

3 Why venture capital markets are well developed in some countries but comparatively small in others: evidence from Europe

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Abstract

This chapter extends the literature on the relationship between a country's legal system and its financial development. While previous studies have examined firms' access to broader debt and equity sources of external finance, our study focuses specifically on firms' access to venture capital (VC). Venture capital often provides a first stepping stone for young firms and is thus a crucial part of a country's financial development. We employ data on VC financing deals from the Securities Data Company's (SDC) VentureXpert database for the period from 1995 to 2004, which we combine with a series of country-specific factors for the same period. We argue that the origin of a country's legal system affects firms' access to capital. In addition, we hypothesize that an independent judiciary, an adaptable legal system, and effective contract enforcement provide the necessary background for venture capitalists to seek out and finance otherwise risky companies. As an added benefit, our study explores the linkage between venture financing activity and various other country characteristics, helping us address the question why VC markets are well developed in some countries while they are comparatively small in others.

3.1 Introduction

Not every firm has equal access to external financing. Aside from firm-specific factors that may determine how well and how much capital a firm can attract, country-specific factors often play a major role as well. This chapter extends the extant literature that investigates how a country's financial system relates to its legal tradition and economic development by focusing on the VC market in Europe. Using data for approximately 4000 firms in 38 countries around the world, Beck et al. (2005) observe that firms in countries with French legal origin face significantly higher obstacles in accessing external finance than firms in common law countries. In addition, they observe various other country-wide factors that affect a company's access to finance. A potential shortcoming of their dataset, however, is that it is derived from survey data, specifically managers' responses to the World Business Environment Survey (WBES). One problem of working with survey data is that an

individual's responses may be subjective and potentially biased. With respect to the WBES survey, this may be particularly problematic as the survey was conducted in 1999, at the height of the 'hot' IPO market in the U.S. and many other countries around the world, when investor optimism and firms' access to finance were arguably better than usual. We aim to overcome this problem by using 'hard' data on venture capitalist financing activity during a ten-year period from January 1995 to December 2004, collected from the Security Data Company's VentureXpert database. The goal of our study is to relate the venture capitalist activity in a given country to various factors describing its economic and legal development and to answer the question whether potential obstacles that firms may face in contracting for external financing are related to linkages running from legal origins to legal traits.

3.2 Literature review

There is a substantial body of research that finds a robust relationship between the origin of a country's legal tradition and the operation of its financial system. La Porta et al. (1998), for example, distinguish between commercial and company law that is based on British, French, German, and Scandinavian legal origins and find that these legal origins are important in explaining the creditor and shareholder rights in the respective countries. Similarly, La Porta et al. (1997) and Levine (1998, 1999, 2003) show that cross-country differences in the size of the banking sector and the level of stock market development can be explained by differences in investor protection laws. As Beck et al. (2005) point out, this means that researchers have identified an empirical chain running from legal origin to investor protection laws to financial development.¹

The legal origins theory 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 common law, as opposed to French civil law, and to a lesser degree to German and Scandinavian civil law, is associated with more orientation towards institutions of the market (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).² Beck et al. (2003a) summarize the comparative legal literature

¹ Beck et al. (2005, 2003a) provide an excellent review of related studies, pointing out that researchers have also found legal institutions to influence the efficiency with which financial systems allocate capital (Beck and Levine, 2002; Wurgler, 2000), the valuation of firms (Caprio et al., 2003; Claessens et al., 2002; La Porta et al., 2002), the dividend payment policies of corporations (La Porta et al., 2000), the efficiency of equity markets (Morck et al., 2000), and the financial fragility of firms (Johnson et al., 2000). Moreover, Beck et al. (2003b) document a robust connection between legal origin and equity market development as well as property rights protection. Finally, Levine et al. (2000) and Beck et al. (2000b) establish that the component of financial development explained by legal origin explains economic growth.

² 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. Judges in civil law countries, on the other hand, generally base their rulings on a strict interpretation of the written codes and laws. Because the weight accorded to judicial precedent is much lower in civil law countries, their legal system tends to be static and inflexible, whereas common law allows the judiciary to dynamically react to new developments.

and note that legal theories emphasize two inter-related channels through which legal origin influences finance.

First, the 'political' channel contends that (a) legal traditions differ in terms of the priority they attach to private property rights versus the rights of the State and (b) the protection of private contracting rights forms the basis of financial development (La Porta et al., 1999). Beck et al. (2003a) note that the English common law evolved in the tumultuous 16th and 17th centuries when Parliament and the English kings battled for control of the country. During those days, the Crown attempted to reassert feudal privileges and sell monopolies to raise revenues. Courts sided with Parliament (composed mostly of wealthy merchants and landowners) and protected private property owners against the Crown. These developments facilitated the ability of private property owners to transact confidently, with positive repercussions on financial development (North and Weingast, 1989). On the other hand, the French and German civil codes, which were developed in the 19th century during the Napoleonic rule in France and Bismarck's rule in Germany, were constructed to solidify State power by placing the 'prince above the law' (Hayek, 1960: 166–167). Because the State dominated the judiciary, legal traditions evolved that focused more on the power of the State and less on the rights of individual investors (Mahoney, 2001). As a result of its promotion of institutions that encourage State power, civil law tradition is believed to have adverse implications on financial development.

Second, the 'adaptability' channel focuses on the flexibility of a legal system in adapting to changing environments. Hayek (1960) points out that legal traditions differ in their ability to evolve with changing conditions. Merryman (1985) extends this line of thought and argues that legal traditions that adapt efficiently to minimize the gap between the contracting needs of the economy and the legal system's capabilities will more effectively foster financial development than more rigid systems. Posner (1973) argues that British common law evolves efficiently as judges respond case-by-case to unforeseen and changing conditions. In addition, Beck et al. (2003a) suggest that since common law grants substantial discretion to judges, inefficient laws are challenged in the courts and, through repeated litigation, efficient rules replace inefficient ones. In reviewing the comparative law literature, they note that legal systems that reject jurisprudence – the law created by judges in the process of solving disputes – and rely instead on changes in statutory law will tend to evolve more inefficiently with negative implications for finance. Beck et al. (2005) note that the Napoleonic doctrine's mistrust of judges and jurisprudence hinders the flexibility of the legal system in countries that follow the French civil code. As a result, financial development is adversely affected in these countries. Yet, not all civil law countries are constrained by a rigid legal system. German and Scandinavian civil law is considered to be much more dynamic as both systems rejected the Napoleonic doctrine and maintained their historical roots in jurisprudence and judicial discretion (Beck et al., 2003a).

It is important to understand that the political and adaptability channels are not mutually exclusive and 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.

This chapter focuses specifically on a firm's access to venture capital and uses broad cross-country regressions to assess whether legal tradition shapes finance primarily by affecting the power of the State relative to the judiciary or primarily by influencing the adaptability of the law to evolving conditions.

3.3 Data

The data used in this study come from several different sources. We start by identifying all venture capital deals in which funds were provided to European companies between January 1995 and December 2004 in the Securities Data Company's (SDC) VentureXpert database. The VentureXpert database provides detailed information for each venture capital deal, including, for example, the date of each financing round, the amount a company received, and detailed information on the venture capitalists that disbursed the funds.

We combine our dataset with country-level data provided by Demirgüç-Kunt and Maksimovic (1998) and Beck et al. (2005, 2003a). Because their datasets only cover the largest European countries, we eliminate venture capital deals for countries not included in their studies from our dataset. This leaves us with approximately 27 300 venture capital financing rounds provided to more than 12 300 firms in 19 European countries. Table 3.1 provides summary statistics for our dataset.

Our dataset contains a diverse group of countries in terms of venture capitalist (VC) activity. The UK, France and Germany clearly lead Europe with respect to the number of firms that received venture capital funding with approximately 3950, 2500, and 1500 funded firms, respectively. Yet, countries in which fewer than 100 firms received venture capital funding during our sample period (such as Cyprus, Greece, Iceland, and Luxembourg) are also represented. Not surprisingly, the UK, France, and Germany also lead our sample when ranked by the total US\$ amount of funds disbursed.^{3,4}

With few exceptions, the average size of each financing deal and the average size of the VC syndicate involved in each deal tend to be larger in the larger European economies.⁵ Moreover, we observe that in larger economies a bigger proportion of domestic venture capital firms stand behind a given deal. The remainder is usually financed by U.S. venture capitalists and VC firms located in other (typically European) nations. Not surprisingly, our statistics suggest a general trend for larger economies to have more developed venture capital markets than smaller economies.

³ Note that the VentureXpert database provides information on financing deals in US\$ terms. We carry over reported investment amounts directly from their database. This allows us to avoid possible currency conversion issues as well as reporting problems related to the introduction of the Euro during our sample period.

⁴ Note that the totals in column 4 of Table 3.1 do not correspond to the figures provided in column 2 and 3 because firms frequently receive more than one financing round.

⁵ A notable exception is Luxembourg. Here, few firms received VC funding, but the amounts provided to these firms were considerably higher than in most other countries.

Table 3.1 Summary statistics for our dataset of venture capital deals in 19 European countries between January 1995 and December 2004. The dataset is based on information contained in the Securities Data Company's (SDC) VentureExpert database.

Country	No. of Firms Receiving Financing	Average Funds Disbursed Per Financing Round (\$000)	Total Funds Disbursed (\$Billion)	Average VC Syndicate Size Per Financing Round	Proportion of Domestic VCs Providing Financing	Proportion of US VCs Providing Financing	Proportion of Other VCs Providing Financing
Austria	158	14,014	1.02	1.47	47.7%	24.5%	27.8%
Belgium	318	11,159	3.06	1.77	42.1%	36.3%	21.6%
Cyprus	11	13,243	0.13	1.18	25.0%	41.7%	33.3%
Denmark	298	13,777	3.38	1.49	49.0%	25.9%	25.1%
Finland	590	6,974	2.35	1.40	61.6%	26.0%	12.5%
France	2,512	16,055	25.37	1.76	52.8%	34.5%	12.7%
Germany	1,522	21,242	21.58	1.65	54.8%	25.5%	19.6%
Greece	38	19,453	0.14	1.11	56.8%	35.1%	8.1%
Iceland	22	4,430	0.12	1.41	55.9%	32.4%	11.8%
Ireland	276	15,266	4.72	1.82	35.7%	44.1%	20.1%
Italy	440	24,151	6.26	1.42	34.5%	36.6%	28.8%
Luxembourg	47	86,522	3.37	1.61	4.6%	56.9%	38.5%
Netherlands	586	18,797	6.73	1.61	43.3%	37.4%	19.3%
Norway	188	10,428	1.04	1.32	49.6%	36.3%	14.1%
Portugal	193	5,112	0.39	1.25	65.3%	26.1%	8.5%
Spain	427	12,909	4.22	1.45	51.6%	27.6%	20.8%
Sweden	575	10,412	4.99	1.64	48.8%	30.2%	21.0%
Switzerland	244	12,758	2.81	1.76	30.7%	35.9%	33.3%
UK	3,949	17,159	62.24	1.67	58.0%	33.8%	8.1%
Total	12,394	333,860	153.90	n/m*	n/m*	n/m*	n/m*
Average	652	17,572	8.10	1.52	45.7%	34.0%	20.3%

*Not meaningful.

3.3.1 Variable descriptions

Dependent variables

In measuring firms' access to external capital in a given country, we focus our attention on venture capitalist activity. As noted in the introduction, the SDC VentureXpert database provides comprehensive coverage of all venture capital deals during our sample period, making it more objective and arguably more reliable than survey-based data.

In our subsequent analysis, we employ three alternative measures intended to capture venture capitalist activity and the overall size of the venture capital market in a given country. Our first measure, VC_DEALS, represents a log ratio of the average number of venture capital deals in a given country divided by the country's average GDP during our sample period. Specifically, we calculate $\ln(\overline{N}_i)/\ln(\overline{GDP}_i)$, where \overline{N}_i is the average yearly number of VC deals in country i during our sample period and \overline{GDP}_i is the average GDP of that country. We employ GDP information from yearly country statistics provided by the International Monetary Fund (IMF). By using the number of deals relative to a country's GDP rather than the number of deals itself we adjust for the different size of each country's economy. Our second measure, VC_FIRMS, is calculated in a similar fashion, but considers the number of firms that receive VC financing rather than the number of VC deals. The measures differ because firms frequently receive more than one financing round.

Finally, we define VC_AMT, calculated as the log ratio of the average amount of venture capital funds disbursed in a given country per year, again divided by the country's average GDP during our sample period.⁶

Independent variables

We relate venture capitalist activity to several different measures of legal tradition, judiciary independence, judicial adaptability, and enforcement. In addition, we investigate how our measures relate to other proxies for financial and economic development that are used in the extant literature. Most of our independent variables are based on data provided by Beck et al. (2003a) who themselves collect data from various different sources (see their study for detailed information about each variable). Table 3.2 provides information on some of the key variables used in our subsequent analysis.

To address the question of whether legal origin affects the relative size of the venture capital market in a given country, we distinguish between the four legal origins that are prevalent in our sample, that is, British common law, as well as French, German, and Scandinavian civil code.

To examine the relative importance of the political and adaptability channels, we further introduce two sets of variables. The first variable set is intended to measure the independence of the judiciary from the State, while the second set proxies for the dynamism and flexibility of a country's legal system. In line with the existing literature, we expect independent judiciaries and adaptable legal systems to be positively related with the development of the venture capital market in a given country.

⁶ In unreported robustness tests, we also employed venture capital measures that are divided by a country's total stock market capitalization rather than its GDP. Our results are qualitatively and quantitatively robust using either variable definition.

Table 3.2 Country characteristics. Information is provided on a series of variables that describe the origin of a country's legal system, the independence of the judiciary from the State, the adaptability of the legal system, the level of financial development, and other factors of interest. The variables are derived from Demirgüç-Kunt and Maksimovic (1998) and Beck et al. (2005, 2003a)

Country	Legal Origin ^a	Indicators of the Political Channel			Indicators of the Adaptability Channel			Financial Development Indicators				Additional Variables of Interests	
		Tenure of Supreme Court Judges ^b	Supreme Court Power ^c	Case Law ^d	Legal Justification ^e	Private Credit ^f	Stock Market Development ^g	Property Rights ^h	Enforcement ⁱ	Government subsidies ^j			
LEGOR	SC_TEN	SC_POW	CAS_LAW	LEG_JUST	PRIV_CR	MCAP	PR_RIG	ENF	GVT_SUBS				
Austria	2	0	0	1	0.92	0.11	5	9.80	1.3				
Belgium	n/a*	n/a*	0	0.33	0.53	0.34	5	9.74	3.5				
Cyprus	n/a*	n/a*	n/a*	0.67	1.05	0.19	3	6.74	n/a*				
Denmark	2	1	1	0	0.40	0.31	5	9.66	n/a*				
Finland	2	1	1	0.67	0.83	0.22	5	9.57	3.0				
France	2	0	0	1	0.91	0.30	4	9.09	2.4				
Germany	2	0	1	1	0.96	0.22	5	9.50	2.0				
Greece	2	0	0	1	0.32	0.13	4	6.41	n/a*				
Iceland	2	1	1	1	0.44	0.09	5	9.63	n/a*				
Ireland	2	1	1	0.33	0.68	0.27	5	8.38	n/a*				
Italy	2	0	0	1	0.53	0.15	4	8.75	2.9				
Luxembourg	n/a*	n/a*	n/a*	0.67	0.33	1.25	5	10.00	n/a*				
Netherlands	2	1	0	0.67	1.49	0.56	5	9.68	2.6				
Norway	2	1	1	0.67	0.94	0.22	5	9.85	5.9				
Portugal	2	0	1	1	0.44	0.13	4	8.63	n/a*				
Spain	2	1	0	1	0.75	0.25	4	8.10	2.4				
Sweden	2	0	1	0.33	1.34	0.50	4	9.79	4.8				

(Continued)

Table 3.2 Continued

Country	Legal Origin ^a	Indicators of the Political Channel		Indicators of the Adaptability Channel		Financial Development Indicators				Additional Variables of Interests	
		Tenure of Supreme Court Judges ^b	Supreme Court Power ^c	Case Law ^d	Legal Justification ^e	Private Credit ^f	Stock Market Development ^g	Property Rights ^h	Enforcement ⁱ	Government subsidies ^j	
	LEGOR	SC_TEN	SC_POW	CAS_LAW	LEG_JUST	PRIV_CR	MCAP	PR_RIG	ENF	GVT_SUBS	
Switzerland	GE	1	1	1	0.67	2.07	0.91	5	9.99	1.4	
UK	UK	n/a*	n/a*	1	0.33	1.12	1.03	5	9.10	1.5	

^a Legal Origin (LEG_OR) indicates whether a country's legal system is based on British common law (UK) or the French (FR), German (GE), or Scandinavian (SC) civil code.

^b Tenure of Supreme Court Judges (SC_TEN) indicates the length of tenure of Supreme Court Judges (0, less than six years; 1, more than six years but not lifelong; 2, lifelong).

^c Supreme Court Power (SC_POW) 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.

^d Case Law (CAS_LAW) is a dummy variable that equals 1 if judges base their decision on case law.

^e Legal Justification (LEG_JUST) indicates whether judgments have to be based on statutory law rather than on principles of equity.

^f Private Credit (PRIV_CR) represents credit by deposit money banks and other financial institutions to the private sector as a share of GDP.

^g Stock Market Development (MCAP) measures the total market capitalization of all shares listed on a country's stock exchanges as a share of GDP.

^h Property Rights (PR_RIG) reflects the degree to which government protects and enforces laws that protect private property.

ⁱ Enforcement (ENF) is an indicator of the effectiveness of the legal system in enforcing contracts.

^j Government Subsidies (GVT_SUBS) represents grants on the current account by the public authorities to private and public enterprises as a percentage of GDP. The property rights variable takes on values from 1 to 5, with 5 representing the strongest property rights protection.

* Not available.

Judiciary independence proxies

To measure the influence of the political channels on venture capitalist activity, we employ two indicators of the power of the judiciary relative to the executive arm of government based on Beck et al. (2003a) and La Porta et al. (2004). Our first variable, the Tenure of Supreme Court Judges (SC_TEN) ranges from 0 to 2. A value of 0 indicates that tenure is for less than six years. If tenure is between six years and lifetime, then the variable is coded as 1. If Supreme Court judges have lifelong tenure, then the variable is coded as 2. The longer the tenure of a Supreme Court judge, the more independent the judiciary is from the State (see Beck et al., 2003a). Larger values of SC_TEN are hypothesized to have a positive relationship with our dependent variables because – according to the political channel – firms in countries with more independent judiciaries should face lower obstacles in accessing and contracting for external finance.

Our second indicator, Supreme Court Power (SC_POW), takes the Tenure of Supreme Court Judges variable and combines it with a dummy variable that indicates whether the Supreme Court has power over administrative cases. The variable takes on a value of 1 if Supreme Court judges have lifelong tenure and have power over administrative cases. This combination would suggest that the Supreme Court is more independent from the State, and, under the political channel would predict a positive effect on firms' access to external finance.

Legal adaptability proxies

In line with Beck et al. (2003a), we use two variables to examine the influence of the adaptability channel on companies' access to venture capital financing. Case Law (CAS_LAW), originally derived from La Porta et al. (2004), is a dummy variable that indicates whether judicial decisions are a source of law, that is, whether they are based on previous court decisions. According to the adaptability channel, countries in which judicial decisions are a source of law will adapt more easily to changing economic and financial circumstances and therefore have higher levels of financial development. As a result, we hypothesize that countries with case law have more developed venture capital markets than countries that have no case law.

The second variable, Legal Justification (LEG_JUST), originally derived from Djankov et al. (2003), indicates whether judgments have to be based on statutory law rather than on principles of equity. The variable takes on values of 0, 0.33, 0.67, and 1, with higher values indicating that the legal system imposes greater requirements that judgments be based on statutory law. As noted by Beck et al. (2003a), the adaptability channel predicts that higher values of Legal Justification will be associated with lower levels of financial development or – in our case – a less-developed venture capital market.

Related financial development measures

Clearly, there is no single measure that captures the level of financial development in a given country. While our study specifically focuses on the venture capital market, the extant literature has employed various other proxies for financial development. We employ three of these measures to examine possible inter-relations between venture capital market developments on the one hand and alternative measures of financial development on the other.

We use Private Credit (PRIV_CR), a measure of credit by deposit money banks and other financial institutions to the private sector as share of GDP, to proxy for the size of the private lending market in a given country. As noted by Beck et al. (2003a), Private Credit excludes credit to the public sector and cross-claims of one financial intermediary on another. It thus measures the amount of savings that is channeled through debt-issuing financial intermediaries to private borrowers. While King and Levine (1993a, 1993b) and Levine et al. (2000) show a strong connection between measures of banking-sector development and economic growth (predicting a positive relationship between Private Credit and our dependent variables), it is also possible that Private Credit may be a substitute for venture capital financing, thus resulting in a negative relationship between these variables.

We follow Beck et al. (2005) and define a country's Stock Market Development (MCAP) as the total value of equity shares traded on a country's stock exchanges divided by the country's GDP. The variable captures the overall size of the equity market in a given country relative to the size of its economy.

Our third variable, Property Rights (PROP_RIG), is an index of the degree to which the government protects private property and enforces laws that protect private property. The data are obtained from Beck et al. (2003a) who themselves derived them from La Porta et al. (2000) and the Index of Economic Freedom. As noted by Beck et al., Property Rights measures a key input into the efficient operation of financial contracts and the development of formal financial institutions: the degree of protection of private property rights. The Property Rights variable takes on values from 1 to 5, with 5 representing the strongest property rights protection.

Other variables of interest

During our data collection, we came across numerous interesting country characteristics that have been employed in the comparative legal and economic literature but rarely in studies such as this. While we discarded many of them in an effort to concentrate only on those that are hypothesized to be most closely related to financial development, two variables sparked our particular interest in the context of this study. The first variable, Enforcement (ENF), is an indicator of the effectiveness of the legal system in enforcing contracts, as defined by Beck et al. (2000a). We include it in some of our regression models as it adds an interesting new perspective to our study. While the quality of a country's legal system is one important factor that may explain the financial development in a given country, we hypothesize that the actual enforcement of the laws is another important aspect. In other words, we argue that a legal system is only beneficial if it is properly enforced.

Our second variable of interest, Government Subsidies (GVT_SUBS), is based on a study by Demirgüç-Kunt and Maksimovic (1998). The variable measures grants on the current account by the public authorities to private and public enterprises as a percentage of GDP. We hypothesize that government subsidies act as a substitute to venture capital financing. That is, we argue that firms with easy access to government grants have less demand for venture capital. Thus, countries that provide firms with generous subsidies should have a less-developed venture capital market.

3.4 Methodology and results

3.4.1 Correlation analysis

We start our empirical analysis by examining the correlation coefficients between all independent and dependent variables. Our results are presented in Table 3.3.

Our dependent variables are all highly positively correlated, suggesting that they represent good alternatives in measuring venture capitalist activity in a given country. They also display positive, albeit smaller, correlations with other commonly used proxies for financial development, namely Private Credit (PRIV_CR), Stock Market Development (MCAP), and Property Rights (PR_RIG).

While not significant, countries with German and Scandinavian legal origins have positive correlations with VC activity when measured by the number of VC deals (VC_DEALS) or the number of VC-backed firms (VC_FIRMS) during our sample period, which is what we expected. Also it is not surprising that French legal origin displays a negative correlation with VC activity. Interestingly, while the British legal origin dummy is negatively correlated with our VC_DEALS and VC_FIRMS variables (which is somewhat unexpected), our third dependent variable, VC_AMT, shows a positive correlation. This suggests that while there may be fewer venture capital deals in British common law countries, the average size of each deal is considerably larger. Most other correlation coefficients are as expected. As some of them are quite large (>0.7 in absolute terms), we will employ models with various variable perturbations to avoid potential multicollinearity issues in our subsequent regression analysis.

3.4.2 Regression analysis

We perform a series of ordinary least squares (OLS) regressions in which we explore the relationship between the development of a country's venture capital market and various country characteristics that describe the origin of that country's legal system, the independence of the judiciary from the State, the adaptability of the legal system, the level of financial development, and other factors of interest. Our results are given in Table 3.4. For robustness and to avoid potential multicollinearity problems that may arise when including sets of highly correlated regressors in our analysis (see discussion above), we present results for several models containing different regressor combinations.

It is worth noting that the results in Panels A, B and C of Table 3.4 show a high degree of consistency, suggesting that our three dependent variables are all influenced by the same factors. The LEGOR_UK variable is consistently positive and in almost all models significant at the 10% level, suggesting that countries whose legal system is based on British common law tend to have more developed venture capital markets, relative to the excluded Scandinavian legal origin dummy. The French and German legal origin dummies, on the other hand, are insignificant in every model, suggesting that they have little explanatory power with respect to a country's venture capital market development.

In line with the political channel argument, the Tenure of Supreme Court Judges has a significant positive effect in almost all model specifications. Thus, an independent judiciary appears to be a significant contributor for having a strong venture capital market. Interestingly, Supreme Court Power (which combines the Tenure of Supreme Court Judges variable with a dummy variable that indicates that the Supreme Court has power over

Table 3.3 Correlation matrix. Pearson correlation coefficients for all dependent and independent variables used in our subsequent regression analysis are provided

	VC_ DEALS ^a	VC_ FIRMS ^b	VC_ AMT ^c	VC_ UK ^d	LEGOR_ FR ^d	LEGOR_ GE ^d	LEGOR_ SC ^d	LEGOR_ TEN ^d	SC_ POW ^d	CASE LAW ^d	LEG_ JUST ^d	PRIV_ CR ^d	MCA ^d P ^d	PR_ RIG ^d	ENF ^d
VC_FIRMS	0.961														
VC_AMT	0.619	0.519													
LEGOR_UK	-0.055	-0.048	0.267												
LEGOR_FR	-0.169	-0.065	-0.152	-0.369											
LEGOR_GE	0.041	0.035	-0.082	-0.188	-0.369										
LEGOR_SC	0.202	0.084	0.017	-0.259	-0.510	-0.259									
SC_TEN	-0.041	0.053	-0.055	0.071	0.218	-0.535	0.189								
SC_POW	0.228	0.010	0.333	0.250	-0.327	-0.200	0.378	-0.250							
CAS_LAW	0.359	0.220	0.324	0.306	-0.757	0.074	0.540	-0.218	0.327						
LEG_JUST	-0.381	-0.303	-0.515	-0.368	0.369	0.267	-0.330	0.074	-0.448	-0.393					
PRIV_CR	0.303	0.292	0.167	0.103	-0.359	0.470	-0.071	-0.703	0.192	0.163	-0.116				
MCA ^d	0.307	0.247	0.702	0.155	0.034	0.046	-0.205	-0.785	0.317	0.234	-0.376	0.352			
PR_RIG	0.547	0.400	0.410	-0.180	-0.294	0.309	0.224	-0.218	0.600	0.383	-0.308	0.077	0.324		
ENF	0.651	0.524	0.530	-0.428	-0.231	0.295	0.369	-0.252	0.273	0.345	-0.259	0.275	0.369	0.733	
GVT_SUBS	-0.13	-0.132	-0.202	-0.298	-0.031	-0.541	0.767	0.357	0.138	0.220	-0.346	-0.208	-0.298	-0.169	0.221

The dependent variables are defined as follows. In each case, venture capital information is derived from the Security Data Company's (SDC) VentureXpert database, and GDP information is from yearly country statistics provided by the International Monetary Fund (IMF).

^a VC_DEALS represents a log ratio of the average number of venture capital deals in a given country per year divided by the country's average GDP during our sample period.

^b VC_FIRMS is a log ratio of the number of firms receiving venture capital financing in a given country per year divided by the country's average GDP during our sample period.

^c VC_AMT is a log ratio of the average amount of venture capital funds disbursed in a given country per year divided by the country's average GDP during our sample period.

^d The independent variables are derived from Demirgüç-Kunt and Maksimovic (1998) and Beck et al. (2005, 2003a) and are as defined in Table 3.2.

Table 3.4 OLS regression results. Ordinary least squares (OLS) regressions in which VC market size in a given country is regressed on a series of variables that describe the origin of the country's legal system, the independence of the judiciary from the State, the adaptability of the legal system, the level of financial development, and other factors of interest

	Panel A: Dependent variable = VC_DEALS ^a		Panel B: Dependent variable = VC_FIRMS ^b		Panel C: Dependent variable = VC_AMT ^c				
	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)			
Constant	-0.140 (0.615)	0.551 (0.157)	-0.194 (0.589)	0.448 (0.194)	0.538 (0.115)	-0.258 (0.439)	0.827** (0.012)	0.824*** (0.000)	0.542*** (0.007)
LEGOR_UK ^d	0.113* (0.079)		0.026 (0.119)	0.085* (0.093)	0.017* (0.085)	0.074** (0.040)			0.038* (0.081)
LEGOR_FR ^d	0.058 (0.333)	0.027 (0.724)	-0.005 (0.941)	0.075 (0.208)	0.054 (0.418)	0.036 (0.573)	0.008 (0.813)	0.008 (0.813)	-0.021 (0.487)
LEGOR_GE ^d	-0.013 (0.826)		0.034 (0.628)	0.001 (0.977)	0.060 (0.370)	0.060 (0.370)	-0.001 (0.983)	-0.001 (0.983)	0.006 (0.831)
SC_TEN ^d		0.082* (0.059)	0.283* (0.087)	0.079* (0.093)	0.283** (0.016)	0.283** (0.016)	0.030 (0.198)	0.030 (0.198)	0.114** (0.044)
SC_POW ^d	-0.017 (0.673)	-0.029 (0.639)		-0.034 (0.408)	-0.010 (0.854)		-0.002 (0.871)	0.006 (0.832)	
CAS_LAW ^d		0.138 (0.300)	0.049 (0.444)	0.121 (0.241)		0.052 (0.385)	0.056 (0.188)		0.003 (0.901)
LEG_JUST ^d	-0.062** (0.044)	-0.138** (0.049)	-0.165** (0.018)	-0.072** (0.036)	-0.064* (0.067)	-0.175** (0.011)	-0.032** (0.035)	-0.072** (0.028)	-0.075** (0.017)
PRIV_CR ^d		0.182 (0.253)		0.204 (0.148)		0.204 (0.148)	0.065 (0.357)	0.065 (0.357)	
MCAP ^d		0.303* (0.093)	0.370** (0.036)		0.272* (0.095)	0.323** (0.044)		0.105* (0.074)	0.165** (0.031)

(Continued)

Table 3.4 Continued

	Panel A: Dependent variable = VC_DEALS ^a		Panel B: Dependent variable = VC_FIRMS ^b		Panel C: Dependent variable = VC_AMT ^c	
	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)	Coeff. (p-value)
PR_RIG ^d	-0.003 (0.969)		-0.010 (0.879)		0.002 (0.946)	
ENF ^d	0.073** (0.026)	0.057** (0.047)		0.031** (0.019)		
GVT_SUBS ^d	-0.053* (0.077)		-0.041* (0.080)		-0.016 (0.104)	
Adjusted R ²	58.8%	25.4%	45.6%	47.3%	20.1%	34.7%
					67.1%	32.4%
					46.4%	53.7%

VC market size is measured as a log ratio of ^athe average number of venture capital deals (VC_DEALS), ^bthe average number of firms receiving venture capital funding (VC_FIRMS), and ^cthe average amount of funding provided in a given country (VC_AMT) per year, respectively, all relative to the country's average GDP during our sample period. ^dThe independent variables are as defined in Table 3.2. For each regression model, we present variable coefficients with *p*-values in brackets below.

***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

administrative cases) seems to have little influence. The variable is insignificant in all model specifications and shows no clear direction.

We find support for the adaptability channel argument, but it is again reflected in only one of our regressors. Specifically, while Case Law shows no explanatory power, our second adaptability proxy, Legal Justification, is consistently negative and significant at the 5% level in almost all model specifications. Our results are consistent with Beck et al. (2003a) who observe that higher levels of Legal Justification are negatively related to financial development.

When including other proxies for financial market development in our model, we observe that the Private Credit and Property Rights variables are largely insignificant. Not surprisingly, however, we find the Stock Market Development proxy (MCAP) to be significantly positively related to venture capital market size.

Finally, effective contract enforcement, as captured by the ENF variable, appears to be an important factor that contributes to a strong venture capital market. This is not surprising. The venture capital industry has traditionally been risky and may have to rely more than any other industry on a sufficient legal safety net if things go wrong. Our last variable, Government Subsidies, is negatively related to venture capital market size, although the coefficients are only marginally significant at the 10% level in two out of the three models in which we include the variable. The negative relationship is in line with our expectations, suggesting that government funding may act as a substitute to private funding.

3.5 Conclusion

Whether and how legal traits affect a country's financial development are questions that have been on the minds of scholars, politicians, and practitioners alike for a long time. We add to the extant literature by focusing our attention on the venture capital market in Europe. While our sample size is naturally limited as a result, this narrow focus allows for two things. First, it enables us to use 'hard' data on one sector of the financial markets that is known to be a crucial source of capital for young start-up firms. Second, it allows us to analyze financial market development in a homogeneous group of countries that are less affected by cultural or religious differences than a worldwide country sample would be.

Our results are highly robust to different variable definitions and model specifications and provide empirical support for the notion that legal traits indeed matter when it comes to financial market development. We observe that the British common law system is positively associated with a flourishing venture capital market. Consistent with the line of argument in the political and adaptability channels, we further observe that an independent judiciary and a flexible, dynamic legal system are important contributors to a thriving venture capital market. Not surprisingly, we also find that, relative to GDP, venture capital markets tend to be larger in countries with better developed stock markets and in countries whose legal systems are effective in enforcing contracts. Finally, we identify a possible substitution effect between government subsidies and venture capitalist funding as venture capital markets tend to be less developed in countries whose governments act themselves as fund providers.

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