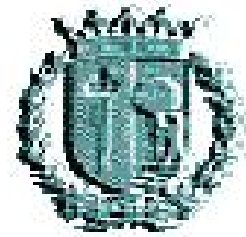




Doctorado en Finanzas de Empresa

*Documento de Trabajo
0404*



Universidad Autónoma

A FRAMEWORK FOR SELF-REGULATION IN VENTURE CAPITAL AND PRIVATE EQUITY: EVIDENCE IN EUROPEAN MARKETS

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2004

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EVIDENCE IN EUROPEAN MARKETS**

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Abstract

This paper proposes a conceptual framework based on both environmental and industrial factors that could explain, in aggregated terms, capital flows within venture capital and private equity markets. The interaction between supply and demand is directly affected by three conditions: the size of the domestic market, the accessibility of a stock market for growing companies and the entrepreneurial environment. Evidence is found on the significant impact of all three conditions on the aggregated commitments to venture capital and private equity organizations in a panel of sixteen European countries. Prior to its inclusion in our model, we find evidence of the impact that several instruments related to the entrepreneurial environment exert on investments.

Key Words: Fundraising, private equity, venture capital

1. INTRODUCTION

Private equity encompasses the participation of professional investors, generally on a temporary basis, in the equity capital of companies that do not quote on the stock market. This definition is further-reaching than the generally accepted notion of venture capital, which is defined as professional investment in companies that are either at the start-up stage or are in the process of expansion. This new denomination is based on the different investment philosophies applied in the United States (henceforth US) and in Europe. In the US, with nearly sixty years of development history, venture capital organizations continue to show remarkable interest in companies that are still in their early stages.

In Europe, however, the belated adoption of this sort of financial activity has been characterized, from the mid-eighties onwards, by a concentration on large-scale investments, leaving a mere six to eight percent of total funds invested for start-ups up to 1999 (EVCA, 1988-2001). Therefore, the information regarding this activity in European countries includes data both on venture capital and private equity activity. This situation limits the possibility of directly comparing the US with the European experience. For the purpose of this paper we will be jointly referring to venture capital and private equity, thus including any commitment to unquoted companies, at any stage of development.

The aim of this paper is twofold. Firstly, we aim to provide a theoretical explanation of the shift in the investment focus of venture capital investors in Europe. Secondly, based on the limited experience in Western Europe we try to check to what extent fundraising is affected by the conditions imposed in the conceptual framework proposed. The scope of the paper concentrates on a sample of sixteen European countries during the period from 1987 to 2000.

The paper is structured as follows. In section two we describe how investments in European countries adopted a wider scope than in the US, increasingly focusing on later stage deals. In the third section we offer a brief review of the literature on the problems involved in attempting to explain the flow of capital towards this financial activity. In the fourth section we introduce a theoretical base to explain self-regulation in venture capital and private equity markets. It also includes a description of the model and the estimation method employed. Section five presents the results. The last section summarizes the main conclusions and their implications for the economic decision-makers are highlighted.

2. THE SHIFT AWAY FROM EARLY STAGE INVESTMENTS IN EUROPEAN VENTURE CAPITAL AND PRIVATE EQUITY MARKETS

Even though venture capital investors started their operations in Europe in the seventies, the real extension of their activity did not take place until the late nineties, when a sharp increase in fundraising and investment figures took place (EVCA, 1988-2001).

This industry showed early growth only in the United Kingdom (UK hereafter), supported by a more friendly business environment. Figure 1 shows the evolution of new funds raised for investments in venture capital and private equity, normalized by the year's gross domestic product (GDP, hereafter), in some selected countries. It shows the difference observed in the development of this industry in the UK when compared with the rest of the European countries. Additionally, this figure highlights the ascending trend that started in 1996. The growth process that followed resulted in a larger diversity of the relative importance that this industry represents in different countries. With the exception of the UK, plus France and Sweden in some years, the previous relative importance of

venture capital and private equity fundraising, when compared to the domestic GDP, did not show a significant difference in the remaining countries. It should also be pointed out that those differences did not show up until the end of the decade despite the distance in size and degree of development among countries such as Germany, Italy and Spain.

(Insert Figure 1 about here)

This evolution was followed by an ascending trend in the aggregated investment committed. Figure 2 shows a similar ranking when it comes to comparing the amounts invested in relation to the nation's GDP in a given year. Nevertheless, the figures hide a growing path towards larger investments, on average, which imply the number of investments did not rise at the same rate (EVCA, 1988-2001). This circumstance signals the shift away from early stage companies, which started in the UK (Murray, 1994; 1995) and extended to the most developed European countries, in the mid eighties, and to the rest of them, in the nineties. This experience is contrary to that observed in the US.

The focus on consolidated companies is justified by the fact that, on average, returns are consistently higher than those recorded in early stage companies. The first surveys conducted in Europe were carried out in the Netherlands (Nederlandse Vereniging van Participatiemaatschappijen, 1993) and in the UK (British Venture Capital Association, 1995). The former concentrated on a sample of individual investments, finding evidence that early stage investee companies provided, on average, a lower return than companies in the expansion stage. The most profitable of all were buy-outs. Starting in 1980, the latter shows that funds specializing in later stage companies consistently showed higher returns than those focused on start-ups.

(Insert Figure 2 about here)

This situation constitutes an obstacle when it comes to absorbing huge amounts of new flows to be committed to unquoted companies. Excess supply of those funds would not imply more money flowing into the more immature companies. The past experience of European fund managers would prevent them from investing basically in early stage companies. As a result, it would lead to heavy pressure on the prices of the deals related to the larger companies. What follows is the dilemma between closing deals at a high price, or investing in early stage companies, in both cases risking future returns, or else, returning the money to the limited partners.

The rapid growth experienced by this industry in the countries included in the sample in the late nineties, however, coincided with the birth and further explosive growth of the so-called *New Economy*. The coincidence of two circumstances resulted in a spectacular increase in the number of new technology-based companies born in that period. On the one hand, the telecommunication industry experienced a process of deregulation in most European countries at the same time as the commercialization of new technological developments and the exponential growth of the mobile phone markets. On the other hand, the development of information highways and the extension in the use of personal computers resulted in the development of the Internet and the birth of e-commerce. The expectations raised by this anticipated rate of growth in both industries, plus the possibility of a rapid initial public offering (IPO, hereafter) attracted the interest of venture capital and private equity investors, who rushed into investments in those industries.

The succession of circumstances commented above resulted in a series of spectacular increases in the amounts raised by European venture capital and private equity organizations. Despite the previous experience of modest returns, a significant portion of

these funds was focused on feeding the start-up process of an immense number of companies related to information systems and telecommunications.

Nevertheless, starting in April 2000, the downward trend in the prices of the shares of these companies on the NASDAQ signaled the beginning of the end of this ideal time for early stage investments in Europe. As a result the stock markets rejected new IPOs and new issues of listed companies and, thus, the expectations of a rapid exit faded away for venture capital and private equity investee companies related to these industries. The unwanted consequence for venture capital and private equity organizations is the step back towards the only investments they are able to profit from, which are the large acquisitions in later stage companies, because they are more visible for prospective buyers and/or the traditional stock markets.

Therefore, sharp movements in fundraising figures seem to be linked to the investment opportunities as well as to the exit possibilities through stock markets that accept issues from growth companies. This paper aims to contribute to explain how fundraising is affected by the lack of an adequate environment for venture capital and private equity markets.

3. REVIEW OF THE LITERATURE ABOUT FUNDRAISING

A common difficulty faced in the studies of small and medium-sized companies is the lack of a theoretical base that would give greater robustness to the research. This lack is aggravated by the difficulty in obtaining enough data to focus beyond a mere description of a series of facts. This is the reason, along with the fact that venture capital and private equity are still relatively new activities in most industrialized countries, which explains the shortage of studies that attempt to explain the volume of funds raised by private equity investors.

Among the first papers published on the flow of capital in this field, we should highlight the early papers by Bygrave and Timmons (1985), Bygrave and Shulman (1988) and Bygrave and Timmons (1992). Poterba (1989) conducts an analysis of the impact that the capital gains taxation has on the total volume of funds raised. He finds that a decrease in this rate could cause an increase in the demand for venture capital, due to the impact it has on the sale of shares on the part of successful founders.

More recently there have been three new papers about the factors that drive venture capital or private equity fundraising. The first one is that of Gompers and Lerner (1998), who analyze the impact of several variables on fundraising. These variables include the volume of IPOs, the GDP growth, the return of alternative investments, the regulation of pension funds and capital gains taxation, as well as research and development expenditures. They find that both the volume of IPOs and the level of pension funds positively affect fundraising. On the contrary, capital gains taxation has a negative impact on the volume of funds raised.

Jeng and Wells (2000) try to explain, through macroeconomic variables and others related to the environment, the volume of funds raised each year. In synthesis, they concentrate on the influence of capital gains taxation, the efficiency of bankruptcy procedures, IPOs, the rigidity of the labor market, the reliability of accounting procedures, private pension funds, GDP growth and market capitalization. These authors find that only IPOs and pension funds have a positive impact on fundraising.

Finally, Martí and Balboa (2001) add variables related to venture capital and private equity activities, such as the total aggregate volume of investment and divestment.

These authors find evidence of a one-period lag effect of investments and divestments, valued at cost, in the obtaining of new funds.

There are also other papers which, while not focusing specifically on the volume of funds raised as a fundamental objective, do analyze the impact of some variables on the amount of funds obtained, such as Berlin (1998) and Black and Gilson (1999), who analyze the impact of the volume of IPOs, and Aylward (1998) who studies the impact of the capital gains taxation and the GDP growth.

4. CONCEPTUAL FRAMEWORK FOR THE VENTURE CAPITAL AND PRIVATE EQUITY MARKETS

4.1 Required framework to allow self-regulation in venture capital and private equity markets

This section introduces a conceptual framework that affords an explanation of the self-regulating effect between supply and demand within venture capital and private equity markets. In our view, a balanced functioning of venture capital and private markets requires an ideal environment based on three basic conditions:

- Condition 1: A large domestic market, with enough population plus a sound purchasing power.
- Condition 2: Access to a stock market that accepts shares issued by companies that are still in their growth stages.
- Condition 3: A suitable framework for entrepreneurial activity.

The closer the fulfillment of the conditions presented, the better for the adjustment period to correct imbalances between supply and demand to achieve the correct functioning of venture capital and private equity markets. Although all the above factors are important, the first two are quite fundamental for the financing of relatively immature projects to be supported by the venture capital and private equity investors. Since the management models employed by most of the organizations devoted to this activity are based on temporary investment vehicles (closed-end funds), it is crucial that the investors be able to divest within the limited life span of the fund. The first two conditions facilitate the company's growth and the ease with which the investors can liquidate their holdings.

Regarding Condition 1, if the local market is not large enough, the growth process in young investee companies will be slower, thus limiting the visibility of such firms. This factor has already been taken into account in certain papers. Murray and Lott (1995) find evidence that suggests that investors see the size of the local market as a factor that negatively affects the success of the technology-based companies in the UK in 66.7 per cent of the cases.

Secondly, and in any case, venture capital and private equity investors could hardly finance the large-scale growth of a company. A stock market that accepts the trading of a company's stock still in its initial stages of development, therefore, affords an acceleration of its growth process, and, furthermore, the possibility for venture capital and private equity investors to divest within a few months from the first offering. Thus, Condition 2 is also required. The importance of such a market is also highlighted in Murray and Lott (1995), in which concern is expressed over the announced dissolution of the Unlisted Securities Market in the UK in 1996. The problem of liquidity is also outlined in Murray (1994), when reference is made to the existence of a second equity gap when the original investors exhaust their capacity to support the growth of a technology-based company.

Regarding Condition 3, a list of socio-economic factors that exert their influence on the demand side should be included. They are supposed to jointly affect the population's appetite for setting up new businesses. Among them, it is worth noting the importance of capital gains taxation, since the entrepreneur's reward is the net gains once she has sold her share in the company. High tax rates on such returns discourage the risk-taking involved in start-ups. The significance of this variable on demand, though not on its supply, has already been empirically demonstrated in the US venture capital market (Poterba, 1989).

Additionally, the list of factors defining a suitable environment that encourages entrepreneurship should at least include, the administrative difficulties experienced in the setting-up of new companies, such as delays and the costs they generate; interest rates; the efficiency of bankruptcy procedures; the labor market's flexibility; the educational system's focus on entrepreneurship; research and development spending; the links between research centers, universities and companies; the availability of grants that cover initial expenses in research centers and universities, aimed to encourage spin-offs; and the social prestige of entrepreneurs. The existence of an environment that encourages entrepreneurship would result in many seed and start-up projects seeking initial funding.

The complete fulfillment of the three conditions imposed would allow a long term self-regulating process between supply and demand, although that does not mean the venture capital and private equity markets would not be subject to ups and downs, like any other market. As a starting point, since the risk on investment decreases with the progress of a company, the venture capital and private equity organizations would be far more inclined to finance consolidated rather than early stage companies. Using the pyramid as a simile, it is natural for investors to prefer, initially, to invest in the companies at the top. In the event of there being a great amount of financial resources available for investment, however, the prices of the larger companies would tend to increase, causing expected gains from a subsequent divestment to decrease. As a result, investors would tend to seek younger companies with lower valuations, and higher expected returns.

If the domestic market is large enough, early growth would be possible in those cases where additional financing is provided in second and subsequent rounds. Later on, explosive growth, which would require huge amounts of money, should basically rely on new issues on the stock market. Such a market ensures that, regardless of how new or immature the development of a company might be, the venture capital or private equity operator could invest at any stage and be assured of the chance to divest on time (in about five years).

As a consequence, the venture capital and private equity organizations would not be afraid to invest in companies during their early stages. Therefore, any possible excess in supply of funds could be absorbed by the venture capital and private equity markets due to the downward shift in the focus towards smaller and riskier companies. It is important, however, to feed the base of the pyramid with a sufficient flow of new innovative businesses, which requires Condition 3 to be met.

Without these desirable conditions the returns obtained by venture capital and private equity organizations are biased against early stage investments, since they prove to be significantly lower than those generated from less risky, later stage deals. This striking evidence is found in several European markets in the nineties. The explanation of this fact does not rely on the quality of the business projects but, rather, on the environmental conditions that prevent venture capital/private equity investors from getting the expected reward.

4.2 Basic hypotheses

The size of the domestic market, which is the first condition of the theoretical framework, could be tested by the population of the related country. Nevertheless, a large population without a relevant purchasing power would not meet the requirements presented. Therefore, the proposed instrument should be the real GDP, since it controls for the size of the population, as well as its wealth. It may well be, however, that the sharp variations in fundraising figures are not matched by the smooth changes in GDP over time, thus, marking the need for a second proxy, market capitalization, taking the aggregated market value of quoted companies in a given country as a reference of the size of the market.

With regard to the second condition, due to the lack of a stock market that fulfils all the functions that the NASDAQ performs in the US, two instruments are introduced as proxies representing the access to a stock market for growth companies. Firstly, a proxy of the fluency in the exiting process could be the EVCA Yearbook's divestment figures. Although valued at cost price, they could at least constitute a signal of the closing of the investment period, anticipating the return of the proceeds to the original investors.

The second one would be a variable representing the years when a new market was operating. Starting in 1995, new markets were created in most European countries. The most relevant were those included in the Euro.nm network, as well as the Easdaq (Belgium) and the Alternative Investment Market (London). Nevertheless, after a short period of exponential growth, allowing a number of IPOs to be launched, most of those markets tumbled when the Nasdaq started its downward trend. This variable has been introduced through a dummy variable taking value one for an specific year to the year 2000, as follows: France and the UK in 1995, Belgium in 1996, Austria, Nordic Countries, Germany and Holland in 1997, Italy and Greece in 1998, Portugal in 1999 and Spain in 2000. In the case of Ireland we assume that investors have access to the British market.

Regarding Condition 3, the main problem is that it is directly related to the demand of venture capital and private equity rather than its supply, as in Conditions 1 and 2. Therefore, two problems arise. First, the number of variables that could encompass the factors affecting demand is large. Second, many of those variables are not always observable and/or measurable. Therefore, we seek to identify a single variable that is a good instrument to jointly control for all the individual aspects that represent how suitable Condition 3 is.

In our view, the more this condition is fulfilled, the more investments will be closed in a given country. This hypothesis is supported by the evidence of Bygrave et al. (2001), who find a positive correlation between venture capital/private equity investments and the existence of the right conditions that allow the development of the entrepreneurial activity. Nevertheless, this approach will be tested by analyzing some measurable variables that could have a significant impact on the aggregated volume invested.

In summary, the hypotheses to be tested are as follows:

Hypothesis 1a: *The lagged real GDP value has a positive impact on the fundraising figures over time.*

Hypothesis 1b: *The lagged market capitalization value in constant currency has a positive impact on the fundraising figures over time.*

Hypothesis 2a: *The amounts divested at cost exert a positive impact on new funds raised over time.*

Hypothesis 2b: *An active stock market for growth companies positively affects fundraising figures over time.*

Hypothesis 3a: *The total amount invested by venture capital and private equity organizations over time is affected by aspects related to the entrepreneurial environment.*

Hypothesis 3b: *The total amount invested by venture capital and private equity organizations exerts a positive impact on fundraising over time.*

4.3 The model

The models proposed to test to what extent the hypotheses are verified share the following structure:

$$Nfund_{it} = \alpha + \beta_1 Size_{it-1} + \beta_2 Exits_{it-1} + \beta_3 Inv_{it-1} + \beta_4 T_t + \eta_i + v_{it}$$

with i denoting countries and t denoting time. $Nfund_{it}$ is the aggregated amount of new funds raised. $Size_{it-1}$ would either represent the real GDP or market capitalization values, in constant currency. $Exits_{it-1}$ either represent the total amount divested at cost, in constant currency, or a dummy variable taking one in the years when a new market was operating and zero otherwise. Inv_{it-1} represents the total amount invested by venture capital and private equity organizations. All variables, except the dummy, are lagged one period and have been transformed in logarithm terms. The lag imposed on most variables is justified by the time required to close a new fund. Additionally, due to the growth registered in European venture capital and private equity markets in the period analyzed, it may be convenient to incorporate a deterministic time trend in the analysis to capture the effect on growth of the simple passing of time. The term η_i denotes the unobservable individual specific effect and v_{it} denotes the underlying disturbance, which can be thought of as a zero-mean white noise process.

Before estimating the proposed model, we test to what extent Hypotheses 3a is verified, allowing Condition 3 to be proxied by the amounts invested. This is devised through the panel data regressions where the aggregated amount invested by venture capital and private equity organizations is the endogenous variable, the exogenous variables being several aspects that exert their impact on the entrepreneurial environment. The first instrument is real GDP growth, as suggested by Aylward (1998) and Jeng and Wells (2000). However, Gompers and Lerner (1998) highlight its impact on fundraising. Nevertheless, it could be indirectly linked through its effect on investment, which we aim to verify. The second variable tracks R&D expenditures. Hellman and Puri (2000) find evidence of the effect of a company adopting an innovative approach on its probability of getting venture funding, whereas Kortum and Lerner (2000) conclude that venture capital funding exerts a strong positive impact on innovation. Both variables are expected to show a positive impact on venture capital and private equity investment.

The third variable is the long term interest rate, the expected effect on the creation of new businesses or expansion of existing companies being negative and thus, negatively affecting the endogenous variable. This variable has also been considered in Bygrave and Timmons (1992). Gompers and Lerner (1998) also consider it as a determinant of fundraising, which could again be related to the effect of interest rates on investments and the impact of the latter on fundraising. A negative coefficient is expected.

The fourth variable refers to the yearly return on a stock market index, as a signal of the possible reward for an entrepreneur should the company be successful. From this perspective, a positive coefficient is anticipated. Nevertheless, a different approach could

also be argued, since high stock market returns could encourage investing in public stock rather than setting up a company.

Lastly, as in Jeng and Wells (2000), the unemployment rate is included as a proxy of labor market rigidities. In this sense, one would expect a negative impact on investments. However, we build on Bygrave et al. (2001) to test a ‘negative’ incentive to becoming an entrepreneur, which stems from the gloomy prospects of getting a new job. In this case, a positive sign on investments is expected.

The first specification, labeled Model A, would stand as follows:

$$\text{Model A} \quad \text{Inv}_{it} = \alpha + \beta_1 \text{GDP}g_{it-1} + \beta_2 R \& D_{it-1} + \beta_3 \text{SR}_{it-1} + \beta_4 \text{UR}_{it-1} + \eta_i + \varepsilon_{it}$$

Inv_{it} being the aggregated amount invested by venture capital and private equity organizations. $\text{GDP}g_{it-1}$ represents the GDP growth from $t-1$ to t . $R \& D_{it-1}$ denotes the aggregated research and development spending. SR_{it-1} represents the return on the main stock market index. Lastly, UR_{it-1} is the unemployment rate. Inv_{it} and $R \& D_{it-1}$ have been transformed in logarithm terms.

A second specification (Model B) includes a variable alternative to the unemployment rate, which is the percentage of the population unemployed after twelve or more months.

$$\text{Model B} \quad \text{Inv}_{it} = \alpha + \beta_1 \text{GDP}g_{it-1} + \beta_2 R \& D_{it-1} + \beta_3 \text{SR}_{it-1} + \beta_4 \text{LTUR}_{it-1} + \eta_i + \varepsilon_{it}$$

with LTUR_{it-1} denoting the percentage of the population unemployed after twelve or more months. All independent variables in Model A and B have been lagged one period.

4.4 The methodology

The panel data methodology is employed, as data on cross-sectional time series were available. In this context, the use of the panel data methodology offers several advantages. The main advantage is that it allows controlling for the effects of variables that specifically affect the dependent variable of each country but are unobservable (the so-called individual heterogeneity). There are relevant factors such as, for example, cultural, sociological, environmental ones that are different for each country (but constant in time) and can be causing a different effect on the dependent variable. The problem is that these variables are very difficult to measure and their omission leads to bias in the resulting estimates. The data panel methodology allows controlling for this individual heterogeneity.¹

Some papers have discussed whether the individual effects are treated as fixed or random variables. However, this is not an important distinction because we can always treat the individual effects as random variables without loss of generality (Arellano and Bover, 1990). What is really important is to determine whether these individual effects are correlated with the observed variables x_{it} or not. To test for the existence of this correlation the Hausman test (1978) is usually used. If this test does not reject the null hypothesis that the individual effects are not correlated with the explanatory variables, the

¹ For a more detailed study of issues related to panel data, see Hsiao (2003) and Arellano and Bover (1990).

most suitable estimation would then be the random-effects model and the best estimator would be the Balestra-Nerlove (1966) estimator. If, however, the null hypothesis is rejected, the *within groups* estimator would then be the most suitable one.

4.5 The data

The study focuses on sixteen European countries, fourteen of them belong to the European Union², plus Norway and Switzerland, in the period 1987-2000. The beginning of the period is limited by the availability of data. The main limitation of this data is the availability of just one observation per country per year, compiled homogeneously by the European Private Equity & Venture Capital Association (EVCA), for all countries included. Data on fundraising, investments and divestments were taken from EVCA (1988-2001) for all countries. All divestments were valued at cost. Full data on fundraising, investments and divestments were available for the whole period, with the following exceptions: Austria (1991-1992), Finland (1987), Greece (1987-1994) and Norway (1987).

The source of data about the remaining variables is as follows. GDP: World Economic Outlook Database; Interest rates and UR: OECD Economic Outlook; Market capitalization: Emerging Market's Fact Book; Stock market return and R&D: OECD Statistical Compendium; LTUR: OECD Labor Force Statistics.

5. RESULTS

Table 1 shows the regression results from the preliminary test of Hypothesis 3a. The Hausman test does not reject the null hypothesis that the individual effects are not correlated with the regressors, allowing us to rely on the Balestra-Nerlove estimator. Since the null hypothesis of homoskedasticity is rejected, the significance of the variables is shown according to robust standard errors.

Evidence is found of the positive impact of R&D and stock market returns on investments in both specifications, whereas interest rates are negatively linked to investments, as expected. Conversely, the GDP growth is not significant. The references regarding unemployment in both models, however, unexpectedly show a significant positive sign. Nevertheless, this result verifies the negative incentive to entrepreneurship suggested by Bygrave et al. (2001). As a result, a significant relationship between venture capital and private equity investment and various measurable relevant instruments is found, therefore, allowing us to proceed with our proposed model. It is worth noting that there does not exist a problem of multicollinearity among independent variables, nor in the demand models, nor in the supply models. Tables of correlation among these variables are available upon request.

The regression results of the different specifications of the proposed model are shown in Table 2. Since the Hausman test rejects the hypothesis of non-correlation between the unobservable individual effects and the regressors, the appropriate estimator for all of the specifications is the within-groups estimator. Given the great disparity across countries, even after the natural logarithm transformation, the null hypothesis of the homoskedasticity of the test is rejected. Therefore, the significance of the variables is shown according to robust standard errors.

The first specification, named as Model I, aims to verify Hypotheses 1a, 2a and 3b. The results simply provide evidence of the impact of the entrepreneurial environment,

² All European Union countries, prior to the inclusion on Eastern countries, except Luxembourg.

proxied by lagged investments, on the endogenous variable, both real GDP values and the amount divested at cost being not significant. The impact of the time trend is positive and significant, as expected, as the fundraising figures in the sample countries increase over time.

Model II builds on the previous one exchanging real GDP values with market capitalization, in constant currency, jointly testing Hypotheses 1b, 2a and 3b. The results provide evidence of the significant positive value of market capitalization and investments. The deterministic time trend showed a significant positive sign and divestments at cost remained not significant.

Provided that the correlation between divestments and the dummy variable is low, the latter was included to perform Model III. As shown in Table 2, Hypotheses 1b, 2b and 3b are verified, whereas the time trend is no longer significant. Model IV builds on the previous one eliminating the divestments and the deterministic time trend, showing similar results.

6. CONCLUSIONS

A solid empirical base has hardly been available in venture capital and private equity fundraising, due mainly to the lack of series of data that were lengthy enough for any reliable analysis. Furthermore, the difficulty of measuring many of the variables that affect fundraising was not encouraging. Most of the previous papers published on fundraising have focused on the US market, and have employed variables that have affected fundraising only in certain years, such as the pension fund regulation. The European venture capital and private equity markets developed much later on, which explains the limited number of papers published on the topic so far.

Most of the empirical papers previously published focus mainly on verifying hypotheses that do not relate to any conceptual framework for the conditions required for the correct functioning of venture capital and private equity markets. This paper hopes to afford a conceptual framework for the conditions required for the correct functioning of venture capital and private equity. In our opinion, three conditions determine a balanced interaction between the supply and demand of venture capital and private equity, creating a self-regulation mechanism that avoids the pervasive effects of an over-supply of investment funds for later-stage companies. We also try to determine the effects of these conditions on the fundraising process.

The main conclusion we draw from the results obtained is that the hypotheses proposed in this research seem to have been verified, thus, providing evidence of the significant impact the three proposed conditions exert on the capital flows allocated to venture capital and private equity organizations. Our results may be interpreted as follows. For venture capital and private equity markets to develop there must be both a sufficient flow of potential investments and safe means of divestment, the domestic market being large enough to allow rapid growth of investee companies. The relation between investments and fundraising is reinforced by the huge increase of investments and fundraising during the 1997-2000 period. The surge of investments seen in Information Technology and Communications since 1998 explains the immense amounts raised by fund managers during 1999 and 2000. Nevertheless, fundraising fell off in 2001, due to the general downturn in stock markets worldwide, with the withdrawal of investors from these industries.

The implications of this study for policy focus on two different directions. In the long term, measures aimed at deepening in the development of a true domestic European market, overcoming administrative and cultural barriers, along with the enforcement of specific incentives that favor transactions among stockholders of non-listed companies and the creation of an environment that fosters entrepreneurship, would clearly contribute to the stable development of the venture capital and private equity markets. Nevertheless, on the short term, policymakers should also devise measures aimed at increasing the flow of capital for early stage companies, since the lack of the ideal environment limits the interest of private investors.

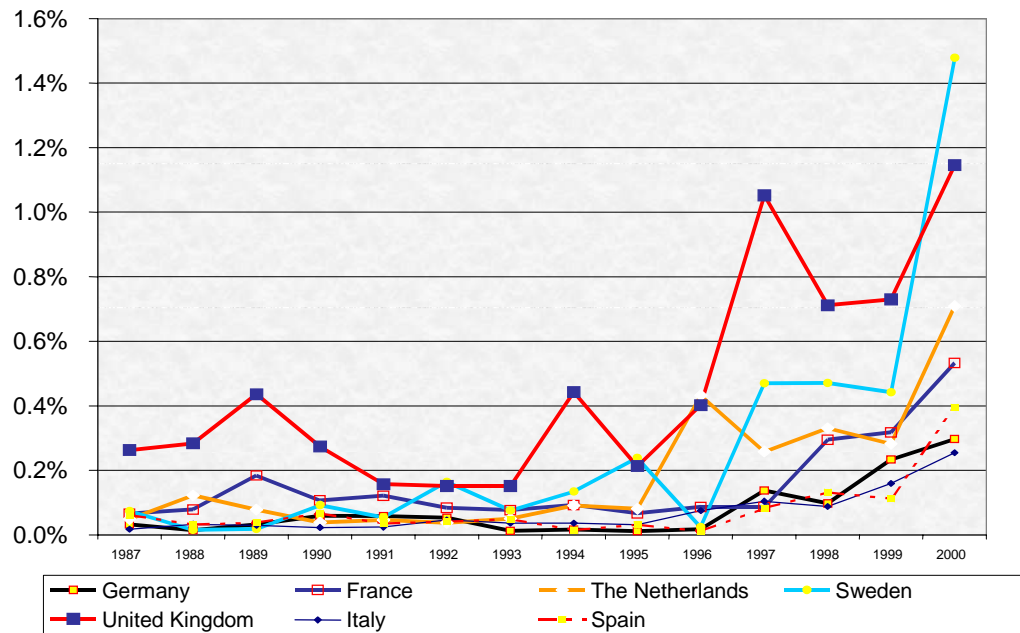
There are two extensions for further research. First, it could be tested to what extent the development of venture capital and private equity markets in emerging countries, specifically in South America and East Asia, is related to the proposed environment. Second, the main limitations of our research are related to both the extension of the data available and the validity of the proxy variables proposed to test the conditions put forward in our conceptual framework. With regard to the former, more research is to be done including data related to the downward trend in the markets started in 2001, since the period considered included two expansion cycles (1987-1990 and 1996-2000) and one recession period (1991-1995). Turning to the validity of proxy variables, more research is recommended regarding the consideration of alternative variables that measure more precisely how fluid exiting is. Furthermore, the consideration of investments as a proxy of the suitability of the entrepreneurial environment requires further analysis introducing some measurable qualitative variables that change over time.

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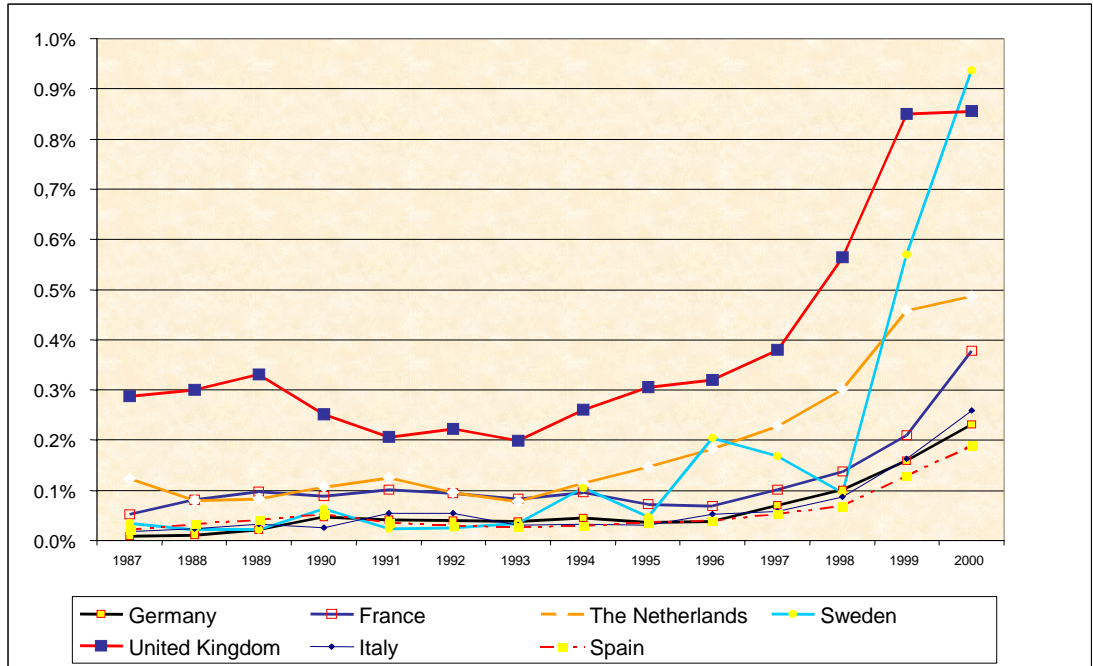
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Figure 1
 New Funds Raised for Private Equity Investments, in Some Selected Countries,
 Normalized by the Year's GDP



Source: EVCA Yearbooks (1988-2001), normalized by the year's GDP in local currency.

Figure 2
 Aggregated Private Equity Investments in Some Selected Countries, Normalized by
 the Year's GDP



Source: EVCA Yearbooks (1988-2001), normalized by the year's GDP in local currency.

Table 1
Regression Results From the Demand Models

Dependent variable: Investments (LnInv_{it})		
Independent variables	Model A	Model B
(1) GDP _g _{it}	1.788 (2.22)	2.067 (2.00)
(2) LnR&D _{it-1}	0.229 ^{***} (0.04)	0.258 ^{***} (0.04)
(3) SR _{it-1}	0.703 ^{***} (0.14)	0.497 ^{***} (0.11)
(4) Interest _{it-1}	-9.876 ^{***} (3.57)	-15.29 ^{***} (4.54)
(5) UR _{it-1}	7.858 ^{***} (1.21)	
(6) LTUR _{it-1}		2.583 ^{***} (0.52)
Constant	6.703 ^{***} (1.00)	6.796 ^{***} (0.92)
R ²	0.199	0.166
Hausman Test (p-value)	1.62 (0.899)	2.56 (0.767)
N ^o Observations	184	179

GLS random effect regression of the model $y_{it} = x_{it}'\beta + \varepsilon_{it}$; $\varepsilon_{it} = \eta_i + v_{it}$, with i denoting country and t denoting year. The dependent variable is *investments* (in logarithm terms). The independent variables are (1) GDP growth from “t-1” to “t”, (2) Research and Development expenditures (in logarithm terms), (3) Stock market return, (4) Interest rate for a ten year investment in Treasury bonds, (5) Unemployment rate, (6) Long-term unemployment rate. The endogenous variable and R&D are expressed in logarithm terms. Robust standard errors in brackets
***= significant at 1%, ** = significant at 5%, * = significant at 10%

Table 2
Regression Results of the Models

Dependent variable: New funds raised (lnNFund_{it})				
Independent variables	Model I	Model II	Model III	Model IV
(1) lnGDP _{it-1}	-0.571 (0.73)			
(2) lnMC _{it-1}		0.885 ^{***} (0.19)	0.702 ^{***} (0.21)	0.754 ^{***} (0.17)
(3) lnDiv _{it-1}	0.044 (0.14)	-0.041 (0.14)	-0.017 (0.14)	
(4) NM _{it}			0.537 ^{***} (0.17)	0.613 ^{***} (0.17)
(5) lnInv _{it-1}	0.329 ^{**} (0.13)	0.267 ^{**} (0.13)	0.277 ^{**} (0.12)	0.389 ^{***} (0.11)
(6) T _t	0.152 ^{***} (0.04)	0.063 ^{***} (0.04)	0.046 (0.03)	
Constant	18.02 (14.52)	-7.559 ^{**} (3.39)	-4.499 (3.64)	-6.691 ^{***} (2.49)
R ²	0.490	0.551	0.575	0.574
Hausman Test	13.28	28.03	18.51	10.07
(p-value)	(0.01)	(0.00)	(0.00)	(0.04)
N° Observations	207	199	199	203

OLS fixed effect regression of the model $y_{it} = x_{it}'\beta + \varepsilon_{it}$; $\varepsilon_{it} = \eta_i + v_{it}$, with i denoting country and t denoting year. The dependent variable is *new funds raised* (in logarithm terms). The independent variables are (1) GDP growth from “t-1” to “t”, (2) Market capitalization, (3) Total amount divested at cost, (4) Dummy indicative of the introduction of a *new market*, (5) Total amount invested, (6) Deterministic time trend. All variables, except New Market (NM) and Trend (T) are expressed in logarithm terms. Robust standard errors in brackets.
***= significant at 1%, ** = significant at 5%, * = significant at 10%