531	
Protestant (12)	168 0.811 0.383	0.237 0.506	0.312 0.047	0.000 0.000	0.666 0.107	0.000 0.000	0.000 0.000	0.000 0.000

Table 2.6: Correlation matrix

I provide pairwise correlation coefficients for all dependent and independent variables used in my subsequent regression analysis. The dependent variable is measured as the total amount of VC investment at all stages (including early and expansion stage investments) scaled by GDP. The independent variables include legal origin dummies, the judicial independence index, the jurisprudent flexibility index, shareholder rights, creditor rights, legal enforcement, and intellectual property rights, private pension fund regulations, capital gains tax rates, corporate income tax rates, stock market capitalization scaled by GDP, real GDP growth, the economic freedom index, inflation, non-corruption perception index, and religion. Definitions for all variables are provided in Tables 2 and 3. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

No.	Variable Name	Investments/GDPTotal Amount of VC Investments at Early and Expansion Stage (1)	English Common Law (2)	French Civil Law (3)	German Civil Law (4)	Scandinavian Civil Law (5)	Socialist Civil Law (6)	Judicial Independence Index (7)	Jurisprudent Flexibility Index (8)	Shareholder Rights (9)	Creditor Rights (10)	Legal Enforcement (11)	Intellectual Property Rights (12)	Private Pension Fund Regulations (13)	Capital Gains Tax Rate (14)	Corporate Income Tax Rate (15)	Stock Market Capitalization Scaled by GDP (16)	Real GDP Growth (17)	Economic Freedom Index (18)	Inflation (19)	Non-Corruption Perception Index (20)	Atheist/Indigenous (21)	Buddhist (22)	Catholic (23)	Hindu (24)	Jewish (25)	Muslim (26)	Orthodox (27)	Protestant (28)
(1)	Total Amount of VC Investments at Early and Expansion Stage Investments/GDP	1																											
(2)	English Common Law	0.32***	1																										
(3)	French Civil Law	-0.24***	-0.48***	1																									
(4)	German Civil Law	-0.07*	-0.34***	-0.40***	1																								
(5)	Scandinavian Civil Law	0.10***	-0.18***	-0.21***	-0.15***	1																							
(6)	Socialist Civil Law	-0.10***	-0.15***	-0.18***	-0.13***	-0.07*	1																						
(7)	Judicial Independence Index	0.16***	0.44***	-0.32***	-0.16***	-0.16***	.	1																					
(8)	Jurisprudent Flexibility Index	0.29***	0.66***	-0.71***	0.00	0.17***	.	0.53***	1																				
(9)	Shareholder Rights	0.16***	0.46***	-0.29***	-0.21***	0.03	0.04	0.49***	0.28***	1																			
(10)	Creditor Rights	0.07*	0.41***	-0.43***	0.09**	-0.06**	0.00	0.28***	0.41***	0.27***	1																		
(11)	Legal Enforcement	-0.27***	-0.58***	0.54***	0.04	-0.15***	0.11***	-0.28***	-0.60***	-0.41***	-0.42***	1																	
(12)	Intellectual Property Rights	0.32***	0.12***	-0.22***	0.12***	0.33***	-0.35***	0.01	0.25***	0.21***	0.12***	-0.57***	1																
(13)	Private Pension Fund Regulations	0.11***	0.25***	-0.16***	-0.05*	0.03	-0.11***	0.06*	-0.02	0.07*	0.01	-0.04	0.06*	1															
(14)	Capital Gains Tax Rate	0.05	-0.25***	0.00	-0.03	0.45***	0.04	-0.11**	-0.08	-0.11***	-0.22***	0.11***	0.07*	0.05	1														
(15)	Corporate Income Tax Rate	-0.02	0.05	0.06*	-0.06*	-0.08**	-0.03	-0.12**	-0.09*	-0.05	-0.07*	-0.01	0.09**	0.07*	-0.20**	1													
(16)	Stock Market Cap. scaled by GDP	0.29***	0.37***	-0.21***	-0.13***	0.07**	-0.14***	0.31***	0.41***	0.36***	0.19***	-0.52***	0.48***	0.11***	-0.14***	-0.14***	1												
(17)	Real GDP Growth	0.02	0.10**	-0.06*	0.01	-0.08**	0.02	0.16***	0.09*	0.06	0.04	0.03	-0.21***	0.03	0.01	-0.15***	0.04	1											
(18)	Economic Freedom Index	0.03	-0.01	0.04	-0.02	0.00	-0.02	0.04	-0.06	0.06*	0.01	0.04	0.04	-0.01	-0.04	0.01	0.03	-0.01	1									
(19)	Inflation	-0.08**	-0.07**	0.01	0.02	-0.05	0.16***	-0.23***	-0.10**	-0.06*	0.00	0.10***	-0.18***	-0.01	-0.01	0.06	-0.14***	-0.19***	-0.02	1								
(20)	Non-Corruption Perception Index	0.33***	0.15***	-0.28***	0.09**	0.39***	-0.32***	0.08*	0.35***	0.27***	0.20***	-0.57***	0.91***	0.07**	0.14***	-0.09**	0.49***	-0.14***	0.05	-0.18***	1								
(21)	Atheist/Indigenous	0.02	0.02	-0.18***	0.26***	-0.06*	-0.06	.	.	-0.04	0.22***	-0.17***	-0.03	-0.01	-0.03	-0.12***	0.25***	0.12***	-0.01	-0.04	0.01	1							
(22)	Buddhist	0.04	0.08**	-0.24***	0.29***	-0.09**	-0.08**	-0.03	0.06	0.21***	0.12***	-0.18***	0.12***	-0.02	-0.25***	0.01	0.02	0.01	0.00	-0.07*	0.10**	-0.08**	1						

(23)	Catholic	-0.12***	-0.36***	0.62***	-0.07*	-0.23***	-0.20***	-0.31***	-0.59***	-0.30***	-0.52***	0.45***	0.04	0.08**	0.07*	-0.07*	-0.11***	-0.09**	0.04	-0.06	0.00	-0.20***	-0.26***	1					
(24)	Hindu	0.06*	0.21***	-0.10***	-0.07*	-0.04	-0.03	0.12**	0.00	0.20***	0.00	-0.02	-0.07*	-0.03	-0.15***	0.13***	-0.02	0.12***	-0.01	-0.01	-0.12***	-0.03	-0.04	-0.11***	1					
(25)	Jewish	0.39***	0.21***	-0.10***	-0.07*	-0.04	-0.03	0.04	0.01	0.07*	0.13***	-0.02	0.02	0.02	0.08**	-0.03	0.00	0.02	-0.01	-0.02	0.03	-0.03	-0.04	-0.11***	-0.02	1			
(26)	Muslim	-0.16***	0.12***	0.05	-0.20***	-0.11***	0.15***	0.19***	0.18***	0.13***	0.11***	0.00	-0.44***	-0.06	-0.14***	0.07*	-0.12***	0.14***	-0.02	0.09**	-0.36***	-0.09**	-0.12***	-0.31***	-0.05	-0.05	1		
(27)	Orthodox	-0.12***	-0.18***	-0.07*	0.02	-0.08**	0.55***	0.02	0.00	-0.13***	-0.06	0.12***	-0.23***	-0.09**	-0.02	-0.05	-0.13***	-0.04	-0.02	0.24***	-0.27***	-0.07*	-0.09**	-0.23***	-0.04	-0.04	-0.11***	1	
(28)	Protestant	0.17***	0.24***	-0.40***	-0.07*	0.53***	-0.13***	0.15***	0.47***	0.13***	0.33***	-0.39***	0.40***	0.05	0.26***	0.09**	0.16***	-0.10**	-0.01	-0.07**	0.41***	-0.13***	-0.17***	-0.43***	-0.07*	-0.07*	-0.20***	-0.15***	1

Table 2.7a: Between (cross-sectional) regressions

I perform between (cross-sectional) regressions in which the total amount of VC investments in a given country per year (including early and expansion stage investments) is regressed on a series of legal factors (legal origins, the judicial independence index, the jurisprudent flexibility index, shareholder rights, creditor rights, legal enforcement, and intellectual property rights) in columns 2-3, private pension fund regulations in column 4, fiscal and economic factors (capital gains tax rates, corporate income tax rates, stock market capitalization scaled by GDP, real GDP growth, the economic freedom index, and inflation) in column 5, religions (Atheist/Indigenous, Buddhist, Catholic, Hindu, Jewish, Muslim, Orthodox, and Protestant) in column 6, and all factors in the last 3 columns. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The R^2, the results of an *F*-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Regression on Legal Factors		Regression on Private Pension Fund Regulations	Regression on Fiscal and Economic Factors	Regression on Religions	Regression on All Factors		
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.494 (0.543)	-1.013 (0.372)	0.231 (0.176)	-0.282 (0.707)	0.811 (0.000)	-0.645 (0.556)	-3.823 (0.173)	-2.134 (0.485)
Reference Category = English Common Law								
French Civil Law	**-1.124 (0.000)*****	**-0.926 (0.029)****				**-0.666 (0.020)****	-1.226 (0.121)	-1.450 (0.135)
German Civil Law	**-0.944 (0.001)*****	-1.179 (0.093)*				**-0.765 (0.010)*****	-1.597 (0.107)	-1.652 (0.147)
Scandinavian Civil Law	-0.706 (0.057)*	-0.101 (0.877)				-0.758 (0.068)*	-0.313 (0.697)	-0.525 (0.553)
Socialist Civil Law	-0.655 (0.106)					-0.094 (0.818)		-0.519 (0.294)
Judicial Independence Index		0.192 (0.063)*					0.602 (0.088)*	
Jurisprudent Flexibility Index		0.230 (0.154)					0.258 (0.273)	
Shareholder Rights	0.048 (0.586)	0.105 (0.428)				0.113 (0.192)	0.200 (0.291)	0.150 (0.454)
Creditor Rights	0.088 (0.290)	0.154 (0.145)				**0.195 (0.026)****	0.351 (0.070)*	0.424 (0.061)*
Legal Enforcement	0.178 (0.164)	0.178 (0.280)				0.163 (0.220)	0.507 (0.088)*	0.460 (0.223)
Intellectual Property Rights	**0.234 (0.001)*****	**0.288 (0.002)*****				**0.306 (0.002)*****	**0.554 (0.014)****	**0.488 (0.039)****
Private Pension Fund Regulations			5.261 (0.075)*					3.669 (0.091)*
Capital Gains Tax Rate				0.009 (0.482)		0.004 (0.744)	-0.005 (0.735)	-0.004 (0.875)
Corporate Income Tax Rate				-0.009 (0.591)		-0.010 (0.489)	-0.011 (0.786)	-0.015 (0.360)
Stock Market Capitalization Scaled by GDP				**0.454 (0.011)****		0.113 (0.518)	0.122 (0.770)	0.105 (0.690)
Real GDP Growth				0.040 (0.532)		0.082 (0.208)	0.068 (0.734)	-0.059 (0.803)
Economic Freedom Index				0.001 (0.947)		0.005 (0.651)	-0.006 (0.738)	-0.003 (0.882)
Inflation				-0.006 (0.359)		0.008 (0.243)	0.043 (0.078)*	0.037 (0.193)
Reference Category = Protestant								
Atheist/Indigenous					-0.239 (0.511)	0.059 (0.883)		-0.143 (0.539)
Buddhist					-0.184 (0.540)	0.009 (0.977)	0.471 (0.536)	-0.404 (0.697)
Catholic					**-0.474 (0.022)****	-0.482 (0.124)	-0.779 (0.170)	-0.934 (0.136)
Hindu					0.146 (0.803)	0.084 (0.886)	-0.179 (0.865)	0.045 (0.969)
Jewish					**2.587 (0.000)*****	**2.409 (0.000)*****	**2.429 (0.000)*****	**2.336 (0.000)*****
Muslim					**-0.740 (0.008)*****	-0.267 (0.415)	-0.182 (0.759)	-0.052 (0.941)
Orthodox					**-0.759 (0.023)****	-0.693 (0.135)	-0.702 (0.101)	**-0.801 (0.041)****
R^2	0.446	0.578	0.064	0.201	0.461	0.732	0.787	0.808
P-value (*F*-Test)	0.000	0.014	0.075	0.082	0.000	0.000	0.049	0.072
No. of Observations	770	602	700	770	770	770	602	700
No. of Countries	55	43	50	55	55	55	43	50

Table 2.7b: Random effects regressions

I perform random effects regressions in which the total amount of VC investments in a given country per year (including early and expansion stage investments) are regressed on a series of legal factors (legal origins, the judicial independence index, the jurisprudent flexibility index, shareholder rights, creditor rights, legal enforcement, and intellectual property rights) in columns 2-3, private pension fund regulations in column 4, fiscal and economic factors (capital gains tax rates, corporate income tax rates, stock market capitalization scaled by GDP, real GDP growth, the economic freedom index, and inflation) in column 5, religions (Atheist/Indigenous, Buddhist, Catholic, Hindu, Jewish, Muslim, Orthodox, and Protestant) in column 6, and all factors in the last 3 columns. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Regression on Legal Factors		Regression on Private Pension Fund Regulations	Regression on Fiscal and Economic Factors	Regression on Religions	Regression on All Factors		
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.494 (0.147)	-1.013 (0.027)	0.482 (0.000)	-0.103 (0.581)	0.811 (0.000)	0.093 (0.856)	-2.091 (0.051)	-1.060 (0.275)
Reference Category = English Common Law								
French Civil Law	**-1.124 (0.000)*****	**-0.926 (0.000)*****				**-0.779 (0.000)*****	**-0.729 (0.013)****	**-0.835 (0.002)*****
German Civil Law	**-0.944 (0.000)*****	**-1.179 (0.000)*****				**-0.778 (0.000)*****	**-1.222 (0.006)*****	**-1.059 (0.006)*****
Scandinavian Civil Law	**-0.706 (0.000)*****	-0.101 (0.705)				**-1.080 (0.000)*****	-0.503 (0.219)	**-0.612 (0.081)***
Socialist Civil Law	**-0.655 (0.000)*****					-0.139 (0.572)		-0.099 (0.658)
Judicial Independence Index		**0.192 (0.039)****					**0.566 (0.001)*****	
Jurisprudent Flexibility Index		0.030 (0.076)*					0.115 (0.456)	
Shareholder Rights	0.048 (0.194)	0.105 (0.051)*				**0.117 (0.017)****	**0.298 (0.000)*****	**0.230 (0.005)*****
Creditor Rights	**0.088 (0.011)****	**0.154 (0.000)*****				**0.233 (0.000)*****	**0.295 (0.000)*****	**0.427 (0.000)*****
Legal Enforcement	**0.178 (0.001)*****	**0.178 (0.007)*****				**0.210 (0.006)*****	**0.333 (0.004)*****	**0.243 (0.021)****
Intellectual Property Rights	**0.234 (0.000)*****	**0.288 (0.000)*****				**0.267 (0.000)*****	**0.380 (0.000)*****	**0.367 (0.000)*****
Private Pension Fund Regulations			0.560 (0.173)					0.082 (0.551)
Capital Gains Tax Rate				0.003 (0.164)		0.001 (0.645)	0.003 (0.593)	0.001 (0.850)
Corporate Income Tax Rate				-0.046 (0.087)*		**-0.014 (0.024)****	-0.009 (0.488)	0.001 (0.949)
Stock Market Capitalization Scaled by GDP				**0.454 (0.000)*****		**0.295 (0.001)*****	**0.517 (0.002)*****	**0.340 (0.024)****
Real GDP Growth				0.001 (0.925)		0.006 (0.572)	0.000 (0.973)	0.003 (0.818)
Economic Freedom Index				0.001 (0.512)		0.001 (0.425)	0.000 (0.541)	0.000 (0.388)
Inflation				-0.001 (0.219)		0.000 (0.664)	**0.009 (0.021)****	0.007 (0.066)*
Reference Category = Protestant								
Atheist/Indigenous					-0.239 (0.125)	0.110 (0.626)		-0.325 (0.110)
Buddhist					-0.184 (0.152)	0.093 (0.616)	**0.670 (0.037)****	-0.144 (0.708)
Catholic					**-0.474 (0.000)*****	**-0.598 (0.001)*****	**-0.792 (0.005)*****	**-1.029 (0.000)*****
Hindu					0.146 (0.560)	0.283 (0.398)	0.437 (0.255)	0.141 (0.672)
Jewish					**2.587 (0.000)*****	2.104 **(0.000)*****	2.738 **(0.000)*****	**2.928 (0.000)*****
Muslim					**-0.740 (0.000)*****	-0.163 (0.393)	0.002 (0.993)	-0.082 (0.714)
Orthodox					**-0.759 (0.000)*****	**-0.587 (0.015)****	**-0.553 (0.071)****	-0.406 (0.052)*
Adjusted R^2	0.206	0.270	0.051	0.088	0.214	0.311	0.348	0.409
P-value (Chi^2-Test)	0.000	0.000	0.733	0.000	0.000	0.000	0.000	0.000
No. of Observations	770	602	700	770	770	770	602	700
No. of Countries	55	43	50	55	55	55	43	50

Table 2.7c: Hausman test

This table reports results for a Hausman test for the hypothesis that there is no correlation between individual heterogeneity (country-level factors) and time-variant (lagged endogenous) variables. My sample covers 55 countries in Model 1 and 50 countries in Model 3 between 1995 and 2008. Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The R^2, the results of a *F*-test/Chi^2-Test, the *p*-value of Hausman test for each regression model as well as the country-year observations and the number of countries are reported in the last five rows. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Independent Variables	Model 1 Coefficient (*p*-value)		Model 3 Coefficient (*p*-value)	
	Fixed-effects	Random-effects	Fixed-effects	Random-effects
Constant	1.289 (0.016)	0.093 (0.856)	0.113 (0.730)	-1.060 (0.275)
Reference Category = English Common Law				
French Civil Law		**-0.779 (0.000)*****		**-0.835 (0.002)*****
German Civil Law		**-0.778 (0.000)*****		**-1.059 (0.006)*****
Scandinavian Civil Law		**-1.080 (0.000)*****		**-0.612 (0.081)***
Socialist Civil Law		-0.139 (0.572)		-0.099 (0.658)
Judicial Independence Index				
Jurisprudent Flexibility Index				
Shareholder Rights		**0.117 (0.017)****		**0.230 (0.005)*****
Creditor Rights		**0.233 (0.000)*****		**0.427 (0.000)*****
Legal Enforcement		**0.210 (0.006)*****		**0.243 (0.021)****
Intellectual Property Rights		**0.267 (0.000)*****		**0.367 (0.000)*****
Private Pension Fund Regulations			0.244 (0.081)*	0.082 (0.551)
Capital Gains Tax Rate		0.001 (0.645)		0.001 (0.850)
Corporate Income Tax Rate	**-0.028 (0.020)****	**-0.014 (0.024)****	**-0.026 (0.022)****	0.001 (0.949)
Stock Market Capitalization Scaled by GDP	**0.767 (0.000)*****	**0.295 (0.001)*****	**0.787 (0.000)*****	**0.340 (0.024)****
Real GDP Growth	0.008 (0.477)	0.006 (0.572)	0.001 (0.384)	0.003 (0.818)
Economic Freedom Index	0.001 (0.626)	0.001 (0.425)	0.000 (0.605)	0.000 (0.388)
Inflation	-0.000 (0.911)	0.000 (0.664)	0.000 (0.918)	0.007 (0.066)*
Reference Category = Protestant				
Atheist/Indigenous		0.110 (0.626)		-0.325 (0.110)
Buddhist		0.093 (0.616)		-0.144 (0.708)
Catholic		**-0.598 (0.001)*****		**-1.029 (0.000)*****
Hindu		0.283 (0.398)		0.141 (0.672)
Jewish		2.104 **(0.000)*****		**2.928 (0.000)*****
Muslim		-0.163 (0.393)		-0.082 (0.714)
Orthodox		**-0.587 (0.015)*****		-0.406 (0.052)*
R^2 (Overall R^2)	0.091	0.311	0.100	0.409
F-Test/Chi^2-Test (*p*-value)	0.000	0.000	0.000	0.000
Hausman test (*p*-value)	0.3073		0.4295	
No. of Observations	770	770	700	700
No. of Countries	55	55	50	50

Table 2.8a: Robustness tests: Potentially omitted variables – Macroeconomic variables

This table reports results for a series of random effects regressions in which I regress the total amount of VC investments in a given country per year on the same variables I employed in Table 2.7b plus a series of potentially omitted variables. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments at all stages including early (send and start-up) and expansion stage investments. The independent variables are the same as those employed in Table 7 plus one of the following variables as an additional control variable: (a) Real Interest Rate (RI) from the World Bank, (b) Nominal Long-term Interest Rate (NI), and (c) Unemployment Rate (UR) from the Global Market Information Database (GMID) administered by Euromonitor International. Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Inclusion of Potentially Omitted Variables								
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.609 (0.248)	-4.304 (0.000)	-0.282 (0.584)	-2.847 (0.002)	-7.095 (0.000)	-1.835 (0.042)	0.196 (0.711)	-2.550 (0.009)	0.422 (0.429)
Additional Control Variable	(a) Real Interest Rate (RI)			(b) Nominal Long-term Interest Rate (NI)			(c) Unemployment Rate (UR)		
	0.006 (0.076)*	**0.026 (0.000)****	0.005 (0.115)	**0.050 (0.057)****	0.060 (0.109)	0.022 (0.378)	**-0.022 (0.017)****	**-0.036 (0.004)****	**-0.031 (0.000)****
Reference Category = English Common Law									
French Civil Law	**-0.816 (0.000)****	**-1.148 (0.000)****	**-0.735 (0.000)****	**-1.383 (0.000)****	**-1.329 (0.012)****	**-1.356 (0.000)****	**-0.804 (0.000)****	-0.219 (0.480)	**-0.667 (0.000)****
German Civil Law	**-0.830 (0.000)****	**-2.189 (0.000)****	**-0.645 (0.000)****	**-1.622 (0.000)****	**-2.793 (0.000)****	**-1.348 (0.000)****	**-0.817 (0.000)****	**-1.443 (0.000)****	**-0.541 (0.001)****
Scandinavian Civil Law	**-1.027 (0.000)****	**-0.723 (0.036)****	**-1.054 (0.000)****	**-1.527 (0.000)****	**-1.009 (0.042)****	**-1.538 (0.000)****	**-0.925 (0.000)****	-0.464 (0.182)	**-0.933 (0.000)****
Socialist Civil Law	-0.040 (0.886)		0.021 (0.937)	0.796 (0.211)		0.342 (0.506)	-0.240 (0.309)		-0.098 (0.719)
Judicial Independence Index		**0.217 (0.050)****			**0.281 (0.037)****			**0.251 (0.028)****	
Jurisprudent Flexibility Index		0.031 (0.081)*			**0.155 (0.027)****			**0.109 (0.041)****	
Shareholder Rights	**0.123 (0.005)****	**0.256 (0.000)****	0.071 (0.125)	**0.375 (0.000)****	0.343 (0.237)	**0.314 (0.000)****	**0.104 (0.025)****	**0.201 (0.006)****	0.034 (0.508)
Creditor Rights	**0.203 (0.000)****	**0.248 (0.000)****	**0.269 (0.000)****	**0.200 (0.001)****	0.177 (0.490)	**0.224 (0.000)****	**0.179 (0.000)****	**0.233 (0.001)****	**0.250 (0.000)****
Legal Enforcement	**0.289 (0.000)****	**0.646 (0.000)****	**0.218 (0.007)****	**0.595 (0.000)****	**0.475 (0.001)****	**0.552 (0.000)****	**0.214 (0.003)****	**0.374 (0.001)****	**0.153 (0.047)****
Intellectual Property Rights	**0.328 (0.000)****	**0.583 (0.000)****	**0.308 (0.000)****	**0.621 (0.000)****	**0.385 (0.001)****	**0.494 (0.000)****	**0.246 (0.000)****	**0.337 (0.000)****	**0.219 (0.000)****
Private Pension Fund Regulations			0.156 (0.314)			0.055 (0.780)			0.161 (0.304)
Capital Gains Tax Rate	-0.001 (0.838)	0.003 (0.560)	0.001 (0.823)	0.010 (0.115)	**0.052 (0.045)****	0.013 (0.073)*	0.002 (0.654)	0.005 (0.336)	0.004 (0.287)
Corporate Income Tax Rate	**-0.015 (0.009)****	-0.013 (0.217)	**-0.015 (0.009)****	**-0.022 (0.006)****	**-0.884 (0.000)****	**-0.022 (0.008)****	**-0.013 (0.031)****	**-0.027 (0.033)****	-0.010 (0.080)*
Stock Market Capitalization Scaled by GDP	**0.151 (0.033)****	**0.266 (0.030)****	0.106 (0.126)	**0.215 (0.012)****	-0.011 (0.321)	**0.211 (0.008)****	**0.164 (0.026)****	**0.483 (0.001)****	0.135 (0.058)*
Real GDP Growth	0.015 (0.180)	0.017 (0.223)	0.012 (0.298)	**0.050 (0.030)****	0.017 (0.400)	0.038 (0.110)	0.006 (0.559)	-0.006 (0.674)	0.003 (0.788)
Economic Freedom Index	0.001 (0.421)	0.001 (0.433)	0.001 (0.308)	0.002 (0.263)	**0.408 (0.034)****	0.002 (0.223)	0.001 (0.386)	0.001 (0.459)	0.001 (0.290)
Inflation	0.001 (0.231)	**0.022 (0.000)****	0.001 (0.357)	0.005 (0.793)	0.041 (0.329)	0.014 (0.445)	0.001 (0.537)	0.007 (0.090)*	0.000 (0.756)
Reference Category = Protestant									
Atheist/Indigenous	0.145 (0.442)		0.069 (0.728)	**0.736 (0.024)****		0.550 (0.074)*	-0.006 (0.976)		-0.083 (0.703)
Buddhist	-0.051 (0.755)	**0.552 (0.034)****	**-0.406 (0.018)****	**0.815 (0.002)****	**1.137 (0.006)****	0.317 (0.260)	-0.092 (0.616)	0.494 (0.083)*	**-0.613 (0.002)****
Catholic	**-0.585 (0.000)****	**-0.871 (0.000)****	**-0.707 (0.000)****	**-0.482 (0.021)****	**-1.256 (0.000)****	**-0.634 (0.001)****	**-0.510 (0.002)****	**-1.010 (0.000)****	**-0.649 (0.000)****
Hindu	0.243 (0.388)	0.374 (0.247)	0.176 (0.503)	**0.951 (0.010)****	0.857 (0.058)*	**0.735 (0.029)****	0.946 (0.146)	1.182 (0.076)*	0.837 (0.168)
Jewish	**2.316 (0.000)****	**2.357 (0.000)****	**2.362 (0.000)****				**2.332 (0.000)****	**2.387 (0.000)****	**2.412 (0.000)****
Muslim	-0.049 (0.785)	**-0.448 (0.048)****	-0.084 (0.619)	-0.560 (0.129)	-0.767 (0.125)	0.202 (0.562)	-0.210 (0.288)	-0.332 (0.237)	-0.304 (0.130)
Orthodox	**-0.573 (0.015)****	**-0.602 (0.011)****	**-0.647 (0.003)****	**-0.849 (0.039)****	**-0.837 (0.041)****	**-0.822 (0.015)****	**-0.491 (0.026)****	**-0.534 (0.015)****	**-0.589 (0.008)****
Adjusted R^2	0.332	0.353	0.372	0.245	0.425	0.256	0.335	0.363	0.375
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	662	509	607	446	373	417	636	488	579
No. of Countries	52	41	48	40	32	37	53	41	48

Table 2.8b: Robustness tests: Potentially omitted variables – Political variables

This table reports results for a series of random effects regressions in which I regress the total amount of VC investments in a given country per year on the same variables I employed in Table 2.7b plus a series of potentially omitted variables. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments at all stages including early (send and start-up) and expansion stage investments. The independent variables are the same as those employed in Table 2.7 plus one of the following variables as an additional control variable: (d) non-corruption perception index (NCP), and (e) political freedom index (PF). Non-corruption perception index (NCP) ranges between 0 (highly corrupt) to 10 (highly clean). Political freedom index (PF) scales from 1 to 7, with 1 being the most politically free and 7 being the least politically free Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Inclusion of Potentially Omitted Variables					
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	0.511 (0.148)	-1.138 (0.081)	0.183 (0.652)	-0.373 (0.351)	-2.461 (0.000)	0.310 (0.451)
Additional Control Variable	(d) Non-Corruption Perception Index (NCP)			(e) Political Freedom Index (PF)		
	0.147 (0.000)***	**0.184 (0.000)*****	0.054 (0.150)	0.030 (0.272)	0.046 (0.186)	-0.045 (0.160)
Reference Category = English Common Law						
French Civil Law	**-0.592 (0.000)*****	-0.175 (0.392)	**-0.618 (0.000)*****	**-0.509 (0.000)*****	**-0.342 (0.041)****	**-0.468 (0.000)*****
German Civil Law	**-0.595 (0.000)*****	**-1.140 (0.000)*****	**-0.526 (0.000)*****	**-0.503 (0.000)*****	**-1.184 (0.000)*****	**-0.445 (0.000)*****
Scandinavian Civil Law	**-0.728 (0.000)*****	-0.572 (0.069)*	**-0.818 (0.000)*****	-0.213 (0.146)	0.150 (0.523)	-0.199 (0.163)
Socialist Civil Law	-0.157 (0.404)		0.046 (0.846)	-0.188 (0.249)		0.100 (0.634)
Judicial Independence Index		0.178 (0.067)*			**0.159 (0.035)****	
Jurisprudent Flexibility Index		0.057 (0.060)*			0.052 (0.043)**	
Shareholder Rights	**0.103 (0.006)*****	**0.196 (0.001)*****	0.066 (0.103)	0.054 (0.104)	0.061 (0.199)	0.021 (0.517)
Creditor Rights	**0.190 (0.000)*****	**0.210 (0.000)*****	**0.235 (0.000)*****	**0.108 (0.001)*****	**0.128 (0.004)*****	**0.137 (0.000)*****
Legal Enforcement	**0.108 (0.039)****	**0.231 (0.002)*****	**0.122 (0.051)****	0.083 (0.083)*	**0.242 (0.000)*****	0.027 (0.590)
Intellectual Property Rights				**0.230 (0.000)*****	**0.335 (0.000)*****	**0.165 (0.000)*****
Private Pension Fund Regulations			0.156 (0.270)			0.064 (0.658)
Capital Gains Tax Rate	0.001 (0.857)	0.002 (0.597)	0.003 (0.345)	0.000 (0.875)	0.004 (0.216)	0.000 (0.882)
Corporate Income Tax Rate	-0.001 (0.761)	**-0.025 (0.008)*****	-0.008 (0.115)	-0.008 (0.063)*	-0.014 (0.079)*	-0.008 (0.077)*
Stock Market Capitalization Scaled by GDP	**0.192 (0.002)*****	**0.466 (0.000)*****	**0.124 (0.047)****	0.019 (0.705)	0.100 (0.263)	-0.007 (0.894)
Real GDP Growth	0.007 (0.480)	-0.004 (0.776)	0.009 (0.377)	0.017 (0.081)*	0.004 (0.724)	0.011 (0.301)
Economic Freedom Index	0.001 (0.408)	0.001 (0.516)	0.001 (0.287)	0.001 (0.104)	0.001 (0.200)	0.001 (0.073)*
Inflation	0.000 (0.665)	0.003 (0.314)	0.000 (0.669)	0.004 (0.507)	0.010 (0.112)	-0.004 (0.444)
Reference Category = Protestant						
Atheist/Indigenous	-0.027 (0.874)		0.038 (0.838)	-0.032 (0.842)		-0.130 (0.413)
Buddhist	0.006 (0.966)	0.263 (0.272)	-0.277 (0.070)*	-0.108 (0.385)	0.251 (0.227)	**-0.274 (0.028)****
Catholic	**-0.425 (0.002)*****	**-0.872 (0.000)*****	**-0.550 (0.000)*****	-0.201 (0.083)*	**-0.587 (0.000)*****	**-0.240 (0.031)****
Hindu	0.378 (0.144)	0.500 (0.089)*	0.293 (0.233)	0.208 (0.321)	0.224 (0.323)	0.148 (0.447)
Jewish	**2.496 (0.000)*****	**2.581 (0.000)*****	**2.473 (0.000)*****	**3.243 (0.000)*****	**3.2504 (0.000)*****	**3.188 (0.000)*****
Muslim	-0.270 (0.054)*	-0.314 (0.081)*	-0.169 (0.244)	-0.167 (0.194)	-0.137 (0.421)	-0.036 (0.784)
Orthodox	**-0.411 (0.026)****	**-0.493 (0.017)****	**-0.576 (0.003)*****	**-0.303 (0.048)****	**-0.354 (0.027)****	**-0.375 (0.018)****
Adjusted R^2	0.329	0.326	0.363	0.602	0.487	0.657
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	770	602	700	385	301	350
No. of Countries	55	43	50	55	43	50
No. of Years	14	14	14	7	7	7

Table 2.8c: Robustness tests: Potentially omitted variables – Non-corruption perception index (BRIC vs. Non-BRIC countries)

Independent Variables	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-3.494 (0.035)	-4.652 (0.381)	-3.753 (0.082)	-0.486 (0.269)	-4.624 (0.000)	-0.495 (0.250)	0.511 (0.148)	-1.138 (0.081)	0.183 (0.652)
Additional Control Variable	(d) Non-Corruption Perception Index (NCP) BRIC Countries			(d) Non-Corruption Perception Index (NCP) Non-BRIC Countries			(d) Non-Corruption Perception Index (NCP) Full Sample		
	0.603 (0.054)*		0.494 (0.157)	**0.105 (0.007)*****	0.081 (0.124)	**0.085 (0.026)****	**0.147 (0.000)*****	**0.184 (0.000)*****	0.054 (0.150)
Reference Category = English Common Law									
French Civil Law				**-0.915 (0.000)*****	**-0.932 (0.000)*****	**-0.935 (0.000)*****	**-0.592 (0.000)*****	-0.175 (0.392)	**-0.618 (0.000)*****
German Civil Law				**-0.939 (0.000)*****	**-2.456 (0.000)*****	**-0.853 (0.000)*****	**-0.595 (0.000)*****	**-1.140 (0.000)*****	**-0.526 (0.000)*****
Scandinavian Civil Law				**-1.150 (0.000)*****	**-1.536 (0.000)*****	**-1.232 (0.000)*****	**-0.728 (0.000)*****	-0.572 (0.069)*	**-0.818 (0.000)*****
Socialist Civil Law				-0.361 (0.087)*		-0.046 (0.866)	-0.157 (0.404)		0.046 (0.846)
Judicial Independence Index					0.040 (0.068)*			0.178 (0.067)*	
Jurisprudent Flexibility Index					**0.316 (0.004)*****			0.057 (0.060)*	
Shareholder Rights	0.096 (0.237)			**0.221 (0.000)*****	**0.355 (0.000)*****	**0.197 (0.000)*****	**0.103 (0.006)*****	**0.196 (0.001)*****	0.066 (0.103)
Creditor Rights				**0.193 (0.000)*****	**0.229 (0.000)*****	**0.233 (0.000)*****	**0.190 (0.000)*****	**0.210 (0.000)*****	**0.235 (0.000)*****
Legal Enforcement				**0.340 (0.000)*****	**0.881 (0.000)*****	**0.348 (0.000)*****	**0.108 (0.039)****	**0.231 (0.002)*****	**0.122 (0.051)****
Intellectual Property Rights									
Private Pension Fund Regulations			0.415 (0.084)*			0.150 (0.132)			0.156 (0.270)
Capital Gains Tax Rate	-0.038 (0.077)*	-0.045 (0.224)	-0.037 (0.156)	0.003 (0.435)	**0.012 (0.010)*****	0.005 (0.098)*	0.001 (0.857)	0.002 (0.597)	0.003 (0.345)
Corporate Income Tax Rate	-0.002 (0.932)	0.013 (0.814)	0.000 (0.992)	**-0.012 (0.023)****	**-0.018 (0.049)****	**-0.014 (0.006)*****	-0.001 (0.761)	**-0.025 (0.008)*****	-0.008 (0.115)
Stock Market Capitalization Scaled by GDP	-0.353 (0.214)	-0.245 (0.714)	-0.564 (0.186)	**0.176 (0.007)*****	**0.353 (0.003)*****	**0.157 (0.013)****	**0.192 (0.002)*****	**0.466 (0.000)*****	**0.124 (0.047)****
Real GDP Growth	-0.040 (0.208)	-0.146 (0.171)	-0.048 (0.229)	0.013 (0.207)	0.004 (0.751)	0.014 (0.176)	0.007 (0.480)	-0.004 (0.776)	0.009 (0.377)
Economic Freedom Index	**0.528 (0.048)****	1.004 (0.123)	0.591 (0.098)*	0.001 (0.346)	0.001 (0.278)	0.001 (0.243)	0.001 (0.408)	0.001 (0.516)	0.001 (0.287)
Inflation	0.001 (0.733)	0.010 (0.446)	0.001 (0.906)	0.001 (0.382)	0.002 (0.550)	0.001 (0.394)	0.000 (0.665)	0.003 (0.314)	0.000 (0.669)
Reference Category = Protestant									
Atheist/Indigenous				0.209 (0.305)		0.208 (0.277)	-0.027 (0.874)		0.038 (0.838)
Buddhist				0.129 (0.382)	0.562 (0.017)**	-0.071 (0.656)	0.006 (0.966)	0.263 (0.272)	-0.277 (0.070)*
Catholic				**-0.617 (0.000)*****	**-1.338 (0.000)*****	**-0.735 (0.000)*****	**-0.425 (0.002)*****	**-0.872 (0.000)*****	**-0.550 (0.000)*****
Hindu							0.378 (0.144)	0.500 (0.089)*	0.293 (0.233)
Jewish				**2.308 (0.000)*****	**2.642 (0.000)*****	**2.284 (0.000)*****	**2.496 (0.000)*****	**2.581 (0.000)*****	**2.473 (0.000)*****
Muslim				0.067 (0.674)	0.516 (0.014)	0.098 (0.530)	-0.270 (0.054)*	-0.314 (0.081)*	-0.169 (0.244)
Orthodox				**-0.510 (0.007)*****	**-0.538 (0.006)*****	**-0.706 (0.000)*****	**-0.411 (0.026)****	**-0.493 (0.017)****	**-0.576 (0.003)*****
Adjusted R^2	0.273	0.170	0.274	0.354	0.431	0.387	0.329	0.326	0.363
P-value (Chi^2-Test)	0.003	0.125	0.014	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	56	28	42	714	406	658	770	602	700
No. of Countries	4	2	3	51	29	47	55	43	50

Table 2.8d: Robustness tests: Potentially omitted variables – Non-corruption perception index (OECD vs. Non-OECD countries)

Independent Variables	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	3.251 (0.000)	4.136 (0.077)	2.826 (0.001)	-1.876 (0.028)	0.277 (0.810)	-1.799 (0.115)	0.511 (0.148)	-1.138 (0.081)	0.183 (0.652)
Additional Control Variable	(d) Non-Corruption Perception Index (NCP) OECD Countries			(d) Non-Corruption Perception Index (NCP) Non-OECD Countries			(d) Non-Corruption Perception Index (NCP) Full Sample		
	-0.089 (0.316)	-0.115 (0.616)	-0.145 (0.128)	**0.180 (0.003)*****	**0.320 (0.000)*****	**0.225 (0.001)*****	**0.147 (0.000)*****	**0.184 (0.000)*****	0.054 (0.150)
Reference Category = English Common Law									
French Civil Law	**-1.308 (0.000)*****	**-0.877 (0.022)***	-0.002 (0.995)	0.062 (0.776)	**-0.710 (0.042)****	-0.256 (0.279)	**-0.592 (0.000)*****	-0.175 (0.392)	**-0.618 (0.000)*****
German Civil Law	-0.181 (0.347)	**-0.875 (0.021)****	0.065 (0.765)	-0.139 (0.516)		**-0.571 (0.018)****	**-0.595 (0.000)*****	**-1.140 (0.000)*****	**-0.526 (0.000)*****
Scandinavian Civil Law	**-0.962 (0.005)****	-0.698 (0.094)*	**-0.797 (0.032)****				**-0.728 (0.000)*****	-0.572 (0.069)*	**-0.818 (0.000)*****
Socialist Civil Law				0.002 (0.991)		-0.131 (0.718)	-0.157 (0.404)		0.046 (0.846)
Judicial Independence Index		**1.703 (0.002)*****			0.004 (0.981)			0.178 (0.067)*	
Jurisprudent Flexibility Index		**0.631 (0.040)****			0.327 (0.074)*			0.057 (0.060)*	
Shareholder Rights	0.051 (0.619)	0.541 **(0.000)*****	0.023 (0.833)	0.074 (0.296)	0.101 (0.259)	**0.180 (0.019)****	**0.103 (0.006)*****	**0.196 (0.001)*****	0.066 (0.103)
Creditor Rights	0.294 **(0.000)*****	0.662 **(0.000)*****	**0.280 (0.001)*****	0.073 (0.293)	0.093 (0.195)	**0.233 (0.005)*****	**0.190 (0.000)*****	**0.210 (0.000)*****	**0.235 (0.000)*****
Legal Enforcement	-0.287 (0.021)**	-0.345 (0.317)	-0.239 (0.068)	0.015 (0.893)	-0.294 (0.116)	-0.118 (0.397)	**0.108 (0.039)****	**0.231 (0.002)*****	**0.122 (0.051)****
Intellectual Property Rights									
Private Pension Fund Regulations			**0.379 (0.018)****			0.433 (0.065)*			0.156 (0.270)
Capital Gains Tax Rate	0.011 (0.087)*	**-0.043 (0.001)*****	0.009 (0.164)	0.003 (0.653)	-0.008 (0.324)	-0.002 (0.815)	0.001 (0.857)	0.002 (0.597)	0.003 (0.345)
Corporate Income Tax Rate	-0.004 (0.647)	-0.015 (0.447)	-0.001 (0.946)	**-0.020 (0.031)****	0.015 (0.277)	-0.018 (0.081)*	-0.001 (0.761)	**-0.025 (0.008)*****	-0.008 (0.115)
Stock Market Capitalization Scaled by GDP	0.654 **(0.000)*****	2.079 **(0.000)*****	0.684 **(0.000)*****	0.045 (0.691)	-0.044 (0.781)	-0.213 (0.112)	**0.192 (0.002)*****	**0.466 (0.000)*****	**0.124 (0.047)****
Real GDP Growth	0.034 (0.180)	-0.014 (0.681)	0.034 (0.186)	-0.001 (0.921)	-0.002 (0.861)	-0.004 (0.736)	0.007 (0.480)	-0.004 (0.776)	0.009 (0.377)
Economic Freedom Index	0.002 (0.198)	0.000 (0.692)	0.002 (0.188)	0.120 (0.126)	-0.008 (0.950)	**0.365 (0.000)*****	0.001 (0.408)	0.001 (0.516)	0.001 (0.287)
Inflation	-0.003 (0.724)	0.000 (0.998)	-0.002 (0.831)	0.000 (0.586)	-0.002 (0.647)	0.000 (0.968)	0.000 (0.665)	0.003 (0.314)	0.000 (0.669)
Reference Category = Protestant									
Atheist/Indigenous	0.009 (0.983)		-0.159 (0.697)	0.239 (0.394)		-0.612 (0.163)	-0.027 (0.874)		0.038 (0.838)
Buddhist	-0.473 (0.171)		**-0.745 (0.041)****	0.488 (0.052)	0.673 (0.119)	**-0.748 (0.005)*****	0.006 (0.966)	0.263 (0.272)	-0.277 (0.070)*
Catholic	-1.026 **(0.000)*****	**-1.226 (0.002)*****	-1.061 **(0.000)*****	0.202 (0.525)	0.558 (0.176)	-0.360 (0.282)	**-0.425 (0.002)*****	**-0.872 (0.000)*****	**-0.550 (0.000)*****
Hindu				**1.082 (0.002)*****	**1.445 (0.001)*****	0.539 (0.138)	0.378 (0.144)	0.500 (0.089)*	0.293 (0.233)
Jewish				**3.026 (0.000)*****	**2.732 (0.000)*****	**2.483 (0.000)*****	**2.496 (0.000)*****	**2.581 (0.000)*****	**2.473 (0.000)*****
Muslim	**-1.590 (0.003)*****	0.260 (0.695)	**-1.807 (0.001)*****	0.197 (0.339)	0.009 (0.977)	-0.053 (0.828)	-0.270 (0.054)*	-0.314 (0.081)*	-0.169 (0.244)
Orthodox	-1.877 **(0.000)*****	-1.748 **(0.000)*****	**-1.646 (0.000)*****	0.492 (0.129)	0.374 (0.307)	0.331 (0.408)	**-0.411 (0.026)****	**-0.493 (0.017)****	**-0.576 (0.003)*****
Adjusted R^2	0.277	0.604	0.293	0.444	0.291	0.530	0.329	0.326	0.363
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	280	336	378	378	266	322	770	602	700
No. of Countries	20	24	27	27	19	23	55	43	50

Table 2.8e: Robustness tests: Potentially omitted variables – Political freedom index (BRIC vs. Non-BRIC countries)

Independent Variables	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-4.704 (0.187)	-2.446 (0.798)	-5.159 (0.234)	-0.450 (0.274)	-3.871 (0.000)	0.046 (0.915)	-0.373 (0.351)	-2.461 (0.000)	0.310 (0.451)
Additional Control Variable	(e) Political Freedom Index (PF) BRIC Countries			(e) Political Freedom Index (PF) Non-BRIC Countries			(e) Political Freedom Index (PF) Full Sample		
	0.114 (0.615)	-0.005 (0.992)	0.026 (0.933)	-0.014 (0.668)	0.023 (0.472)	-0.056 (0.089)	0.030 (0.272)	0.046 (0.186)	-0.045 (0.160)
Reference Category = English Common Law									
French Civil Law				**-0.666 (0.000)*****	**-0.694 (0.000)*****	**-0.628 (0.000)*****	**-0.509 (0.000)*****	**-0.342 (0.041)****	**-0.468 (0.000)*****
German Civil Law				**-0.724 (0.000)*****	**-1.912 (0.000)*****	**-0.632 (0.000)*****	**-0.503 (0.000)*****	**-1.184 (0.000)*****	**-0.445 (0.000)*****
Scandinavian Civil Law				**-0.391 (0.015)****	**-0.554 (0.020)****	**-0.397 (0.013)****	-0.213 (0.146)	0.150 (0.523)	-0.199 (0.163)
Socialist Civil Law				-0.201 (0.256)		0.061 (0.797)	-0.188 (0.249)		0.100 (0.634)
Judicial Independence Index					0.138 (0.060)*			**0.159 (0.035)****	
Jurisprudent Flexibility Index					**0.245 (0.003)*****			0.052 (0.043)**	
Shareholder Rights	0.267 (0.276)			**0.112 (0.007)*****	**0.193 (0.000)*****	**0.091 (0.024)****	0.054 (0.104)	0.061 (0.199)	0.021 (0.517)
Creditor Rights				**0.098 (0.003)*****	**0.118 (0.004)*****	**0.133 (0.000)*****	**0.108 (0.001)*****	**0.128 (0.004)*****	**0.137 (0.000)*****
Legal Enforcement				**0.189 (0.001)*****	**0.619 (0.000)*****	**0.140 (0.030)****	0.083 (0.083)*	**0.242 (0.000)*****	0.027 (0.590)
Intellectual Property Rights	**1.453 (0.042)****		1.018 (0.332)	**0.270 (0.000)*****	**0.492 (0.000)*****	**0.222 (0.000)*****	**0.230 (0.000)*****	**0.335 (0.000)*****	**0.165 (0.000)*****
Private Pension Fund Regulations			0.201 (0.566)			0.050 (0.744)			0.064 (0.658)
Capital Gains Tax Rate	**-0.037 (0.040)****	-0.029 (0.510)	-0.032 (0.169)	0.001 (0.828)	**0.009 (0.006)*****	0.002 (0.503)	0.000 (0.875)	0.004 (0.216)	0.000 (0.882)
Corporate Income Tax Rate	-0.014 (0.643)	-0.030 (0.851)	-0.002 (0.959)	**-0.014 (0.003)*****	-0.013 (0.092)*	**-0.012 (0.009)*****	-0.008 (0.063)*	-0.014 (0.079)*	-0.008 (0.077)*
Stock Market Capitalization Scaled by GDP	-0.009 (0.964)	-0.088 (0.849)	0.054 (0.860)	0.022 (0.673)	-0.025 (0.766)	0.018 (0.725)	0.019 (0.705)	0.100 (0.263)	-0.007 (0.894)
Real GDP Growth	-0.011 (0.829)	0.014 (0.884)	-0.004 (0.949)	0.013 (0.183)	0.003 (0.763)	0.014 (0.210)	0.017 (0.081)*	0.004 (0.724)	0.011 (0.301)
Economic Freedom Index	-0.089 (0.784)	0.603 (0.558)	0.059 (0.904)	0.001 (0.106)	0.001 (0.060)*	0.001 (0.054)*	0.001 (0.104)	0.001 (0.200)	0.001 (0.073)*
Inflation	0.032 (0.154)	0.074 (0.252)	0.049 (0.165)	0.001 (0.828)	-0.001 (0.931)	-0.006 (0.305)	0.004 (0.507)	0.010 (0.112)	-0.004 (0.444)
Reference Category = Protestant									
Atheist/Indigenous				-0.055 (0.755)		-0.049 (0.763)	-0.032 (0.842)		-0.130 (0.413)
Buddhist				0.014 (0.915)	0.373 (0.050)**	-0.163 (0.213)	-0.108 (0.385)	0.251 (0.227)	**-0.274 (0.028)****
Catholic				**-0.277 (0.023)****	**-0.893 (0.000)*****	**-0.336 (0.004)*****	-0.201 (0.083)*	**-0.587 (0.000)*****	**-0.240 (0.031)****
Hindu							0.208 (0.321)	0.224 (0.323)	0.148 (0.447)
Jewish				**3.110 (0.000)*****	**3.107 (0.000)*****	**3.080 (0.000)*****	**3.243 (0.000)*****	**3.2504 (0.000)*****	**3.188 (0.000)*****
Muslim				0.055 (0.704)	**0.350 (0.041)****	0.126 (0.375)	-0.167 (0.194)	-0.137 (0.421)	-0.036 (0.784)
Orthodox				-0.364 (0.022)	-0.398 (0.017)	**-0.470 (0.004)*****	**-0.303 (0.048)****	**-0.354 (0.027)****	**-0.375 (0.018)****
Adjusted R^2	0.450	0.141	0.413	0.617	0.592	0.669	0.602	0.487	0.657
P-value (Chi^2-Test)	0.012	0.381	0.072	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	28	14	21	357	273	343	385	301	350
No. of Countries	4	2	3	51	39	49	55	43	50

Table 2.8f: Robustness tests: Potentially omitted variables – Political freedom index (OECD vs. Non-OECD countries)

Independent Variables	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value
Constant	0.493 (0.598	-4.684 (0.004)	1.020 (0.230)	-1.368 (0.075)	-0.967 (0.325)	-0.517 (0.535)	-0.373 (0.351)	-2.461 (0.000)	0.310 (0.451)
Additional Control Variable	(e) Political Freedom Index (PF) OECD Countries			(e) Political Freedom Index (PF) Non-OECD Countries			(e) Political Freedom Index (PF) Full Sample		
	-0.115 (0.602)	0.138 (0.605)	-0.015 (0.938)	**0.080 (0.010)*****	**0.102 (0.023)****	-0.051 (0.118)	0.030 (0.272)	0.046 (0.186)	-0.045 (0.160)
Reference Category = English Common Law									
French Civil Law	**-0.740 (0.004)*****	**-2.171 (0.010)*****	0.284 (0.345)	-0.056 (0.740)	0.496 (0.139)	**-0.388 (0.007)*****	**-0.509 (0.000)*****	**-0.342 (0.041)****	**-0.468 (0.000)*****
German Civil Law	**-0.715 (0.005)*****	**-2.633 (0.000)*****	0.435 (0.145)	-0.111 (0.537)		**-0.568 (0.001)*****	**-0.503 (0.000)*****	**-1.184 (0.000)*****	**-0.445 (0.000)*****
Scandinavian Civil Law	-0.253 (0.190)	**-0.829 (0.023)****	**0.921 (0.000)*****				-0.213 (0.146)	0.150 (0.523)	-0.199 (0.163)
Socialist Civil Law				-0.126 (0.516)		-0.018 (0.942)	-0.188 (0.249)		0.100 (0.634)
Judicial Independence Index		0.163 (0.351)			0.047 (0.771)			**0.159 (0.035)****	
Jurisprudent Flexibility Index		0.147 (0.608)			0.303 (0.073)*			0.052 (0.043)**	
Shareholder Rights	0.079 (0.301)	**0.285 (0.009)*****	**0.272 (0.002)*****	0.068 (0.228)	0.026 (0.801)	**0.104 (0.044)****	0.054 (0.104)	0.061 (0.199)	0.021 (0.517)
Creditor Rights	0.090 (0.061)*	**0.237 (0.002)*****	0.024 (0.592)	0.047 (0.408)	0.096 (0.159)	**0.257 (0.000)*****	**0.108 (0.001)*****	**0.128 (0.004)*****	**0.137 (0.000)*****
Legal Enforcement	0.028 (0.814)	**0.924 (0.000)*****	**-0.426 (0.002)*****	0.120 (0.136)	-0.117 (0.535)	-0.108 (0.252)	0.083 (0.083)*	**0.242 (0.000)*****	0.027 (0.590)
Intellectual Property Rights	0.098 (0.318)	**0.687 (0.002)*****	-0.086 (0.355)	**0.177 (0.008)*****	0.004 (0.974)	**0.196 (0.002)*****	**0.230 (0.000)*****	**0.335 (0.000)*****	**0.165 (0.000)*****
Private Pension Fund Regulations			0.026 (0.909)			0.016 (0.921)			0.064 (0.658)
Capital Gains Tax Rate	0.001 (0.730)	0.007 (0.347)	-0.005 (0.203)	0.002 (0.675)	0.003 (0.669)	-0.005 (0.296)	0.000 (0.875)	0.004 (0.216)	0.000 (0.882)
Corporate Income Tax Rate	-0.004 (0.603)	0.005 (0.798)	-0.002 (0.790)	-0.006 (0.450)	0.005 (0.725)	-0.003 (0.716)	-0.008 (0.063)*	-0.014 (0.079)*	-0.008 (0.077)*
Stock Market Capitalization Scaled by GDP	**0.232 (0.007)*****	**-0.480 (0.046)****	0.093 (0.250)	-0.094 (0.261)	0.082 (0.558)	**-0.298 (0.000)*****	0.019 (0.705)	0.100 (0.263)	-0.007 (0.894)
Real GDP Growth	0.040 (0.107)	**0.091 (0.020)****	0.040 (0.076)*	0.003 (0.711)	-0.002 (0.872)	0.004 (0.711)	0.017 (0.081)*	0.004 (0.724)	0.011 (0.301)
Economic Freedom Index	0.001 (0.113)	0.001 (0.176)	0.001 (0.209)	-0.022 (0.796)	-0.043 (0.783)	**0.278 (0.001)*****	0.001 (0.104)	0.001 (0.200)	0.001 (0.073)*
Inflation	-0.009 (0.525)	-0.010 (0.460)	-0.014 (0.255)	0.001 (0.871)	0.004 (0.650)	0.000 (0.957)	0.004 (0.507)	0.010 (0.112)	-0.004 (0.444)
Reference Category = Protestant									
Atheist/Indigenous	0.026 (0.929)		-0.295 (0.271)	0.230 (0.352)		0.083 (0.772)	-0.032 (0.842)		-0.130 (0.413)
Buddhist	-0.158 (0.558)		**-0.622 (0.016)****	0.258 (0.178)	**0.887 (0.014)****	**-0.660 (0.000)*****	-0.108 (0.385)	0.251 (0.227)	**-0.274 (0.028)****
Catholic	-0.115 (0.512)	**-0.631 (0.019)****	**0.372 (0.030)****	-0.050 (0.842)	0.397 (0.364)	-0.282 (0.206)	-0.201 (0.083)*	**-0.587 (0.000)*****	**-0.240 (0.031)****
Hindu				**0.566 (0.031)****	**1.189 (0.007)*****	0.240 (0.290)	0.208 (0.321)	0.224 (0.323)	0.148 (0.447)
Jewish				**3.617 (0.000)*****	**3.465 (0.000)*****	**3.309 (0.000)*****	**3.243 (0.000)*****	**3.2504 (0.000)*****	**3.188 (0.000)*****
Muslim	0.148 (0.769)	1.388 (0.143)	-0.508 (0.277)	-0.135 (0.448)	-0.036 (0.912)	0.045 (0.803)	-0.167 (0.194)	-0.137 (0.421)	-0.036 (0.784)
Orthodox	-0.482 (0.117)	-0.402 (0.198)	0.337 (0.253)	-0.025 (0.923)	-0.072 (0.845)	-0.095 (0.701)	**-0.303 (0.048)****	**-0.354 (0.027)****	**-0.375 (0.018)****
Adjusted R^2	0.406	0.719	0.412	0.761	0.288	0.845	0.602	0.487	0.657
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	196	168	189	189	133	161	385	301	350
No. of Countries	28	24	27	27	19	23	55	43	50

Table 2.9: Robustness tests: Potentially omitted variables – Entrepreneurial and cultural variables

This table reports results for a series of random effects regressions in which I regress the total amount of VC investments in a given country per year on the same variables I employed in Table 2.7 plus a series of potentially omitted variables. My sample covers 55 countries between 1995 and 2008. Models 1 and 2 are based on permutations of my right-hand-side variables. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments at all stages including early (send and start-up) and expansion stage investments. The independent variables are the same as those employed in Table 7 plus one of the following variables as an additional control variable: (f) the total entrepreneurial activity (TEA) index as provided by the Global Entrepreneurship Monitor, (g) ease of doing business index (EB) from the World Bank, (h) the age of VC industry (AGE). The total entrepreneurial activity (TEA) index measures the number of new entrepreneurs and new companies and is computed by adding the proportion of adults involved in the creation of emerging firms and the proportion involved in new firms. It ranges from 1 to 20, with 1 being the lowest and 20 the highest level of entrepreneurial activity. The ease of doing business index (EB) ranges from 1 (most business-friendly regulations) to 183. A high ranking on the ease of doing business index means that the regulatory environment is conducive to the operation of business. The age of VC industry (AGE) measures the number of years between the date the first portfolio firm received VC funding in a given country and 1995 (the start of my sample period).Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Inclusion of Potentially Omitted Variables								
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	1.847 (0.021)	-2.526 (0.221)	1.313 (0.089)	-0.296 (0.499)	-2.855 (0.000)	-0.024 (0.956)	-0.427 (0.295)	-3.485 (0.000)	-0.262 (0.511)
Additional Control Variable	(f) Total Entrepreneurial Activity Index (TEA)			(g) Ease of Doing Business Index (EB)			(h) Age of VC Industry (AGE)		
	-0.042 (0.014)**	0.044 (0.194)	-0.020 (0.251)	0.001 (0.302)	**0.004 (0.025)****	0.001 (0.496)	**0.013 (0.000)*****	**0.019 (0.000)*****	**0.017 (0.000)*****
Reference Category = English Common Law									
French Civil Law	**-1.108 (0.000)*****	-1.142 (0.132)	**-0.994 (0.000)*****	-0.741 (0.000)	**-0.786 (0.002)*****	**-0.662 (0.000)*****	**-0.649 (0.000)*****	-0.110 (0.636)	**-0.556 (0.000)*****
German Civil Law	**-1.249 (0.000)*****	-0.571 (0.225)	**-0.930 (0.000)*****	**-0.720 (0.000)*****	**-1.576 (0.000)*****	**-0.538 (0.000)*****	**-0.614 (0.000)*****	**-1.139 (0.000)*****	**-0.362 (0.005)*****
Scandinavian Civil Law	**-0.955 (0.000)*****	-0.112 (0.819)	**-0.914 (0.000)*****	**-0.774 (0.000)*****	-0.626 (0.054)*	**-0.787 (0.000)*****	**-0.573 (0.002)*****	-0.241 (0.417)	**-0.559 (0.002)*****
Socialist Civil Law	-0.436 (0.384)		-0.082 (0.859)	-0.202 (0.290)		-0.042 (0.863)	-0.182 (0.330)		0.099 (0.668)
Judicial Independence Index		0.034 (0.879)			0.169 (0.104)			**0.214 (0.026)****	
Jurisprudent Flexibility Index		0.492 (0.091)*			0.019 (0.860)			**0.247 (0.034)****	
Shareholder Rights	**0.155 (0.008)*****	0.053 (0.689)	0.110 (0.051)*	**0.086 (0.027)****	**0.147 (0.020)****	0.051 (0.218)	**0.083 (0.026)****	**0.179 (0.003)*****	0.054 (0.173)
Creditor Rights	**0.190 (0.001)*****	**0.240 (0.006)*****	**0.276 (0.000)*****	**0.179 (0.000)*****	**0.261 (0.000)*****	**0.229 (0.000)*****	**0.112 (0.006)*****	0.075 (0.203)	**0.153 (0.000)*****
Legal Enforcement	0.086 (0.338)	0.100 (0.511)	0.085 (0.351)	**0.172 (0.003)*****	**0.381 (0.000)*****	**0.123 (0.050)****	**0.176 (0.002)*****	**0.362 (0.000)*****	**0.125 (0.040)****
Intellectual Property Rights	0.049 (0.507)	0.086 (0.537)	0.074 (0.274)	**0.266 (0.000)*****	**0.443 (0.000)*****	**0.246 (0.000)*****	**0.211 (0.000)*****	**0.280 (0.000)*****	**0.183 (0.000)*****
Private Pension Fund Regulations			-0.054 (0.768)			0.143 (0.313)			0.116 (0.403)
Capital Gains Tax Rate	0.005 (0.303)	-0.003 (0.774)	0.009 (0.067)*	0.002 (0.558)	0.007 (0.126)	0.003 (0.297)	0.004 (0.235)	**0.012 (0.011)****	**0.007 (0.024)****
Corporate Income Tax Rate	0.000 (0.950)	**-0.041 (0.024)****	-0.004 (0.577)	**-0.011 (0.022)****	-0.011 (0.249)	**-0.011 (0.026)****	**-0.012 (0.014)****	**-0.023 (0.012)****	**-0.011 (0.016)*****
Stock Market Capitalization Scaled by GDP	**0.535 (0.000)*****	**1.356 (0.000)*****	**0.480 (0.000)*****	**0.162 (0.011)****	**0.257 (0.028)****	0.122 (0.051)*	**0.136 (0.032)****	**0.290 (0.011)****	0.086 (0.165)
Real GDP Growth	0.015 (0.339)	-0.007 (0.756)	0.013 (0.441)	0.011 (0.260)	0.003 (0.841)	0.009 (0.360)	0.010 (0.275)	0.000 (0.970)	0.011 (0.267)
Economic Freedom Index	0.001 (0.353)	0.001 (0.494)	0.001 (0.242)	0.001 (0.354)	0.001 (0.376)	0.001 (0.259)	0.001 (0.505)	0.001 (0.580)	0.001 (0.383)
Inflation	0.005 (0.282)	0.004 (0.626)	0.002 (0.667)	0.001 (0.456)	0.005 (0.117)	0.000 (0.628)	0.001 (0.384)	0.004 (0.193)	0.001 (0.496)
Reference Category = Protestant									
Atheist/Indigenous	-0.123 (0.735)			0.084 (0.633)		0.029 (0.878)	0.128 (0.461)		0.164 (0.375)
Buddhist	-0.354 (0.064)*	-0.054 (0.889)	**-0.810 (0.000)*****	0.024 (0.867)	**0.517 (0.031)****	-0.296 (0.052)*	0.040 (0.781)	**0.754 (0.002)*****	**-0.333 (0.026)****
Catholic	**-0.496 (0.010)*****	**-1.267 (0.001)*****	**-0.593 (0.001)*****	**-0.437 (0.002)*****	**-0.874 (0.000)*****	**-0.539 (0.000)*****	**-0.297 (0.036)****	**-0.616 (0.003)*****	**-0.394 (0.004)*****
Hindu				0.188 (0.492)	0.032 (0.921)	0.178 (0.498)	0.474 (0.068)*	**0.843 (0.005)*****	**0.506 (0.038)****
Jewish				**2.420 (0.000)*****	**2.418 (0.000)*****	**2.462 (0.000)*****	**2.327 (0.000)*****	**2.457 (0.000)*****	**2.338 (0.000)*****
Muslim				-0.146 (0.321)	0.004 (0.982)	-0.169 (0.248)	0.014 (0.926)	0.188 (0.336)	0.051 (0.729)
Orthodox	**-1.103 (0.002)*****	**-1.145 (0.001)*****	**-1.130 (0.000)*****	**-0.481 (0.010)*****	**-0.539 (0.008)*****	**-0.585 (0.003)*****	-0.244 (0.197)	-0.369 (0.103)	**-0.387 (0.045)****
Adjusted R^2	0.292	0.358	0.348	0.328	0.333	0.361	0.341	0.360	0.388
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	420	350	364	770	602	700	770	602	700
No. of Countries	30	25	26	55	43	50	55	43	50

Table 2.9 (cont'd): Robustness tests: Potentially omitted variables – Technological and financial market variables

This table reports results for a series of random effects regressions in which I regress the total amount of VC investments in a given country per year on the same variables I employed in Table 2.7 plus a series of potentially omitted variables. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments at all stages including early (send and start-up) and expansion stage investments. The independent variables are the same as those employed in Table 2.7 plus one of the following variables as an additional control variable: (i) the patent rights index (PRI) from Ginarte and Park (1997), (j) R&D expenditures (RD) from the World Bank, and (k) prospectus disclosure regulation (DIS) from LLSV (2006). The patent rights index (PRI) ranges from 0 to 5, with higher values indicating stronger patent rights protection. In constructing the index, the authors considered five characteristics of national patent laws: (1) extent of coverage, (2) membership in international patent agreements, (3) provisions for loss of protection, (4) enforcement mechanisms, and (5) duration of protection. R&D expenditures (RD) are the total expenditures on R&D as a percentage of total GDP from 1996 to 2006. Disclosure regulation is an index measure of the strength of a country's prospectus disclosure regulation as of December 2000 in 49 countries. The index equals the arithmetic mean of six subindices based on (1) prospectuses; (2) compensation; (3) shareholders; (4) inside ownership; (5) irregular contracts; and (6) transactions. The higher the index value, the more stringent the disclosure regulation. Definitions for all other explanatory variables are provided in Tables 2 to 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Inclusion of Potentially Omitted Variables								
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.708 (0.271)	-2.718 (0.001)	0.342 (0.584)	0.861 (0.101)	-1.173 (0.238)	1.382 (0.013)	-0.435 (0.413)	-2.551 (0.001)	0.020 (0.969)
Additional Control Variable	(i) Patent Rights Index (PRI)			(j) R&D Expenditures (RD)			(k) Disclosure (DIS)		
	0.176 (0.009)***	0.018 (0.855)	**0.306 (0.000)*****	**0.482 (0.000)*****	**0.862 (0.000)*****	**0.540 (0.000)*****	-0.060 (0.842)	-0.439 (0.207)	0.376 (0.205)
Reference Category = English Common Law									
French Civil Law	**-0.666 (0.000)*****	-0.532 (0.115)	**-0.412 (0.015)****	**-0.911 (0.000)*****	0.194 (0.552)	**-0.823 (0.000)*****	**-0.705 (0.000)*****	**-0.667 (0.007)*****	**-0.517 (0.001)*****
German Civil Law	**-1.074 (0.000)*****	**-1.467 (0.000)*****	**-0.628 (0.001)*****	**-1.165 (0.000)*****	**-1.793 (0.000)*****	**-1.018 (0.000)*****	**-0.966 (0.000)*****	**-1.674 (0.000)*****	**-0.492 (0.019)****
Scandinavian Civil Law	**-0.855 (0.000)*****	-0.400 (0.223)	**-0.825 (0.000)*****	**-1.319 (0.000)*****	**-1.980 (0.000)*****	**-1.271 (0.000)*****	**-0.796 (0.000)*****	-0.492 (0.126)	**-0.712 (0.001)*****
Socialist Civil Law				**-0.865 (0.000)*****		**-1.029 (0.001)*****			
Judicial Independence Index		0.249 (0.055)*			0.098 (0.444)			**0.239 (0.016)****	
Jurisprudent Flexibility Index		0.052 (0.744)			0.282 (0.052)*			0.029 (0.795)	
Shareholder Rights	**0.108 (0.037)****	**0.172 (0.014)****	0.040 (0.428)	**0.114 (0.012)****	0.102 (0.222)	**0.124 (0.016)****	**0.136 (0.005)*****	**0.179 (0.003)*****	**0.094 (0.047)****
Creditor Rights	**0.202 (0.000)*****	**0.214 (0.000)*****	**0.324 (0.000)*****	0.086 (0.063)*	0.118 (0.093)*	0.095 (0.070)*	**0.170 (0.000)*****	**0.219 (0.000)*****	**0.221 (0.000)*****
Legal Enforcement	**0.213 (0.013)****	**0.372 (0.000)*****	0.051 (0.566)	0.127 (0.070)*	**0.246 (0.023)****	0.050 (0.515)	**0.182 (0.012)****	**0.382 (0.000)*****	0.095 (0.197)
Intellectual Property Rights	**0.229 (0.000)*****	**0.362 (0.000)*****	**0.121 (0.039)****	0.034 (0.569)	-0.051 (0.624)	-0.036 (0.576)	**0.278 (0.000)*****	**0.394 (0.000)*****	**0.216 (0.000)*****
Private Pension Fund Regulations			0.189 (0.240)			-0.026 (0.873)			-0.184 (0.242)
Capital Gains Tax Rate	0.00 (0.395)	0.006 (0.230)	0.004 (0.297)	0.005 (0.203)	0.000 (0.933)	0.005 (0.178)	0.003 (0.403)	0.005 (0.247)	0.005 (0.162)
Corporate Income Tax Rate	-0.009 (0.209)	-0.018 (0.067)*	**-0.013 (0.048)****	**-0.012 (0.025)****	-0.019 (0.082)*	-0.008 (0.131)	0.007 (0.289)	**-0.019 (0.047)****	-0.009 (0.151)
Stock Market Capitalization Scaled by GDP	**0.246 (0.003)*****	**0.269 (0.027)****	0.110 (0.166)	0.071 (0.320)	0.269 (0.075)*	0.031 (0.661)	**0.257 (0.001)*****	**0.321 (0.007)*****	0.144 (0.063)*
Real GDP Growth	0.009 (0.467)	0.003 (0.846)	0.013 (0.330)	**0.025 (0.042)****	0.010 (0.581)	**0.030 (0.026)****	0.009 (0.450)	0.002 (0.866)	0.012 (0.346)
Economic Freedom Index	0.001 (0.510)	0.001 (0.512)	0.001 (0.370)	0.001 (0.301)	0.001 (0.507)	0.001 (0.203)	0.001 (0.357)	0.001 (0.516)	0.001 (0.228)
Inflation	0.003 (0.442)	0.009 (0.055)*	-0.002 (0.727)	0.001 (0.293)	0.001 (0.790)	0.001 (0.341)	0.001 (0.720)	0.006 (0.096)*	-0.002 (0.638)
Reference Category = Protestant									
Atheist/Indigenous	-0.050 (0.888)		0.129 (0.698)	0.178 (0.362)		0.288 (0.162)	-0.215 (0.534)		-0.161 (0.619)
Buddhist	0.213 (0.251)	**0.535 (0.048)****	-0.341 (0.084)*	-0.166 (0.332)	0.376 (0.198)	**-0.571 (0.002)*****	0.263 (0.188)	**0.622 (0.015)****	-0.319 (0.155)
Catholic	**-0.451 (0.010)*****	**-0.800 (0.000)*****	**-0.659 (0.000)*****	-0.239 (0.138)	**-0.858 (0.001)*****	-0.257 (0.105)	**-0.393 (0.017)****	**-0.768 (0.000)*****	**-0.534 (0.001)*****
Hindu	0.568 (0.058)*	0.362 (0.309)	**0.571 (0.038)****	0.201 (0.485)	0.323 (0.344)	0.159 (0.556)	0.456 (0.119)	0.475 (0.118)	0.231 (0.401)
Jewish	**2.338 (0.000)*****	**2.307 (0.000)*****	**2.358 (0.000)*****	**1.195 (0.002)*****	**1.132 (0.004)*****	**1.073 (0.005)*****	**2.483 (0.000)*****	**2.367 (0.000)*****	**2.504 (0.000)*****
Muslim	0.014 (0.945)	-0.029 (0.888)	-0.113 (0.529)	-0.231 (0.209)	-0.471 (0.087)*	**-0.376 (0.045)****	0.017 (0.929)	0.086 (0.683)	-0.146 (0.415)
Orthodox	**-0.736 (0.017)****	**-0.796 (0.012)****	**-0.873 (0.002)*****	-0.276 (0.186)	-0.271 (0.190)	-0.277 (0.195)	**-0.740 (0.014)****	**-0.751 (0.016****	**-0.774 (0.005)*****
Adjusted R^2	0.343	0.320	0.396	0.395	0.408	0.436	0.336	0.328	0.373
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	588	560	546	630	473	568	630	602	588
No. of Countries	42	40	39	49	37	44	45	43	42

Table 2.10a: Robustness test: Alternative sample compositions - Exclusion of the U.K. and the U.S. and of the bottom 3 and top 3 countries in terms of VC investments

This table reports results for random effects regressions of the total amount of VC investments at all stages including early (send and start-up) and expansion stage investments on legal, regulatory, and fiscal factors in which I employ the same variables as in Models 1, 2, and 3 of Table 2.7 but consider alternative sample specifications. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments in a given country per year (including early and expansion stage investments) measured as the total amount of funding provided to local firms in a given country per year, relative to the country's GDP during the corresponding year. In the first two columns, I exclude two countries: the U.K. and the U.S. In the last two columns, I exclude countries that range among the bottom 3 (Columbia, Peru, and Turkey) and top 3 (Israel, the U.S., and Singapore) in terms of the total amount of VC investments scaled by GDP. Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Exclusion of the U.K. and the U.S.			Exclusion of bottom 3 (Columbia, Peru, and Turkey) and top 3 (Israel, the U.S., and Singapore) countries in terms of total VC investments scaled by GDP		
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.171 (0.634)	-1.875 (0.002)	0.220 (0.521)	0.002 (0.995)	-1.195 (0.012)	0.006 (0.983)
Reference Category = English Common Law						
French Civil Law	**-0.425 (0.000)*****	0.025 (0.889)	**-0.280 (0.010)*****	**-0.327 (0.001)*****	-0.270 (0.114)	**-0.325 (0.002)*****
German Civil Law	**-0.341 (0.004)*****	-0.318 (0.275)	-0.089 (0.432)	**-0.195 (0.044)****	**-0.608 (0.004)*****	-0.178 (0.080)*
Scandinavian Civil Law	-0.170 (0.356)	**-0.939 (0.001)*****	-0.331 (0.063)*	-0.154 (0.275)	**-0.568 (0.008)*****	-0.111 (0.473)
Socialist Civil Law	-0.129 (0.432)		-0.162 (0.402)	-0.088 (0.502)		-0.138 (0.441)
Judicial Independence Index		0.081 (0.315)			0.021 (0.783)	
Jurisprudent Flexibility Index		**0.210 (0.018)****			0.043 (0.609)	
Shareholder Rights	0.004 (0.918)	0.005 (0.927)	0.044 (0.196)	0.014 (0.613)	0.028 (0.507)	0.048 (0.124)
Creditor Rights	0.026 (0.465)	0.045 (0.360)	0.058 (0.107)	0.036 (0.211)	0.010 (0.792)	0.063 (0.058)*
Legal Enforcement	0.020 (0.709)	0.047 (0.553)	-0.081 (0.145)	-0.024 (0.592)	0.092 (0.115)	-0.037 (0.466)
Intellectual Property Rights	**0.127 (0.001)*****	**0.155 (0.002)*****	**0.085 (0.017)****	**0.104 (0.000)*****	**0.143 (0.000)*****	**0.116 (0.000)*****
Private Pension Fund Regulations			0.130 (0.271)			-0.043 (0.704)
Capital Gains Tax Rate	0.000 (0.927)	0.003 (0.473)	-0.001 (0.705)	0.002 (0.492)	0.006 (0.097)*	0.001 (0.616)
Corporate Income Tax Rate	**-0.009 (0.035)****	-0.012 (0.118)	-0.007 (0.069)*	-0.006 (0.080)*	-0.009 (0.143)	**-0.008 (0.022)****
Stock Market Capitalization Scaled by GDP	0.089 (0.111)	0.070 (0.455)	0.033 (0.521)	0.053 (0.240)	-0.007 (0.924)	0.032 (0.511)
Real GDP Growth	0.010 (0.218)	0.001 (0.956)	0.007 (0.434)	0.007 (0.318)	-0.005 (0.544)	0.007 (0.395)
Economic Freedom Index	0.001 (0.369)	0.001 (0.380)	0.001 (0.259)	0.001 (0.241)	0.001 (0.265)	0.001 (0.245)
Inflation	0.000 (0.733)	0.000 (0.857)	0.000 (0.895)	0.000 (0.769)	0.000 (0.953)	0.000 (0.875)
Reference Category = Protestant						
Atheist/Indigenous	**0.328 (0.033)****		0.210 (0.182)	**0.249 (0.041)****		0.170 (0.228)
Buddhist	**0.342 (0.009)*****	**0.976 (0.000)*****	-0.024 (0.848)	-0.012 (0.915)	-0.062 (0.769)	-0.056 (0.627)
Catholic	0.240 (0.081)*	0.262 (0.198)	0.238 (0.066)*	0.179 (0.092)*	-0.027 (0.858)	0.132 (0.253)
Hindu	**0.683 (0.003)*****	**0.943 (0.000)*****	**0.663 (0.001)*****	**0.642 (0.000)*****	**0.596 (0.002)*****	**0.601 (0.001)*****
Jewish	**2.950 (0.000)*****	**2.963 (0.000)*****	**3.087 (0.000)*****			
Muslim	0.109 (0.403)	0.168 (0.281)	0.036 (0.766)	0.022 (0.839)	0.015 (0.903)	0.018 (0.871)
Orthodox	0.045 (0.787)	0.076 (0.701)	0.081 (0.632)	-0.048 (0.714)	-0.035 (0.793)	-0.010 (0.947)
Adjusted R^2	0.343	0.263	0.402	0.216	0.308	0.219
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	742	574	672	686	518	630
No. of countries	53	41	48	49	37	45

Table 2.10b: Robustness test: Alternative time periods

This table reports results for random effects regressions of the total amount of VC investments at all stages including early (seed and start-up) and expansion stage investments on legal, regulatory, and fiscal factors in which I employ the same variables as in Models 1, 2, and 3 of Table 2.7 but consider alternative sample specifications. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments in a given country per year (including early and expansion stage investments) measured as the total amount of funding provided to local firms in a given country per year, relative to the country's GDP during the corresponding year. I divide my sample period into two parts, i.e. January 1995 to December 2000 and January 2001 to December 2008. I then provide results for the years 1995-2000 and 2001-2008, respectively. Definitions for all variables are provided in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Years 1995-2000 only			Years 2001-2008 only		
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.172 (0.839)	-1.492 (0.382)	-0.340 (0.699)	0.028 (0.947)	-2.815 (0.000)	0.226 (0.588)
Reference Category = English Common Law						
French Civil Law	**-0.725 (0.003)*****	**-0.940 (0.048)****	**-0.671 (0.005)*****	**-0.675 (0.000)*****	**-0.410 (0.041)****	**-0.574 (0.000)*****
German Civil Law	**-0.761 (0.003)*****	**-1.461 (0.034)****	**-0.507 (0.047)****	**-0.637 (0.000)*****	**-1.307 (0.000)*****	**-0.463 (0.000)*****
Scandinavian Civil Law	**-1.301 (0.000)*****	**-1.287 (0.037)****	**-1.356 (0.000)*****	-0.317 (0.068)*	-0.297 (0.295)	-0.308 (0.075)*
Socialist Civil Law	0.036 (0.922)		0.468 (0.306)	-0.229 (0.218)		-0.116 (0.626)
Judicial Independence Index		**0.559 (0.011)****			**0.189 (0.037)****	
Jurisprudent Flexibility Index		0.168 (0.076)*			**0.198 (0.035)****	
Shareholder Rights	0.120 (0.091)*	**0.373 (0.003)*****	0.115 (0.127)	0.069 (0.062)*	0.087 (0.121)	0.012 (0.766)
Creditor Rights	**0.222 (0.003)*****	**0.388 (0.001)*****	**0.285 (0.000)*****	**0.136 (0.000)*****	**0.113 (0.029)****	**0.173 (0.000)*****
Legal Enforcement	**0.276 (0.015)****	**0.490 (0.008)*****	0.229 (0.051)*	0.080 (0.155)	**0.280 (0.000)*****	0.022 (0.718)
Intellectual Property Rights	**0.244 (0.009)*****	**0.430 (0.007)*****	**0.195 (0.027)****	**0.224 (0.000)*****	**0.340 (0.000)*****	**0.206 (0.000)*****
Private Pension Fund Regulations			0.280 (0.200)			0.178 (0.316)
Capital Gains Tax Rate	0.001 (0.852)	0.001 (0.915)	0.007 (0.274)	0.002 (0.530)	0.008 (0.054)*	0.002 (0.433)
Corporate Income Tax Rate	-0.012 (0.210)	0.009 (0.690)	-0.010 (0.265)	-0.008 (0.128)	**0.025 (0.013)****	-0.009 (0.097)*
Stock Market Capitalization Scaled by GDP	**0.447 (0.001)*****	**0.810 (0.001)*****	**0.341 (0.011)****	-0.015 (0.804)	-0.063 (0.563)	-0.041 (0.487)
Real GDP Growth	**0.036 (0.033)****	0.016 (0.518)	**0.035 (0.043)****	-0.003 (0.817)	-0.017 (0.182)	-0.006 (0.649)
Economic Freedom Index	-0.011 (0.894)	-0.125 (0.472)	0.087 (0.334)	0.001 (0.199)	0.001 (0.397)	0.001 (0.145)
Inflation	0.001 (0.346)	**0.011 (0.036)****	0.001 (0.345)	0.004 (0.502)	0.006 (0.398)	-0.001 (0.904)
Reference Category = Protestant						
Atheist/Indigenous	0.130 (0.695)		0.449 (0.208)	0.114 (0.508)		-0.139 (0.457)
Buddhist	0.044 (0.873)	0.546 (0.259)	-0.299 (0.299)	0.002 (0.987)	**0.619 (0.008)*****	**-0.314 (0.034)****
Catholic	**-0.732 (0.007)*****	**-1.089 (0.011)****	**-0.884 (0.001)*****	-0.181 (0.185)	**-0.521 (0.009)*****	**-0.258 (0.054)****
Hindu	0.133 (0.787)	0.184 (0.754)	0.193 (0.675)	0.422 (0.088)*	**0.537 (0.050)****	0.387 (0.100)
Jewish	**1.136 (0.019)****	**1.187 (0.011)****	**1.260 (0.006)*****	**3.417 (0.000)*****	**3.441 (0.000)*****	**3.453 (0.000)*****
Muslim	-0.283 (0.313)	-0.173 (0.651)	-0.234 (0.397)	-0.084 (0.552)	0.087 (0.640)	-0.094 (0.504)
Orthodox	-0.655 (0.079)*	-0.701 (0.063)*	**-0.866 (0.019)****	-0.272 (0.130)	-0.296 (0.127)	-0.302 (0.111)
Adjusted R^2	0.227	0.298	0.249	0.533	0.448	0.581
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	330	258	300	440	344	400
No. of countries	55	43	50	55	43	50

Table 2.11: Robustness test: Alternative legal enforcement measure and Newey-West heteroskedasticity and autocorrelation corrected standard errors

This table reports results for a series of random effects and OLS regressions of the total amount of VC investments at all stages including early (seed and start-up) and expansion stage investments on legal, regulatory, and fiscal factors in which I employ the same variables as in Model 1, 2, and 3 of Table 2.7 but consider an alternative legal enforcement measure and estimation method. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. The dependent variable is the total amount of VC investments in a given country per year (including early and expansion stage investments) measured as the total amount of funding provided to local firms in a given country per year, relative to the country's GDP during the corresponding year. All independent variables are as defined in Tables 2 and 3. In the first three columns, I replace my legal enforcement proxy (the formalism index) with the rule of law. In the last three columns, I control for potential cross-sectional correlation by applying Newey-West heteroskedasticity and autocorrelation corrected standard errors in an OLS regression context. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. The regression with Newey-West standard errors does not include any R^2. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Rule of Law (RL) used as Legal Enforcement Measure			Newey-West heteroskedasticity and autocorrelation corrected standard errors		
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	0.277 (0.463)	-1.025 (0.075)	0.390 (0.274)	-0.123 (0.768)	-2.461 (0.006)	0.026 (0.950)
Reference Category = English Common Law						
French Civil Law	**-0.412** **(0.002)*****	0.012 (0.957)	**-0.372** **(0.003)*****	**-0.704** **(0.000)*****	**-0.531** **(0.038)****	**-0.654** **(0.000)*****
German Civil Law	**-0.659** **(0.000)*****	**-0.583** **(0.036)****	**-0.359** **(0.022)****	**-0.711** **(0.000)*****	**-1.292** **(0.001)*****	**-0.516** **(0.003)*****
Scandinavian Civil Law	**-0.687** **(0.000)*****	-0.031 (0.918)	**-0.738** **(0.000)*****	**-0.741** **(0.044)****	-0.206 (0.695)	-0.769 (0.052)*
Socialist Civil Law				-0.171 (0.092)*		-0.053 (0.680)
Judicial Independence Index		**0.336** **(0.014)****			**0.409** **(0.000)*****	
Jurisprudent Flexibility Index		0.050 (0.666)			0.249 (0.091)*	
Shareholder Rights	0.060 (0.273)	**0.162** **(0.029)****	0.008 (0.876)	**0.096** **(0.054)***	**0.221** **(0.012)****	0.053 (0.329)
Creditor Rights	**0.178** **(0.000)*****	**0.202** **(0.000)*****	**0.239** **(0.000)*****	**0.174** **(0.008)*****	**0.213** **(0.025)****	**0.232** **(0.002)*****
Legal Enforcement	**0.094** **(0.006)*****	**0.104** **(0.006)*****	**0.085** **(0.008)*****	**0.171** **(0.039)****	**0.330** **(0.010)*****	0.143 (0.130)
Intellectual Property Rights	0.063 (0.283)	0.063 (0.411)	0.048 (0.413)	**0.243** **(0.000)*****	**0.367** **(0.000)*****	**0.222** **(0.000)*****
Private Pension Fund Regulations			0.142 (0.107)			0.129 (0.085)*
Capital Gains Tax Rate	0.005 (0.181)	0.005 (0.236)	0.005 (0.114)	0.001 (0.538)	0.005 (0.057)*	0.002 (0.302)
Corporate Income Tax Rate	-0.003 (0.613)	**-0.020** **(0.033)****	-0.002 (0.640)	**-0.010** **(0.027)****	**-0.017** **(0.019)****	**-0.009** **(0.040)****
Stock Market Capitalization Scaled by GDP	**0.285** **(0.000)*****	**0.412** **(0.000)*****	**0.194** **(0.008)*****	0.163 (0.064)*	0.288 (0.073)*	0.116 (0.184)
Real GDP Growth	0.012 (0.316)	0.003 (0.768)	0.011 (0.345)	0.011 (0.258)	0.002 (0.843)	0.007 (0.387)
Economic Freedom Index	0.001 (0.325)	0.001 (0.321)	0.001 (0.229)	**0.001** **(0.000)*****	**0.001** **(0.000)*****	**0.001** **(0.000)*****
Inflation	0.000 (0.893)	0.003 (0.294)	-0.002 (0.413)	0.001 (0.099)*	**0.006** **(0.016)****	0.000 (0.306)
Reference Category = Protestant						
Atheist/Indigenous	-0.581 (0.069)*		-0.382 (0.202)	0.097 (0.638)		0.081 (0.740)
Buddhist	0.126 (0.480)	**0.540** **(0.032)****	-0.312 (0.096)*	0.023 (0.929)	0.514 (0.248)	-0.276 (0.094)*
Catholic	**-0.387** **(0.018)****	**-0.578** **(0.005)*****	-0.566 **(0.000)*****	-0.421 (0.104)	**-0.768** **(0.046)****	-0.525 (0.057)*
Hindu	0.496 (0.080)*	**0.650** **(0.026)****	0.409 (0.118)	0.284 (0.417)	0.371 (0.274)	0.302 (0.381)
Jewish	**2.785** **(0.000)*****	**2.814** **(0.000)*****	**2.690** **(0.000)*****	**2.430** **(0.002)*****	**2.568** **(0.001)*****	**0.418** **(0.002)*****
Muslim	-0.167 (0.342)	**-0.193** **(0.332)**	-0.193 (0.241)	-0.139 (0.309)	-0.013 (0.784)	-0.108 (0.386)
Orthodox	**-0.726** **(0.014)****	**-0.734** **(0.011)****	**-0.745** **(0.007)*****	**-0.446** **(0.032)****	**-0.489** **(0.027)****	**-0.516** **(0.033)****
Adjusted R^2	0.339	0.321	0.379	-	-	-
P-value (Chi^2-Test /*F*-Test)	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	630	602	588	770	602	700
No. of countries	45	43	42	55	43	50

Table 2.12: Robustness test: Alternative dependent variables

This table reports results for a series of random effects regressions in which I replicate the model estimations in Table 2.7, but use alternative dependent variables. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. I replace my main dependent variable (the total amount of VC investments at all stages including early and expansion stage investments) with (a) the total amount of early stage investments, (b) the total amount of expansion stage investments, (c) the number of financing rounds at all stages, (d) the number of financing rounds disbursed in connection with early stage investments, and (e) the number of financing rounds disbursed in connection with expansion stage investments. VC investment amounts are scaled by the country's GDP during the corresponding year. Financing rounds are scaled by the country's stock market capitalization during the corresponding year. All independent variables are as defined in Tables 2 and 3. The *p*-values have been adjusted for heteroskedasticity using White's (1980) procedure and are shown in parentheses. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Total Amount of VC Investments/GDP						No. of Financing Rounds/SMC								
	(a) Early Stage Investments			(b) Expansion Stage Investments			(c) Both Early and Expansion Stage Investments			(d) Early Stage Investments			(e) Expansion Stage Investments		
	Model 1 Coeff. (*p*-value)	Model 2 Coeff. (*p*-value)	Model 3 Coeff. (*p*-value)	Model 1 Coeff. (*p*-value)	Model 2 Coeff. (*p*-value)	Model 3 Coeff. (*p*-value)	Model 1 Coeff. (*p*-value)	Model 2 Coeff. (*p*-value)	Model 3 Coeff. (*p*-value)	Model 1 Coeff. (*p*-value)	Model 2 Coeff. (*p*-value)	Model 3 Coeff. (*p*-value)	Model 1 Coeff. (*p*-value)	Model 2 Coeff. (*p*-value)	Model 3 Coeff. (*p*-value)
Constant	-0.112 (0.540)	-0.384 (0.136)	-0.004 (0.981)	-0.010 (0.969)	-0.433 (0.231)	0.092 (0.736)	0.116 (0.881)	0.023 (0.964)	2.462 (0.037)	-0.039 (0.910)	-0.149 (0.528)	1.079 (0.112)	0.155 (0.750)	0.172 (0.567)	1.915 (0.014)
Reference Category = English Common Law															
French Civil Law	**-0.290 (0.000)*****	0.025 (0.810)	**-0.251 (0.000)*****	**-0.414 (0.000)*****	0.046 (0.750)	**-0.382 (0.000)*****	**-1.038 (0.000)*****	-0.293 (0.148)	**-1.037 (0.002)*****	**-0.323 (0.002)*****	-0.132 (0.163)	-0.254 (0.219)	**-0.714 (0.000)*****	-0.162 (0.177)	**-0.808 (0.000)*****
German Civil Law	**-0.296 (0.000)*****	-0.195 (0.118)	**-0.195 (0.000)*****	**-0.415 (0.000)*****	**-0.461 (0.009)*****	**-0.333 (0.000)*****	-0.104 (0.658)	**-0.821 (0.001)*****	0.121 (0.720)	-0.069 (0.512)	**-0.361 (0.002)*****	0.082 (0.669)	-0.035 (0.813)	**-0.460 (0.002)*****	0.077 (0.727)
Scandinavian Civil Law	**-0.273 (0.001)*****	-0.110 (0.420)	**-0.266 (0.000)*****	**-0.467 (0.000)*****	-0.096 (0.614)	**-0.504 (0.000)*****	0.070 (0.832)	0.256 (0.340)	-0.206 (0.629)	0.223 (0.133)	0.184 (0.141)	0.025 (0.913)	-0.153 (0.461)	0.072 (0.649)	-0.337 (0.224)
Socialist Civil Law	-0.067 (0.435)		0.020 (0.837)	-0.104 (0.396)		-0.013 (0.935)	-0.312 (0.378)		-0.972 (0.145)	-0.179 (0.260)		-0.472 (0.272)	-0.133 (0.550)		-0.660 (0.129)
Judicial Independence Index		0.067 (0.173)			0.074 (0.281)			0.114 (0.243)			0.053 (0.247)			0.062 (0.287)	
Jurisprudent Flexibility Index		0.086 (0.105)			0.045 (0.547)			0.003 (0.980)			0.011 (0.814)			0.009 (0.885)	
Shareholder Rights	**0.047 (0.006)*****	**0.068 (0.039)****	**0.033 (0.052)****	**0.049 (0.046)****	0.037 (0.421)	0.024 (0.385)	0.011 (0.871)	0.099 (0.129)	0.018 (0.866)	0.005 (0.870)	0.046 (0.128)	0.022 (0.712)	0.016 (0.706)	0.053 (0.170)	0.041 (0.550)
Creditor Rights	**0.072 (0.000)*****	**0.073 (0.003)*****	**0.092 (0.000)*****	**0.101 (0.000)*****	**0.124 (0.000)*****	**0.135 (0.000)*****	0.124 (0.078)*	**0.223 (0.000)*****	**0.202 (0.050)****	0.038 (0.230)	**0.083 (0.000)*****	0.065 (0.235)	0.086 (0.051)*	**0.140 (0.000)*****	0.123 (0.069)*
Legal Enforcement	**0.078 (0.003)*****	**0.037 (0.032)****	**0.054 (0.042)****	**0.093 (0.015)****	**0.083 (0.001)*****	0.067 (0.116)	0.090 (0.415)	**0.094 (0.007)*****	-0.021 (0.897)	0.024 (0.634)	**0.036 (0.024)****	0.011 (0.903)	0.066 (0.338)	**0.058 (0.005)*****	-0.001 (0.994)
Intellectual Property Rights	**0.096 (0.000)*****	0.019 (0.571)	**0.083 (0.000)*****	**0.148 (0.000)*****	-0.008 (0.863)	**0.148 (0.000)*****	**0.319 (0.000)*****	**0.175 (0.010)*****	0.129 (0.246)	**0.123 (0.000)*****	**0.077 (0.016)****	0.043 (0.486)	**0.196 (0.000)*****	**0.099 (0.014)****	0.040 (0.591)
Private Pension Fund Regulations			-0.016 (0.792)			0.133 (0.167)			0.283 (0.404)			-0.005 (0.979)			0.201 (0.365)
Capital Gains Tax Rate	0.000 (0.824)	0.002 (0.264)	0.001 (0.388)	0.001 (0.594)	0.003 (0.247)	0.002 (0.360)	0.004 (0.460)	-0.001 (0.856)	0.014 (0.136)	0.003 (0.332)	0.001 (0.721)	0.008 (0.120)	0.002 (0.629)	-0.001 (0.555)	0.010 (0.101)
Corporate Income Tax Rate	-0.003 (0.214)	-0.008 (0.059)*	-0.002 (0.359)	**-0.007 (0.019)****	**-0.013 (0.031)****	**-0.008 (0.011)****	**-0.022 (0.011)****	0.001 (0.885)	**-0.029 (0.018)****	**-0.008 (0.049)****	0.003 (0.489)	**-0.018 (0.013)****	**-0.015 (0.008)*****	-0.002 (0.763)	**-0.017 (0.033)****
Stock Market Capitalization Scaled by GDP	**0.070 (0.016)****	**0.169 (0.001)*****	**0.055 (0.038)****	**0.093 (0.025)****	**0.267 (0.000)*****	0.067 (0.118)	**-0.526 (0.000)*****	**-0.201 (0.055)****	**-0.631 (0.000)*****	**-0.192 (0.000)*****	-0.093 (0.056)*	**-0.307 (0.000)*****	**-0.334 (0.000)*****	-0.107 (0.082)*	**-0.408 (0.000)*****
Real GDP Growth	0.007 (0.083)*	0.004 (0.461)	0.006 (0.130)	0.003 (0.615)	0.000 (0.991)	0.003 (0.678)	0.014 (0.432)	0.001 (0.955)	0.019 (0.531)	0.012 (0.137)	0.004 (0.461)	0.030 (0.093)*	0.002 (0.851)	-0.003 (0.628)	0.000 (0.987)
Economic Freedom Index	0.000 (0.929)	0.000 (0.874)	0.000 (0.938)	0.001 (0.151)	0.001 (0.134)	0.001 (0.112)	0.000 (0.945)	0.000 (0.991)	0.000 (0.915)	0.000 (0.939)	0.000 (0.951)	0.000 (0.979)	0.000 (0.957)	0.000 (0.977)	0.000 (0.899)
Inflation	0.000 (0.411)	0.001 (0.536)	0.000 (0.579)	0.000 (0.631)	0.001 (0.583)	0.000 (0.766)	-0.001 (0.463)	0.001 (0.728)	-0.005 (0.630)	0.000 (0.700)	0.000 (0.818)	-0.005 (0.487)	-0.001 (0.372)	0.001 (0.684)	-0.003 (0.688)
Reference Category = Protestant															
Atheist/Indigenous	0.024 (0.763)		-0.008 (0.923)	0.073 (0.522)		0.049 (0.701)	0.040 (0.899)		-0.008 (0.985)	-0.058 (0.687)		0.027 (0.929)	0.098 (0.624)		0.115 (0.697)
Buddhist	0.078 (0.231)	**0.342 (0.002)*****	-0.100 (0.120)	-0.055 (0.558)	0.067 (0.667)	**-0.201 (0.052)****	-0.357 (0.187)	-0.376 (0.085)*	**-0.792 (0.045)****	-0.122 (0.316)	-0.100 (0.326)	-0.400 (0.072)*	-0.236 (0.165)	-0.276 (0.032)	**-0.532 (0.036)****
Catholic	**-0.170 (0.008)*****	-0.178 (0.059)*	**-0.213 (0.000)*****	**-0.251 (0.006)*****	**-0.460 (0.001)*****	**-0.319 (0.001)*****	0.057 (0.823)	**-0.619 (0.001)*****	-0.284 (0.401)	-0.048 (0.671)	**-0.204 (0.018)****	-0.309 (0.102)	0.105 (0.510)	-0.415 (0.000)	-0.041 (0.850)
Hindu	0.039 (0.741)	0.243 (0.065)*	0.026 (0.799)	0.246 (0.145)	**0.374 (0.044)****	0.218 (0.189)	0.775 (0.097)*	**0.930 (0.000)*****	0.277 (0.625)	0.336 (0.109)	**0.439 (0.000)*****	-0.006 (0.984)	0.439 (0.134)	**0.491 (0.001)*****	0.086 (0.814)
Jewish	**0.944 (0.000)*****	**0.951 (0.000)*****	**0.969 (0.000)*****	**1.486 (0.000)*****	**1.496 (0.000)*****	**1.502 (0.000)*****	**3.880 (0.000)*****	**3.750 (0.000)*****	**3.453 (0.000)*****	**1.437 (0.000)*****	**1.245 (0.000)*****	**1.075 (0.000)*****	**2.443 (0.000)*****	**2.373 (0.000)*****	**2.098 (0.000)*****
Muslim	-0.040 (0.547)	-0.055 (0.533)	-0.054 (0.377)	-0.099 (0.303)	-0.227 (0.069)*	-0.104 (0.292)	0.084 (0.754)	-0.245 (0.162)	-0.609 (0.155)	-0.016 (0.891)	-0.054 (0.511)	-0.405 (0.135)	0.100 (0.550)	-0.191 (0.065)*	-0.359 (0.207)
Orthodox	**-0.172 (0.041)****	**-0.198 (0.019)****	**-0.237 (0.004)*****	**-0.275 (0.023)****	**-0.297 (0.020)****	**-0.339 (0.010)****	0.174 (0.607)	0.163 (0.707)	0.113 (0.837)	0.003 (0.986)	0.009 (0.876)	-0.096 (0.776)	0.172 (0.420)	0.195 (0.348)	0.177 (0.620)
Adjusted R^2	0.259	0.252	0.310	0.302	0.305	0.322	0.235	0.376	0..228	0.199	0.320	0.180	0.224	0.374	0.231
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	770	602	700	770	602	700	770	602	700	770	602	700	770	602	700
No. of countries	55	43	50	55	43	50	55	43	50	55	43	50	55	43	50

Table 2.13a: Robustness test: Alternative dependent variables – Total amount of VC investments scaled by population

This table reports results for a series of random effects regressions in which I replicate the model estimations in Table 2.7, but use alternative dependent variables. My sample covers 55 countries between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. I replace my main dependent variable (the total amount of VC investments at all stages including early and expansion stage investments scaled by GDP) with (a) the total amount of VC investments at all stages scaled by population, (b) the total amount of early stage investments scaled by population, and (c) expansion stage investments scaled by population. All independent variables are as defined in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Total Amount of VC Investments Scaled by Population								
	(a) Both Early and Expansion Stage Investments			(b) Early Stage Investments			(c) Expansion Stage Investments		
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.007 (0.511)	-0.002 (0.897)	-0.004 (0.729)	-0.003 (0.508)	-0.004 (0.569)	-0.001 (0.889)	-0.004 (0.571)	0.002 (0.856)	-0.003 (0.666)
Reference Category = English Common Law									
French Civil Law	**-0.023 (0.000)*****	-0.004 (0.531)	**-0.022 (0.000)*****	**-0.009 (0.000)*****	-0.001 (0.732)	**-0.008 (0.000)*****	**-0.014 (0.000)*****	-0.003 (0.448)	**-0.014 (0.000)*****
German Civil Law	**-0.024 (0.000)*****	**-0.021 (0.007)*****	**-0.021 (0.000)*****	**-0.009 (0.000)*****	-0.007 (0.055)*	**-0.006 (0.000)*****	**-0.016 (0.000)*****	**-0.015 (0.003)*****	**-0.015 (0.000)*****
Scandinavian Civil Law	**-0.020 (0.000)*****	-0.006 (0.499)	**-0.023 (0.000)*****	**-0.007 (0.001)*****	-0.002 (0.550)	**-0.007 (0.000)*****	**-0.013 (0.000)*****	-0.004 (0.508)	**-0.016 (0.000)*****
Socialist Civil Law	-0.004 (0.406)		0.002 (0.737)	-0.002 (0.494)		0.001 (0.598)	-0.003 (0.413)		0.001 (0.850)
Judicial Independence Index		0.006 (0.053)*			0.002 (0.068)*			0.004 (0.069)*	
Jurisprudent Flexibility Index		0.050 (0.098)*			0.071 (0.053)*			0.021 (0.067)*	
Shareholder Rights	**0.004 (0.000)*****	**0.006 (0.002)*****	**0.003 (0.013)****	**0.002 (0.000)*****	**0.003 (0.002)*****	**0.001 (0.007)*****	**0.002 (0.001)*****	**0.004 (0.005)*****	0.002 (0.036)
Creditor Rights	**0.006 (0.000)*****	**0.009 (0.000)*****	**0.008 (0.000)*****	**0.003 (0.000)*****	**0.003 (0.000)*****	**0.003 (0.000)*****	**0.004 (0.000)*****	**0.006 (0.000)*****	**0.005 (0.000)*****
Legal Enforcement	**0.007 (0.000)*****	**0.003 (0.007)*****	**0.006 (0.001)*****	**0.003 (0.000)*****	**0.001 (0.049)****	**0.002 (0.002)*****	**0.004 (0.000)*****	**0.002 (0.003)*****	**0.004 (0.001)*****
Intellectual Property Rights	**0.009 (0.000)*****	0.002 (0.417)	**0.009 (0.000)*****	**0.003 (0.000)*****	0.001 (0.319)	**0.003 (0.000)*****	**0.006 (0.000)*****	0.001 (0.543)	**0.006 (0.000)*****
Private Pension Fund Regulations			0.004 (0.307)			-0.000 (0.948)			0.004 (0.141)
Capital Gains Tax Rate	0.000 (0.671)	0.000 (0.236)	0.000 (0.216)	0.000 (0.954)	0.000 (0.338)	0.000 (0.320)	0.000 (0.542)	0.000 (0.222)	0.000 (0.212)
Corporate Income Tax Rate	**-0.000 (0.004)*****	-0.001 (0.074)*	**-0.000 (0.002)*****	**-0.000 (0.040)****	-0.000 (0.099)*	-0.000 (0.060)*	**-0.000 (0.002)*****	-0.000 (0.087)*	**-0.000 (0.001)*****
Stock Market Capitalization Scaled by GDP	**0.007 (0.000)*****	**0.015 (0.000)*****	**0.006 (0.001)*****	**0.003 (0.000)*****	**0.006 (0.000)*****	**0.003 (0.000)*****	**0.004 (0.002)*****	**0.009 (0.000)*****	**0.003 (0.010)*****
Real GDP Growth	0.000 (0.519)	0.000 (0.538)	0.000 (0.695)	0.000 (0.237)	0.000 (0.394)	0.000 (0.399)	0.000 (0.836)	0.000 (0.693)	0.000 (0.928)
Economic Freedom Index	0.000 (0.592)	0.000 (0.365)	0.000 (0.469)	0.000 (0.945)	0.000 (0.741)	0.000 (0.883)	0.000 (0.388)	0.000 (0.228)	0.000 (0.325)
Inflation	0.000 (0.285)	0.000 (0.187)	0.000 (0.402)	0.000 (0.266)	0.000 (0.215)	0.000 (0.406)	0.000 (0.367)	0.000 (0.212)	0.000 (0.449)
Reference Category = Protestant									
Atheist/Indigenous	-0.005 (0.262)		-0.006 (0.290)	-0.003 (0.125)		-0.003 (0.099)*	-0.002 (0.483)		-0.002 (0.546)
Buddhist	-0.005 (0.185)	0.004 (0.545)	**-0.012 (0.006)*****	0.000 (0.921)	**0.007 (0.023)****	**-0.005 (0.007)*****	**-0.005 (0.050)****	-0.003 (0.555)	**-0.007 (0.013)****
Catholic	**-0.017 (0.000)*****	**-0.026 (0.000)*****	**-0.021 (0.000)*****	**-0.006 (0.000)*****	**-0.008 (0.002)*****	**-0.008 (0.000)*****	**-0.011 (0.000)*****	**-0.018 (0.000)*****	**-0.013 (0.000)*****
Hindu	**-0.018 (0.009)*****	-0.011 (0.196)	**-0.019 (0.005)*****	**-0.007 (0.028)****	-0.002 (0.533)	**-0.007 (0.010)*****	**-0.012 (0.011)****	-0.009 (0.105)	**-0.012 (0.008)*****
Jewish	**0.039 (0.000)*****	**0.033 (0.000)*****	**0.039 (0.000)*****	**0.016 (0.000)*****	**0.015 (0.000)*****	**0.017 (0.000)*****	**0.023 (0.000)*****	**0.019 (0.000)*****	**0.023 (0.000)*****
Muslim	-0.004 (0.280)	-0.010 (0.074)*	-0.004 (0.355)	-0.001 (0.497)	-0.002 (0.307)	-0.001 (0.442)	-0.003 (0.229)	**-0.008 (0.033)****	-0.003 (0.357)
Orthodox	**-0.016 (0.001)*****	**-0.019 (0.001)*****	**-0.021 (0.000)*****	**-0.006 (0.007)*****	**-0.011 (0.002)*****	**-0.008 (0.000)*****	**-0.010 (0.002)*****	**-0.011 (0.002)*****	**-0.013 (0.001)*****
Adjusted R^2	0.355	0.374	0.377	0.292	0.307	0.365	0.336	0.378	0.348
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	770	602	700	770	602	700	770	602	700
No. of countries	55	43	50	55	43	50	55	43	50

Table 2.13b: Robustness test: Alternative dependent variables – Total amount of VC investments scaled by population (excluding BRIC countries)

This table reports results for random effects regressions in which I replicate the model estimations in Table 2.7, but use alternative dependent variables. My sample covers 51 countries (excluding Brazil, Russia, India, and China) between 1995 and 2008. Models 1, 2, and 3 are based on permutations of my right-hand-side variables. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. I replace my main dependent variable (the total amount of VC investments at all stages including early and expansion stage investments scaled by GDP) with (a) the total amount of VC investments at all stages scaled by population, (b) the total amount of early stage investments scaled by population, and (c) expansion stage investments scaled by population. All independent variables are as defined in Tables 2 and 3. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of a Chi^2-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Total Amount of VC Investments Scaled by Per Capita								
	(a) Both Early and Expansion Stage Investments			(b) Early Stage VC Investments			(c) Expansion Stage VC Investments		
	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)	Model 1 Coefficient (*p*-value)	Model 2 Coefficient (*p*-value)	Model 3 Coefficient (*p*-value)
Constant	-0.023 (0.055)	0.002 (0.902)	-0.024 (0.054)	-0.009 (0.068)	-0.002 (0.833)	-0.008 (0.110)	-0.014 (0.085)	0.004 (0.736)	-0.016 (0.056)
Reference Category = English Common Law									
French Civil Law	**-0.030 (0.000)*****	-0.005 (0.429)	**-0.031 (0.000)*****	**-0.012 (0.000)*****	-0.002 (0.560)	**-0.011 (0.000)*****	**-0.018 (0.000)*****	-0.004 (0.392)	**-0.020 (0.000)*****
German Civil Law	**-0.031 (0.000)*****	**-0.021 (0.010)****	**-0.030 (0.000)*****	**-0.011 (0.000)*****	-0.007 (0.060)*	**-0.009 (0.000)*****	**-0.020 (0.000)*****	**-0.015 (0.005)*****	**-0.020 (0.000)*****
Scandinavian Civil Law	**-0.030 (0.000)*****	-0.006 (0.504)	**-0.034 (0.000)*****	**-0.011 (0.000)*****	-0.002 (0.548)	**-0.011 (0.000)*****	**-0.019 (0.000)*****	-0.004 (0.517)	**-0.023 (0.000)*****
Socialist Civil Law	-0.011 (0.065)*		-0.003 (0.749)	-0.004 (0.117)		0.000 (0.981)	-0.007 (0.075)*		-0.002 (0.647)
Judicial Independence Index		0.006 (0.068)*			0.002 (0.087)*			0.004 (0.084)*	
Jurisprudent Flexibility Index		0.001 (0.094)*			0.002 (0.078)*			**0.001 (0.042)****	
Shareholder Rights	**0.007 (0.000)*****	**0.008 (0.002)*****	**0.006 (0.000)*****	**0.003 (0.000)*****	**0.004 (0.001)*****	**0.002 (0.000)*****	**0.004 (0.000)*****	**0.004 (0.006)*****	**0.004 (0.000)*****
Creditor Rights	**0.006 (0.000)*****	**0.009 (0.000)*****	**0.008 (0.000)*****	**0.003 (0.000)*****	**0.003 (0.000)*****	**0.003 (0.000)*****	**0.004 (0.000)*****	**0.006 (0.000)*****	**0.005 (0.000)*****
Legal Enforcement	**0.012 (0.000)*****	**0.002 (0.044)****	**0.012 (0.000)*****	**0.005 (0.000)*****	0.001 (0.221)	**0.004 (0.000)*****	**0.007 (0.000)*****	**0.002 (0.019)****	**0.008 (0.000)*****
Intellectual Property Rights	**0.012 (0.000)*****	0.003 (0.263)	**0.012 (0.000)*****	**0.004 (0.000)*****	0.001 (0.155)	**0.004 (0.000)*****	**0.007 (0.000)*****	0.001 (0.421)	**0.008 (0.000)*****
Private Pension Fund Regulations			0.004 (0.326)			-0.000 (0.986)			0.004 (0.151)
Capital Gains Tax Rate	0.000 (0.299)	0.000 (0.324)	0.000 (0.051)*	0.000 (0.550)	0.000 (0.466)	0.000 (0.103)	0.000 (0.234)	0.000 (0.288)	**0.000 (0.054)****
Corporate Income Tax Rate	**-0.001 (0.000)*****	-0.000 (0.152)	**-0.001 (0.000)*****	**-0.000 (0.001)*****	-0.000 (0.221)	**-0.000 (0.001)*****	**-0.000 (0.000)*****	-0.000 (0.152)	**-0.000 (0.000)*****
Stock Market Capitalization Scaled by GDP	**0.007 (0.000)*****	**0.015 (0.000)*****	**0.006 (0.000)*****	**0.003 (0.000)*****	**0.006 (0.000)*****	**0.003 (0.000)*****	**0.004 (0.002)*****	**0.009 (0.000)*****	**0.004 (0.004)*****
Real GDP Growth	0.000 (0.375)	0.000 (0.489)	0.000 (0.461)	0.000 (0.176)	0.000 (0.361)	0.000 (0.254)	0.000 (0.645)	0.000 (0.636)	0.000 (0.671)
Economic Freedom Index	0.000 (0.500)	0.000 (0.311)	0.000 (0.399)	0.000 (0.950)	0.000 (0.613)	0.000 (0.793)	0.000 (0.324)	0.000 (0.209)	0.000 (0.275)
Inflation	0.000 (0.208)	0.000 (0.247)	0.000 (0.240)	0.000 (0.203)	0.000 (0.304)	0.000 (0.262)	0.000 (0.280)	0.000 (0.257)	0.000 (0.280)
Reference Category = Protestant									
Atheist/Indigenous	-0.001 (0.872)		-0.001 (0.880)	-0.002 (0.507)		-0.002 (0.422)	0.001 (0.848)		0.001 (0.807)
Buddhist	-0.002 (0.589)	0.005 (0.476)	-0.006 (0.152)	0.001 (0.572)	0.007 (0.018)**	-0.003 (0.139)	-0.003 (0.232)	-0.002 (0.633)	-0.004 (0.210)
Catholic	**-0.022 (0.000)*****	**-0.025 (0.000)*****	-0.026 (0.000)***	**-0.008 (0.000)*****	**-0.007 (0.006)*****	**-0.009 (0.000)*****	**-0.014 (0.000)*****	**-0.018 (0.000)*****	**-0.016 (0.000)*****
Hindu									
Jewish	**0.035 (0.000)*****	**0.041 (0.000)*****	**0.034 (0.000)*****	**0.015 (0.000)*****	**0.013 (0.000)*****	**0.015 (0.000)*****	**0.020 (0.000)*****	**0.017 (0.000)*****	**0.019 (0.000)*****
Muslim	0.003 (0.561)	-0.008 (0.167)	0.004 (0.384)	0.002 (0.425)	-0.001 (0.567)	0.002 (0.387)	0.001 (0.718)	-0.007 (0.073)*	0.002 (0.434)
Orthodox	**-0.019 (0.000)*****	**-0.045 (0.000)*****	**-0.024 (0.000)*****	**-0.007 (0.002)*****	**-0.011 (0.001)*****	**-0.009 (0.000)*****	**-0.012 (0.000)*****	**-0.018 (0.000)*****	**-0.015 (0.000)*****
Adjusted R^2	0.367	0.372	0.392	0.303	0.307	0.358	0.345	0.372	0.362
P-value (Chi^2-Test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
No. of Observations	770	602	700	770	602	700	770	602	700
No. of countries	55	43	50	55	43	50	55	43	50

Table 2.14: Test for multicollinearity using variance inflation factors (VIFs)

This table reports results for my correlation matrix in Table 2.6 and provides information on variance inflation factors to test for multicollinearity amongst my regressors. My dependent variable is the total VC investment amount at all stages including early (seed and startup) and expansion stage investment in 55 countries from 1995 to 2008. Model 1 includes all countries. Model 2 includes the judicial independence index and the jurisprudent flexibility index, but due to the unavailability of these variables for many of my sample countries only considers 43 out of my 55 sample countries. Model 3 is based on a subsample of 50 countries for which data on private pension fund regulations is available. In each model, I report variance inflation factors (VIFs) to test for multicollinearity amongst the regressors. For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The adjusted R^2, the results of an *F*-Test for each regression model as well as the country-year observations and the number of countries are reported in the last four rows. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Regression on All Factors					
	Model 1 Coefficient (*p*-value)	VIF	Model 2 Coefficient (*p*-value)	VIF	Model 3 Coefficient (*p*-value)	VIF
Constant	0.093 (0.856)		-2.091 (0.051)		-1.060 (0.275)	
Reference Category = English Common Law						
French Civil Law	**-0.779 (0.000)*****	4.08	**-0.729 (0.013)****	7.57	**-0.835 (0.002)*****	4.11
German Civil Law	**-0.778 (0.000)*****	3.01	**-1.222 (0.006)*****	1.98	**-1.059 (0.006)*****	3.20
Scandinavian Civil Law	**-1.080 (0.000)*****	2.46	-0.503 (0.219)	1.80	**-0.612 (0.081)***	2.71
Socialist Civil Law	-0.139 (0.572)	2.03			-0.099 (0.658)	1.83
Judicial Independence Index			**0.566 (0.001)*****	2.66		
Jurisprudent Flexibility Index			0.115 (0.456)	3.94		
Shareholder Rights	**0.117 (0.017)****	1.71	**0.298 (0.000)*****	2.62	**0.230 (0.005)*****	1.64
Creditor Rights	**0.233 (0.000)*****	1.98	**0.295 (0.000)*****	2.85	**0.427 (0.000)*****	2.33
Legal Enforcement	**0.210 (0.006)*****	4.11	**0.333 (0.004)*****	6.15	**0.243 (0.021)****	4.49
Intellectual Property Rights	**0.267 (0.000)*****	4.83	**0.380 (0.000)*****	5.23	**0.367 (0.000)*****	4.41
Private Pension Fund Regulations					0.082 (0.551)	1.02
Capital Gains Tax Rate	0.001 (0.645)	1.69	0.003 (0.593)	2.00	0.001 (0.850)	1.78
Corporate Income Tax Rate	**-0.014 (0.024)****	1.43	-0.009 (0.488)	2.19	0.001 (0.949)	1.52
Stock Market Capitalization Scaled by GDP	**0.295 (0.001)*****	2.04	**0.517 (0.002)*****	2.50	**0.340 (0.024)****	2.05
Real GDP Growth	0.006 (0.572)	1.20	0.000 (0.973)	1.19	0.003 (0.818)	1.22
Economic Freedom Index	0.001 (0.425)	1.02	0.000 (0.541)	1.04	0.000 (0.388)	1.03
Inflation	0.000 (0.664)	1.16	**0.009 (0.021)****	1.54	0.007 (0.066)*	1.16
Reference Category = Protestant						
Atheist/Indigenous	0.110 (0.626)	1.75			-0.325 (0.110)	1.50
Buddhist	0.093 (0.616)	1.91	**0.670 (0.037)****	2.18	-0.144 (0.708)	1.94
Catholic	**-0.598 (0.001)*****	5.20	**-0.792 (0.005)*****	6.97	**-1.029 (0.000)*****	5.08
Hindu	0.283 (0.398)	1.31	0.437 (0.255)	1.67	0.141 (0.672)	1.33
Jewish	**2.104 (0.000)*****	1.18	**2.534 (0.000)*****	1.12	**2.928 (0.000)*****	1.06
Muslim	-0.163 (0.393)	2.66	0.002 (0.993)	3.76	-0.082 (0.714)	2.54
Orthodox	**-0.587 (0.015)*****	2.54	**-0.601 (0.019)****	2.62	-0.406 (0.052)*	2.39
Adjusted R^2	0.311		0.348		0.409	
P-value (*F*-Test)	0.000		0.000		0.000	
No. of Observations	770		602		700	
No. of countries	55		43		50	

Table 2.15: Summary of findings in chapter 2

Table	2.7a: Between Regression			2.7b: Random-effects Regression			2.7c: Fixed-effects Regression		
Model	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
French Civil Law	-	0	0	-	-	-			
German Civil Law	-	0	0	-	-	-			
Scandinavian Civil Law	-	0	0	-	0	-			
Socialist Civil Law	0		0	0		0			
Judicial Independence Index		+			+				
Jurisprudent Flexibility Index		0			0				
Shareholder Rights	0	0	0	+	+	+			
Creditor Rights	+	+	+	+	+	+			
Legal Enforcement	0	+	0	+	+	+			
Intellectual Property Rights	+	+	+	+	+	+			
Private Pension Fund Regulations			+			0			+
Capital Gains Tax Rate	0	0	0	0	0	0			
Corporate Income Tax Rate	0	0	0	-	0	0	-		-
Stock Market Capitalization Scaled by GDP	0	0	0	+	+	+	+		+
Real GDP Growth	0	0	0	0	0	0	0		0
Economic Freedom Index	0	0	0	0	0	0	0		0
Inflation	0	+	0	0	+	+	0		0
Atheist	0		0	0		0			
Buddhist	0	0	0	0	+	0			
Catholic	0	0	0	-	-	-			
Hindu	0	0	0	0	0	0			
Jewish	+	+	+	+	+	+			
Muslim	0	0	0	0	0	0			
Orthodox	0	0	-	-	-	-			

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Table 2.16: Summary of findings in chapter 2 (robustness tests)

Table	2.8 and 2.9: POVs			2.10a: Exclusion of the U.K. and the U.S.			2.10a: Exclusion of top 3 (Israel, the U.S., and Singapore) and bottom 3 (Columbia, Peru, and Turkey) countries in terms of total VC investments scaled by GDP			2.10b: Years 1995-2000 only			2.10b: Years 2001-2008 only			2.11: Rule of Law		
Model	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
French Civil Law				-	0	-	-	0	-	-	-	-	-	-	-	0	-	
German Civil Law				-	0	0	-	-	0	-	-	-	-	-	-	-	-	-
Scandinavian Civil Law				0	-	-	0	-	0	-	-	-	-	0	-	-	0	-
Socialist Civil Law				0		0	0		0	0		0	0		0			
Judicial Independence Index					0			0			+			+			+	
Jurisprudent Flexibility Index					+			0			+			+			0	
Shareholder Rights				0	0	0	0	0	0	+	+	0	+	0	0	0	+	0
Creditor Rights				0	0	0	0	0	+	+	+	+	+	+	+	+	+	+
Legal Enforcement				0	0	0	0	0	0	+	+	+	0	+	0	+	+	+
Intellectual Property Rights				+	+	+	+	+	+	+	+	+	+	+	+	0	0	0
Private Pension Fund Regulations						0			0			0			0			0
Capital Gains Tax Rate				0	0	0	0	+	0	0	0	0	0	+	0	0	0	0
Corporate Income Tax Rate				-	0	-	-	0	-	0	0	0	0	+	-	0	-	0
Stock Market Capitalization Scaled by GDP				0	0	0	0	0	0	+	+	+	0	0	0	+	+	+
Real GDP Growth				0	0	0	0	0	0	+	0	+	0	0	0	0	0	0
Economic Freedom Index				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inflation				0	0	0	0	0	0	0	+	0	0	0	0	0	0	0
Atheist				+		0	+		0	0		0	0		0	-		0
Buddhist				+	+	0	0	0	0	0	0	0	0	+	-	0	+	-
Catholic				+	0	+	+	0	0	-	-	-	0	-	-	-	-	-
Hindu				+	+	+	+	+	+	0	0	0	+	+	0	+	+	0
Jewish				+	+	+				+	+	+	+	+	+	+	+	+
Muslim				0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
Orthodox				0	0	0	0	0	0	-	-	-	0	0	0	-	-	-
Real Interest Rate	+	+	0															
Nominal Long-term Interest Rate	+	0	0															
Unemployment Rate	-	-	-															
Non-Corruption Perception Index	+	+	0															
Political Freedom Index	0	0	0															
Total Entrepreneurial Activity Index	-	0	0															
Ease of Doing Business Index	0	+	0															
Age of VC Industry	+	+	+															
Patent Rights Index	+	0	+															
R&D Expenditures	+	+	+															
Disclosure	0	0	0															

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Table 2.16 (cont'd): Summary of findings in chapter 2 (robustness tests)

Table	2.11: Newey-West Heterokedasticity			2.12: Early stage VC invesments			2.12: Expansion stage VC invesments			2.12: All stage no. of financing rounds			2.12: Early stage no. of financing rounds			2.12: Expansion stage no. of financing rounds		
Model	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
French Civil Law	-	-	-	-	0	-	-	0	-	-	0	-	-	0	0	-	0	-
German Civil Law	-	-	-	-	0	-	-	-	-	0	-	0	0	-	0	0	-	0
Scandinavian Civil Law	-	0	-	-	0	-	-	0	-	0	0	0	0	0	0	0	0	0
Socialist Civil Law	-		0	0		0	0		0	0		0	0		0	0		0
Judicial Independence Index		+			0			0			0			0			0	
Jurisprudent Flexibility Index		+			0			0			0			0			0	
Shareholder Rights	+	+	0	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0
Creditor Rights	+	+	+	+	+	+	+	+	+	+	+	+	0	+	0	+	+	+
Legal Enforcement	+	+	0	+	+	+	+	+	0	0	+	0	0	+	0	0	+	0
Intellectual Property Rights	+	+	+	+	0	+	+	0	+	+	+	0	+	+	0	+	+	0
Private Pension Fund Regulations			+			0			0			0			0			0
Capital Gains Tax Rate	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corporate Income Tax Rate	-	-	-	0	-	0	-	-	-	-	0	-	-	0	-	-	0	-
Stock Market Capitalization Scaled by GDP	+	+	0	+	+	+	+	+	0	-	-	-	-	-	-	-	-	-
Real GDP Growth	0	0	0	+	0	0	0	0	0	0	0	0	0	0	+	0	0	0
Economic Freedom Index	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inflation	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atheist	0		0	0		0	0		0	0		0	0		0	0		0
Buddhist	0	0	-	0	+	0	0	0	-	0	-	-	0	0	-	0	0	-
Catholic	0	-	-	-	-	-	-	-	-	0	-	0	0	-	0	0	0	0
Hindu	0	0	0	0	+	0	0	+	0	+	+	0	0	+	0	0	+	0
Jewish	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Muslim	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	-	0
Orthodox	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

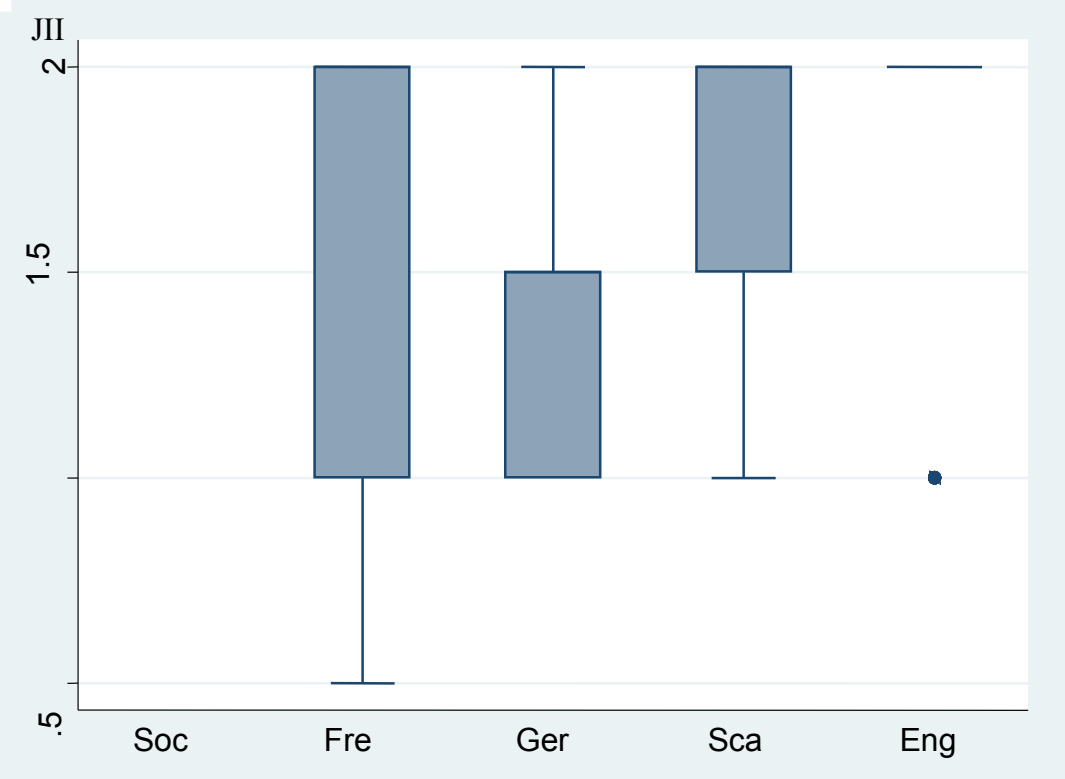
Table 2.16 (cont'd): Summary of findings in chapter 2 (robustness tests)

Table	2.13a: All stage VC investments scaled by population			2.13a: Early stage VC investments scaled by population			2.13a: Expansion stage VC investments VC investments scaled by population			2.13b: All stage VC investments scaled by population (excluding BRIC)			2.13b: Early stage VC investments scaled by population (excluding BRIC)			2.13b: Expansion stage VC investments VC investments scaled by population (excluding BRIC)		
Model	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
French Civil Law	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-
German Civil Law	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandinavian Civil Law	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-
Socialist Civil Law	0		0	0		0	0		0	-		0	0		0	-		0
Judicial Independence Index		+			+			+			+			+			+	
Jurisprudent Flexibility Index		+			+			+			+			+			+	
Shareholder Rights	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	+	+
Creditor Rights	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Legal Enforcement	+	+	+	+	+	+	+	+	+	+	+	+	+	0	+	+	+	+
Intellectual Property Rights	+	0	+	+	0	+	+	0	+	+	0	+	+	0	+	+	0	+
Private Pension Fund Regulations			0			0			0			0			0			0
Capital Gains Tax Rate	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0	0	0	+
Corporate Income Tax Rate	-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	0	-
Stock Market Capitalization Scaled by GDP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Real GDP Growth	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic Freedom Index	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inflation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Atheist	0		0	0		-	0		0	0		0	0		0	0		0
Buddhist	0	0	-	0	+	-	-	0	-	0	0	0	0	+	0	0	0	0
Catholic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hindu	-	0	-	-	0	-	-	0	-									
Jewish	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Muslim	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	0	-	0
Orthodox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Figure 2.1: Variation of judicial independence within the five legal origins



1

Figure 2.2: Variation of jurisprudent flexibility within the five legal origins

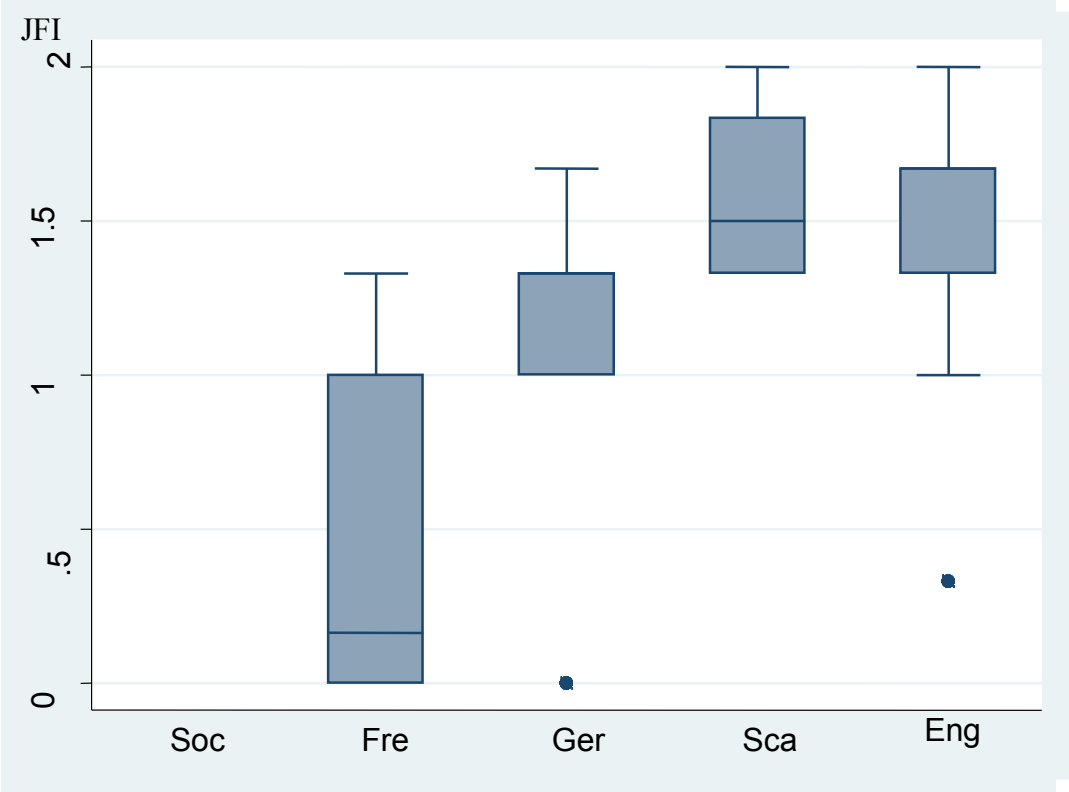


Figure 2.3: Variation of shareholder rights within the five legal origins

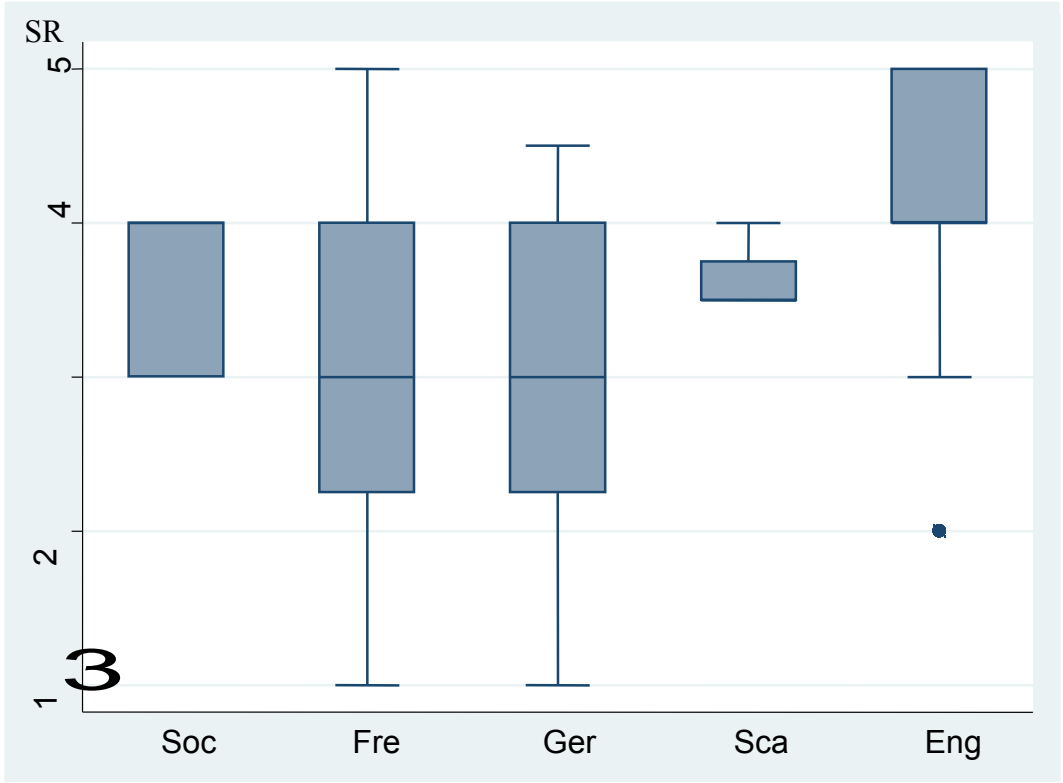


Figure 2.4: Variation of creditor rights within the five legal origins

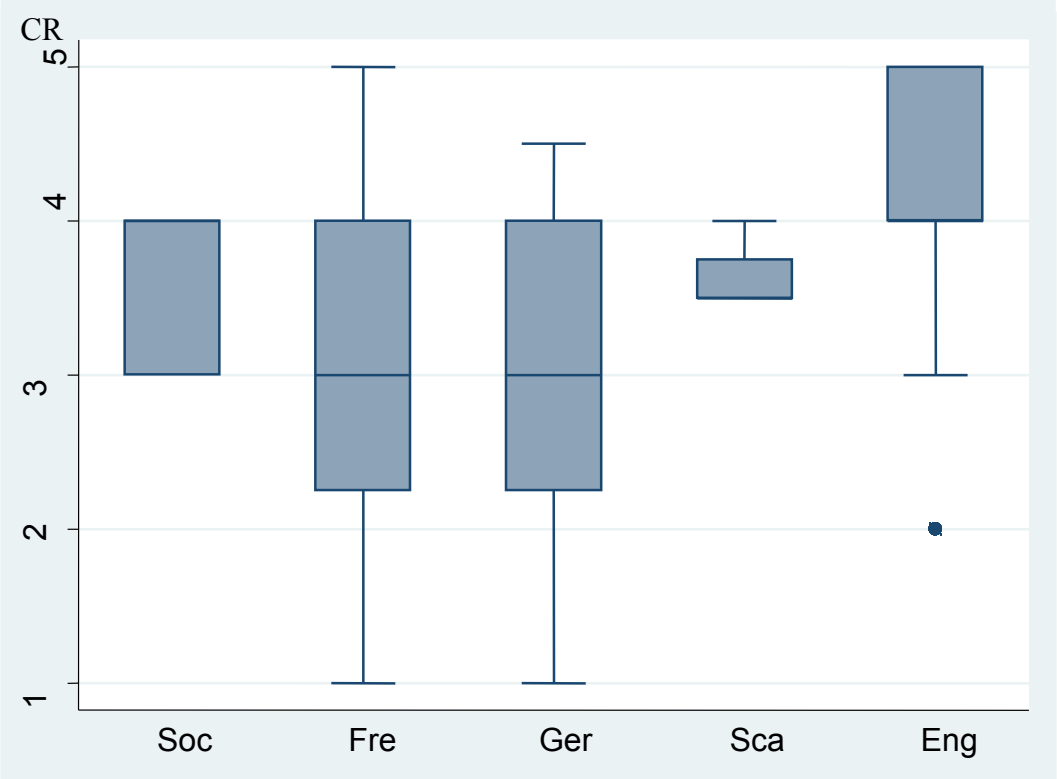


Figure 2.5: Variation of legal enforcement within the five legal origins

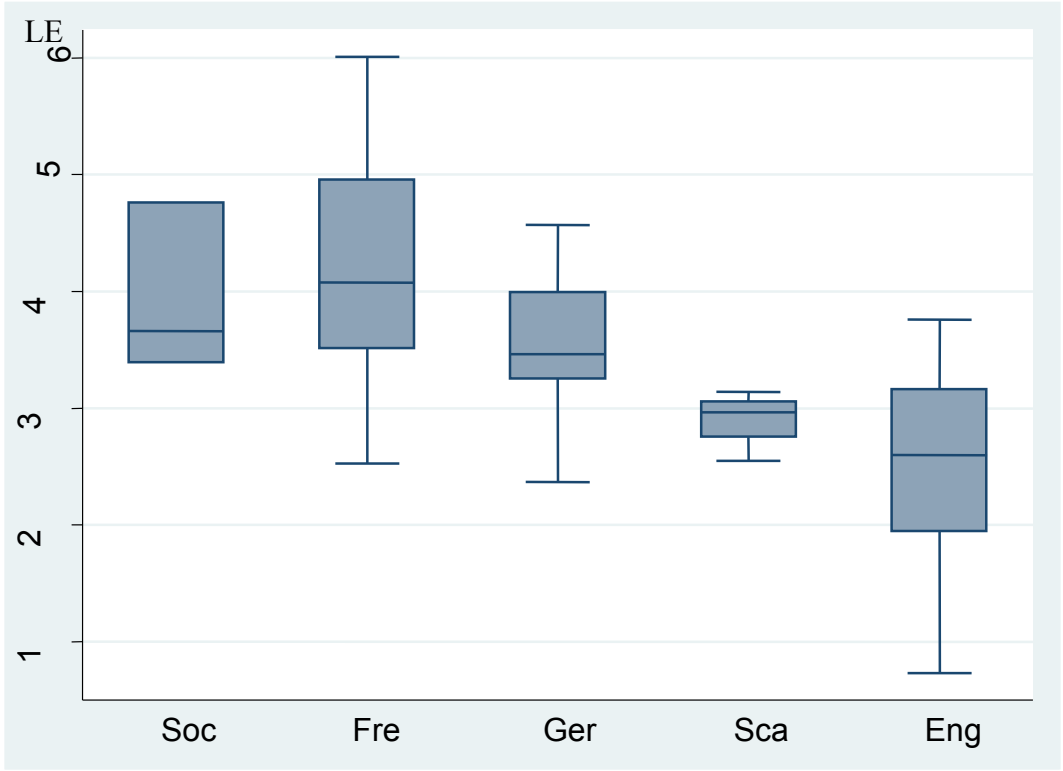


Figure 2.6: Variation of intellectual property rights within the five legal origins

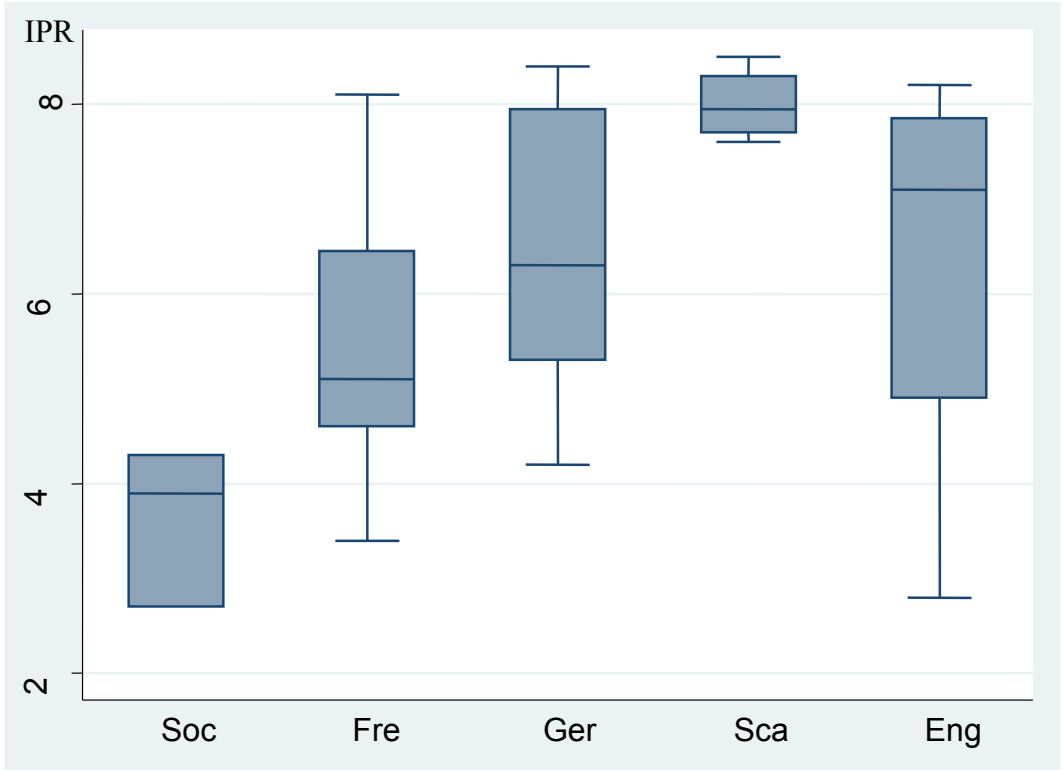


Figure 2.7: Non-corruption perception index and average yearly VC investments scaled by GDP from 1995 to 2008 (in percentage terms)

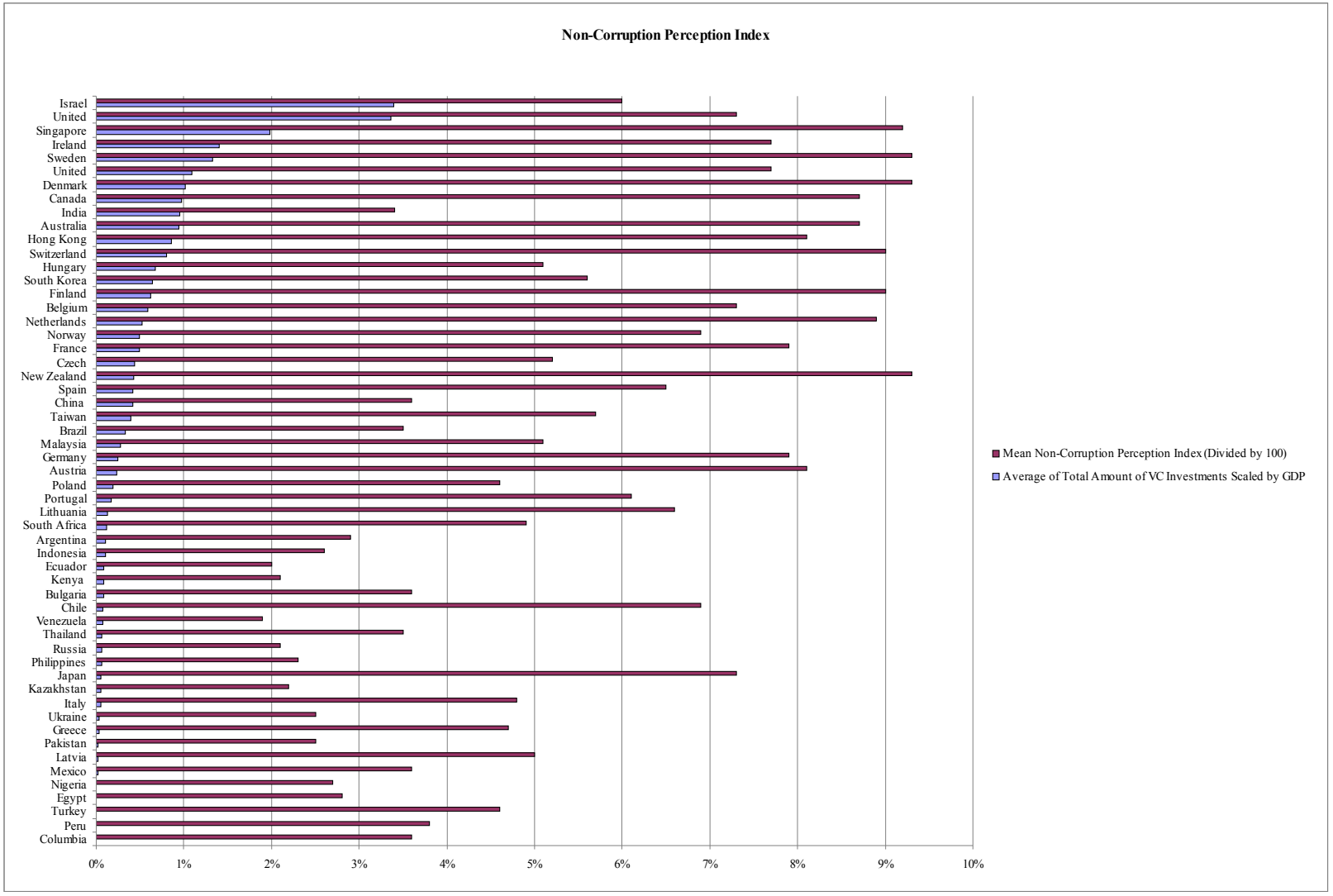


Figure 2.8: Capital gains taxes and average yearly VC investments scaled by GDP from 1995 to 2008 (in percentage terms)

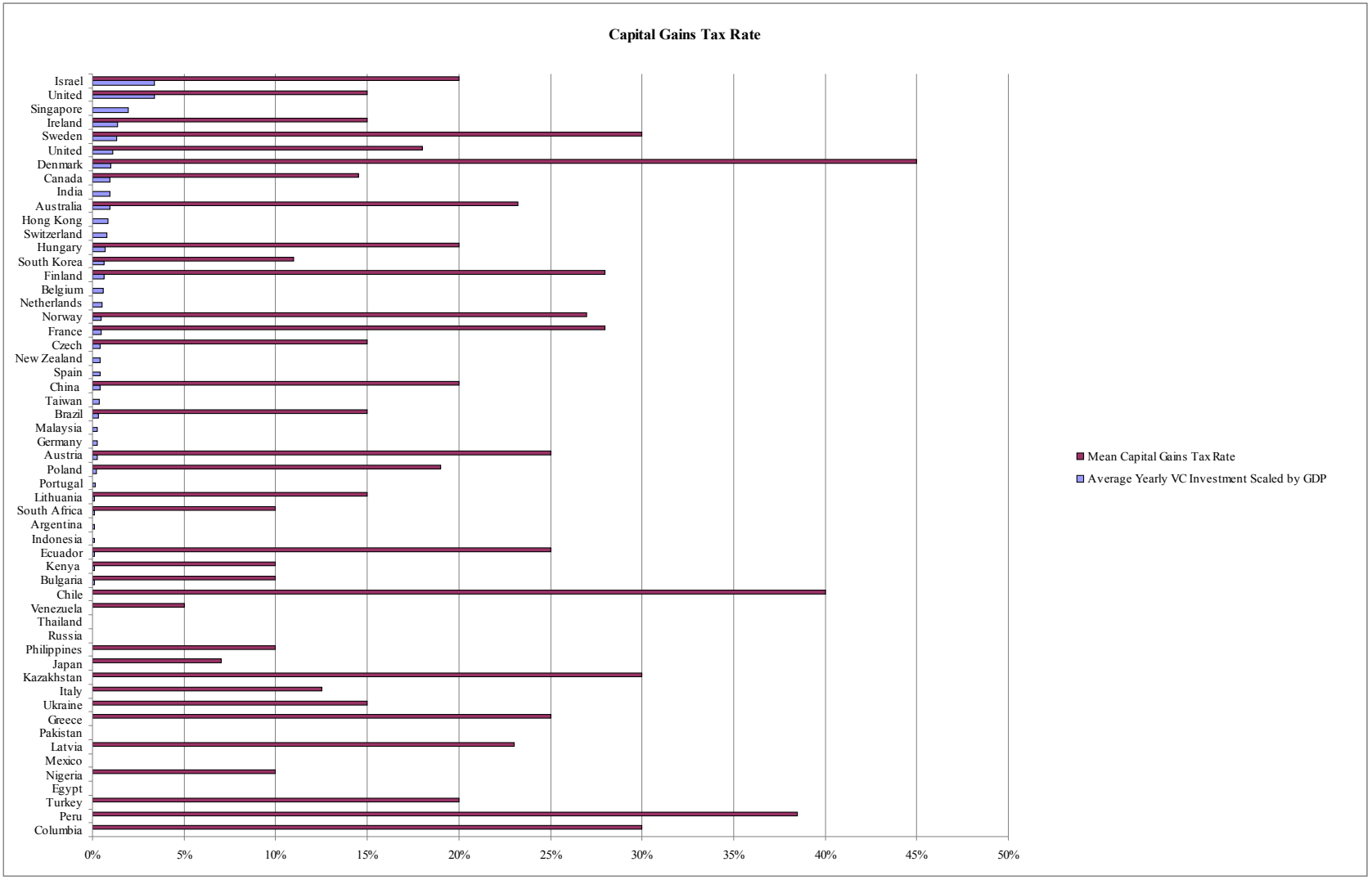
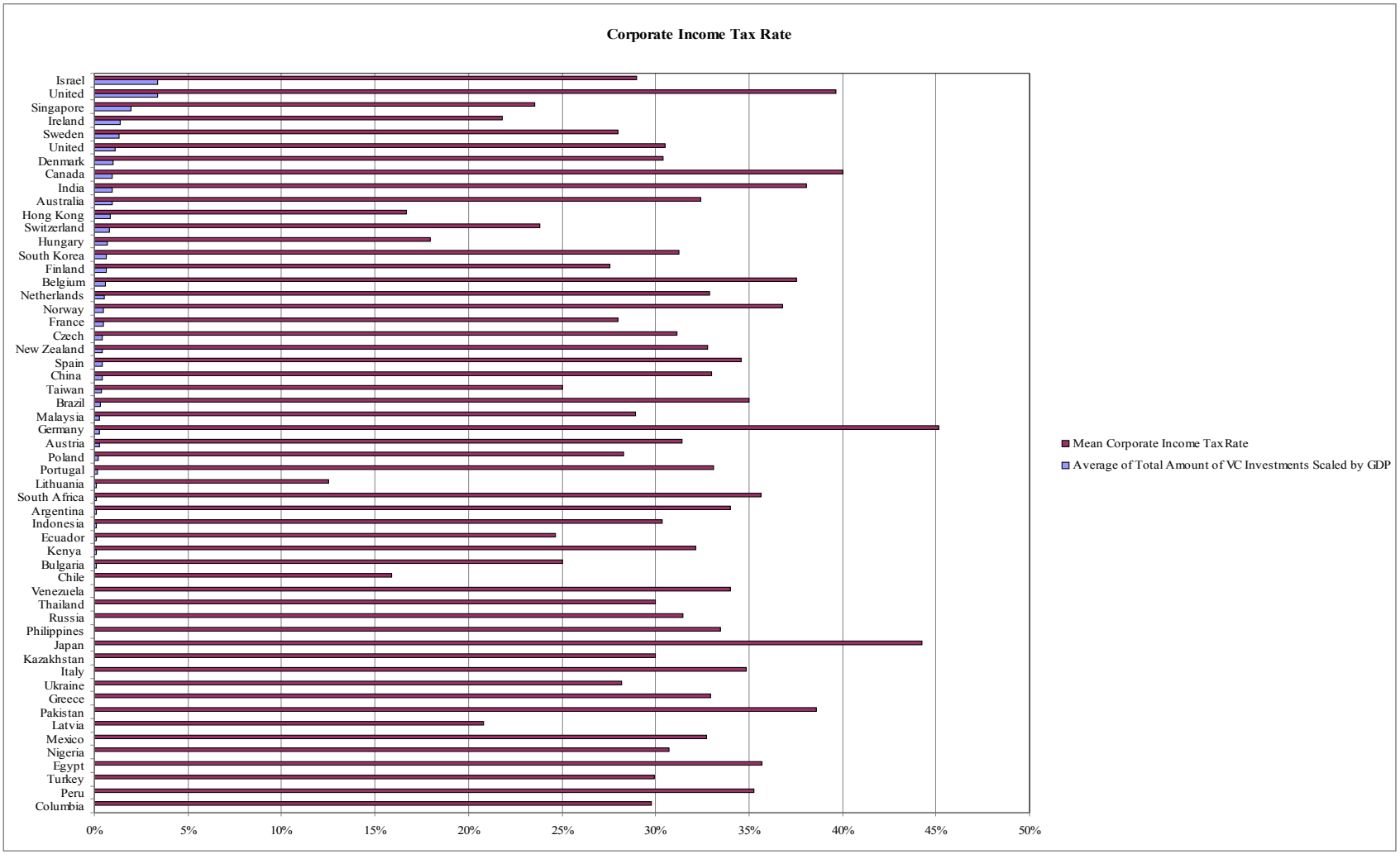


Figure 2.9: Corporate income taxes and average yearly VC investments scaled by GDP from 1995 to 2008 (in percentage terms)



Appendix 3: Tables and Figures for Chapter 3

Table 3.1: Annual changes in VC investments made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic) and foreign based VC firms in domestic portfolio companies (Foreign -> Domestic)

I provide summary statistics for my variable that measures changes in the total amount of VC investments made by domestically headquartered VC firms in their home countries (domestic -> domestic) and foreign based VC firms in domestic portfolio companies (foreign -> domestic). I consider both early and expansion stage investments made in 55 countries between January 1995 and December 2008. My dataset is based on information contained in the Securities Data Company's (SDC) VentureXpert database. For each category, I present information on the mean and median changes in venture capitalist investment activity as described in the column headings. To account for all possible realizations of VC investment amounts in consecutive years, I measure changes in VC investments from period T-i to T-j as the natural logarithm of (1 + VC investments at T-j)/(1 + VC investments at T-i). Note that some countries are reported as having 0% mean changes in VC investments even though they experienced some variation in VC investment activity. This is due to the fact that log ratio changes, e.g. from 0 to N in one year and from N to 0 in another year, have opposite signs but are of equal magnitude and thus cancel each other out when the average of those numbers is calculated.

Country	Domestic -> Domestic (1995-2008)		Foreign -> Domestic (1995-2008)	
	Mean (%)	Median (%)	Mean (%)	Median (%)
Panel A: Asia				
China	108.06%	46.57%	14.73%	29.35%
Hong Kong	-89.71%	-40.98%	-2.68%	35.80%
India	26.97%	69.27%	45.15%	21.22%
Indonesia	0.00%	0.00%	-92.38%	-122.23%
Japan	25.23%	68.15%	37.17%	3.02%
Kazakhstan	0.00%	0.00%	0.00%	0.00%
Malaysia	0.00%	0.00%	8.61%	0.00%
Pakistan	0.00%	0.00%	66.92%	0.00%
Philippines	0.00%	0.00%	-82.55%	0.00%
Singapore	38.22%	5.91%	24.94%	46.72%
South Korea	8.29%	-14.19%	84.66%	71.73%
Taiwan	-66.98%	0.00%	-61.01%	-98.75%
Thailand	3.59%	0.00%	63.20%	0.00%
Panel B: Africa				
Kenya	0.00%	0.00%	0.00%	0.00%
Nigeria	0.00%	0.00%	0.00%	0.00%
South Africa	0.00%	0.00%	15.03%	0.00%
Panel C: Australia				
Australia	3.88%	-20.13%	7.84%	2.09%
New Zealand	66.80%	-26.11%	10.91%	0.00%
Panel D: Eastern Europe				
Bulgaria	0.00%	0.00%	0.00%	0.00%
Czech Republic	-0.73%	0.00%	0.00%	0.00%
Hungary	0.00%	0.00%	83.70%	-16.39%
Latvia	0.00%	0.00%	0.00%	0.00%
Lithuania	0.00%	0.00%	59.75%	0.00%
Poland	4.93%	4.36%	49.70%	-31.53%
Russia	81.56%	49.06%	92.48%	111.89%
Ukraine	0.00%	0.00%	0.00%	0.00%
Panel E: Middle East				
Egypt	0.00%	0.00%	0.00%	0.00%
Israel	22.86%	10.79%	21.97%	22.61%
Panel F: North America				
Canada	-0.46%	18.69%	10.35%	2.31%
United States	9.53%	18.68%	9.88%	3.53%
Panel G: South America				
Argentina	0.00%	0.00%	80.40%	0.00%
Brazil	85.82%	0.00%	33.63%	51.33%
Chile	0.00%	0.00%	0.00%	0.00%
Columbia	0.00%	0.00%	0.00%	0.00%
Ecuador	0.00%	0.00%	0.00%	0.00%
Mexico	0.00%	0.00%	0.00%	0.00%
Peru	0.00%	0.00%	0.00%	0.00%
Venezuela	0.00%	0.00%	0.00%	0.00%
Panel H: Western Europe				
Austria	77.46%	37.84%	88.64%	110.93%
Belgium	87.33%	0.00%	87.50%	33.24%
Denmark	11.94%	10.88%	97.33%	0.00%

Country	Macroeconomic Variables				Non-Corruption Perception Index (NCP) (As of 2008) 0-10	Religion (RL)
	SMC scaled by GDP (SMC_GDP) (1995-2008 Average)	GDP Growth (ΔGDP) (1995-2008 Average) %	Economic Freedom Index (EF) (1995-2008 Average) 0-10 (Low to High)	Inflation (INF) (1995-2008 Average) %		
French origin (cont'd):						
Indonesia	0.2771	3.95%	6.14	16.66%	2.6	Muslim
Italy	0.4211	1.39%	6.86	2.83%	4.8	Catholic
Lithuania	0.1651	5.98%	6.41	8.68%	6.6	Catholic
Mexico	0.2588	2.89%	6.75	13.73%	3.6	Catholic
Netherlands	1.1159	2.76%	7.77	2.40%	8.9	Catholic
Peru	0.3510	4.90%	6.90	4.93%	3.6	Catholic
Philippines	0.4835	4.59%	6.91	6.37%	2.3	Catholic
Portugal	0.3981	2.17%	7.30	3.09%	6.1	Catholic
Spain	0.7379	3.56%	6.92	3.60%	6.5	Catholic
Turkey	0.2539	4.61%	5.85	46.19%	4.6	Muslim
Venezuela	0.0602	3.36%	4.75	34.51%	1.9	Catholic
German origin:						
Austria	0.2523	2.27%	7.35	1.45%	8.1	Catholic
Bulgaria	0.1225	2.95%	5.58	86.80%	3.6	Orthodox
China	0.4797	9.68%	5.80	3.99%		Atheist
Czech Republic	0.2511	3.47%	5.49	5.02%	5.2	Atheist
Germany	0.4731	1.53%	7.50	0.89%	7.9	Protestant
Hungary	0.2420	3.64%	6.83	10.19%	5.1	Catholic
Japan	0.7612	1.24%	7.27	-0.91%	7.3	Buddhist
Latvia	0.0783	6.07%	6.60	9.57%	5.0	Protestant
Poland	0.1985	4.78%	6.10	8.44%	4.6	Catholic
South Korea	0.5398	4.50%	6.82	3.17%	5.6	Buddhist
Switzerland	2.3125	1.81%	8.19	0.80%	9.0	Catholic
Taiwan	1.1164	4.45%	7.38	1.25%	5.7	Buddhist
Scandinavian origin:						
Denmark	0.5782	1.96%	7.58	2.19%	9.3	Protestant
Finland	1.1862	3.61%	7.50	1.80%	9.0	Protestant
Norway	0.4688	2.94%	7.22	4.83%	7.9	Protestant
Sweden	1.0546	2.87%	7.29	1.73%	9.3	Protestant
Socialist origin:						
Kazakhstan	0.1416	5.65%	7.31	26.50%	2.2	Muslim
Russia	0.4563	4.07%	5.39	33.08%	2.1	Orthodox
Ukraine	0.1553	2.50%	4.79	49.45%	2.5	Orthodox

Table 3.2: Changes in bankruptcy laws across countries

I provide information on changes in bankruptcy laws and their associated impact on creditor rights protection as measured by LLSV's (1997, 1998) creditor rights index. The creditor rights index takes on values from 0 to 4. The higher the index value, the stronger the creditor rights protection in a given country. The data employed in this table is based on Djankov et al. (2007) who track changes in bankruptcy laws in 129 countries during the period 1978 to 2004. Among my sample of 55 countries, 10 experienced changes in their creditor rights index (some of them multiple changes) and 45 remained the same during my sample period. The table presents information on the creditor rights index in each year. Bankruptcy law reform-induced creditor rights changes are identified in bold and italic.

Country	Year (1995 – 2004)									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Panel A: Asia										
China	2	2	2	2	2	2	2	2	2	2
Hong Kong	4	4	4	4	4	4	4	4	4	4
India	2	2	2	2	2	2	2	2	2	2
Indonesia	3	3	3	***2***	2	2	2	2	2	2
Japan	3	3	3	3	3	***2***	2	2	***3***	3
Kazakhstan	1	1	***2***	***3***	3	3	***2***	2	2	2
Malaysia	3	3	3	3	3	3	3	3	3	3
Pakistan	1	1	1	1	1	1	1	1	1	1
Philippines	1	1	1	1	1	1	1	1	1	1
Singapore	3	3	3	3	3	3	3	3	3	3
South Korea	3	3	3	3	3	3	3	3	3	3
Taiwan	2	2	2	2	2	2	2	2	2	2
Thailand	3	3	3	3	***2***	2	2	2	2	2
Panel B: Africa										
Kenya	4	4	4	4	4	4	4	4	4	4
Nigeria	4	4	4	4	4	4	4	4	4	4
South Africa	3	3	3	3	3	3	3	3	3	3
Panel C: Australia										
Australia	3	3	3	3	3	3	3	3	3	3
New Zealand	4	4	4	4	4	4	4	4	4	4
Panel D: Eastern Europe										
Bulgaria	1	1	1	1	1	***2***	2	2	2	2
Czech Republic	3	3	3	3	3	3	3	3	3	3
Hungary	1	1	1	1	1	1	1	1	1	1
Latvia	3	3	3	3	3	3	3	3	3	3
Lithuania	1	1	1	***2***	2	2	2	2	2	2
Poland	1	1	1	1	1	1	1	1	1	1
Russia	2	2	2	***1***	1	1	1	***2***	2	2
Ukraine	3	3	3	3	***2***	2	2	2	2	2
Panel E: Middle East										
Egypt	2	2	2	2	2	2	2	2	2	2
Israel	4	***3***	3	3	3	3	3	3	3	3
Panel F: North America										
Canada	1	1	1	1	1	1	1	1	1	1
United States	1	1	1	1	1	1	1	1	1	1
Panel G: South America										
Argentina	1	1	1	1	1	1	1	1	1	1
Brazil	1	1	1	1	1	1	1	1	1	1
Chile	2	2	2	2	2	2	2	2	2	2
Columbia	0	0	0	0	0	0	0	0	0	0
Ecuador	0	0	0	0	0	0	0	0	0	0
Mexico	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0
Venezuela	3	3	3	3	3	3	3	3	3	3
Panel H: Western Europe										
Austria	3	3	3	3	3	3	3	3	3	3
Belgium	2	2	2	2	2	2	2	2	2	2
Denmark	3	3	3	3	3	3	3	3	3	3
Finland	1	1	1	1	1	1	1	1	1	1
France	0	0	0	0	0	0	0	0	0	0
Germany	3	3	3	3	3	3	3	3	3	3
Greece	1	1	1	1	1	1	1	1	1	1
Ireland	1	1	1	1	1	1	1	1	1	1

Country	Year (1995 – 2004)									
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Panel H: Western Europe (cont'd)										
Italy	2	2	2	2	2	2	2	2	2	2
Netherlands	3	3	3	3	3	3	3	3	3	3
Norway	2	2	2	2	2	2	2	2	2	2
Portugal	1	1	1	1	1	1	1	1	1	1
Spain	2	2	2	2	2	2	2	2	2	***3***
Sweden	1	1	1	1	1	1	1	1	1	1
Switzerland	1	1	1	1	1	1	1	1	1	1
Turkey	2	2	2	2	2	2	2	2	2	2
United Kingdom	4	4	4	4	4	4	4	4	4	4

Table 3.3: Changes in VC-related private pension fund regulations across countries

I provide information on changes in VC-related private pension fund regulations in 50 countries (out of my 55 country sample) from 1995 to 2008. The data employed in this table has been derived from various academic and non-academic studies and via a series of surveys with pension fund managers, investment professionals, and government regulators. A value of 1 indicates that pension funds are allowed to invest in VC in a given country. A value of 0 indicates that pension funds are not allowed to invest in VC. For the five countries not listed in this table, I were unable to obtain data on pension fund regulations. Changes in pension fund regulations are identified by bolded and italicized figures.

Country	Year (1995 – 2008)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Panel A: Asia														
China	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hong Kong	1	1	1	1	1	1	1	1	1	1	1	1	1	1
India	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japan	0	0	***1***	1	1	1	1	1	1	1	1	1	1	1
Kazakhstan	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Malaysia	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pakistan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	***1***	1	1	1	1	1
Singapore	–	–	–	–	–	–	–	–	–	–	–	–	–	–
South Korea	0	0	0	0	0	0	***1***	1	1	1	1	1	1	1
Taiwan	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thailand	0	0	0	0	0	0	0	***1***	1	1	1	1	1	1
Panel B: Africa														
Kenya	0	0	0	0	0	***1***	1	1	1	1	1	1	1	1
Nigeria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Africa	0	0	0	0	0	***1***	1	1	1	1	1	1	1	1
Panel C: Australia														
Australia	***1***	1	1	1	1	1	1	1	1	1	1	1	1	1
New Zealand	***1***	1	1	1	1	1	1	1	1	1	1	1	1	1
Panel D: Eastern Europe														
Bulgaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hungary	0	0	0	0	0	0	0	0	0	0	0	***1***	1	1
Latvia	0	0	***1***	1	1	1	1	1	1	1	1	1	1	1
Lithuania	0	0	0	0	0	0	0	0	0	0	0	***1***	1	1
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia	0	0	0	***1***	1	1	1	1	1	1	1	1	1	1
Ukraine	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Panel E: Middle East														
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Israel	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Panel F: North America														
Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1
United States	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Panel G: South America														
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazil	0	0	0	0	0	0	0	0	0	0	0	***1***	1	1
Chile	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Columbia	0	0	0	0	0	0	0	0	0	0	0	0	***1***	1
Ecuador	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peru	0	0	0	0	0	0	0	0	0	0	0	0	0	***1***
Venezuela	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Panel H: Western Europe														
Austria	0	0	0	0	0	***1***	1	1	1	1	1	1	1	1
Belgium	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Denmark	0	0	0	0	0	***1***	1	1	1	1	1	1	1	1
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1	1
France	0	***1***	1	1	1	1	1	1	1	1	1	1	1	1
Germany	0	0	0	0	0	0	0	***1***	1	1	1	1	1	1
Greece	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	***1***	1	1	1	1	1	1	1	1	1	1	1	1	1
Italy	0	***1***	1	1	1	1	1	1	1	1	1	1	1	1

Country	Year (1995 – 2008)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Panel H: Western Europe (cont'd)														
Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway	0	0	***1***	1	1	1	1	1	1	1	1	1	1	1
Portugal	0	0	0	0	0	0	0	0	***1***	1	1	1	1	1
Spain	0	0	0	0	0	0	0	0	0	0	***1***	1	1	1
Sweden	0	0	0	0	0	0	***1***	1	1	1	1	1	1	1
Switzerland	0	0	0	0	0	***1***	1	1	1	1	1	1	1	1
Turkey	1	1	1	1	1	1	1	1	1	1	1	1	1	1
United Kingdom	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4: Changes in corporate income tax rates across countries

I provide information on levels and changes in corporate income tax rates for my sample of 55 countries between January 1995 and December 2008. The dataset presented in this table is based on information provided by individual county representatives of PricewaterhouseCoopers. I present information on the maximum corporate income tax rate in each year, measured as a percentage of a company's taxable income. Tax rate changes are identified in bold and italic.

Country	Year (1995 – 2008)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Panel A: Asia														
China	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Hong Kong	17%	17%	17%	17%	17%	***16%***	16%	16%	16%	***18%***	18%	18%	18%	***17%***
India	46%	46%	***43%***	***35%***	***39%***	39%	***40%***	***36%***	***37%***	***36%***	***37%***	***34%***	34%	34%
Indonesia	35%	***30%***	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Japan	51%	51%	***52%***	52%	***42%***	42%	42%	42%	42%	42%	***41%***	41%	41%	***40%***
Kazakhstan	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Malaysia	30%	30%	30%	30%	30%	30%	30%	30%	***28%***	28%	28%	28%	***27%***	***26%***
Pakistan	46%	46%	46%	***43%***	***35%***	***45%***	***35%***	35%	35%	35%	35%	35%	35%	35%
Philippines	35%	35%	35%	***34%***	***33%***	***32%***	32%	32%	32%	32%	32%	***35%***	35%	35%
Singapore	27%	27%	***26%***	26%	26%	26%	***25.5%***	***25%***	***22%***	22%	***20%***	20%	20%	***18%***
South Korea	35%	35%	35%	***33%***	33%	***30%***	30%	30%	30%	30%	30%	30%	30%	***28%***
Taiwan	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Thailand	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Panel B: Africa														
Kenya	35%	35%	35%	35%	35%	***33%***	33%	***30%***	30%	30%	30%	30%	30%	30%
Nigeria	35%	35%	***30%***	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
South Africa	35%	35%	35%	35%	***30%***	***38%***	***37.8%***	37.8%	37.8%	37.8%	37.8%	***36.9%***	36.9%	***28%***
Panel C: Australia														
Australia	36%	36%	36%	36%	36%	***34%***	***30%***	30%	30%	30%	30%	30%	30%	30%
New Zealand	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	***30%***
Panel D: Eastern Europe														
Bulgaria	40%	40%	40%	***36%***	***30%***	***27%***	***25%***	***24%***	***20%***	20%	***15%***	15%	***10%***	10%
Czech Republic	41%	***39%***	39%	***35%***	35%	***31%***	31%	31%	31%	***28%***	***26%***	***24%***	24%	***21%***
Hungary	18%	18%	18%	18%	18%	18%	18%	18%	18%	***16%***	16%	***17%***	***20%***	20%
Latvia	25%	25%	25%	25%	25%	25%	25%	***22%***	***19%***	***15%***	15%	15%	15%	15%
Lithuania	10%	10%	10%	10%	10%	10%	10%	***15%***	15%	15%	15%	15%	15%	15%
Poland	40%	40%	***38%***	***36%***	***34%***	***30%***	***28%***	28%	***27%***	***19%***	19%	19%	19%	19%
Russia	41%	***39%***	39%	39%	39%	***35%***	***30%***	***35%***	***24%***	24%	24%	24%	24%	24%
Ukraine	30%	30%	30%	30%	30%	30%	30%	30%	30%	***25%***	25%	25%	25%	25%
Panel E: Middle East														
Egypt	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	***20%***	20%	20%	20%
Israel	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Panel F: North America														
Canada	45%	45%	45%	45%	45%	***44%***	***41%***	***39%***	***37%***	***36%***	36%	36%	36%	***34%***
United States	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	***39%***	39%	39%	39%
Panel G: South America														
Argentina	30%	30%	***33%***	33%	***35%***	35%	35%	35%	35%	35%	35%	35%	35%	35%
Brazil	35%	35%	***43%***	***33%***	***35%***	***37%***	***34%***	34%	34%	34%	34%	34%	34%	34%
Chile	15%	15%	15%	15%	15%	15%	15%	***16%***	***17%***	17%	17%	17%	17%	17%
Columbia	38%	***36%***	36%	36%	36%	36%	***35%***	35%	35%	35%	35%	35%	***34%***	34%
Ecuador	25%	25%	25%	***20%***	***25%***	25%	25%	25%	25%	25%	25%	25%	25%	25%
Mexico	34%	34%	34%	34%	***35%***	35%	35%	35%	***34%***	***33%***	***30%***	***29%***	***28%***	28%
Peru	30%	30%	30%	30%	30%	30%	30%	30%	***27%***	***30%***	30%	30%	30%	30%
Venezuela	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Panel H: Western Europe														
Austria	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	***25%***	25%	25%	25%
Belgium	40%	40%	40%	40%	40%	40%	40%	40%	***34%***	34%	34%	34%	34%	34%
Denmark	34%	34%	34%	34%	***32%***	32%	***30%***	30%	30%	30%	***28%***	28%	***25%***	25%
Finland	25%	***28%***	28%	28%	28%	***29%***	29%	29%	29%	29%	***26%***	26%	26%	26%
France	37%	37%	***42%***	42%	***40%***	***38%***	***36%***	***35%***	35%	35%	35%	***34%***	34%	34%
Germany	55%	***56%***	***57%***	***56%***	***52%***	52%	***39%***	39%	***40%***	***39%***	39%	39%	39%	***30%***
Greece	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	***32%***	***29%***	***25%***	25%
Ireland	38%	36%	36%	***32%***	***28%***	***24%***	***20%***	***16%***	***13%***	13%	13%	13%	13%	13%
Italy	37%	37%	37%	37%	37%	37%	***36%***	36%	***34%***	***33%***	33%	33%	33%	***28%***
Netherlands	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	***32%***	***30%***	***26%***	26%

Country	Year (1995 – 2008)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Panel H: Western Europe (cont'd)														
Norway	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Portugal	40%	40%	***37%***	37%	37%	***35%***	35%	***33%***	33%	***28%***	28%	28%	***27%***	27%
Spain	36%	36%	36%	36%	***35%***	35%	35%	35%	35%	35%	35%	35%	***33%***	***30%***
Sweden	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Switzerland	26%	26%	26%	26%	***24%***	24%	***25%***	25%	***24%***	24%	***21%***	21%	21%	21%
Turkey	28%	28%	***33%***	33%	33%	33%	33%	33%	33%	33%	***30%***	30%	***20%***	20%
United Kingdom	33%	33%	***31%***	31%	31%	***30%***	30%	30%	30%	30%	30%	30%	30%	***28%***

Table 3.5: Country characteristics: Control variables

I provide summary statistics for a series of control variables (stock market growth, real GDP growth, changes in the economic freedom index, and inflation) across my sample of 55 countries from 1995 to 2008 categorized by law system and legal origin. I present the arithmetic average for each variable during my sample period. Stock market growth is calculated as the percentage annual growth in a country's stock market capitalization, adjusted for inflation. The data are obtained from the Global Market Information Database (GMID) by Euromonitor International. Real GDP growth is the percentage increase or decrease in a country's real GDP during a given year relative to the previous year. The underlying data is retrieved from the World Bank's World Development Indicators (WDI) database. The economic freedom index is calculated by the Fraser Institute. The index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to trade internationally, and 5) the regulation of credit, labour, and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom. During the period from 1970 to 2000, the index is calculated on a quinquenial (5-year) basis, while from 2001 to 2008 it is reported annually. Inflation is measured by the GDP and is obtained from the World Bank's World Development Indicators (WDI) database.

Country	Control Variables			
	Stock Market Growth (ΔSMC)	Real GDP Growth (ΔRGDP)	Changes in the Economic Freedom Index (ΔEF)	Inflation (INF)
Panel A: Common law (English origin) countries				
Australia	11.515%	3.546%	0.846%	2.634%
Canada	15.142%	3.038%	0.231%	2.001%
Hong Kong	9.127%	3.900%	-0.846%	0.633%
India	25.560%	6.900%	5.769%	5.821%
Ireland	11.275%	6.546%	-1.462%	3.026%
Israel	15.712%	3.846%	7.077%	3.509%
Kenya	24.140%	3.400%	9.385%	9.173%
Malaysia	5.954%	5.015%	-4.462%	2.508%
New Zealand	1.709%	2.969%	-2.615%	2.212%
Nigeria	36.789%	6.923%	15.462%	12.485%
Pakistan	19.567%	4.592%	2.308%	6.752%
Singapore	8.126%	5.492%	-0.923%	1.195%
South Africa	9.957%	3.608%	5.077%	6.101%
Thailand	13.696%	3.185%	-0.462%	3.323%
United Kingdom	5.196%	2.769%	-1.385%	1.720%
United States	9.191%	2.915%	-1.846%	2.634%
Panel B: Civil law countries				
French origin				
Argentina	12.934%	3.785%	-5.077%	6.209%
Belgium	25.864%	2.192%	0.000%	1.932%
Brazil	21.302%	3.000%	11.462%	7.245%
Chile	8.769%	4.254%	5.154%	4.087%
Columbia	19.580%	3.185%	3.538%	9.675%
Ecuador	14.027%	3.377%	-3.308%	23.945%
Egypt	25.710%	5.338%	7.538%	6.799%
France	12.759%	2.108%	5.000%	1.737%
Greece	29.934%	3.823%	7.538%	3.861%
Indonesia	22.272%	3.623%	-0.462%	12.997%
Italy	11.870%	1.285%	3.769%	2.388%
Lithuania	59.867%	6.346%	16.692%	5.032%
Mexico	13.179%	3.585%	-0.769%	10.230%
Netherlands	5.138%	2.738%	-2.000%	2.236%
Peru	19.452%	4.615%	7.462%	3.997%
Philippines	7.600%	4.577%	-2.154%	5.794%
Portugal	16.313%	2.162%	-0.615%	2.758%
Spain	16.635%	3.515%	2.615%	3.024%
Turkey	35.899%	4.408%	5.923%	41.378%
Venezuela	4.480%	3.308%	0.846%	29.794%

Country	Control Variables			
	Stock Market Growth (ΔSMC)	Real GDP Growth (ΔRGDP)	Changes in the Economic Freedom Index (ΔEF)	Inflation (INF)
German origin				
Austria	14.082%	2.423%	4.923%	1.714%
Bulgaria	35.454%	3.300%	16.385%	97.549%
China	56.655%	9.585%	10.308%	2.169%
Czech Republic	13.934%	3.246%	10.692%	4.347%
Germany	13.150%	1.508%	-0.154%	1.532%
Hungary	30.315%	3.646%	9.154%	9.467%
Japan	3.463%	1.185%	3.308%	0.025%
Latvia	35.699%	6.600%	14.538%	6.765%
Poland	33.465%	4.631%	11.846%	6.573%
South Korea	31.435%	4.285%	8.615%	3.447%
Switzerland	7.580%	1.915%	2.000%	0.914%
Taiwan	9.178%	4.292%	2.846%	1.109%
Scandinavian origin				
Denmark	10.713%	1.877%	2.154%	2.100%
Finland	21.499%	3.592%	2.000%	1.573%
Norway	14.710%	2.846%	1.385%	2.036%
Sweden	8.453%	2.785%	0.769%	1.574%
Socialist origin				
Kazakhstan	55.987%	6.723%	-4.000%	12.091%
Russia	75.987%	4.700%	16.154%	23.175%
Ukraine	58.380%	3.631%	17.231%	18.595%

Table 3.6: Univariate tests for the impact of changes in control variables on VC investments

I examine mean and median changes in the total amount of VC investments (including early and expansion stage investments) for various subsets of my country sample. Each subset is based on different realizations of my control variables (including stock market growth, real GDP growth, and inflation). Specifically, I measure how changes in these variables during a given year affect VC investments in the subsequent year. In Panel A, I provide test results for VC Investments made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic). In Panel B, I provide test results for VC investments made by foreign VC firms in domestic portfolio companies (Foreign -> Domestic). For each group of subsamples, I report the number of observations (N), as well as mean and median changes in VC investments. In the last column, I report *p*-values for a t-test and a Kruskal-Wallis test for the equality of means and medians between each set of subsamples.

Panel A: VC Investments Made by Domestically Headquartered VC Firms in Domestic Portfolio Companies (Domestic -> Domestic)

Subsample 1	N, mean, median	Subsample 2	N, mean, median	Tests of differences means (*p*-value) medians (*p*-value)
Changes in Control Variables				
Positive Stock Market Growth (lagged 1 year)	456 0.125 0	Negative Stock Market Growth (lagged 1 year)	204 0.077 0	 0.073 0.069
Positive Real GDP Growth (lagged 1 year)	612 0.090 0	Negative Real GDP Growth (lagged 1 year)	48 0.065 0	 0.082 0.098
Positive Change in the Economic Freedom Index (lagged 1 year)	407 0.513 0	Negative or No Change in the Economic Freedom Index (lagged 1 year)	253 -0.401 0	 0.027 0.039
Inflation > 3.565% (lagged 1 year)	330 0.084 0	Inflation < 3.565% (lagged 1 year)	330 0.225 0	 0.562 0.370

Panel B: VC Investments Made by Foreign Based VC Firms in Domestic Portfolio Companies (Foreign -> Domestic)

Subsample 1	N, mean, median	Subsample 2	N, mean, median	Tests of differences means (*p*-value) medians (*p*-value)
Changes in Control Variables				
Positive Stock Market Growth (lagged 1 year)	456 0.147 0	Negative Stock Market Growth (lagged 1 year)	204 0.101 0	 0.046 0.072
Positive Real GDP Growth (lagged 1 year)	612 0.122 0	Negative Real GDP Growth (lagged 1 year)	48 0.036 0	 0.074 0.060
Positive Change in the Economic Freedom Index (lagged 1 year)	407 0.295 0	Negative or No Change in the Economic Freedom Index (lagged 1 year)	253 -0.962 0	 0.187 0.015
Inflation > 3.565% (lagged 1 year)	330 -0.004 0	Inflation < 3.565% (lagged 1 year)	330 0.332 0	 0.088 0.104

Table 3.7: Correlation matrix

I provide Pearson correlation coefficients for all dependent and independent variables across my sample of 715 country-year observations (55 countries times 13 annual changes) used in my subsequent regression analyses. The two dependent variables include changes in VC investments made by domestically headquartered VC firms in their home countries (domestic -> domestic) and changes in VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). The independent variables include changes in the creditor rights index, changes in corporate income tax rates, and changes in pension fund regulations, as well as stock market growth, real GDP growth, changes in the economic freedom index, and inflation. Definitions for all variables are provided in Appendix 7.

No.	Variable Name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Change in VC investments made by domestically headquartered VC firms to domestic portfolio companies (domestic -> domestic)	1							
(2)	Change in VC investments made by foreign based VC firms to domestic portfolio companies (foreign -> domestic)	0.18***	1						
(3)	Increase in the creditor rights index (lagged 1 year)	0.11***	0.28***	1					
(4)	Increase in corporate income tax rates (lagged 1 year)	-0.04	-0.09*	0.01	1				
(5)	Change in private pension fund regulations allowing VC investments (lagged 1 year)	0.32***	0.05	-0.07	0.03	1			
(6)	Stock market growth (lagged 1 year)	0.25***	0.28***	0.03	-0.09**	-0.15***	1		
(7)	Real GDP growth (lagged 1 year)	0.06	0.05	0.05	-0.00	-0.02	0.22**	1	
(8)	Change in the economic freedom index (lagged 1 year)	0.11***	0.08*	0.03	-0.02	0.02	0.13***	-0.00	1
(9)	Inflation (lagged 1 year)	-0.04	-0.12***	-0.02	0.03	-0.01	-0.08*	-0.13***	0.00

Table 3.8: Changes in VC investments – Lagged OLS regressions for 55 countries

I perform ordinary least square (OLS) regressions in which I regress changes in VC investments in a given country on a series of variables that measure lagged one-year changes in my legal, fiscal, and regulatory variables (changes in bankruptcy laws, changes in corporate income tax rates, changes in private pension fund regulations) and my control variables (stock market growth, real GDP growth, changes in the economic freedom index, and inflation). In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are defined in Appendix 7. *P*-values have been adjusted for heteroskedasticity using White's (1980) procedure and are shown in parentheses. The adjusted R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Model 1 Domestic -> Domestic				Model 2 Foreign -> Domestic			
	Regression with Economic and Fiscal Variables Only	Regression with ΔCR	Regression with ΔPPF	Regression with ΔCR and ΔPPF	Regression with Economic and Fiscal Variables Only	Regression with ΔCR	Regression with ΔPPF	Regression with ΔCR and ΔPPF
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	0.264 (0.174)	0.330 (0.098)*	0.218 (0.292)	0.240 (0.224)	0.327 (0.207)	0.317 (0.292)	0.326 (0.258)	0.342 (0.287)
Increase in the creditor rights index (lagged 1 year)		0.206 (0.059)*		0.277 (0.076)*		**0.319** **(0.023)****		**0.335** **(0.036)****
Increase in corporate income tax rates (lagged 1 year)	-1.227 (0.097)*	0.478 (0.617)	-1.482 (0.073)*	0.334 (0.727)	-1.176 (0.096)*	**-2.010** **(0.044)****	-1.719 (0.060)*	-1.327 (0.135)
Change in private pension fund regulations (lagged 1 year)			**0.832** **(0.004)*****	**0.703** **(0.019)****			0.248 (0.600)	0.270 (0.513)
Stock market growth (lagged 1 year)	**0.007** **(0.003)*****	**0.010** **(0.000)*****	**0.008** **(0.001)*****	**0.102** **(0.000)*****	**0.007** **(0.023)****	**0.010** **(0.007)****	**0.008** **(0.026)****	**0.009** **(0.018)****
Real GDP growth (lagged 1 year)	**0.080** **(0.031)****	0.045 (0.270)	**0.079** **(0.041)****	0.040 (0.387)	0.086 (0.080)*	0.061 (0.304)	**0.091** **(0.047)***	0.086 (0.108)
Change in the economic freedom index (lagged 1 year)	0.004 (0.174)	0.006 (0.079)*	0.004 (0.151)	**0.007** **(0.046)****	-0.001 (0.879)	0.001 (0.793)	0.003 (0.215)	-0.001 (0.857)
Inflation (lagged 1 year)	-0.002 (0.721)	0.002 (0.709)	-0.001 (0.843)	0.003 (0.526)	-0.010 (0.178)	-0.017 (0.067)*	-0.009 (0.194)	-0.018 (0.054)*
Adjusted R^2	0.147	0.151	0.224	0.267	0.174	0.230	0.198	0.286
P-value (*F*-Test)	0.015	0.017	0.009	0.021	0.021	0.013	0.031	0.037
No. of observations	660 (55 x 12 years)	440 (55 x 8 years)	600 (50 x 12 years)	400 (50 x 8 years)	660 (55 x 12 years)	440 (55 x 8 years)	600 (50 x 12 years)	400 (50 x 8 years)
No. of countries	55	55	50	50	55	55	50	50

Table 3.9: Changes in VC investments – Fixed-effects regressions for 55 countries

I perform a series of fixed-effects regressions in which the natural log of the total amount of VC investments in a given country per year is regressed on my key variables (bankruptcy laws, corporate income tax rates, and private pension fund regulations) and control variables (the natural log of stock market capitalization, the natural log of real GDP, the economic freedom index, and the inflation index). In Model 1, my dependent variable is calculated as a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are defined in Appendix 7. For each regression model, I present variable coefficients with *p*-values in brackets below. The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Model 1 Domestic -> Domestic				Model 2 Foreign -> Domestic			
	Regression with Economic and Fiscal Variables Only	Regression with CR	Regression with PPF	Regression with CR and PPF	Regression with Economic and Fiscal Variables Only	Regression with CR	Regression with PPF	Regression with CR and PPF
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	7.529 (0.045)	7.966 (0.185)	9.783 (0.017)	4.776 (0.448)	10.866 (0.018)	9.364 (0.168)	8.952 (0.071)	2.280 (0.740)
Creditor rights index		1.765 (0.059)*		1.456 (0.090)*		**2.226** **(0.049)****		2.075 (0.061)*
Corporate income tax rate	**-0.073** **(0.031)****	**-0.095** **(0.043)****	**-0.062** **(0.056)***	-0.057 (0.233)	**-0.120** **(0.001)*****	**-0.218** **(0.000)*****	**-0.101** **(0.010)*****	**-0.165** **(0.004)*****
Pension fund regulations			**1.849** **(0.000)*****	**2.365** **(0.000)*****			0.896 (0.080)*	1.426 (0.070)*
ln(stock market capitalization)	**0.244** **(0.041)****	**0.439** **(0.012)****	0.163 (0.336)	0.289 (0.154)	**0.412** **(0.004)*****	**0.653** **(0.003)*****	**0.548** **(0.009)*****	**0.767** **(0.002)*****
ln(real GDP)	0.222 (0.458)	0.099 (0.803)	0.344 (0.267)	-0.069 (0.902)	0.303 (0.385)	0.292 (0.580)	-0.010 (0.950)	0.358 (0.340)
Economic freedom index	0.002 (0.705)	0.009 (0.071)*	-0.001 (0.801)	0.012 (0.086)*	0.005 (0.361)	0.004 (0.390)	0.006 (0.278)	0.006 (0.279)
Inflation index	0.002 (0.733)	-0.009 (0.106)	0.001 (0.788)	-0.008 (0.196)	**-0.017** **(0.028)****	**-0.013** **(0.046)****	-0.007 (0.088)*	-0.008 (0.097)*
R^2	0.204	0.354	0.271	0.390	0.240	0.297	0.262	0.322
P-value (*F*-Test)	0.025	0.008	0.016	0.001	0.015	0.008	0.004	0.003
No. of observations	770	550	700	500	770	550	700	500
No. of countries	55	55	50	50	55	55	50	50

Table 3.10: Robustness test: Potentially omitted correlated variables

This table reports results for a series of fixed effects regression models in which the natural log of the total amount of VC investments in a given country per year is regressed on my key variables (bankruptcy laws, corporate income tax rates, and private pension fund regulations) and control variables (the natural log of stock market capitalization, the natural log of real GDP, the economic freedom index, and the inflation index). In Model 1, my dependent variable is calculated as a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). The independent variables are the same as those employed in Table 3.9 plus one of the following variables as an additional control variable: (a) nominal long-term interest rates (NI), (b) net inflows of foreign direct investments (calculated as inflows minus outflows), and (c) year dummies. Nominal long-term interest rates (NI) are annualized interest rates on 10-year government bonds and are retrieved from Bloomberg. Net inflows of foreign direct investments are scaled by the country's GDP during the same year and are collected from the World Development Indicators (WDI) database by the World Bank. The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		Additional Control Variables					
			(a) Nominal Long-term Interest Rate (NI)		(b) ΔFDII – ΔFDIO		(c) Year Dummies	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	4.776 (0.448)	2.280 (0.740)	4.319 (0.772)	2.184 (0.445)	5.826 (0.197)	3.843 (0.345)	-13.608 (0.000)	-13.605 (0.000)
Additional control variable(s)			0.175 (0.401)	0.305 (0.184)	0.116 (0.279)	**0.198 (0.043)****	**Included**	**Included**
Creditor rights index	1.456 (0.090)*	2.075 (0.061)*	1.186 (0.056)*	**1.976 (0.039)****	**1.280 (0.024)****	1.559 (0.051)*	**1.635 (0.009)*****	**1.789 (0.011)****
Corporate income tax rate	-0.057 (0.233)	**-0.165 (0.004)*****	-0.043 (0.177)	**-0.182 (0.033)****	-0.044 (0.181)	**-0.172 (0.005)*****	-0.030 (0.205)	**-0.099 (0.008)*****
Pension fund regulations	**2.365 (0.000)*****	1.426 (0.070)*	**1.997 (0.009)*****	**1.900 (0.030)****	**2.546 (0.000)*****	**2.529 (0.000)*****	**2.508 (0.002)*****	**2.036 (0.001)*****
ln(stock market capitalization)	0.289 (0.154)	**0.767 (0.002)*****	**0.623 (0.024)****	0.461 (0.062)*	0.291 (0.084)*	**0.831 (0.002)*****	**0.564 (0.014)****	**0.879 (0.001)*****
ln(real GDP)	-0.069 (0.902)	0.358 (0.340)	0.124 (0.333)	0.065 (0.941)	0.312 (0.553)	0.242 (0.586)	**1.043 (0.004)*****	**1.057 (0.006)*****
Economic freedom index	0.012 (0.086)*	0.006 (0.279)	0.013 (0.061)*	0.004 (0.381)	0.008 (0.180)	0.006 (0.296)	**0.005 (0.001)*****	**0.006 (0.000)*****
Inflation index	-0.008 (0.196)	-0.008 (0.097)*	-0.013 (0.071)*	-0.025 (0.093)*	-0.009 (0.228)	0.003 (0.849)	0.000 (0.932)	0.003 (0.509)
R^2	0.390	0.322	0.306	0.280	0.395	0.338	0.474	0.469
P-value (*F*-Test)	0.001	0.003	0.023	0.039	0.006	0.015	0.000	0.000
No. of observations	500	500	268	268	436	436	500	500
No. of countries	50	50	34	34	47	47	50	50

Table 3.11a: Robustness test: Alternative sample compositions

This table reports results for a series of fixed effects regression models in which the natural log of the total amount of VC investments in a given country per year is regressed on my key variables (bankruptcy laws, corporate income tax rates, and private pension fund regulations) and control variables (the natural log of stock market capitalization, the natural log of real GDP, the economic freedom index, and the inflation index). I employ the same variables as in the full model specifications for Models 1 and 2 in Table 3.9 but employ alternative sample specifications. My sample covers 55 countries between 1995 and 2008. In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are in Appendix 7. In columns 2 and 3, I exclude the U.K. and the U.S. from my sample. In columns 4 and 5, I exclude the top 3 countries in terms of mean annual changes in VC investments (China at 108.06%, Germany at 106.44%, and Switzerland at 90.08%) as well as the bottom 3 countries (Hong Kong at -89.71%, Taiwan at -66.98%, and the Czech Republic at -0.73%). For each regressor I present both the coefficient estimate and the associated *p*-value in parentheses. The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		Exclusion of the U.K. and the U.S.		Exclusion of the Top 3 (China, Germany, and Switzerland) and Bottom 3 (Hong Kong, Taiwan, and Czech Republic) Countries in Terms of Changes in VC Investments	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic (excluding China, Germany, Ireland, Hong Kong, Taiwan, and the Czech Republic)	Model 2 Foreign -> Domestic (excluding Denmark, Switzerland, Russia, Indonesia, the Philippines, and Taiwan)
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	4.776 (0.448)	2.280 (0.740)	4.498 (0.484)	1.876 (0.835)	1.909 (0.919)	2.576 (0.636)
Creditor rights index	1.456 (0.090)*	2.075 (0.061)*	1.424 (0.057)*	0.082 (0.709)	**1.604 (0.033)****	1.916 (0.064)*
Corporate income tax rate	-0.057 (0.233)	**-0.165 (0.004)*****	-0.056 (0.256)	**-0.168 (0.005)*****	-0.096 (0.082)*	**-0.179 (0.003)*****
Pension fund regulations	**2.365 (0.000)*****	1.426 (0.070)*	**2.591 (0.000)*****	0.881 (0.209)	**1.907 (0.001)*****	0.858 (0.115)
ln(stock market capitalization)	0.289 (0.154)	**0.767 (0.002)*****	0.279 (0.178)	**0.797 (0.002)*****	0.270 (0.168)	**0.681 (0.008)*****
ln(real GDP)	-0.069 (0.902)	0.358 (0.340)	0.067 (0.856)	-0.003 (0.952)	0.541 (0.275)	0.128 (0.755)
Economic freedom index	0.012 (0.086)*	0.006 (0.279)	**0.014 (0.049)****	0.006 (0.283)	0.009 (0.073)*	0.006 (0.266)
Inflation index	-0.008 (0.196)	-0.008 (0.097)*	-0.008 (0.202)	-0.007 (0.316)	-0.008 (0.170)	**-0.014 (0.048)****
R^2	0.390	0.322	0.367	0.308	0.382	0.286
P-value (*F*-Test)	0.001	0.003	0.002	0.004	0.001	0.011
No. of observations	500	500	480	480	440	440
No. of countries	50	50	48	48	44	44

Table 3.11b: Robustness test: Inclusion of non-lagged and 2-year lagged independent variables

I perform ordinary least square (OLS) regressions in which I regress changes in VC investments in a given country on a series of variables that measure non-lagged, 1-year lagged, and 2-year lagged changes in my legal, fiscal, and regulatory variables (changes in bankruptcy laws, changes in corporate income tax rates, changes in private pension fund regulations) and my control variables (stock market growth, real GDP growth, changes in the economic freedom index, and inflation). My sample covers 55 countries between 1995 and 2008. In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). The independent variables are the same as those employed in Table 8 and are defined in Appendix 7. *P*-values have been adjusted for heteroskedasticity using White's (1980) procedure and are shown in parentheses. The adjusted R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		Inclusion of Non-lagged Dependent Variables (Starting in 1996)		Inclusion of 2-Year Lagged Dependent Variables (Starting in 1998)		Inclusion of Both Non-lagged and 1-Year Lagged Dependent Variables		Inclusion of Non-lagged, 1-Year Lagged, and 2-Year Lagged Dependent Variables	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	0.240 (0.224)	0.342 (0.287)	0.133 (0.563)	-0.156 (0.626)	0.707 (0.001)	0.259 (0.415)	0.206 (0.454)	-0.018 (0.990)	0.521 (0.107)	-0.203 (0.651)
Increase in the creditor rights index (concurrent)			0.194 (0.202)	0.355 (0.092)*			0.211 (0.164)	**0.227 (0.048)****	0.120 (0.192)	0.175 (0.055)*
Increase in the creditor rights index (lagged 1 year)	0.277 (0.076)*	**0.335 (0.036)****					0.157 (0.652)	0.156 (0.074)*	0.293 (0.288)	0.203 (0.089)*
Increase in the creditor rights index (lagged 2 years)					0.112 (0.385)	-0.062 (0.962)			-0.092 (0.798)	-0.158 (0.697)
Increase in corporate income tax rates (concurrent)			-1.878 (0.115)	**-2.052 (0.034)****			-1.747 (0.149)	**-2.554 (0.022)****	0.706 (0.382)	**-2.479 (0.037)****
Increase in corporate income tax rates (lagged 1 year)	0.334 (0.727)	-1.327 (0.135)					-1.635 (0.808)	-1.361 (0.686)	0.136 (0.941)	-1.869 (0.299)
Increase in corporate income tax rates (lagged 2 years)					0.668 (0.292)	0.877 (0.615)			0.968 (0.456)	1.387 (0.252)
Change in private pension fund regulations (concurrent)			0.454 (0.082)*	0.217 (0.474)			0.263 (0.147)	0.567 (0.636)	0.316 (0.123)	-0.059 (0.926)
Change in private pension fund regulations (lagged 1 year)	**0.703 (0.019)****	0.270 (0.513)					**0.738 (0.042)****	0.700 (0.520)	**0.614 (0.047)****	0.319 (0.230)
Change in private pension fund regulations (lagged 2 years)					0.385 (0.061)*	0.954 (0.364)			0.306 (0.087)*	-0.331 (0.765)
Stock market growth (concurrent)			0.005 (0.097)*	-0.005 (0.212)			**0.008 (0.011)****	0.006 (0.203)	-0.002 (0.636)	0.006 (0.286)
Stock market growth (lagged 1 year)	**0.102 (0.000)*****	**0.009 (0.018)****					**0.007 (0.017)****	0.008 (0.067)	**0.008 (0.025)****	**0.014 (0.007)*****
Stock market growth (lagged 2 years)					-0.001 (0.702)	-0.004 (0.308)			0.002 (0.569)	-0.002 (0.672)
Real GDP growth (concurrent)			**0.125 (0.008)*****	0.103 (0.111)			**0.140 (0.009)*****	0.096 (0.232)	**0.158 (0.008)*****	0.103 (0.217)
Real GDP growth (lagged 1 year)	0.040 (0.387)	0.086 (0.108)					0.093 (0.078)*	-0.130 (0.095)	-0.078 (0.177)	-0.119 (0.152)
Real GDP growth (lagged 2 years)					**-0.098 (0.028)****	0.012 (0.843)			-0.107 (0.052)*	0.132 (0.083)*
Change in the economic freedom index (concurrent)			**0.009 (0.028)****	0.003 (0.507)			0.004 (0.238)	0.003 (0.530)	-0.003 (0.406)	0.003 (0.638)
Change in the economic freedom index (lagged 1 year)	**0.007 (0.046)****	-0.001 (0.857)					0.006 (0.101)	-0.001 (0.872)	0.003 (0.655)	0.000 (0.961)

Independent Variables	Main Regression Results		Inclusion of Non-lagged Dependent Variables (Starting in 1996)		Inclusion of 2-Year Lagged Dependent Variables (Starting in 1998)		Inclusion of Both Non-lagged and 1-Year Lagged Dependent Variables		Inclusion of Non-lagged, 1-Year Lagged, and 2-Year Lagged Dependent Variables	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Change in the economic freedom index (lagged 2 years)					0.000 (0.953)	0.001 (0.819)			0.001 (0.879)	0.000 (0.955)
Inflation (concurrent)			0.000 (0.906)	-0.022 (0.075)*			-0.001 (0.866)	-0.006 (0.090)*	-0.004 (0.816)	-0.040 (0.057)*
Inflation (lagged 1 year)	0.003 (0.526)	-0.018 (0.054)*					0.001 (0.756)	-0.012 (0.164)	0.000 (0.920)	-0.017 (0.121)
Inflation (lagged 2 years)					-0.001 (0.783)	-0.009 (0.136)			-0.002 (0.475)	-0.001 (0.830)
Adjusted R^2	0.267	0.286	0.176	0.198	0.031	0.017	0.240	0.211	0.214	0.225
P-value (*F*-Test)	0.021	0.037	0.052	0.041	0.281	0.835	0.009	0.022	0.023	0.068
No. of Observations	400	400	450	450	350	350	400	400	350	350
No. of countries	50	50	50	50	50	50	50	50	50	50

Table 3.12a: Robustness test: Inclusion of squared explanatory variables

This table reports results for a series of fixed effects regression models in which the natural log of the total amount of VC investments in a given country per year is regressed on my key variables (bankruptcy laws, corporate income tax rates, and private pension fund regulations) and control variables (the natural log of stock market capitalization, the natural log of real GDP, the economic freedom index, and the inflation index). I employ the same variables as in Models 1 and 2 of Table 10 but employ alternative model specifications for each model. My sample covers 55 countries between 1995 and 2008. In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). In each model, I include squared variable terms to control for the possibility of non-linear relationships in my estimation. All independent variables are as defined in Appendix 7. The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively. Note that the squared pension fund dummy is excluded because it takes on the same values as the non-squared dummy.

Independent Variables	Main Regression Results		Inclusion of Squared Explanatory Variables	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	4.776 (0.448)	2.280 (0.740)	4.453 (0.365)	5.029 (0.104)
Creditor rights index	1.456 (0.090)*	2.075 (0.061)*	1.273 (0.095)*	**1.563** **(0.047)****
Creditor rights index^2			-0.298 (0.636)	-0.379 (0.637)
Corporate income tax rate	-0.057 (0.233)	**-0.165** **(0.004)*****	-0.117 (0.140)	**-0.331** **(0.043)****
Corporate income tax rate^2			-0.004 (0.117)	0.002 (0.509)
Pension fund regulations	**2.365** **(0.000)*****	1.426 (0.070)*	**2.211** **(0.000)*****	**2.374** **(0.001)*****
Pension fund regulations^2			Excluded	Excluded
ln(stock market capitalization)	0.289 (0.154)	**0.767** **(0.002)*****	**0.180** **(0.000)*****	**0.374** **(0.001)*****
ln(stock market capitalization)^2			**0.000** **(0.000)*****	**0.000** **(0.003)*****
ln(real GDP)	-0.069 (0.902)	0.358 (0.340)	0.277 (0.071)*	0.209 (0.276)
ln(real GDP)^2			0.000 (0.254)	0.000 (0.506)
Economic freedom index	0.012 (0.086)*	0.006 (0.279)	0.021 (0.093)*	0.009 (0.680)
Economic freedom index^2			0.000 (0.481)	0.000 (0.689)
Inflation index	-0.008 (0.196)	-0.008 (0.097)*	-0.021 (0.248)	-0.022 (0.287)
Inflation index^2			0.000 (0.566)	0.000 (0.591)
R^2	0.390	0.322	0.339	0.328
P-value (*F*-Test)	0.001	0.003	0.006	0.020
No. of observations	500	500	500	500
No. of countries	50	50	50	50

Table 3.12b: Robustness test: Newey-West heteroskedasticity and autocorrelation corrected standard errors

I perform ordinary least square (OLS) regressions in which I regress changes in VC investments in a given country on a series of variables that measure lagged one-year changes in my legal, fiscal, and regulatory variables (changes in bankruptcy laws, changes in corporate income tax rates, changes in private pension fund regulations) and my control variables (stock market growth, real GDP growth, changes in the economic freedom index, and inflation). I employ the same variables as in Model 1 and 2 of Table 8 but use Newey-West heteroskedasticity and autocorrelation corrected standard errors that control for potential cross-sectional correlation in my estimation. My sample covers 55 countries between 1995 and 2008. In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are as defined in Appendix 7. *P*-values are shown in parentheses. The adjusted R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		Newey-West Heteroskedasticity and Autocorrelation Corrected Standard Errors	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	0.240 (0.224)	0.342 (0.287)	0.240 (0.166)	0.342 (0.157)
Increase in the creditor rights index (lagged 1 year)	0.277 (0.076)*	**0.335 (0.036)****	0.277 (0.101)	0.335 (0.069)*
Increase in corporate income tax rates (lagged 1 year)	0.334 (0.727)	-1.327 (0.135)	-0.434 (0.290)	-1.327 (0.366)
Change in private pension fund regulations (lagged 1 year)	**0.703 (0.019)****	0.270 (0.513)	**0.703 (0.040)****	0.270 (0.644)
Stock market growth (lagged 1 year)	**0.102 (0.000)*****	**0.009 (0.018)****	**0.102 (0.002)*****	**0.009 (0.021)****
Real GDP growth (lagged 1 year)	0.040 (0.387)	0.086 (0.108)	0.040 (0.054)*	0.086 (0.194)
Change in the economic freedom index (lagged 1 year)	**0.007 (0.046)****	-0.001 (0.857)	**0.007 (0.000)*****	-0.001 (0.354)
Inflation (lagged 1 year)	0.003 (0.526)	-0.018 (0.054)*	0.003 (0.412)	-0.038 (0.092)*
Adjusted R^2	0.267	0.286	-	-
P-value (*F*-Test)	0.021	0.037	0.009	0.040
No. of observations	400	400	400	400
No. of countries	50	50	50	50

Table 3.13a: Robustness test: Alternative dependent variables (early vs. expansion stage investments)

This table reports results for a series of fixed effects regressions in which I replicate the model estimations in Table 3.9, but use alternative dependent variables. My sample covers 55 countries between 1995 and 2008. In Model 1, my dependent variable is calculated as the change in a country's VC investments (including both early and expansion stage investments) made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic). In Model 2, my dependent variable is defined similarly but considers VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). I replace these two dependent variables with (a) changes in early stage VC investments made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic), (b) changes in early stage VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic), (c) changes in expansion stage VC investments made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic), and (d) changes in expansion stage VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are as defined in Appendix 7. The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		Early Stage VC Investments		Expansion Stage VC Investments	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	(a) Model 1 Domestic -> Domestic	(b) Model 2 Foreign -> Domestic	(c) Model 1 Domestic -> Domestic	(d) Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	4.776 (0.448)	2.280 (0.740)	2.865 (0.675)	9.072 (0.217)	9.660 (0.177)	3.368 (0.650)
Creditor rights index	1.456 (0.090)*	2.075 (0.061)*	**1.911 (0.026)****	**2.082 (0.035)****	0.735 (0.092)*	0.808 (0.081)*
Corporate income tax rate	-0.057 (0.233)	**-0.165 (0.004)*****	-0.062 (0.210)	-0.106 (0.067)*	**-0.141 (0.031)****	**-0.179 (0.001)*****
Pension fund regulations	**2.365 (0.000)*****	1.426 (0.070)*	**3.065 (0.000)*****	**2.769 (0.000)*****	**2.907 (0.000)*****	**2.550 (0.000)*****
ln(stock market capitalization)	0.289 (0.154)	**0.767 (0.002)*****	0.373 (0.085)*	**0.660 (0.004)*****	0.261 (0.243)	**0.668 (0.007)*****
ln(real GDP)	-0.069 (0.902)	0.358 (0.340)	0.099 (0.808)	0.688 (0.216)	0.301 (0.561)	-0.008 (0.992)
Economic freedom index	0.012 (0.086)*	0.006 (0.279)	0.015 (0.076)*	0.001 (0.903)	0.002 (0.715)	0.006 (0.249)
Inflation index	-0.008 (0.196)	-0.008 (0.097)*	-0.006 (0.330)	0.002 (0.774)	-0.012 (0.066)*	**-0.016 (0.043)****
R^2	0.390	0.322	0.414	0.403	0.313	0.421
P-value (*F*-Test)	0.001	0.003	0.001	0.002	0.026	0.001
No. of observations	500	500	500	500	500	500
No. of countries	50	50	50	50	50	50

Table 3.13b: Robustness test: Alternative dependent variables (number of financing rounds, early vs. expansion stage investments)

This table reports results for a series of fixed effects regressions in which I replicate the model estimations in Table 3.9, but use alternative dependent variables. My sample covers 55 countries between 1995 and 2008. I replace the two dependent variables in Table 3.9 with (e) changes in the number of financing rounds in early and expansion stage investments made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic), (f) changes in the number of financing grounds in early and expansion stage investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic), (g) changes in the number of financing rounds in early stage VC investments made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic), (h) changes in the number of financing rounds in early stage VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic), (i) changes in the number of financing rounds in expansion stage VC investments made by domestically headquartered VC firms in domestic portfolio companies (domestic -> domestic), and (j) changes in the number of financing rounds in expansion stage VC investments made by foreign based VC firms in domestic portfolio companies (foreign -> domestic). All independent variables are as defined in Appendix 7. *P*-values have been adjusted for heteroskedasticity using White's (1980) procedure and are shown in parentheses.The R^2, the results of an *F*-test, the sample size, and the number of countries in each regression model are reported in the last four rows. ***, **, * indicate statistical significance at the 1, 5, and 10 percent level, respectively.

Independent Variables	Main Regression Results		No. of Financing Rounds (Early and Expansion Stage Investments)		No. of Financing Rounds (Early Stage Investments)		Change in No. of Financing Rounds (Expansion Stage Investments)	
	Model 1 Domestic -> Domestic	Model 2 Foreign -> Domestic	(e) Model 1 Domestic -> Domestic	(f) Model 2 Foreign -> Domestic	(g) Model 1 Domestic -> Domestic	(h) Model 2 Foreign -> Domestic	(i) Model 1 Domestic -> Domestic	(j) Model 2 Foreign -> Domestic
	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)	Coefficient (*p*-value)
Constant	4.776 (0.448)	2.280 (0.740)	8982.713 (0.264)	356.953 (0.567)	3558.427 (0.217)	158.857 (0.448)	5793.073 (0.288)	219.641 (0.604)
Creditor rights index	1.456 (0.090)*	2.075 (0.061)*	**6278.876 (0.000)****	**326.238 (0.000)****	**2155.047 (0.000)****	**124.695 (0.000)****	**1208.248 (0.049)****	90.234 (0.056)*
Corporate income tax rate	-0.057 (0.233)	**-0.165 (0.004)****	-36.973 (0.549)	-4.683 (0.300)	-17.744 (0.410)	1.134 (0.870)	-41.534 (0.057)*	-5.562 (0.063)*
Pension fund regulations	**2.365 (0.000)****	1.426 (0.070)*	**1846.098 (0.012)****	**190.155 (0.000)****	380.844 (0.139)	**50.965 (0.006)****	**1384.820 (0.003)****	**142.067 (0.000)****
ln(stock market capitalization)	0.289 (0.154)	**0.767 (0.002)****	218.740 (0.537)	45.660 (0.081)*	12.045 (0.897)	**58.972 (0.049)****	207.520 (0.379)	**38.272 (0.039)****
ln(real GDP)	-0.069 (0.902)	0.358 (0.340)	314.411 (0.620)	-18.018 (0.721)	130.227 (0.562)	-1.726 (0.932)	182.152 (0.664)	21.138 (0.515)
Economic freedom index	0.012 (0.086)*	0.006 (0.279)	-0.837 (0.908)	-0.072 (0.856)	-2.266 (0.078)*	-0.025 (0.855)	**-3.615 (0.045)****	-0.046 (0.887)
Inflation index	-0.008 (0.196)	-0.008 (0.097)*	-15.751 (0.052)*	**-1.115 (0.041)***	-4.338 (0.120)	-0.275 (0.174)	**-10.951 (0.037)****	**-0.851 (0.030)****
R^2	0.390	0.322	0.318	0.287	0.201	0.243	0.355	0.334
P-value (*F*-Test)	0.001	0.003	0.016	0.005	0.089	0.004	0.001	0.001
No. of observations	500	500	500	500	500	500	500	500
No. of countries	50	50	50	50	50	50	50	50

Table 3.14: Summary of findings in chapter 3

Table	3.8: OLS regression		3.9: Fixed-effects regression	
Model	1 D->D	2 F->D	1 D->D	2 F->D
Increase in the creditor rights index	+	+	+	+
Increase in corporate income tax rates	0	0	-	-
Change in private pension fund regulations	+	0	+	+
Stock market growth	+	+	0	+
Real GDP growth	0	0	0	0
Change in the economic freedom index	+	0	+	0
Inflation	0	-	0	-

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Table 3.15: Summary of findings in chapter 3 (robustness tests)

Table	3.10: POVs				3.11a: Exclusion of the U.K. and the U.S.		3.11a: Exclusion of the Top 3 (China, Germany, and Switzerland) and Bottom 3 (Hong Kong, Taiwan, and Czech Republic) Countries in Terms of Changes in VC Investments		3.11b: Inclusion of Both Non-lagged and 1-Year Lagged Dependent Variables		3.11b: Inclusion of Non-lagged, 1-Year Lagged, and 2-Year Lagged Dependent Variables		3.12a: Include squared right-hand side variables		3.12b: Newey-West Heterokedasticity	
Model	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D
Increase in creditor rights index					+	0	+	+	0	+	0	+	+	+	0	+
Increase in corporate income tax rates					0	-	-	-	0	0	0	0	0	-	0	0
Allowing private pension funds to invest in VC					+	0	+	0	+	0	+	0	+	+	+	0
ln_stock market capitalization in $M					0	+	0	+	+	0	+	+	+	+	+	+
ln_GDP					0	0	0	0	+	0	0	0	+	0	+	0
Increase in the Economic Freedom Index					+	0	+	0	0	0	0	0	+	0	+	0
Inflation Index					0	0	0	-	0	-	0	-	0	0	0	-
Increase in Nominal Interest rates	0	0														
Increase in difference between FDI Inflows and FDI outflows			0	+												

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Table 3.15 (cont'd): Summary of findings in chapter 3 (robustness tests)

Table	3.13a: Early stage VC investments		3.13a: Expansion stage VC investments		3.13b: All stage no. of financing rounds		3.13b: Early stage no. of financing rounds		3.13b: Expansion stage no. of financing rounds	
Model	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D	1 D->D	2 F->D
Increase in creditor rights index	+	+	+	+	+	+	+	+	+	+
Increase in corporate income tax rates	0	-	-	-	0	0	0	0	-	-
Allowing private pension funds to invest in VC	+	+	+	+	+	+	0	+	+	+
ln_stock market capitalization in $M	+	+	0	+	0	+	0	+	0	+
ln_GDP	0	0	0	0	0	0	0	0	0	0
Increase in the Economic Freedom Index	+	0	0	0	0	0	-	0	-	0
Inflation Index	0	0	-	-	-	-	0	0	-	-

Legend:

A positive sign (+) indicates that a coefficient is positive and the corresponding *p*-value is less than 10%.
A negative sign (-) indicates that a coefficient is negative and the corresponding *p*-value is less than 10%.
Zero (0) indicates that the *p*-value of a coefficient is more than 10%.

Figure 3.1: Average annual percentage changes in VC investments made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic)

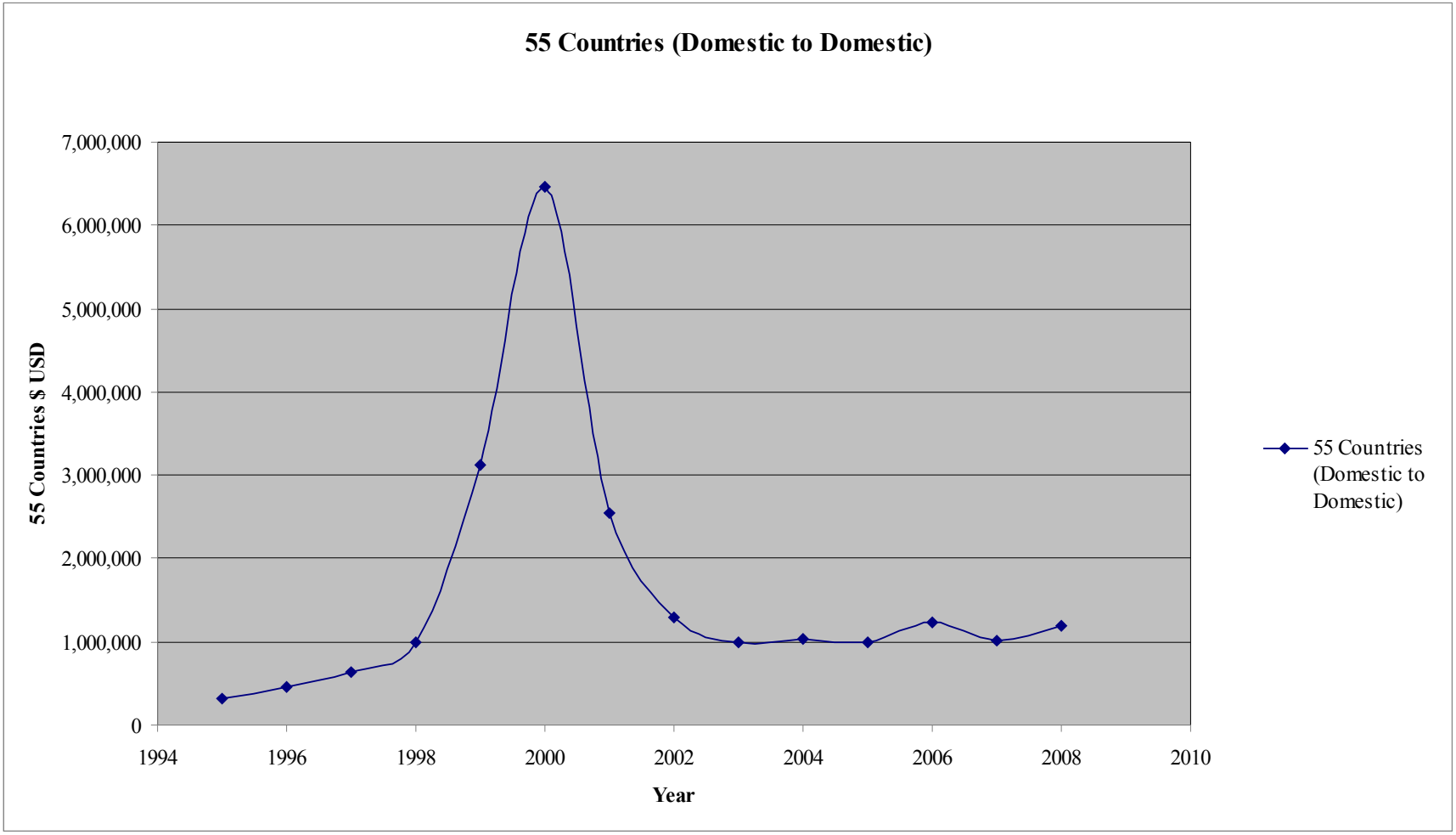


Figure 3.2: Average annual percentage changes in VC investments made by domestically headquartered VC firms in domestic portfolio companies (Foreign -> Domestic)

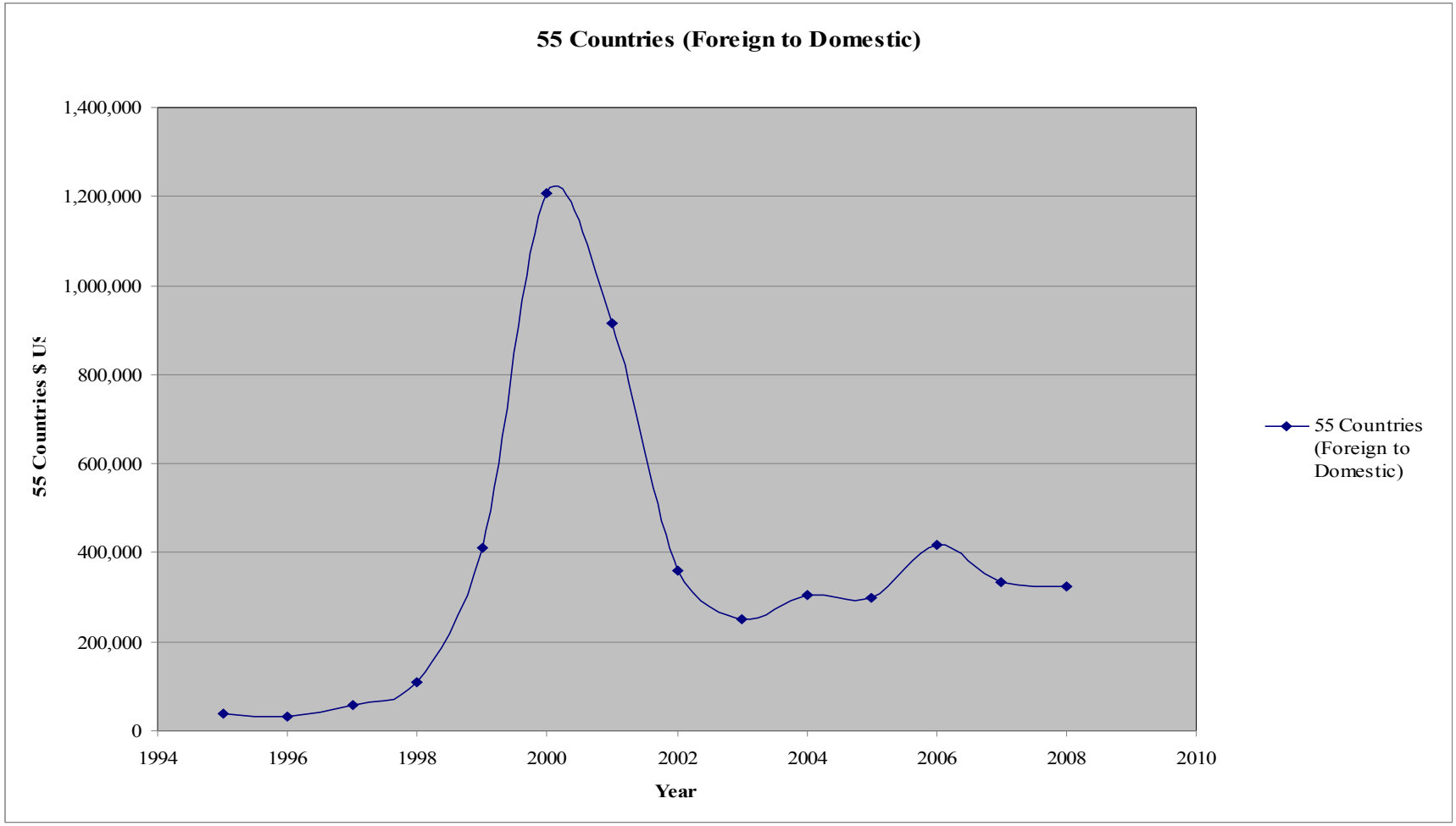


Figure 3.3: Average annual percentage changes in VC investments in Brazil, Russia, India, and China (i.e. the BRIC countries) made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic)

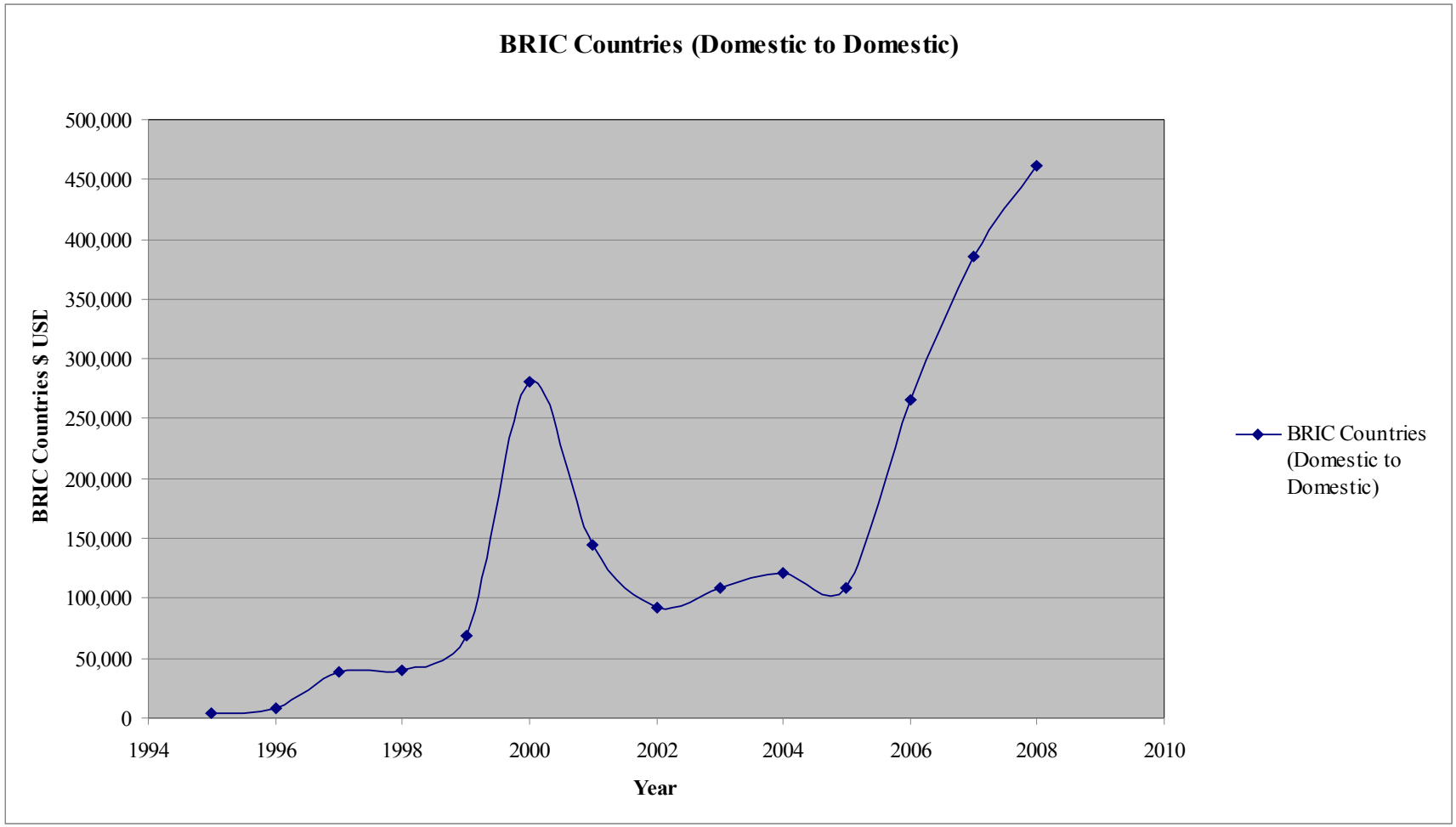
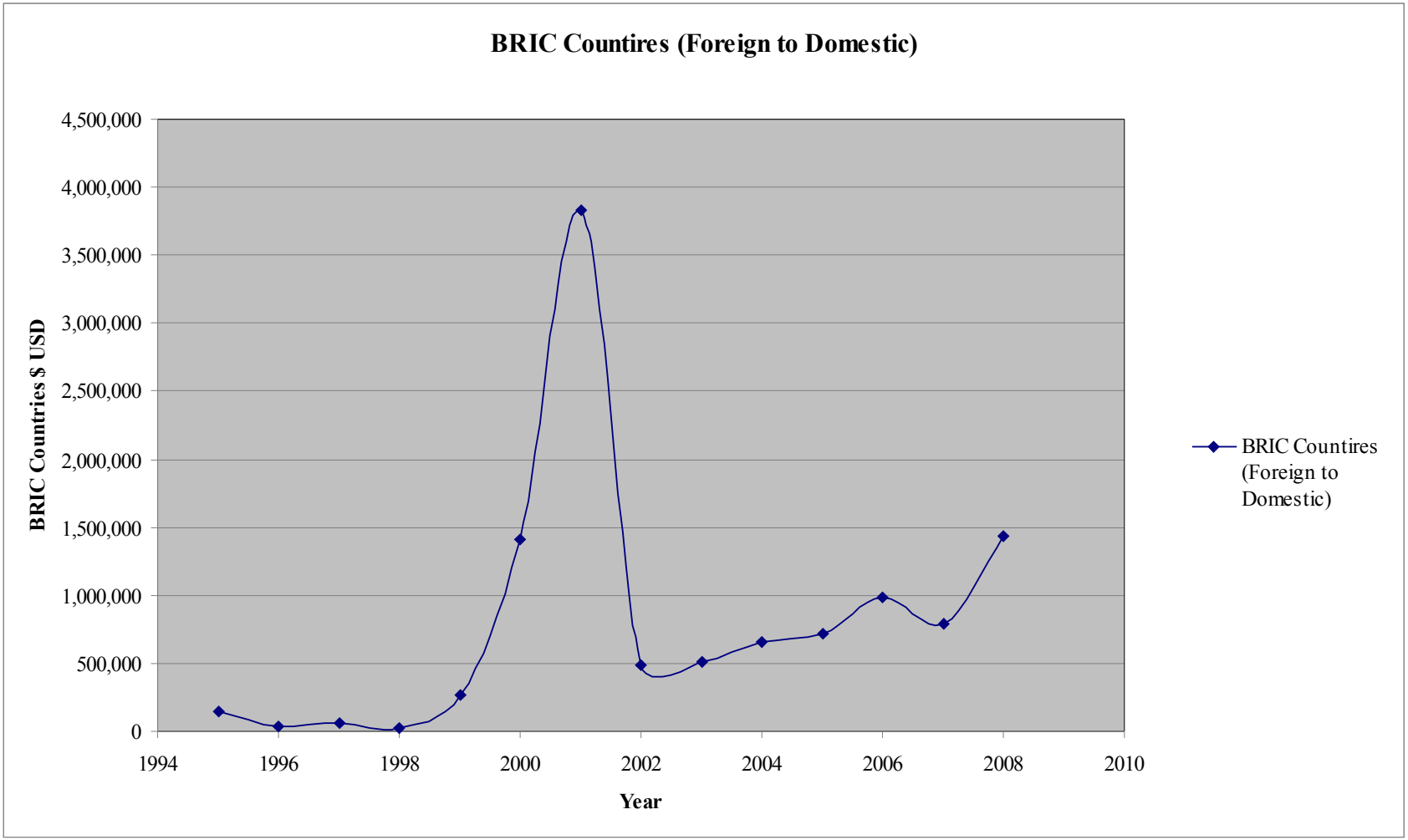


Figure 3.4: Average annual percentage changes in VC investments in Brazil, Russia, India, and China (i.e. the BRIC countries) made by domestically headquartered VC firms in domestic portfolio companies (Foreign -> Domestic)



Figures 3.5-10: The impact of legal, fiscal, and regulatory reforms on VC investments

I use event study methodology to measure how changes in my three main variables of interest (changes in creditor rights, corporate income tax rates, and private pension fund regulations) affect VC investments (including early and expansion stage investments). In Figures 1, 3, and 5, I provide trend lines that show how VC investments made by domestically headquartered VC firms in domestic portfolio companies (Domestic -> Domestic) change around a given event. In Figures 2, 4, and 6, I provide trend lines for VC investments made by foreign VC firms in domestic portfolio companies (Foreign -> Domestic). In each figure, I show how VC investments evolve during a period of +/- five years around a given event. Specifically, I show trends in mean scaled VC investments (VC investments/GDP) that have been indexed to a value of 1 at time -5, i.e., five years prior to a given event.

Figure 3.5: Changes in VC Investments (Domestic -> Domestic) around Bankruptcy Law Reforms

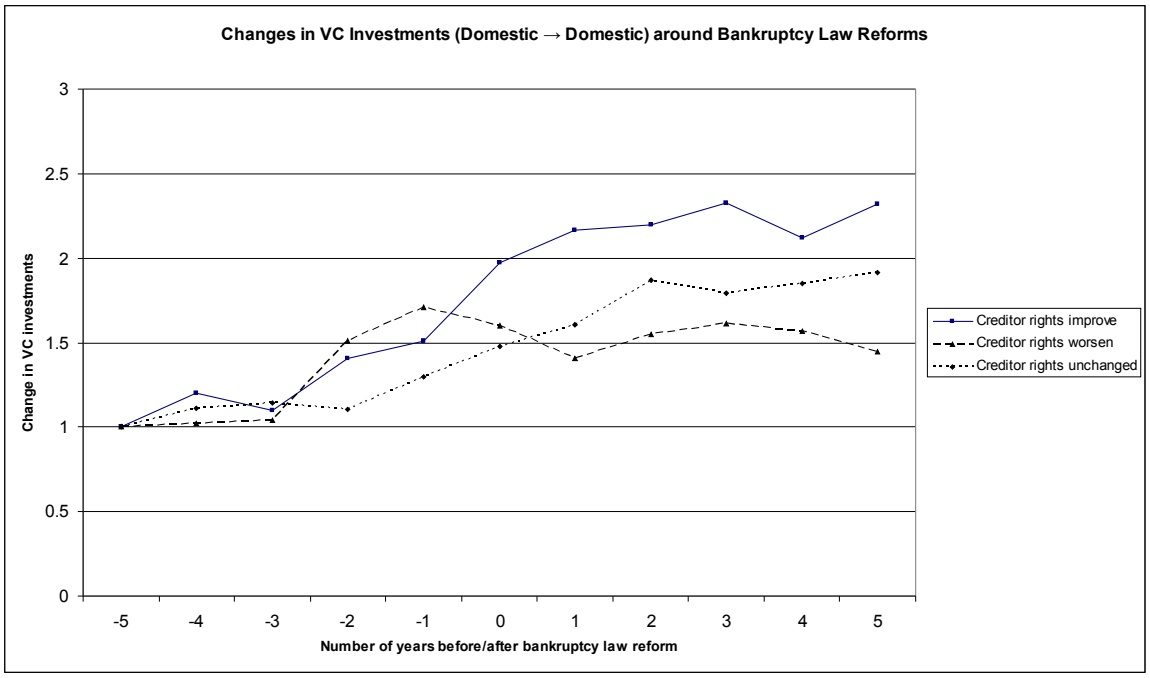


Figure 3.6: Changes in VC Investments (Foreign -> Domestic) around Bankruptcy Law Reforms

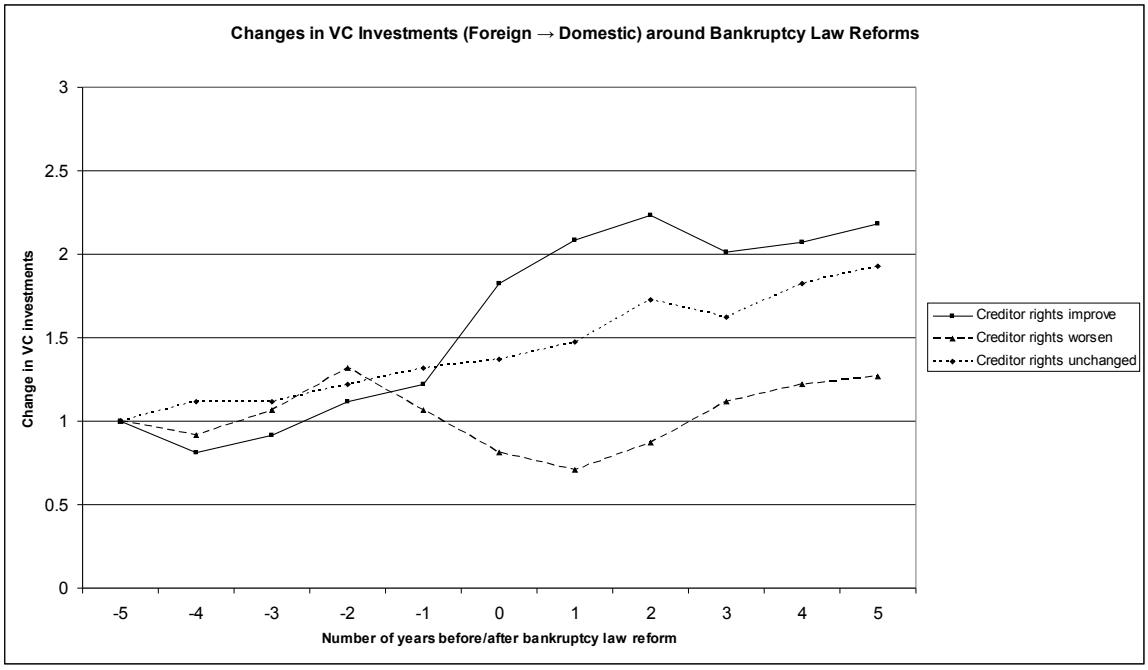

Changes in VC Investments (Foreign → Domestic) around Bankruptcy Law Reforms
Change in VC investments
3
2.5
2
1.5
1
0.5
0
-5
-4
-3
-2
-1
0
1
2
3
4
5
Number of years before/after bankruptcy law reform
Creditor rights improve
Creditor rights worsen
Creditor rights unchanged

Figure 3.7: Changes in VC Investments (Domestic -> Domestic) around Private Pension Fund Reforms

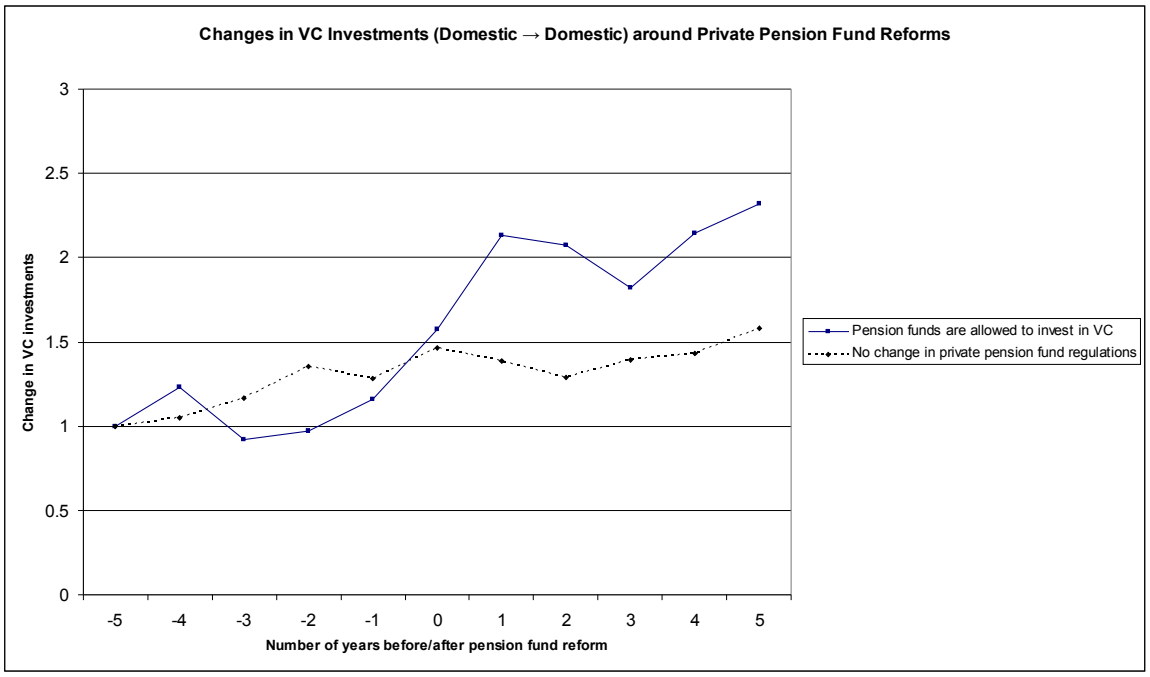


Figure 3.8: Changes in VC Investments (Foreign -> Domestic) around Private Pension Fund Reforms

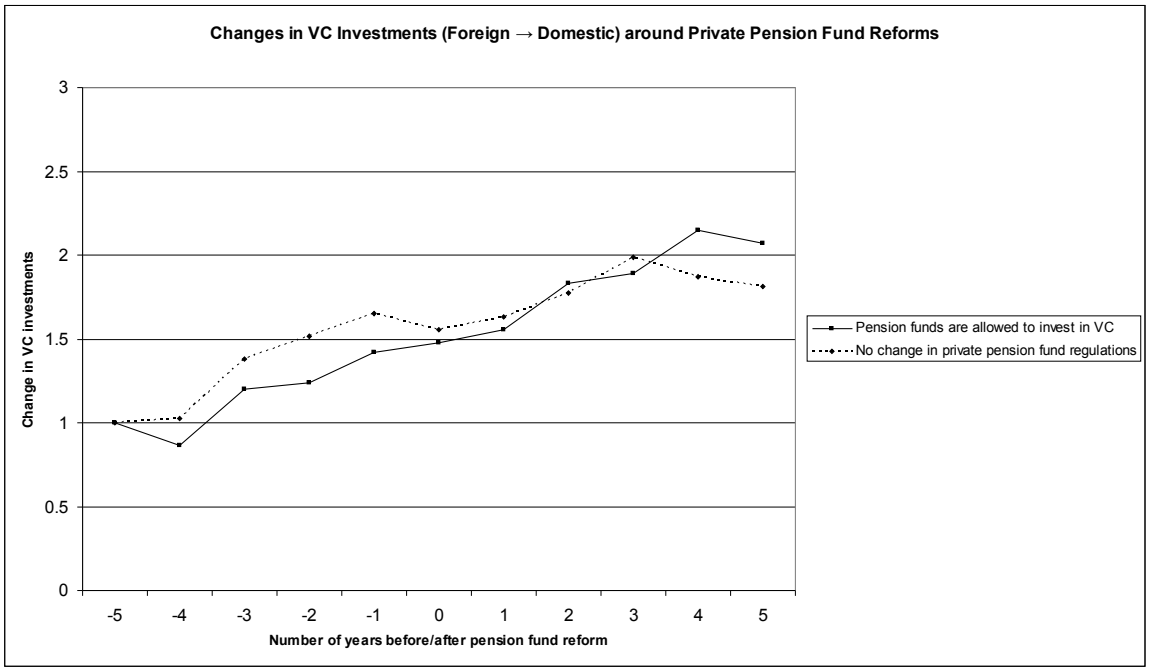


Figure 3.9: Changes in VC Investments (Domestic -> Domestic) around Fiscal Reforms

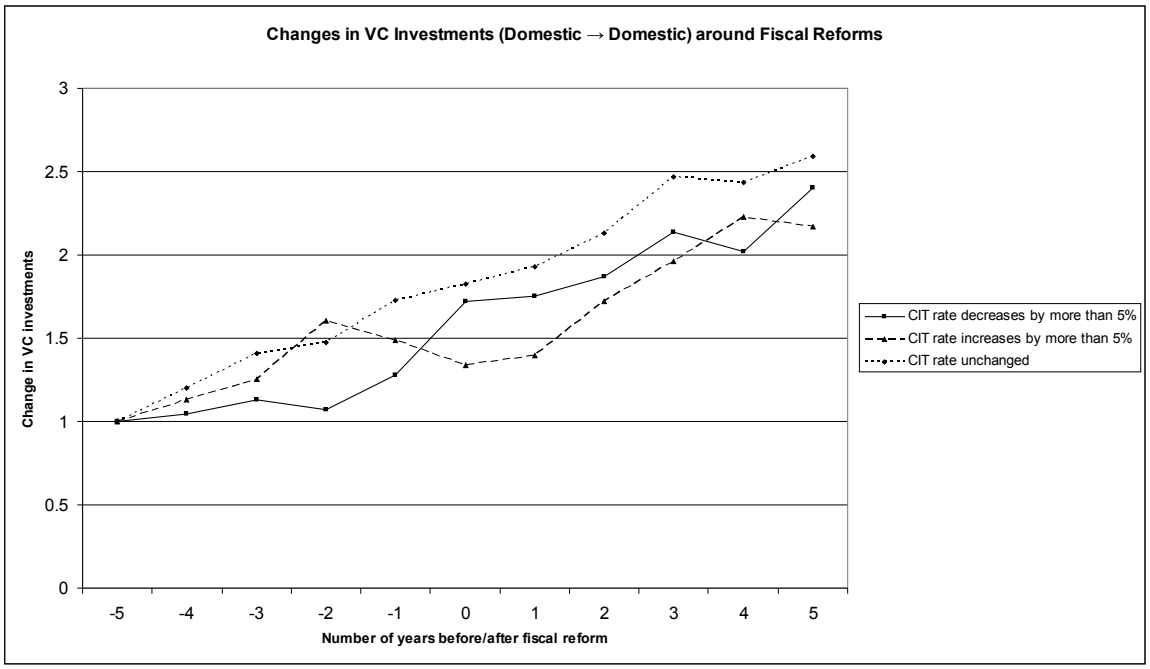
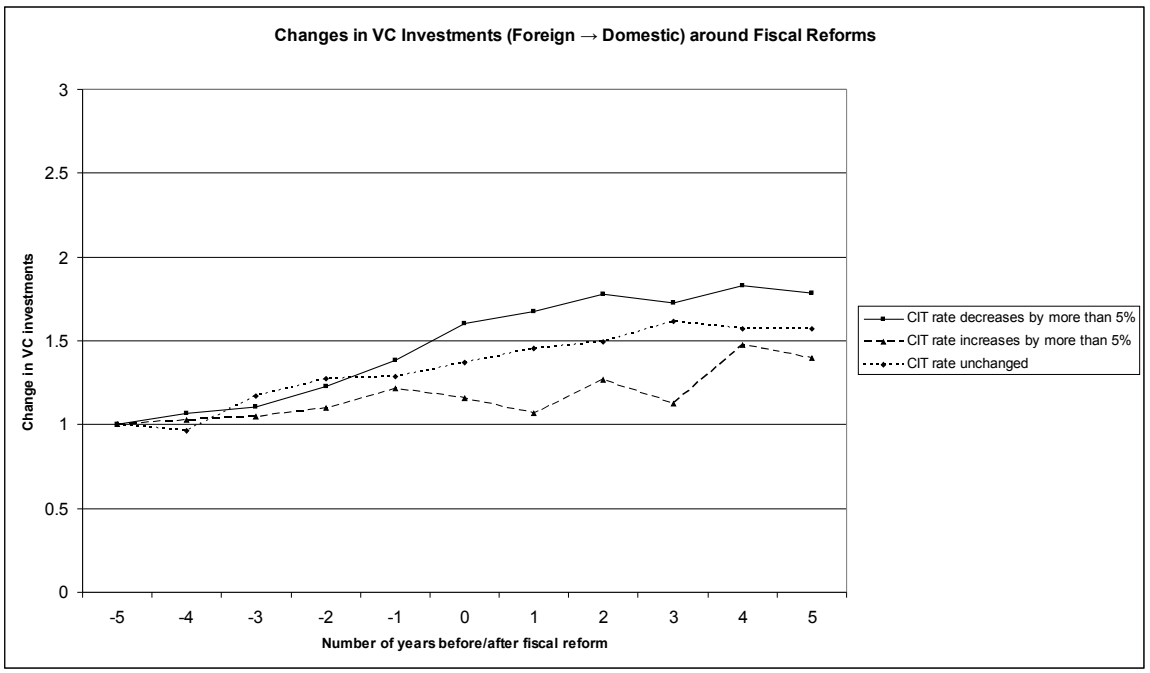


Figure 3.10: Changes in VC Investments (Foreign -> Domestic) around Fiscal Reforms



Appendix 4: Summary of the Literature and Hypotheses

Table 4.1: Summary of the key literature on how legal factors impact the development of bank and capital markets and firms' access to external financing

Author	La Porta et al. (LLSV)	La Porta et al. (LLSV)	Levine	Beck et al.	Beck et al.	Beck et al.	Djankov et al.
Year	1997	1998	1999	2003a	2003b	2005	2007
Countries	49	49	77	54	70	38	133
Time period	1970-1993	1970-1993	1960-1989	1990-1995	1990-1995	1990-1999	1978-2003
Research question	How do legal origin, investor protection rights, and legal enforcement impact external financing via stock and bond markets?	How does ownership concentration impact external financing via stock and bond markets?	How do laws and indicators of financial intermediary development impact the size of stock markets?	How do court independence and legal adaptability explain the development of bank and stock markets?	How do court independence and legal adaptability and the endowment theory explain the development of bank and stock markets?	How do court independence and legal adaptability affect firms' access to external financing?	How do creditor rights impact the size of private credit markets?
Legal factors							
Legal origins	+ (English common law)	+ (English common law)					+ (English common law)
Supreme court power				+	+	+	
Supreme court tenure of judges				+	+	+	
Case law				+	+	+	
Legal justification				-	-	-	
Shareholder rights	+	+	+				
Creditor rights	+	+	+				+
Changes in creditor rights							+/-
Legal enforcement	+ (Rule of law)	+ (Rule of law)	+	+			

Table 4.2: Summary of the key VC literature on how *legal* factors impact the development of VC markets

Author	Allen and Song	Cumming et al.	Kaplan et al.	Groh et al.	Groh et al.	Cumming et al.
Year	2002	2006	2006	2007	2008	2008
Countries	33	12	18	25	25	39
Time period	1990-2001	1989-2001	1992-2001	N/A	2000-2005	1971-2003
Research question	How do laws impact VC investments?	How do laws impact the existing of VC investments?	How does the legal system affect the design of VC contracts (e.g., allocation of cash flow rights, liquidity rights, and control rights)?	How does property rights protection impact allocation process of institutional VC investors in European countries?	How does property rights protection impact VC fundraising?	How does law impact the structure of VC investments (screening processes, syndication, agency and control problems)?
Legal factors						
Legal origins						+ (English common law)
Supreme court power						
Supreme court tenure of judges						
Case law						
Legal justification						
Shareholder rights	+		-	+	+	
Creditor rights	+ (explains better than shareholder rights)	+	+			
Changes in creditor rights						
Legal enforcement	- (Rule of law)	+	Not significant			
Intellectual property rights						

Table 4.3: Summary of the key VC literature on how *regulatory* factors impact the development of VC markets

Author	Gompers and Lerner	Jeng and Wells
Year	1999	2000
Countries	U.S.	21
Time period	1969-1994	1986-1995
Research question	How does the prudent man rule of the ERISA Act in 1978 affect VC fundraising?	How do private pension funds and government programmes impact VC fundraising over time
Regulatory factors:		
Changes in pension fund regulations	+	+ (the authors consider levels and changes in private pension fund investments, not pension fund regulations)

Table 4.4: Summary of the key VC literature on how *fiscal* factors impact the development of VC markets

Author	Bygrave and Timmons	Gompers and Lerner	Gompers and Lerner	Romain and De la Potterie	Da Rin et al.	Armour and Cumming	Bonini and Alkan
Year	1992	1999	2004	2004	2005	2006	2009
Countries	U.S.	U.S.	U.S. and Europe	OECD (16)	14	15	16
Time period	1969-1986	1972-1994	N/A (theoretical analysis)	1990-2000	1988-2001	1990-2003	1995-2002
Research question	How do capital gains tax rates impact VC fundraising?	How do macroeconomic, regulatory, and firm-specific performance factors impact VC investments?	How does a uniform capital gains tax on both entrepreneurs and VCs affect the involvement of VCs in their portfolio companies?	How do corporate income tax rates impact VC investments in OECD countries?	How do capital gains tax rates impact high-tech as well as early stage VC investments?	How do capital gains tax rates affect the level of VC investments?	How do corporate income tax rates affect the level of VC investments?
Fiscal factors							
Capital gains tax rates	-	-	-		-	-	
Corporate income tax rates				-			- (only at the early stage, not the expansion stage)
Changes in corporate income tax rates							

Table 4.5: List of hypotheses for chapter 2

H no.	Hypothesis	Variable of Interest	Expected Relationship
H_1	English common law countries have higher direct VC investments than French, German, Scandinavian, and Socialist civil law countries.	Common law	+
H_2	Countries that have a higher judicial independence index (i.e., whose courts are more independent from the State) have higher direct VC investments.	Judicial independence index	+
H_3	Countries that have a higher jurisprudent flexibility index (i.e., countries that more easily adapt their laws to changing circumstances) have higher direct VC investments.	Jurisprudent flexibility index	+
H_4	Countries with stronger shareholder protection rights have higher direct VC investments.	Shareholder protection rights	+
H_5	Countries with stronger creditor protection rights have higher direct VC investments.	Creditor protection rights	+
H_6	Countries with good legal enforcement have higher direct VC investments.	Legal enforcement (Formalism index)	+
H_7	Countries with strong intellectual property rights protection have higher direct VC investments.	Intellectual property rights (Patent rights index)	+
H_8	Countries that pass legislation aimed at increasing the amount of capital that private pension funds can invest in alternative asset classes such as VC or private equity will experience an increase in direct VC investments relative to countries that pass no such legislation.	Allowing pension funds to invest in VC (via pension fund reforms)	+
H_9	Countries with lower capital gains tax rates have higher direct VC investments.	Capital gains tax rates	-
H_{10}	Countries with lower corporate income tax rates have higher direct VC investments.	Corporate income tax rates	-

Table 4.6: List of hypotheses for chapter 3

H no.	Hypothesis	Variable of Interest	Expected Relationship
H_{11}	Countries that experience an improvement in creditor rights following a bankruptcy law reform will experience an increase in direct VC investments relative to countries that pass no such reform during the same time period.	Improvement in creditor rights (via bankruptcy law reforms)	+
H_{12}	Countries that pass legislation aimed at increasing the amount of capital private pension funds can invest in alternative asset classes such as VC or private equity will experience an increase in direct VC investments relative to countries that pass no such legislation during the same time period.	Changes in pension fund regulations that allow pension funds to invest in VC (via pension fund reforms)	+
H_{13}	An increase/decrease in the corporate income tax rate of a given country exerts a negative/positive influence on direct VC investments in that country.	Changes in corporate income tax rates (via fiscal reforms)	-

Appendix 5: Venture Capital Investments – A Conceptual Framework

Venture capital investments – a conceptual framework

When engaging in a global analysis of whether and how the legal, regulatory, and fiscal environments in a given country affects venture capital (VC) investments, it is worthwhile laying some groundwork to identify what VC is, who the key players in the VC industry are, how and to whom VC firms distribute their capital, where they get their funds from, how VC funds are organized, how the VC life cycle works, and how the VC industry developed over time. In this appendix, I attempt to answer these issues.

1. Definition

The definition of VC is not straight forward and varies among many researchers and institutions. Many researchers regards VC as a special form of investment capital (see Freear and Wetzel, 1994; Mason and Harrison, 1999a; Jeng and Wells, 2000; Gompers and Lerner, 2001; Allen and Song, 2002; Soderblom and Wiklund, 2005; Adongo and Stork, 2006; Armour and Cumming, 2006; Landström, 2007). For example, Gompers and Lerner (2001) define VC as "independent, professionally managed, dedicated pools of capital that focus on equity or equity-related investments in privately held, high growth companies." (p. 2). This definition is also supported by Smith and Smith (2004) who define VC as capital supplied by a financial institution or a VC firm to fund new ventures. At the same time, the term VC is often used to describe a financial intermediary or an institutional VC fund (see EVCA, 2003 and 2004; Romain and De la Potterie, 2004; Matrick, 2007). For example, the EVCA (2003 and 2004) defines VC as a financial intermediary consisting of institutional or formal investors who invest in entrepreneurial firms that produce products and have high growth potential at an early stage. Similarly, Metrick (2007) defines VC as a

financial intermediary or an institutional VC fund, which is different from a bank in that it invests investors' money directly in venture-backed firms. However, business angels may sometimes invest directly into firms without the aid of an institutional VC fund. Relative to institutional VC funds, angel investors typically invest smaller amounts of capital and target seed and start-up firms.

1.1. Differences in the definition of VC between the U.S. and Europe

In addition to the different definitions of VC outlined in the last section, it is worth noting that the way VC is defined also differs by region. Take Europe and the U.S., for example. In Europe, the term VC is typically used to finance start-up and expansion stage projects in privately held firms as well as leveraged or management buyouts. Capital for both leveraged and management buyouts is usually provided to mature firms. In a leveraged buyout, debt is used to acquire a firm and to reduce its equity. Management buyouts are leveraged buyouts where current managers take control of their firms (Armour and Cumming, 2006). In contrast, in the U.S., the term VC usually excludes leveraged and management buyouts. In other words, it refers only to private equity investments that are made to provide seed or start-up funding as well as funding for expansion purposes. While seed and start-up funding is generally provided at an early stage, expansion financing tends to be provided to firms that are in a late stage of their life-cycle. This definition is sometimes described as the classic view of VC (Bygrave and Timmons, 1992) in the sense that VC investments only concentrate on start-up and early-stage businesses that have high risk and high potential to substantially increase their sales and profits, as opposed to VC investments at a later stage such as management buy-outs and buy-ins (MBOs and MBIs) which are typically viewed as less risky (Marriott and Murray, 1998). Many authors such

as Freear and Wetzel (1994), Jeng and Wells (2000), Allen and Song (2002), Armour and Cumming (2006), and Landström (2007) propagate the use of the U.S. definition of VC investments arguing, for example, that the U.S. VC industry provides more than two-thirds of the entire capital available for entrepreneurial firms across nations.

In this dissertation, I follow Gompers and Lerner (2001) and define VC as long-term investments in equity capital in new, potentially high growth, and non-publicly traded companies that produce new and innovative products and services for new customers in new markets in return for capital gains rather than interest income and dividend yields. In addition to the see and startup investments that typically fall under this definition, I follow the U.S. definition of VC, and also consider expansion stage investments in later stage firms. [35]Following my earlier discussion, I exclude other late-stage investments such as management buy-outs, management buy-ins, mezzanine funding, and turnaround financing. The reason I use the U.S. concept is that the U.S. was the primary birthplace of the VC industry and has the largest and the most mature VC industry in the world. As noted earlier, most of the recent academic literature on VC uses a similar approach. Jeng and Wells (2000), for example, argue that the U.S. account for – by fare – the largest venture capitalist investment activity in the world following by Israel, the U.K., Canada, and the Netherlands.

2. Special characteristics of VC investments

In this section, I will outline some of the special characteristics of VC investments that set the VC industry apart from the broader debt and equity markets. Specifically, I will

[35] To ensure the robustness of my results to alternative definitions of VC, I perform a series of sensitivity analyses in which I differentiate between the different sub-categories of VC investments.

explore the structure of and the process behind VC investments, identify the key players and their roles in the VC industry, and outline the life cycle of VC investments. This detailed breakdown is useful because it allows us to better understand what effect the legal, fiscal, and regulatory environment may have on a VC firm's fundraising, investing, and exiting choices.

3. The structure of VC investments

VC investments are almost always structured as limited liability partnerships (LLPs) that comprise 1) institutional investors who become limited partners (LPs), 2) VC fund managers or venture capitalists who are general partners (GPs), 3) portfolio firms, and 4) different funds (Gompers and Lerner, 2004). In addition, Carter (1996) suggests that VC funds should be structured so as to include a minimum fund size, a limited fund life in order to give incentives to the venture capitalists to divest, a common goal of the institutional investors, and a mechanism in order to prevent conflicts of interest such as disclosure and review procedures between the institutional investors (LPs) and venture capitalists (GPs).

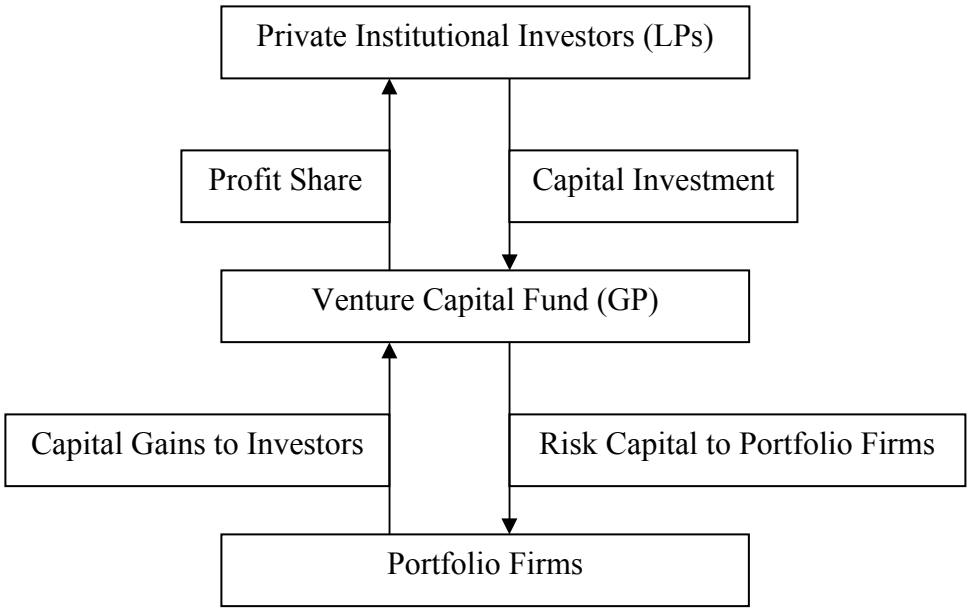
Institutional investors are capital providers who typically want to diversify their portfolios of equities, bonds, and other alternative investments by investing in VC. For these investors, venture capitalists act as allocating intermediary agents who invest their capital in a carefully selected group of portfolio firms. In addition to offering financial support to the portfolio firms, venture capitalists also provide a wide range of value-added services. For instance, they provide advisory services, monitor the progress of firms, offer access to network of suppliers, customers, consultants, investment banks, accountants, and lawyers,

and thereby try to help the portfolio firms develop and grow (Lerner, 1995). While the venture capitalists have complete control over the committed funds and the investment process, they typically provide no more than 1% of the funds in a LLP (Sahlman, 1990). The primarily compensation for the selection, monitoring, management, and value-added services they provide typically consists of a 20% share in the fund's net capital gains (also called a carried interest) but only after they return the institutional investors' capital with a minimum level of interest (also called a hurdle rate). This compensation structure is directly designed to align the interests of the institutional investors and venture capitalists (Gompers and Lerner, 1999; Metrick, 2007).

4. The VC investment process

As shown in Figure 5.1, the VC investment process involves the three key players - institutional investors or LPs, venture capitalists or GPs, and the portfolio firms they choose to invest in. The flow of capital begins with the institutional investors who provide investment funds to the venture capitalists who, in return, invest the capital in the portfolio firms. When an investment is exited, e.g. through an IPO or a private sale, it provides principal return or capital gain to the venture capitalist. As noted earlier, any resultant profits are usually shared in a proportion of 80:20 between the institutional investors and the venture capitalists (Metrick 2007).

Figure 5.1: The VC investment process



Source: Lingelbach and Murray (2008)

5. The life cycle of VC investments

The life cycle of a typical VC investment is very different from that of an equity investment in a company's common or preferred stock. Perhaps the biggest difference lies in the fact that in a stock market investment, investors can close out their position at any time by selling their holdings through an original exchange or in the over the counter (OTC) market.

From a venture capitalist's perspective, the VC life cycle consists of three stages: fundraising, investing, and exiting. The first stage (fundraising) of the VC cycle commences when the venture capitalists raise capital from their institutional investors. The capital that the institutional investors provide to the venture capitalists is typically passed on to portfolio firms in one or several instalments (also called financing rounds or series). The number of financing rounds that the portfolio company requires depends on which

industry they belong to as well as market condition (among other factors). In addition, the amount of capital that is provided to the portfolio companies depends on the investment stage they are in.

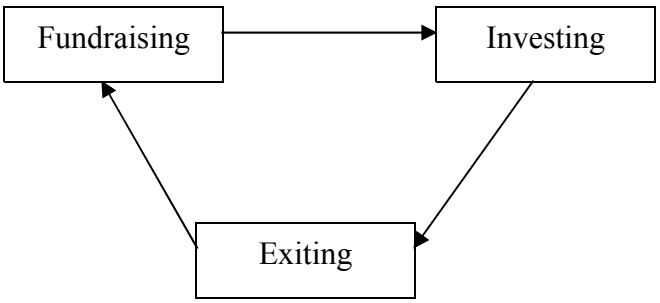
At the second investing stage, the venture capitalists invest the funds provided by the institutional investors, monitor, and try to add value to the portfolio firms. At this stage, capital flows from venture capitalists to the portfolio firms.

Finally, at the last (exit) stage, the venture capitalists exit their investments either through an IPO, a secondary sale, a merger or acquisition, or by raising new replacement capital.

Throughout the cycle, some disruptive factors may occur such as overinvestment in fashionable sectors and volatile market valuations upon exit. Of course, the goal the venture capitalists pursue throughout the cycle is to maximize the overall net gains of their investment which not only increases their own profit share but also allows them to entice institutional investors to renew their investments in the future. To do so, the venture capitalists are pressed hand to achieve a high internal rates of return (IRRs) on their investments.

Figure 5.2 provides a graphical depiction of the VC life cycle that starts with the initial fundraising, the funding of portfolio firms by the venture capitalists who set up a portfolio, monitor, and provide their value-added services to the firms. Next, after realising the returns on their portfolio, they share those returns with their institutional investors. The cycle restarts when the next VC fund is raised (Gompers and Lerner, 1999; Palacin, 2008).

Figure 5.2: The life cycle of VC investments



Source: Palacin (2008)

6. Supply and demand for VC funding

Definitions of the supply and demand for VC vary widely and typically depend on a researcher's work, i.e. whether his/her research focuses on venture capitalists, institutional investors, or portfolio firms (see Poterba, 1989; Gompers and Lerner, 1999; Jeng and Wells, 2000; Schertler, 2003; Romain and De la Potterie, 2004; Adongo and Stork, 2006; Armour and Cumming, 2006; Felix et al., 2007). Gompers and Lerner (1999) define the supply for VC as "the desire of investors to place money into venture capital funds" (p.150) and the demand for VC as "the desire of entrepreneurs to attract venture capital investment in their firm" (p.150), Armour and Cumming (2006) define the supply side of VC investments as the supply of investment funds from venture capitalists to entrepreneurial firms and the demand side of VC investments as the demand for external equity finance by portfolio firms. However, Schertler (2003) takes a different perspective and distinguishes between two types of supply: the supply of management support by venture capitalists and the financial support by capital providers. Similarly, Schertler states that the demand for VC depends on three factors. The first factor is related to individual incentives to become an entrepreneur – a decision that is, among other things, affected by

labour market regulations and corporate income tax rates. The second factor is the innovation potential of the economy as it determines the number of innovative ideas for which entrepreneurs seek financing. The last factor is the institutional environment and regulations that impact the individual's ability to finance and start a business.

In this dissertation, I focus on the venture capitalists' willingness to invest in portfolio firm on behalf of institutional investors and how their investment decisions are affected by country-specific factors. Thus, when I refer to the supply for VC, I mean the institutional investors (capital providers) who provide funds to the venture capitalists to invest in the portfolio firms. Similarly, when I refer to the demand for VC, I refer to the capital demand by portfolio firms (capital users) who seek external financing from venture capitalists for their business operations.

7. History of the VC industry

The historical development of the VC industry has been examined in several previous studies (see, for example, Rind (1981), Florida and Kenney (1988), Bygrave and Timmons (1992), Timmons and Sapienza (1992), Murray (1995), Fenn et al. (1997), Benjamin and Margulis (2001), Jeng and Wells (2000), Gompers and Lerner (2001 and 2003), Bottazzi and Da Rin (2002), Rigaut (2002), Napier and Mitchell (2008), and Lingelbach (2009) and in a number of recent academic books in the area of entrepreneurial finance, entrepreneurial management, and venture capital (see, for example, Smith and Smith, 2004; Landström, 2007; Metrick, 2007).

Some of the first VC deals in history were likely made in antique times and in early medieval Europe, where entrepreneurs raised capital from private financiers. During the period of Roman Empire, privately financed fire fighting teams were known to negotiate deals before extinguishing fires in a burning building. Later, during the colonization period, in the late 1400s, explorers often relied on informal external equity financing to fund their expedition. Even the Dutch East India Company, the world's first multinational corporation, and the Gutenberg press were financed by early business angels (Lingelbach, 2009). During the 19th and 20th century, private individual investments drove the development of the VC industry. In 1911, the first organized VC firm, run by the Boston Chamber of Commerce, financed new ventures and provided them with its technical support. Later, in 1924, International Business Machines (IBM) was created via a merger that was financed by a U.S. group of private investors.

7.1. The VC history in the U.S.

The U.S. was the pioneer in venture capital by forming American family trusts in order to do proto - venture capital, equity financings in the 1930s (Gompers,1994). The institutional VC market in the U.S. dates back to 1945 when the first formal VC organization of the world called the American Research and Development (ARD) was founded. As is still the case nowadays, this first VC firm was formed as a limited liability partnership (LLP). It was a publicly traded, closed-end VC firm that was established to fund early-stage and high-risk firms that produced technology-related products. In the 1950s, the VC industry established itself on the West Coast, which later became the epicentre of the industry (Saxenian, 1994, and Lingelbach, 2009). In 1958, the U.S. government enacted the Small Business Act and created the Small Business Administration (SBA) and Small Business

Investment Company (SBIC) programs, which soon became key steeping stones for the development of the VC industry in the U.S.

Many of the first venture capitalists acted as professional managers in closed-end mutual funds and were thus subject to government regulations and investment policies that were required by the Securities Act of 1933 and the Securities Exchange Act of 1934 as well as the Investment Company Act (ICA) of 1940. Due to the regulations under the SEC Acts and the ICA, the funds' board of directors were required to report the net asset values of their VC investment portfolios at fair value and in good faith to their investors – a task that was often difficult to accomplish. To avoid these reporting requirements, venture capitalists soon changed their firms' organizational form from a mutual fund to a limited partnership and only selected professional investors, who do not require the protections from the SEC. The early 1970s were a bad period for the U.S. VC industry as the oil crisis led to a global economic recession and the U.S. government raised capital gains tax rates from 25 to 49 percent – a move that had a significant negative impact on investors' willingness to invest in the typically capital gain oriented VC funds. In 1978, the government reduced the capital gains tax rate back down to 28% and in 1980 implemented changes in the Employee Retirement Income Security Act's (ERISA) Prudent Man Rule to allow pension fund managers to invest up to 10% of their assets in risky ventures such as VC funds. These developments, coupled with the rising number of technology startups, beginning with Apply computer in 1975, led to a significant rise in capital commitments for the VC industry throughout the 1980s, followed by a strong comeback of SBIC funds in the 1990s.

The VC industry experienced another setback following the year 2000 collapse of the dot.com bubble, but by 2006, the VC market had sufficiently recovered and had roughly the same size it previously had in 1998 (Landström, 2007).[36]

7.2. The VC history in Europe

Shortly after the U.S. VC industry took its first baby steps in 1945 via the founding of ARD, the European VC industry started in 1946 when the Bank of England created the Industrial and Commercial Finance Corporation (ICFC) and the Finance Corporation Industry (FCI) as part of the U.K.'s reconstruction efforts after World War II. Later, in 1983, these two organizations merged and became 3i (Investors in Industry) plc. In 1947, the Colonial Development Corporation (CDC) was established and was subsequently renamed the Commonwealth Development Corporation. The CDC focused on agribusiness and VC in developing countries. As a private sector alternative to the CDC, in 1953, the Bank of England also created the Commonwealth Development Finance Corporation (CDFC). However, in 1986, this organization was sold after a persistent series of losses (Cowen, 1984: McWilliam. 2001; Lingelbach, 2009).

The U.K. was the first European country to develop a meaningful VC market in Europe and most of this development may be attributed to the large role the ICFC (or 3i) played in the U.K. (Murray, 1995). In Continental Europe, the VC industry experienced its first boom in the Netherlands (in the mid-1980s) that was largely due to a strong incentive program that was offered by the Dutch government (Rigaut, 2002). In the late 1980s, many other European countries also enjoyed a strong VC market development that was largely

[36] For detailed discussion of the development of the U.S. VC industry form 1980 to 2008, see also Kaplan and Lerner (2010).

driven by the emergence of a number of new secondary stock markets (Bygrave and Timmons, 1992). In 1998, the Risk Capital Action Plan (RCAP) was issued by the European Commission in order to foster the development of the emerging European venture capital market.

7.3. Other VC markets

In Asia, the venture capital industry started evolving in the late 1960s and early 1970s as a result of significant support by U.S. government-stimulated funds (Fox, 1996). In 1972, the first private sector venture capital fund was established in Japan (Ono, 1995) and was followed by the establishment of vibrant venture capital sectors in Hong Kong, Singapore, and Taiwan in the 1980s (Kenney et al., 2002). During the same period, the Business Partners were founded in South Africa. In the early 1990s, the VC industry took a giant leap forward in many developing countries following the liberalization of many developing and transitional economies (Leeds and Sunderland, 2003) and due to the expanded activities of many development finance institutions such as OPIC, USAID, IFC and EBRD in Latin America, Central and Eastern Europe, and the former Soviet Union (Lancaster et al., 2002).

The VC markets in Asia grew particularly strong from 1995 to 2000, starting with the evolution of a technology-driven economy in India and followed by the new industrial countries such as China, Hong Kong, Taiwan, Singapore, Malaysia, and Vietnam (Lockett and Wright, 2002). Yet, as noted by Ahlstrom and Bruton (2006), Asian countries still experience some major problems that prevent them from experiencing the same dramatic growth one could observe in the U.S. and Europe. In particular, many Asian countries still

lack a well-developed legal and regulatory environment, which is a fundamental requirement for VC market development.

Following this rich story of the evolution of VC around the world, Fohlin (2006) argues that legal and economic factors that developed in the mid to late 19th century still explain a significant proportion of the differences in the financial sector development I can observe today. Of particular interest I this context may be the studies by Maula and Murray (2003) and Jääskeläinen et al. (2007) that suggest that the creation of a VC industry in even the best legal, economic and technological environments is the product of a long and slow evolutionary change which is compatible with the wider commercial and political environments.

In this dissertation, I extend this notion by exploring whether and how the whole spectrum of a country' s regulatory environment including legal, regulatory, and fiscal factors explain differences in the creation of a VC industry across countries. Most importantly, I introduce a number of new factors and examine how they impact the size of a country's VC market from both a static and dynamic perspective. In addition, I explore the direct impact of legal, regulatory, and fiscal policy reforms on VC investment activity – something that to my knowledge has not been done in any cross-country VC study to date.

Appendix 6: Factors Affecting VC Investments

1. Legal factors

Howa country's legal environment affects its financial market development is discussed, for example, in the seminal papers by La Porta et al. (1997a, 1998, 1999, 2000a, 2000b, and 2002), who study the role of legal systems in promoting countries' financial development and growth. The most relevant aspect of the work undertaken by La Porta et al. (hereafter LLSV) is that the legal system of almost all countries around the world can be classified into two groups (common law and civil law) and, more specifically, into four legal origins, namely, English, French, German, and Scandinavian law. These legal origins differ with respect to their legal rules (also called rules of law or corporate laws) which, among other things, provide protection to shareholder who invest in a domestic firm. In LLSV (1997a), the authors find that investors in common law countries enjoy better protection and that, as a result, the firms in those countries have better access to external financing via the stock markets. LLSV's findings are supported by later studies such as Allen and Song (2002) and Rossi and Volpin (2004). However, Pruti and Wright (2002) provide evidence against LLSV (1997a) and find that, in common law countries such as the U.S. and India, firms do not have better access to external finance. In a follow-up study, LLSV (1998) extend their study and show that strong investor rights, an efficient enforcement of those rights, and well developed accounting standards drive financial development and economic growth. The authors create a data set that characterizes the legal environment in 49 countries around the world, which provides one of the base pillars for my study. Among others, their legal characteristics include a measure of the legal protection of creditors and shareholders' property rights called the Anti-Director Rights index, the origin of law (English, French, German, and Scandinavian legal origin), a measure of law enforcement quality estimated by a country's legal tradition, the degree of

government corruption, the level of contract repudiation, and the quality of a country's accounting standards. LLSV (1998) find that countries with poor shareholder and creditor protection compensate investors (or prevent them from expropriation) by using three different investor protection systems. The first one is the power of courts to judge cases. The second system contains two statutory measures of mandatory dividends and legal reserve requirements, which require firms to give a certain percentage of their net income to shareholders and to reserve a certain level of their capital for creditors in case of bankruptcy. The third system is ownership concentration that allows shareholders in weak protection countries to monitor and put more pressure on managers. Djankov et al. (2008) support LLSV (1997, 1998) and find that investors in common law countries are better protected against expropriation than in civil law countries.

LLSV (1999) further extends the authors' prior analysis by looking at the influence of investor protection rights on government performance and finds that governments in common law countries tend to be less corrupt than those in civil law countries and thus have better developed financial markets. In addition, in LLSV (2000a), the authors examine how protection rights of outside investors affect corporate governance standards and find that, in countries where outside investors are well protected from expropriation, those investors invest more in securities and thus help firms raise more external funds. Similarly, in their 2000b study, they find that better shareholder protection reduces agency problems and results in higher dividend payouts. Finally, in their 2002 study, LLSV find that, in countries with good investor protection, concentration of control rights in firms tend to be lower than in countries with poor investor protection. In sum, LLSV find that legal rules and the effectiveness of their enforcement are some of the major determinants of a country's equity market capitalization. In addition, their findings suggest that

countries' legal origins affect investors' property rights differently insofar as common law countries or countries in the Anglo-Saxon legal family protect shareholders better than civil law countries or countries in the French legal family. Similarly, in countries whose legal systems originate from German civil code, debtholders are more protected than shareholders. The authors conclude that in countries where certain investors are better protected, their respective financial markets are better developed.

LLSV's studies have been extended by numerous researchers (Johnson et al., 2000; Wurgler, 2000; Demirgüç-Kunt and Levine, 2004; Beck et al., 2003a, 2003b; Friedman et al., 2003). These studies consistently find that a country's financial development is strongly related to investor protection rights and legal origin. A common conclusion in these studies is that owners of private property are better protected in common law countries than in civil law countries, which drives the financial development of those countries. In a recent study, Miletkov and Wintoki (2008) take a different approach and find that the level of financial development determines a country's property rights institutions and hence fosters economic growth. In addition to the country-level analyses performed in most studies, some authors have also employed firm-level data. Levine (1997) and Rajan and Zingales (1998 and 2003), for example, examine the link between law and a country's financial development on a firm level. These studies find that, in countries with well-functioning financial markets (primarily English legal origin countries), companies rely more on external finance than in countries with poor-functioning financial markets. Rajan and Zingales (2003) argue that, consequently, differences in the economic growth between countries may be driven by the degree to which companies depend on external financing.

The impact of legal systems on the development of VC markets is examined in several studies. For instance, Black and Gilson (1998), Jeng and Wells (2000), and Cumming et al. (2006) find that larger VC markets are typically found in common law countries where the shareholder rights are better protected. Focusing on the connection between VC contracting and the size of VC markets, Kaplan et al. (2000 and 2004) find that VC financing contracts influence the size of VC markets because they cover issues related to cash flow allocation, boards, liquidation, and other control rights between venture capitalists and entrepreneurs. Furthermore, Lerner and Schoar (2005) find a heightened use of VC contracts in the form of convertible preferred stock and covenants in common law countries where the efficiency of legal enforcement is high. Additionally, Balcarcel (2005) finds that VC firms are more successful, i.e. achieve higher returns on their portfolio investments, in common law countries than in non-common law countries. Similarly, Cumming et al. (2008) examine the governance of VC funds across 39 countries and find that differences in legal structure may help explain differences in the size of VC markets and VC investment returns between different countries in the sense that better legal systems solve agency and control problems in start-up and innovative firms, and therefore drive VC investment performance.

Another study that examines the relationship between legal factors and VC investment activity is that by Armour and Cumming (2006) who find that, in Western Europe and North America, bankruptcy laws are a significant determinant of VC investments and fundraising. VC backed firms in countries with liberal bankruptcy laws have a higher demand for VC funding than those in countries with non-liberal bankruptcy laws. The authors conclude that a country's legal environment is as important as its economic environment in determining VC investment activity. In addition, differences in legal and

regulatory factors have been shown to explain differences in VC investments across countries from both a supply and demand perspective, ultimately affecting countries' overall VC markets (Keuschnigg, 2002; Armour, 2003; Cumming et al., 2006).

In a related context, Soderblom and Wiklund (2005) show that performance of VC investments is influenced by the efficiency of a country's legal framework. Similarly, Wonglimpiyarat (2009) finds that legal structures and regulations have a significant influence on VC fundraising, VC performance and on a country's overall VC and stock markets.

Regarding the link between law and returns on VC investments, Lerner and Schoar (2005) find that in common law countries, where investor protection rights are strongly enforced, firm valuations are significantly higher and, as a result, investors experience higher returns than in civil law countries where investor protection rights are poor. Lerner and Schoar's (2005) results are consistent with those of Cumming et al. (2009) who find that the magnitude of VC investment returns is positively correlated with the level of a country's protection rights.

In a non-VC context, LLSV (1997) find that firms in common law countries enjoy better shareholder rights protection and thus have better excess to external finance via the stock markets. In contrast, when focusing on VC investments, Allen and Song (2002) find a negative relationship between the extent of contract enforcement and the level of VC investments, meaning that contracts are not important in VC markets. They conclude that countries with less tradition for law and order are more attractive to venture capitalists and thus have a higher degree of VC activity and that VC can substitute for public equity and

debt markets. Concerning the linkage between VC claims as creditor claims and the level of VC investments, Allen and Song (2002) find that creditor rights are more important than shareholder rights in determining the amount of VC investment activity. They argue that the reason for this is that VC claims are more similar to creditor claims than equity claims.

At the firm level, legal issues play an important role in attracting outside investors. Legal disclaimers and a description of the legal control structure are a major component of the business plan of almost every entrepreneurial firm (Smith and Smith, 2004). Schertler (2003) notes that legal factors have a significant impact on the investment decisions of venture capitalists whose major role is to get involved in monitoring, financially supporting, managing, and in turn, adding value to venture back firms. Among a myriad of factors affecting their investment decisions, regulations and financial contract laws play a crucial role as they impact their control rights such as board membership and voting rights. With those rights, they can manage the firm, intervene in the firm's business decisions, and finally add value to the firm.

For VC firms that want to do business overseas, Armour and Cumming (2006) find that taxation laws, legal structure, and bankruptcy laws are essential factors that drive the venture capitalists decision to invest or move abroad. Not only do they affect a venture capitalist's profitability, they also give incentives to entrepreneurial firms to do business, and hence augmenting the demand for VC. Similarly, from a managerial and strategic perspective, Coeurderoy and Murray (2008) find that the quality of intellectual property rights protection influences the decision by young high-tech firms whether or not to invest in a foreign country.

Finally, two recent studies on the relationship between investor protection rights and VC fundraising activity are presented by Groh et al. (2007 and 2008) who find that the protection of property rights is a primary determinant of the development of VC investments activity in Central Eastern Europe and that investor protection and corporate governance rules as well as the size and liquidity of capital markets are very important for attracting VC funds and for increasing VC fundraising activity in all European countries.

2. Macro-economic factors

2.1. GDP growth

While Gompers and Lerner (1999 and 2004) find a positive relation between GDP growth and VC fundraising in the U.S., the findings of Jeng and Wells (2000) and Marti and Balboa (2001) indicate that GDP growth has no impact on VC funding for either early or late stage firms. Romain and De la Potterie (2004) study the relation between countries' GDP growth rate and the supply and demand for VC using a sample of 16 OECD countries and find that GDP growth impacts VC demand more than VC supply. Similarly, in a study that focuses on the Canadian VC market, Cumming and MacIntosh (2006) find that changes in real GDP in Canada influence the supply and demand for VC. In addition, in line with Gompers and Lerner (1999 and 2004), Armour and Cumming (2006) find a positive impact of GDP growth on VC investment activity in Western Europe and North America. These findings are also supported by Felix et al. (2007) who use a random effects model to test the relationship between GDP growth and VC investment activity. Finally, Bonini and Alkan (2009) find that GDP growth has a significant impact on early stage VC investments in a sample of 16 countries around the world.

2.2. Interest rates

The impact of interest rates on VC fundraising is examined by Gompers and Lerner (1999). Using U.S. data, they show that, while a high level of interest rates negatively affects VC fundraising, it positively influences VC investments. Later studies by Jeng and Wells (2000) and Romain and De la Potterie (2004), use larger cross-country datasets and find that short-term interest rates have a stronger impact on VC demand than on VC supply. This is in contrast to Cumming and MacIntosh (2006) who find that real interest rates in Canada influence both the supply and demand for VC. Finally, a recent European VC investment study by Felix et al. (2007) suggests that the level of long-term interest rates affects early stage VC investments in European countries. The later results are also supported by Bonini and Alkan (2009) who perform a similar analysis of early stage investments.

2.3. Unemployment rates

Felix et al. (2007) provide one of the first empirical analyses to examine the impact of unemployment rates on VC markets. Examining early stage investments in a sample of 23 European countries, the authors find that unemployment rates have a significant impact on VC investments.

2.4. Employment growth as a proxy for labour market performance

Taking a different perspective, the impact of VC investments on countries' employment growth is examined by Belke et al. (2003) who find that, in OECD countries, innovative entrepreneurship increases the number of jobs in new and young firms, which consequently results in countries' employment growth.

2.5. Stock market returns and liquidity

Gompers and Lerner (1999) find a positive correlation between the equity market returns (which they refer to as stock market opportunities) and VC fundraising in the U.S. On the other hand, later studies by Jeng and Wells (2000) and Romain and De la Potterie (2004) show that neither the growth nor the liquidity of a country's stock market impact the growth of VC funding even though those factors are directly related to the availability of IPO exits. At the same time, Schertler (2003) extends the study by Jeng and Wells (2000) and finds that stock market growth and liquidity have a positive impact on VC investments in Western Europe. However, their results only hold for early stage investments, not for investments made at the expansion or later stages. While Schertler (2003) uses changes in stock market capitalization as a proxy for the growth rate of a country's stock market, Jeng and Wells (2000) use the market value of IPOs. A later study by Cumming and MacIntosh (2006) shows that the stock market performance in Canada influences the supply and demand for VC. This is also supported by Felix et al. (2007) who find that increases in stock market capitalization affect both the supply and demand for VC funds in Europe.

3. Regulatory factors

3.1. Capital gains tax rates

In the U.S., there have been numerous regulatory and fiscal changes in recent decades which affected investors' willingness to invest in VC funds. Among other things, they frequently resulted in changes to the capital gains tax rate that VC investors have to bear once they draw profits from their investments. These included, for example, the Revenue

Act of 1978 and the Economic Recovery Tax Act of 1981 (see Bygrave and Timmons (1992), Gompers and Lerner (1999 and 2004), and Wonglimpiyarat (2009) for details).

Focusing on the supply and demand for VC, Poterba (1989) finds that changes in capital gains taxation have a significant impact on investors who incur a personal tax liability when they realize their gains, but not on investors who are tax-exempt (e.g. pension funds). With respect to the demand for VC funds, Poterba further finds that capital gains tax rates also affect entrepreneurs and employees in start-up firms who pay personal capital gains taxes for stocks and options that they receive as part of their compensation instead a salary. If personal capital gains taxes rise, those parties are generally less inclined to apply for VC funds. This finding is also confirmed by Anand (1996), Gompers and Lerner (1999), Jeng and Wells (2000), and Armour and Cumming (2006) who show that an increase in the capital gains tax rate negatively impacts the level and composition of VC investments. In their studies on the determinants of VC fundraising, Gompers and Lerner (1999 and 2004) find that reductions in capital gains taxes lead to greater VC commitments. This effect is significant at the firm, industry, and country levels. Moreover, focusing on the relationship between risk and return, Schertler (2003) notes that, taxation has an impact on the investment decisions of VC providers in the sense that an increase in capital gains tax rates reduces VC providers' returns, while their risk level remains constant. In addition, Rigaut (2002) finds that capital gains taxes negatively affect the demand for VC. Finally, Armour and Cumming (2006) point out that the capital gain tax rate is an important economic factor that determines the number and amount of VC investments made in a given country.

3.2 Corporate income tax rates

Romain and De la Potterie (2004) examine the impact of corporate income tax rates on VC investments in OECD countries from 1990 to 2000. They show that the lower the corporate income tax rates, the higher the total amount of VC investments made in that country. Bonini and Alkan (2009) support these results and find that corporate income taxation is a significant factor in explaining early stage VC investments.

3.3. Labour market rigidities

Labour market rigidities refer to the flexibility of a business to be able to decrease or increase its labour force. In the cross-sectional study by Jeng and Wells (2000), labour market rigidities are found to have a negative impact on early stage VC investments. This finding is supported by Schertler (2003) who focuses on Western European countries and finds a negative effect of labour market rigidities on early stage VC investments (not on the later or expansion stage investments). Similarly, Romain and De la Potterie (2004) find that labour market rigidities reduce GDP growth as well as the growth rate of human knowledge. Finally, Bonini and Alkan (2009) find that labour market rigidities are a significant determinant of VC investment activity at all investment stages.

4. Accounting standards

In their cross-country study on the determinants of VC fundraising, Jeng and Wells (2000) note that countries' accounting standards and financial reporting requirements impact VC funding. The authors explain that high-quality financial reports act to reduce asymmetric information. Specifically, in countries with stronger accounting regulations, investors will

require a lower risk premium from VC-backed firms as they have more complete details about those firms.

5. Pension funds

In 1974, the U.S. government issued the Employee Retirement Income Security Act (ERISA), which allowed pension fund managers to freely invest in such risky asset classes as VC. Kortum and Lerner (2000) find that the passage of ERISA spurred fundraising because pension fund managers quickly appreciated the diversification benefits offered by the low correlation of VC fund returns with the returns of other asset classes and thus increased their VC holdings. In their cross-country analysis, Jeng and Wells (2000) reveal that VC fundraising is affected by the levels of private pension fund investments over time, not across countries. Romain and De la Potterie (2004) extend previous studies by Kortum and Lerner (2000) and Jeng and Wells (2000) and find that private pension funds positively impact the supply and demand for VC in OECD countries.

6. VC exit strategies

6.1. VC exit through an IPO

Black and Gilson (1998), Gompers and Lerner (1999, 2001, and 2004), Lerner (1999 and 2002), Jeng and Wells (2000), Hellmann (2000), and Barnes et al. (2003) define the success of a VC investment by the ability of VC funds to exit their investment through an IPO. The study by Black and Gilson (1998) shows that countries with a market-based financial system and an active market for IPOs have a stronger VC industry than countries with a bank-based system. Thus, the availability of public IPO markets drives the success

of VC markets due to the fact that an IPO typically allows VC investors to exit their investments with a high return. These results are supported by Jeng and Wells (2000) who extend Black and Gilson's (1998) study and find that an increase in IPO volume drives VC funding. This is particularly so far go at the later-stage investments rather than early-stage investments. In line with Jeng and Wells (2000), Bonini and Alkan (2009) find that availability of IPOs is a significant driver of early-stage VC investments. In addition, Gompers and Lerner (2001) find that IPO timing drives the success of the VC industry.

Gompers and Lerner (2001) find that IPO exits provide investors with higher returns than other exit strategies such as a merger or acquisition. In addition, Djankov et al. (2005) find that, in the U.S., an increase in IPO activity trends to cause a rise in VC capital. However, the above results stand in contrast with a study by Romain and De la Potterie (2004) who find that IPOs have no effect on either VC supply or demand in OECD countries. Cumming et al. (2006) raise some doubt about this explanation and argue that, instead of active IPO markets, protection of investor rights drives the success of VC markets.

6.2. VC exit through trade sales

In a study of VC markets in Europe, Felix et al. (2007) indicate that trade sale divestments have a significant impact on VC investments. They note that this effect applies particularly to late-stage VC investments.

7. Geographical factors

Based on statistics from Japan, the U.K., Israel, and Germany, Mayer et al. (2005) find that differences in the location of funded firms explain differences in VC investment activity. Similarly, Lerner (1995) finds that, in the U.S., the higher the distance between venture capitalists and their portfolio companies, the less monitoring support they provide, while Sorenson and Stuart (2001) find that VC firms like to invest in companies that are located close to them. However, Balcarcel (2005) finds that location has no effect on investors' benefits when they invest in diversified VC firms that target domestic and foreign portfolio companies outside the U.S. Finally, according to a recent study by Coeurderoy and Murray (2008), location influences the decision by young hi-tech firms whether or not to invest in a foreign country.

8. Cultural factors

Hofstede (1983 and 2001) provide some of the first cross-country studies that examine how culture affects business. He creates measures of cultural distance or cultural dimension across nations and relates them to individuals' attitude toward professionals. More recently, Licht et al. (2001) and Stulz and Willamson (2003) examine the linkage between culture and investor protection in financial markets. Licht et al. (2001) find that culture explains differences in investor protection rights better than legal origin. Similarly, using religion and language as cultural indicators, Stulz and Willamson (2003) find that religion affects the protection of shareholder and creditor rights and thus has an effect on stock market development. There are few studies that examine culture and its effect on VC. Sapienza and Manigart (1996) find that culture can explain some of the differences of how

venture capital funds operate in different countries. In addition, a recent study by Ye et al. (2008) examines whether cultural differences influence the interaction between VCs and CEOs. The authors find that, from an entrepreneur's perspective, perception and behavioural responses of venture capitalists are influenced by differences in cultural values. From a venture capital perspective, cultural differences help venture capitalists evaluate the CEOs of portfolio companies, efficiently deal with entrepreneurs of different cultural backgrounds in terms of joint decision making, and thus help VCs achieve investment success.

9. Political factors

One of the first cross-country analyses of the relationship between politics and stock market development was carried out by Kim (2008) who finds that a country's political institutions have a significant impact on its stock market development. In addition, Coeurderoy and Murray (2008) examine the link between political uncertainty and VC. Based on statistics from the U.S. and Germany, they conclude that political uncertainty (or political risk) influences the decision of young hi-tech firms whether or not to invest in a given country. Finally, Bonini and Alkan (2009) find that political risk factors (corruption and socioeconomic conditions) are significant in explaining VC investments at all stages.

10. Technological opportunities

10.1. The growth rate of R&D expenditures as an indicator of technological opportunities

Using a sample of VC transactions in the U.S., Gompers and Lerner (1999 and 2004) find that academic and industrial R&D expenditures have a positive impact on VC fundraising. Similar results are found in OECD countries by Romain and De la Potterie (2004) and in Europe by Felix et al. (2007) who note that increased R&D expenditures drive the demand for VC funds.

10.2. Number of patents

Kortum and Lerner (2000) study how investments by VC funds affect innovation in the U.S. Specifically, they focus on the 1980 changes in the Employee Retirement Income Security Act's (ERISA) prudent man rule that allowed pension fund managers to invest in VC funds. The authors find that the higher the investments made by venture capital funds, the higher the patenting rates. Schertler (2003) further finds that the number of patents has no significant impact on VC investments both at the early and expansion stages. However, the author notes that her results may be unreliable as they are based on too few observations.

11. Entrepreneurial opportunities

11.1. Total entrepreneurial activity (TEA)

Romain and De la Potterie (2004) examine how levels of entrepreneurship, as captured by the total entrepreneurial activity index affect VC supply and demand. This index is

measured by the proportion of adults in nascent firms and in new firms and is used as a proxy variable for the entrepreneurial culture in a given country. The authors find that the growth rate of human knowledge is influenced by the percentage of people who work in start-up firms. In addition, Felix et al. (2007) use this index as a control variable to examine the effect of macro-economic factors on early-stage VC investments in Europe. Finally, Bonini and Alkan (2009) find that total entrepreneurial activity has a positive impact on VC investments, but only at the early stage.

11.2. Availability of human capital

Schertler (2003) studies how human capital endowments (i.e. the availability of human capital), estimated as the number of employees who work in R&D affects VC investment activity. Using a sample of Western European countries, the author finds a positive relation between human capital endowments and VC investments at the early investment stage, but not at the expansion or later stage.

Appendix 7: Variable Definitions

Variable descriptions, data sources, and expected relationships

Variable	Variable Abbrev.	Source	Description	Expected Influence on VC Investment Activity
			Dependent variables	
VC investment activity variables				
VC investment amount	VC_AMT	SDC VentureXpert	Amount of funding (in US$ thousand) provided to local firms in a given country per year, relative to the country's average GDP during my sample period (1995-2008), separated into early (seed and startup) stage, expansion stage, and total investments.	n/a
Number of VC financing rounds	VC_ROUNDS	SDC VentureXpert	Number of venture capital deals in a given country per year, divided by the country's stock market capitalization during my sample period (1995-2008), separated into early (seed and startup) stage, expansion stage, and total investments.	n/a
VC firm nation	FIRM_NATIO N	SDC VentureXpert	Nation where a VC firm's headquarters are located.	n/a
Portfolio company nation	COMPANY_N ATION	SDC VentureXpert	Nation where a portfolio company's headquarters are located.	n/a
			Independent variables	
Legal origin variables				
Legal origin	LAW (Eng, Fren, Ger, Scan, and Soc)	Djankov et al. (2007)	Five legal origins for each country: English common law (Eng), French commercial code (Fren), German commercial code (Ger), Scandinavian civil law (Scan), and Socialist civil law (Soc). Each legal origin is captured by a dummy variable that equals 1 if the legal origin of the country is English common law, or French commercial code, German commercial code, Scandinavian civil law, or Socialist civil law and 0 otherwise.	Eng + Fren – Ger – Scan – Soc –
Investor protection rights variables				
Shareholder rights	SR	LLSV (1998) and Djankov et al. (2008)	The shareholder rights index (frequently also called the anti-director rights index) ranges from 0 to 6, with a higher rating representing stronger shareholder rights protection. The index increases by 1 when each of the following is true: 1) the country allows shareholders to mail their proxy vote to the firm, 2) shareholders are not required to deposit their shares prior to the general shareholders' meeting, 3) cumulative voting or proportional representation of minorities on the board of directors is allowed, 4) an oppressed minorities mechanism is in place, 5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than or equal to 10 percent and 6) shareholders have pre-emptive rights that can be waived only by a shareholders' vote (see LLSV, 1998, p. 1126-1127).	+
Creditor rights	CR	LLSV (1998) and Djankov et al. (2007)	The creditor right index in 2002 ranges from 0 to 4, with a higher rating representing stronger creditor rights protection. The index increases by 1 when each of the	+

			following is true: 1) there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization, 2) secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze", 3) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as the government or workers, and 4) management does not retain administration of its property pending the resolution of reorganization (see Djankov et al., 2007, p. 455).	
Changes in creditor rights	ΔCR	Djankov et al. (2007)	Changes in creditor rights from 1995 to 2004 based on the aggregated creditor rights score calculated by Djankov et al. (2007). Djankov et al. register positive/negative changes in the index if any of the four components of the index change during a given year.	+
Law enforcement variables				
Rule of law	ROL	LLSV (1998)	The rule of law index measures the law and order tradition in a given country. The index ranges from 0 to 10, with higher ratings for a stronger tradition for law and order. In countries with a stronger law and order tradition, the citizens are generally viewed as being more willing to "accept the established institutions to make and implement laws and adjudicate disputes" (see LLSV, 1998, p. 1124). LLSV collected this variable from International Country Risk Guide. See also Brockman and Unlu (2009, p. 280) who note that rule of law index captures the degree to which citizens have confidence in, and are bounded by, the rules of their society. This index includes ''perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts.''	+
Formalism index	LE	Djankov et al. (2003)	The index measures substantive and procedural statutory intervention in judicial cases at lower-level civil trial courts. It ranges from 0 to 7, with higher numbers indicating more formalism, i.e. a higher level of control or intervention in the judicial process. The index is formed by adding up the following indices: (i) professionals versus laymen, (ii) written versus oral elements, (iii) legal justification, (iv) statutory regulation of evidence, (v) control of superior review, (vi) engagement formalities, and (vii) independent procedural actions (see Djankov et al., 2003, p. 469 for more details).	+
			Intellectual property rights variables	
Intellectual property rights index	IPR	The Property Rights Alliance organization (www.internationalpropertyrightsindex.org)	The index is calculated for the year 2008 and covers all areas of intellectual property rights including 1) protection of intellectual property rights from the World Economic Forum, 2) patent rights from Ginarte and Park (1997), 3) copyright piracy from the U.S. Trade Representative's 2008 301 Watch List Report, and 4) trademark protection from the International Trademark Association's 1998 Report. The IPR index ranges in value from 0 to 10. A higher score indicates better protection of intellectual property rights in a given country.	+
Patent rights index	PRI	Ginarte and Park (1997)	The patent rights index is constructed by Ginarte and Park (1997) based on a quinquenial evaluation of national patent laws during the period 1960 to 1990. The index ranges from 0 to 5, with higher values indicating stronger patent rights protection. In constructing the index, the authors considered five characteristics of national patent laws: (1) extent of coverage, (2) membership in international patent	+

			agreements, (3) provisions for loss of protection, (4) enforcement mechanisms, and (5) duration of protection (see Ginarte and Park, 1997, p. 284).	
Political channel variables				
Judicial independence index	JI	Beck et al. (2005)	An index that combines the two political channel variables from Beck et al. (2005): the supreme court power and the tenure of supreme court judges. The Supreme Court power is a dummy variable that takes on a value of 1 if supreme court judges have lifelong tenure and jurisdiction over administrative cases, and 0 otherwise. The tenure of supreme court judges is a dummy variable that indicates the length of tenure of supreme court judges (0=less than six years, 1=more than six years but not lifelong, 2=lifelong). My judicial independence index ranges from 0 to 2 and is calculated by adding the supreme court power dummy plus 0.5 times the tenure of supreme court judges.	+
Adaptability channel variables				
Jurisprudent flexibility index	JF	Beck et al. (2005)	An index that combines the two adaptability channel variables from Beck et al. (2005): case law and legal justification. Case law is a dummy variable that equals 1 if judges base their decision on case law, and 0 otherwise. Legal justification measures the level of legal justification required in the process. The variable is calculated as the normalized sum of three subindices and increased by 0.33 if one of the following statements is true: 1) the complaint must be legally justified, 2) the judgment must be legally justified, and 3) the judgment must be based on law (not on equity). The index ranges from 0 to 1, where higher values mean a higher use of legal language or justification. I calculate the jurisprudent flexibility index by summing the case law dummy variable and (1 - the legal justification dummy variable). The resultant measure thus ranges from 0 to 2.	+
Private pension fund reform variable				
Private pension fund reforms	ΔPPF	Various	Change in a country's pension fund regulations that allow pension funds to invest in VC (or restrict pension funds from investing in VC). A value of 1 means that pension funds are allowed to invest in VC in a given country. A value of 0 indicates that pension funds are not allowed to invest in VC. Legal reforms are identified based on information provided by the Economist Intelligence Unit (EIU) database (1996-2009), OECD (1997), O'Shea (1997), O'Shea and Stevens (1998), Jeng and Wells (2000), Heerde (2001), Burgess (2002), Kenney et al. (2002), Spieckermann (2002), Hinz (2003), Bosut (2004), Chan-Lau (2004), Martin et al. (2004), Olivares (2004), Choi (2005), Kharas and Steer (2006), ABVCA (2006), Bayhan (2007), Mitchell (2007), Schröder (2007), Tapia (2007), Wijina (2007), Coelho et al. (2009), and LAVCA (2009) as well as a series of surveys with industry professionals (including pension fund managers, mutual fund managers, investment advisors, and partners of VC firms) in 23 countries and VC associations including the Latin American Venture Capital Association (LAVCA) for 13 Latin American countries, Associação Brasileira de Private Equity & Venture Capital (ABVCPA) for Brazil, the African Venture Capital Association for Kenya, and the Indian Venture Capital Association (IVCA).	+
Fiscal variables				

Capital gains tax rate	CGT	PricewaterhouseCoopers	Maximum capital gains tax rate charged by the federal government of a given country, measured at the end of the year.	-
Corporate income tax rate	CIT	PricewaterhouseCoopers and OECD	Maximum corporate income tax rate charged by the federal government of a given country, measured at the end of the year.	-
Changes in corporate income tax rates	ΔCIT	PricewaterhouseCoopers and OECD	Annual change in a country's maximum corporate income tax rate used to proxy for a corporate income tax reform in that country.	-
		Control variables		
Macroeconomic variables				
GDP	GDP	Global Market Information Database (GMID) by Euromonitor International and World Development Indicators (WDI) Database by the World Bank	Gross domestic product, measured annually and converted to US dollars for each country.	+
GDP per capita	GDPC	Global Market Information Database (GMID) by Euromonitor International	The Gross domestic product per capita, measured annually and converted to US dollars for each country.	+
Real GDP growth	ΔRGDP	World Development Indicators (WDI) Database by the World Bank	Real GDP Growth (in % growth). The percentage increase or decrease in a country's real GDP during a given year relative to the previous year.	+
Economic Freedom of the World index	EF	The Fraser Institute (www.freetheworld.com)	The index measures the degree of economic freedom in five major areas including 1) the size of government, 2) the legal structure and security of property rights, 3) the access to sound money, 4) the freedom to trade internationally, and 5) the regulation of credit, labour, and business. It ranges from 0 to 10, with higher values indicating a higher degree of economic freedom. During the period from 1970 to 2000, the index is calculated on a quinquenial (five-year) basis, while starting from 2001 it is reported annually. For my empirical analysis, I interpolate the 1996-1999 figures based on the index values in 1995 and 2000.	+
Net change in foreign direct investment inflows	ΔFDII	World Development Indicators (WDI) Database by the World Bank	Percentage change in foreign direct investment inflows (i.e., inflows – outflows) as a percentage of total GDP.	+

Nominal long-term interest rate	NI	Bloomberg and Bulgaria's National Bank	Annualized nominal interest rate on 10-year government bonds. Due to missing data for Bulgaria, I use the country's 10-year yield on government securities in the primary market as reported by Bulgaria's National Bank (http://www.bnb.bg/Statistics/StMonetaryInterestRate/StInterestRate/StIRInterestRate/index.htm).	+
Real long-term interest rate	RI	World Development Indicators (WDI) Database by the World Bank	Annualized real interest rate calculated as the nominal interest rate on 10-year government bonds, adjusted for inflation as measured by the GDP deflator.	-
Inflation	INF	World Development Indicators (WDI) Database by the World Bank	Annual inflation rate measured by the GDP deflator (expressed in percentage terms).	-
Unemployment rate	UR	World Development Indicators (WDI) Database by the World Bank	Annual unemployment rate, measured as a percentage of the total labor force in a given country.	-
Stock market variables				
Stock market capitalization	SMC	World Development Indicators (WDI) Database by the World Bank and the World Federation of Exchanges	Stock market capitalization of all listed companies in a given country, measured in US$ million. Market capitalization (also known as market value) is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles (see Standard & Poor's Emerging Stock Markets Factbook).	+
Stock market growth	ΔSMC	World Development Indicators (WDI) Database by the World Bank and the World Federation of Exchanges	Annual percentage growth in a country's stock market capitalization, adjusted for inflation.	+
Financial market variable				
Disclosure index	DIS	LLSV (2006)	An index measure of the strength of a country's prospectus disclosure regulation as of December 2000. The index equals the arithmetic mean of six subindices that focus on disclosure regulations related to a company's 1) prospectus, 2) compensation, 3) shareholders, 4) inside ownership, 5) irregular contracts, and 6) transactions. The higher the index value, the more stringent the disclosure regulation. The index values are measured on a 100-point scale.	+

Entrepreneurial environment variables				
Total Entrepreneurial Activity index	TEA	Global Entrepreneurship Monitor (GEM)	A proxy for the level of entrepreneurship in a given country. The total entrepreneurial activity (TEA) index is calculated by the Global Entrepreneurship Monitor (GEM) from 1998 to 2005. It measures the number of new entrepreneurs and new companies and is computed by adding the proportion of adults involved in the creation of emerging firms and the proportion involved in new firms. It ranges from 1 to 20, with 1 being the lowest and 20 the highest level of entrepreneurial activity.	-
Ease of Doing Business ranking	EB	World Development Indicators (WDI) Database by the World Bank	An index that ranks economies on their ease of doing business. The index ranges from 1 to 183, with 1 representing the most business-friendly environment. A high ranking on the ease of doing business index means that the regulatory environment is conducive to operating a business. This index is created after ranking countries on 10 topics, made up of a variety of indicators, giving equal weight to each topic. The rankings are from the Doing Business 2010 report, covering the period June 2008 through May 2009. (www.doingbusiness.org/EconomyRankings/)	+
Technological variable				
Total R&D expenditures	RDE	World Development Indicators (WDI) Database by the World Bank	Total expenditure on R&D as a percentage of total GDP, measured annually from 1996 to 2006.	+
Political variables				
Political freedom index	PF	Freedom House (www.freedomhouse.org)	The index is based on an evaluation of 3 characteristics of a country's political system, i.e. the electoral process, political pluralism and participation, and the functioning of government. The index covers the period from 1992 to 2009. As of 2009, it is available for the 192 countries. The index is assessed on a scale from 1 to 7, with 1 being the most politically free and 7 being the least politically free.	+
Non-corruption perception index	CP	Djankov et al. (2003)	The index measures the perceived level of public-sector corruption in 180 countries and territories around the world. The index is calculated for the year 2000 and draws on 14 data sources from 7 institutions: the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, PricewaterhouseCoopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit and Freedom House's Nations in Transit. The index ranges between 10 (highly clean) and 0 (highly corrupt). See Transparency International (www.transparency.org).	-
Cultural variable				
Religion	RL (Ath, Bud, Cath, Hin, Ind, Jew, Mus, Ortho, and Protest)	Djankov et al. (2007)	A dummy variable that identifies the religion practiced by the largest proportion of the population. There are nine religions: Atheist, Buddhist, Catholic, Hindu, Indigenous, Jewish, Muslim, Orthodox Christian and Protestant, which are all represented in my sample. Atheist and Indigenous religions are combined in the same group.	Ath and Ind + Bud + Cath - Hin + Jew + Mus - Ortho - Protest +
Age of VC industry	AGE	SDC VentureXpert	Measure of the number of years between the date the first portfolio firm received VC funding in a given country and 1995 (the start of my sample period).	+

Socialist civil law	LAW (Soc)	Djankov et al. (2007)	A dummy variable for communist countries to account for the fact that they have no time to establish their own VC industries before 1990s. After that time, all formerly communist countries had an opportunity to establish a VC industry. The communist country dummy thus accounts for the delay in these countries' ability to establish a functioning VC industry (same as the socialist civil law dummy defined under the legal origin dummies above).	-

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