LEGAL ENVIRONMENT, CAPITAL STRUCTURE AND FIRM GROWTH: INTERNATIONAL EVIDENCE FROM INDUSTRY DATA[1]

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Abstract

This paper investigates the effects that economic regulations have on firm growth. There is substantial evidence of a positive relationship between the level of financial development and economic growth. Little is known, about the role played by the legal structure affecting firm decision making on growth. We analyse banking regulation, disclosure requirements, company and bankruptcy laws, accountancy norms and rules about market competition. We find evidence that the efficiency of the legal environment affects significantly firm growth. We show that this result is unlikely to be driven by omitted variables. We also show that institutional framework impacts the influence of financial development on growth. We find that comprehensive shareholder and creditor protection affects more positively those sectors which are more externally financed; however disclosure requirements hinder the results of those industrial sectors that are more externally financed.

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1.- Introduction.

The relationship between the financial system and economic growth has been extensively analysed. Starting with Schumpeter´s seminal paper (1911) the number of related articles is continually increasing. Such effort to understand the nature of this relationship has obtained diverse contributions. The older literature found a positive correlation between financial development and economic growth (Cameron, (1967), Goldsmith (1969) and McKinnon, (1973)). However, these results have to be interpreted with caution since the methods and the variables used make it difficult to establish clearly the direction of causality. Nevertheless, these papers were the first attempts to analyse the relation between finance and growth.

The second serious effort was started recently by King and Levine (1993). They perform the first broad, cross-country analysis. They find that countries initially endowed with a more sizeable credit sector experience faster growth. Levine and Zervos (1998) introduce the stock market in the analysis. They show the joint, independent relevance for growth of both banks and capital markets. However, the causality issue still remains unresolved.

Rajan and Zingales (1998) make an innovative contribution to the field by focusing on a cross-industry, cross-country analysis. They focus on a rationale for such a relationship: that financial development reduces the differential cost of external finance to firms. For that purpose, first, they construct a measure of the dependence on external finance. They calculate it for a wide range of industrial sectors. The main assumption is that differences between sectors depend mainly on technology-specific factors. Second, they test whether industries that are more dependent on external finance grow faster in countries that are more financially developed. They find that this is indeed the case.

On the other hand, Coase (1992) and North (1994) in their Nobel speeches emphasise the importance for economic growth of getting the institutional and legal environment right. La Porta et al. (1996,1998) contribute to this debate, analysing the relevance of the institutional framework in firm capital structure. For that purpose, they investigate the main features of legal systems in a wide range of countries. They find

that law origin and enforcement affect financial decisions significantly. Furthermore, these results have encouraged the study of the influence that structural features can have on economic growth. Thereby, the newest papers on this relationship include institutional variables as alternative or complementary possible explanations (Levine, 1998, Demirgüç-Kunt and Maksimovic, 1998).

The underlying assumption of this new strand of the literature, is that the legal setting firms face forms a stable or quasi-stable environment. Nevertheless, a look at national legal sources shows that the institutional environment is continuously changing. In this sense, Rajan and Zingales (2001) develop a theory of the dynamics of the relationship between legal structure and economic growth. Moreover, they claim that the strength of political forces -the nature of government, the degree to which the legal system permits innovation and the degree to which individual rights are protected- can explain both the time series variation in financial development as well as cross-sectional differences. They provide empirical evidence as well.

This paper tries to contribute to this line of empirical research on financial intermediation, institutional environment and economic growth. We investigate the effects that economic regulations have on firm growth in order to find the legal conditions which foster economic growth and financial development. For this purpose, we perform a cross-country, cross-industry analysis. We will study the legal environment of some developed countries in order to evaluate their impact on economic activity. This analysis will account not only for cross-country differences but also time series variations. As a consequence, we can investigate the dynamics of the relation of interest as well.

Previous contributions have shown that the presence of a more developed financial market reduces the costs of external finance and consequently has a relevant effect on growth (Rajan and Zingales, 1998). We think that a legally efficient environment and a well protected financial system must have an additional effect on firm growth. This is the link and interaction we want to investigate.

To address this question, we use industry-level data from a cross-section of countries. Quantifying the effects of institutions on firm growth may prove difficult for

a single country, since investors and firms in a given country face the same legal, judicial and political systems. Combining data from several countries permits a more precise estimate of the effect of interest. However, the estimation may be affected by country-specific as well as industry-specific factors that are ignored by theoretical propositions. We include country and sector dummy variables in order to identify the effect of interest without taking an explicit stance about these specific effects. Accordingly, estimations are not driven by omitted variables.

The underlying assumption is that capital markets are not perfectly integrated and that firms finance themselves largely in their own country. A similar assumption has been made in related papers and there is evidence on the existence of frictions in international capital markets (Lombardo and Pagano, 2000a). Particularly, there is evidence on high correlation between national savings and investments (Feldstein and Horioka, 1980), strong home bias portfolio (French and Poterba, 1991) and cross country differences in expected returns (Bekaert and Harvey, 1995 and 2000, Lombardo, 2000).

The first novelty of this paper is the country sample chosen and the period analysed. Our sample includes developed economies for the 1990-1999 period. This decision is due to the lack of data. Data on economic regulations are scarce. On the one hand, economic regulations are mainly available for developed countries. On the other hand, it is difficult to find passed regulations earlier than 1990. Therefore, we restrict the analysis to developed economies and the period of interest to be 1990-1999. Nevertheless, historically, it has been generally accepted that the link between financial development and growth is influenced by the degree of development of the national economy. Actually, a certain degree of industrialisation is needed for the financial system to emerge (Becsi, Wang and Wynne (1998)). In other words, the demand for financial services is a prime driver of financial development (Rajan and Zingales, 2001). Therefore, despite the sample reduction, we consider interesting to analyse economies with a similar degree of development to avoid biased results. We therefore investigate the function of financial systems in developed economies. However, the demand for financial services is not the only explanation for its emergence; otherwise national financial systems would present less different patterns among them, than observed. The complementary explanation is the existence of a structural environment which

conditions finance development (Rajan and Zingales, 2001). However, a complete study of the structural conditions remains to be done, partly because of the difficulty in collecting international data.

The second refinement is related to the institutional variables. The legal variables have been constructed in order to reflect as carefully as possible the true legal environment in each country in our period of study. For this reason, we check the changes and evolution of the main economic regulations affecting firm decision making. The norms analysed are banking regulation, disclosure requirements, company and bankruptcy laws, accountancy norms and rules about market competition. The 1990-1999 decade has been a period of deregulation and opening in product and financial markets for the world economy, especially for the developed countries. Developments in the European Union have particularly favoured a dramatic change in market competition conditions, and have strengthened European financial markets. These changes have been parallel to legal improvements in order to protect the new system. The legal innovations were passed by the Single Market formation in January 1993, although most of them were introduced by 1990.

Previous studies do not take into consideration any legal improvement; on the contrary, the legal environment is considered as constant or nearly stable. As Rajan and Zingales (2001) point out, this is not the case since economic scenario and legal changes are intimately related. Despite the attention paid to legal improvements, the lack of long time series data together with the fact that in the countries considered the legal environment is nearly stable, make us consider more convenient not to truncate the period.

We find that the efficiency of the legal environment affects significantly firm growth. We show that this result is unlikely to be driven by omitted variables. We also show that the institutional framework is more relevant to growth in those countries with less developed financial markets. We find that demanding disclosure rules and banking laws affect more negatively those sectors which are more externally financed; however comprehensive shareholder protection fosters the results of those industrial sectors that are more externally financed.

The paper is organised as follows. In the next section we review the theoretical results as well as the empirical evidence on the matter. Section 3 contains an illustration of the models used for hypothesis testing. In section 4 we describe the data set. The empirical results are presented in section 5. Section 6 concludes and propose future lines of investigation and extensions.

2.- Theoretical Background.

2.1. Financial development and growth.

The relationship between financial development and economic growth has been extensively studied. Postulating a link between financial development and economic growth entails relaxing some neo-classical assumptions. In an Arrow-Debreu model with no asymmetric information or transaction costs, there is no need for a financial system. Hence, it is the cost of getting information and making transactions that create incentives for the emergence of financial systems. Particularly, financial markets and institutions may arise to ease the trading, hedging, and pooling of risk, both liquidity and idiosyncratic risk (Levine, 1997).

A recent surge of interest in the link between financial development and economic growth has resulted mainly from the development of endogenous growth models, which raise the possibility of an influence of institutional arrangements on growth rates. The main conclusions of this kind of models are that financial development could influence the economic growth rate by changing either the productivity of capital, or the efficiency of financial systems or the saving rate (Tsuru, 2000).

2.1.1. More Efficient Financial Systems and Productivity of Capital.

One important role of financial intermediaries is to provide liquidity to individual investors. Liquidity risk arises due to the uncertainties associated with converting assets into a medium of exchange. Informational asymmetries and transaction costs might inhibit liquidity; thereby, incentives exist for the emergence of financial markets and institutions that augment liquidity. Liquid capital markets, therefore, are markets where it is relatively inexpensive to trade financial instruments and where there is little uncertainty about the timing and settlements of those trades. As

a consequence, investment is enhanced (Levine, 1991). Bencivenga and Smith (1991) show that financial intermediaries, by allocating funds to more illiquid and productive assets and reducing the premature liquidation of profitable investments, could enhance the productivity of capital, and thus the growth rate. Banks can also increase investment and accelerate growth by reducing informational asymmetries and eliminating liquidity risk (Bencivenga and Smith, 1991).

Besides reducing liquidity risks, banks can diversify risks and therefore induce a portfolio shift towards projects with higher expected returns (Saint-Paul, 1992; Devereux and Smith, 1994; Obsfeld, 1994), thus improving resource allocation (Sirri and Tufano, 1995). Apart from this link between risk diversification and capital accumulation, risk diversification can also affect technological change. Investing in innovation is risky, although successful innovations obtain exceptional profits. The possibility of holding a diversified portfolio reduces risk and encourages investment in growth-enhancing innovative activities (King and Levine, 1993).

A financial system is efficient when it allocates funds to those projects with the highest marginal product of capital. However, this process is costly. First, in order to find the most profitable project, financial systems need to monitor or screen alternative projects. Even if high-return projects are detected, their possible high risks might discourage single individuals from investing. Thus, in addition to the monitoring function, financial systems must play a role of risk sharing as well. Therefore, financial intermediaries and markets, which are better at selecting investment opportunities will induce a more efficient allocation of capital and faster growth (Greenwood and Jovanovic, 1990).

The role of pooling rate-of-return and liquidity risks can also be played by security markets, especially stock markets. Henceforth, the introduction of a liquid stock market could enhance the productivity of capital in the same way that financial intermediaries can (Levine, 1991). Portfolio diversification via stock markets might have an additional growth-encouraging effect, by increasing specialisation of firm production (Saint-Paul, 1992), since such diversification may reduce sector risks. If production externalities are present, more specialisation improves capital productivity and accordingly long-term economic growth rate (Romer, 1986).

With regard to the stock market, several papers have shown a positive relation between its size and the floating decision of firms, due to incentive generation and the emergence of positive externalities (Subrahmanyan and Titman, 1999, Pagano, 1993). Pagano (1989) and Pagano and Roëll (1996) claim that the more developed markets are, the more liquid they are, since participation costs are less important and shareholders are better protected. Therefore, a positive relation is expected between capitalisation and turnover and floating capital. Both effects are closely related to the public information level in the markets. On the one hand, when information is public, its cost decreases, investment profitability increases, and consequently investors are encouraged to invest (Subrahmanyan and Titman, 1999), that is to say, the more information, the more the incentives to float. In addition to this, stock markets may also influence the acquisition and dissemination of information about firms. Moreover, this improved information should foster resource allocation with corresponding implications for economic growth (Merton, 1987).

2.1.2. The Effect on the Saving Rate.

There are at least four routes through which financial development could affect saving rates: idiosyncratic risks, rate-of-return risks, interest rates and liquidity constraints (Tsuru, 2000). The effects are proved to be ambiguous. First a decrease on idiosyncratic risks may lower the level of savings and hence the growth rate (Leland, 1969; Sandmo, 1970; Kimbal, 1990 and Caballero, 1990). Devereux and Smith (1994) introduce international capital markets and show that if national risks are shared internationally, growth may be lower than otherwise. Furthermore, when rate-of-return risks are diversified, saving and growth rates might decrease if relative risk aversion exceeds one.

Although liquidity has a positive effect on investment, there is ambiguous evidence on the effect on saving rates. It is generally accepted that greater liquidity increases investment returns and lowers uncertainty, but the effect of higher returns on saving rates is ambiguous due to income and substitution effects. Hence, saving rates could fall enough, so that growth decelerates with greater liquidity (Jappelli and Pagano, 1994).

Summing up, in an endogenous growth framework, financial development can promote economic growth via its positive impact on capital productivity and the efficiency of financial systems in converting financial resources into real investment. Nevertheless, its effect on the saving rate is ambiguous and could affect the growth rate negatively. In net terms, the impact on welfare is likely to be positive, since increased efficiency of investment in the long term can offset any reduction in the propensity to save (Tsuru, 2000).

2.2. Legal environment and growth.

Banking regulation is mainly justified to protect small shareholders who have no access to information (Dewatripont and Tirole, 1994) and to set up a security belt for the banking system so as to avoid a fall in the system and the negative externalities associated (Freixas y Rochet, 1997). Therefore, the equilibrium results from the interaction of public regulation and the reaction of all agents involved: regulators and regulated entities (firms and households).

Banking regulations are formed by prudential norms, which are barriers to enter certain activities (narrow banking) and measures to seek optimal bank strategic choices, such as capital requirements, closure policy, accounting rules and the like (Bhattacharya and Thakor, 1993), thus reducing competition. The former are direct regulations and the latter indirect regulations. Moreover, deposit insurance is generally adopted, although insuring deposits is said to increase bank risk-taking (Gennote and Pyle, 1991). Hence, banking regulation strongly stresses bank solvency. It is primarily designed to prevent moral hazard in banking (Dewatripont and Tirole, 1994).

Moreover, rate controls, entry restrictions, charter limitations of banks and separation of commercial and investment banking have been widely used by regulators to limit competition (Matutes and Vives, 1995). Competition has traditionally been considered a source of excessive risk taking in banking. In this sense, some governments have even encouraged collusive agreements between banks. Indeed, recent empirical research on European banking highlights the importance of imperfect competition in the sector (Neven and Röller, 1994).

Conventional wisdom suggests that any departure from perfect competition in the credit market brings about inefficiencies that would harm firms´ access to credit, thus hindering growth. Pagano (1993) shows this effect in a simple endogenous growth model. However, some recent contributions have pointed out that banks with monopoly power have greater incentives to establish lending relations with their clients. Suarez (1993b) develops a model which shows that banking regulation that creates barriers to entry will protect and enhance the exercise of monopoly power. In this sense, Caminal and Matutes (1997) find that total loans are related to market power as well. Under asymmetric information, banks optimally choose between restricting the loan size or monitoring firm decisions. Loan size decreases with market power but the incentive to exert monitoring effort increase. Henceforth, unless monitoring costs are prohibitively high, their model suggests that some market power enhances welfare. That is, a certain degree of market power is likely to reduce the expected lending rate and extend credit since it increases the probability that loans will take the form of information based credit as opposed to transactions based credits. As a consequence, the effect on growth is ambiguous.

With respect to investor protection, theoretical predictions are diverse. On the one hand, strict creditor protection leads to cheaper credit. Consequently, as pointed out by Padilla and Requejo (1998), many valuable investment projects, which would not be funded because of moral hazard problems, may be financed. Additionally, firm growth may improve. Apart from this *ex ante* increasing efficiency of credit markets, strict protection of creditors also raises efficiency *ex post*. When borrowers can decide on reorganisation without creditor consent, liquidation may not take place even when it is efficient. Therefore, strict protection of creditor rights to be repaid with absolute priority eliminates the possibility of this kind of *ex post* overinvestment problem (Gertner and Scharfstein, 1991).

However, there are other theories (*Critical theories*) that consider that strict enforcement of creditor rights may lead to inefficiencies both *ex ante* and *ex post*. Collateral rights might lead to underinvestment in project evaluation by banks (Manove, Padilla and Pagano, 2000), that is, collateral repossession may cause the decrease of project control by lenders (Bebchuk and Fried, 1996). Consequently, many unworthy projects may be funded and bankruptcy cases will increase. In case of default, if

creditor rights are strictly enforced, they will have no incentives to allow their debtors to restructure financially. Therefore, creditor protection effects on firm growth are ambiguous.

Theoretical literature has analysed the effects of shareholder rights on economic growth as well. Shareholder rights are related to capital market development. Grossman and Hart (1988) point out the relevance of residual power of investors (guaranteed by legal framework) in order to partly mitigate distortion practices from insiders. Legal protection of shareholders makes expropriation practices less efficient. As investor protection improves, the insiders must engage in more distorted and wasteful diversion practices (La Porta et al., 1999c). When investors are protected from expropriation, they pay more for securities, making this form of external finance more attractive for entrepreneurs, who will issue more securities. Therefore, shareholder protection encourages the development of equity markets measured by the valuation of firms, listed companies and the rate at which firms go public (La Porta et al. 1999b).

A positive relation between shareholder protection and corporate valuation has been shown recently through different modelling (Gorton and Schmid, 1996 and La Porta et al. 1999b). However, there is another effect which the literature has overlooked: the quality of legal protection also shapes the shareholder incentives to monitor. Therefore, shareholder protection can be counterproductive due to indirect effects on the behaviour of managers, that is to say, can affect manager´s incentives to undertake valuable projects (Burkart and Panunzi, 2001). Thus the link between shareholder protection and growth proves to be pretty complex.

With regard to disclosure requirements conclusions are linked to the investment enhancement and stock markets as well. When information is public, its cost decreases, investment profitability increases, and consequently investors are encouraged to invest (Subrahmanyan and Titman, 1999), that is to say, the more information, the more incentives to float, as investors are willing to invest their money. On the other hand, if disclosure requirements are pretty demanding, firms can refuse to float in the market to avoid confidential information disclosure, although investment opportunities might be negatively affected (Campbell, 1979).

3.- Empirical Evidence.

Cameron (1967), Goldsmith (1969) and McKinnon (1973) find a positive relationship between financial development and economic growth. However, this relationship may be accidental due to the variables used for measuring financial development. Moreover, this positive sign may not imply causality from financial development to economic growth, but reverse causality and could be driven by omitted variables (Rajan and Zingales, 1998).

The newer strand of empirical research tries to overcome these weaknesses. The first attempt was realised by King and Levine (1993). The main novelty of their study is the introduction of four new measures of financial development in order to measure this concept more accurately. These ratios capture mainly the nature and power of the banking sector through different ratios of credit allocation. They control for other variables related to economic growth as well, to avoid bias in the relation. They have data on 77 countries for the period 1960-1989. They find statistically and economically significant coefficients of financial development on the different economic growth indicators used. Henceforth, this study eliminates some of the previous weaknesses. However, there still remain some drawbacks.

On the one hand, they do not examine carefully the role of productive growth and the rate of investment. On the other, they only focus on the relevance of banking sector on economic growth. Jappelli and Pagano (1994) and Levine and Zervos (1998) try to take into account the importance of other financial sources. The former analyses household credit markets and finds a negative relation as predicted in their theoretical model. The latter studies both stock market development and banking development and economic growth over the period 1973-1993. Even after controlling for many factors related to long- run economic growth, their measures of stock market liquidity and banking development were positively and robustly correlated with future rates of economic growth, capital accumulation and productivity growth. Moreover, they find no evidence that stock market size, international integration and stock return volatility are robustly linked with growth indicators. In addition to this, none of the financial indicators were closely correlated with private savings rates. Their conclusions put in evidence the different function traditionally attributed to stock markets and banking

sector. However, the results obtained may be driven by the different quality of the financial indicators.

In connection to the causality tests, results are not conclusive. As Rajan and Zingales (1998) point out, financial development may be a leading indicator rather than a causal factor. In order to solve this weakness, they take a different and innovative approach, focusing on a more disaggregated relationship between finance and growth. First, they construct a measure of the dependence on external finance of industrial sectors in the US. Second, they test whether industrial sectors that are more dependent on external finance according to their measure, develop disproportionately faster in those countries that are more financially developed. They find that this is true in a large sample of countries over the 1980s. They also show that this result is unlikely to be driven by omitted variables, outliers, or reverse causality. Thus they provide robust evidence that confirms the overall importance of financial development on growth.

Another strategy for the issue of causality is the use of instrumental variables which are used for controlling the simultaneity bias that may arise from the joint determination of financial development and growth. Recently, legal and institutional variables have been introduced in this analysis successfully, since they capture the different nature of national financial systems. As Carlin and Mayer (1998) emphasise a central issue in this debate is whether stock markets or banks are more appropriate for promoting economic development. They take Rajan and Zingales (1998) approach as starting point and introduce in the analysis the legal structure of financial systems as developed by Laporta et al (1997,1998), particularly investor protection and legal enforcement, to study the relationship between financial market features and economic growth. They conclude that financial, corporate and legal structures do bear an important relation to industrial characteristics, and that their effects on activity are sensitive to different stages of economic development.

Demirguc-Kunt and Maksimovic (1998) provide another micro-level support for the proposition that financial and legal development facilitate economic growth, although their variables and data are different. They estimate a predicted growth rate if a firm depends on retained earning and short-term credit only. Then they estimate the proportion of firms growing at rates exceeding the predicted rate. This proportion

should be associated with institutional difficulties for firms in obtaining long-term finance, and be linked with the level of financial development in each country. Their main result is that firms in countries that have easier access to external funds grow faster.

Levine (1998) and Levine (2000) examine more deeply the relationship between national financial and legal structure and growth. The main conclusions are that countries with a legal system assuring a high protection of creditors tend to have more-developed financial intermediaries. Beck, Levine and Loayza (2000) find a significant positive causal impact of financial development on real per capita growth and per capita productivity growth.

The main weakness of these articles is related to the use of the legal variables developed by LaPorta et al (1997,1998). These legal variables reflect the legal structure of a country over a certain period, generally speaking are valid for the nineties. However, they are introduced in the regressions for longer periods of time: 1960-1989, 1976-1990 etc. In developed countries, the legal environment during these periods is assumed to be quite stable. However, this assumption seems to be too strong when talking about developing countries for the numerous changes in political systems and uncertainties associated. Actually, the sample used in these papers includes developing countries as well. Therefore, this link may be spurious as variables are referred to different periods of time. That is to say, innovations are not included in the study.

The second drawback of these studies is also related to the sample of countries used. All the studies analyse developed and developing countries together. However, the relationship between financial development and economic growth is conditioned by the degree of development of each country (Greenwood and Jovanovic, 1990). Henceforth the correlation obtained can be misled by the composition of the sample, for the large differences in development between the sample countries. Moreover, the evolution of the countries included has been completely different over the period.

Both weaknesses are dealt with in the present article. On the one hand, we will use legal variables valid over the whole period of study, which guarantees an unbiased result in this sense. On the other hand, we will use countries with similar degree of

development and evolution. We are conscious that this decision implies the reduction on the number of countries analysed and therefore the difficulty to generalise the conclusions. However, it ensures more robust results.

Cetorelli and Gambera (2001) explore the empirical relevance of banking market structure on economic growth. They use an extension of Rajan and Zingales data set. They find that concentration in the banking sector determines a general deadweight loss which depresses growth. However, they also find that bank concentration promotes the growth of those industries that are more in need of external finance by facilitating credit access to firms, especially younger firms. We find interesting this use of Rajan and Zingales approach for the study of the effects of variables not considered until now in economic growth. Thus, we will use a similar methodology to analyse the influence of the legal environment on economic growth. For that, we will use a comprehensive set of legal variables which captures not only investor protection but also banking laws and stock market regulations.

As we have already mentioned, we will take special care in validating the variables for the period of analysis and finally, we will limit the analysis to countries with similar level of economic development.

4.- Data.

In this paper, we test the relationship between the legal environment, financial development and economic growth. For this purpose, we will use data from the BACH database[1] on 23 industrial sectors on 9 European countries for the decade 1990-2000. For each sector, we have three observations a year. In order to check exactly the influence of financial development and institutional framework on growth and not the reverse relation, we will use the initial data on financial system and legal environment in 1990. Accordingly, the variables associated to economic growth are the corresponding average over the period. In this way, we examine the effects of ex ante financial development on the ex post economic growth.

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[1] Bank for the Accounts of companies Harmonised. European Committe of Central Balance Sheet Offices.

4.1. Data on Financial Development.

Financial development measures vary from some articles to others due to the difficulties of finding data. The generally accepted solution is to use proxy variables, even though they may miss some of the aspects associated to financial systems. In this article, we will construct a measure of the financial development from data of the banking sector, capital and bond market. For the stock market we will use the level of market capitalisation, which is consistent with the previous literature and captures the availability of finance in the market. Hence, we will use the ratio of market capitalisation to gross domestic product in 1990 as a measure of capital market development[2]. Data come from the International Federation of Stock Exchanges (FIBV). Similarly, we calculate the ratio of private credit to the gross domestic product Therefore, our basic measure of financial development-which we term "*findev*"-is the sum of private credit and stock market capitalisation to gross domestic product in 1990. This measure of financial development resembles the one developed by Rajan and Zingales (1998). Yet, we are conscious of the limits of this measure, since as previous studies we do not have data on private equity and private placement of debt either. Table 1 collects these data.

4.2. Data on Countries.

    4.2.1. Macroeconomic and Institutional Data.

The countries included in this paper are all developed economies. There are 9 European countries: Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal and Spain. We also have data on the USA. To capture the economic degree of development in 1990, we use the real gross domestic product per capita. All data come from *International Financial Statistics* and *OCDE*.

In the empirical analysis we use three measures of institutional quality which are generally believed to relate to the degree of development. The sources are the country-risk rating agency International Country Risk (ICR) and Business Environment Risk Intelligence (BERI). We control for the degree of corruption in the government through

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[2] Stock market data has a problem associated to the volatility of the markets, that is, the capitalisation ratio can vary significantly from one year to another. We have checked that in 1989 and 1991 and 1992, the computed ratios for the countries included are very similar. We have run the regressions using the ratios of these years, as well as an average of the period 1990-1993 and the results are not significantly different.

ICR´s corruption index. Lower scores indicate higher corruption. The second measure for institutional quality is the "index of enforceability of contracts" constructed by BERI. This index has a range between 0 and 4. The enforceability of contracts at reasonable costs depends in large part on the efficiency of courts (Lombardo, 2000). We introduce the index "rule of law". This ICR index evaluates the legal and order tradition in a country. This index combines, with equal weights, assessments of 1) the strength and the impartiality of the legal system, and 2) the popular observance of the law. Table 2 summarises the data.

4.2.2. Legal Data.

We have analysed a broad set of economic legislation to obtain a confident picture of the environment firms face. However, the choice is constrained by data availability. The rules we have analysed are merger and acquisition laws, accountancy regulations, auditing norms, disclosure requirements and banking regulations. With this information, following the methodology developed by La Porta et al. (1998), we have constructed several indexes[3] to measure shareholder and creditor protection, banking degree of prudence and protection and disclosure requirements.

The method of construction is the same for all four indexes. Using papers on accounting and legal reviews[4], we define different categories which summarise the protection to investors, public intervention in banking and the quantity of information that has to be public respectively, present in the rules cited. For every country and each category we sum one unit when the feature is present and zero otherwise. Afterwards, we sum for each index and obtain the result for every country. We have taken into

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[3] These indexes were developed for a previous paper.

[4] On corporate law: "European Corporate Finance Law. A guide to M&A and Corporate Restructuring Legislation" Hawkins and Morton, (1990) and "Law of Monopolies, Competition Law and Practice in the USA, EEC, Germany and the UK" Raybould,. and Firth Ed. (1991).
On accounting: "The European Accounting Guide" Alexander and Archer (1992) and "European Accounting", Blake and Amat (1993).
On banking and financial markets: "The Regulation of Banks in the Member States of the EEC", Law Interbank Research Organization (1978). "Banking in Europe: the Harmonization Process in Establishment and Services", Moreiro (1992). "El Sistema Financiero en los Países de la Unión Europea", Parejo, Calvo and Gutiérrez (1993). "Financial Services in the New Europe. The Comparative Law Yearbook of International Business, Special Issue, 1992", Campbell and Moore (1993). "Il sistema finanziario. Istituzioni, mercati e modelli di intermediazione", Forestieri and Mottura (1998). "Deregulation of Financial Markets in Japan", Katayama and Makov (1998). "Banking Act of the Federal Republic of Germany", Bank of Germany. "Ley 26/88 Disciplinar Intervencion de las Entidades de Crédito", Bank of Spain. "Legal Framework of Credit Institutions and Financial Companies", Bank of

account changes in legislation in order to obtain time series differences and not only cross-country variations.

La Porta et al. (1998) develop an index for creditor protection and another for investor protection apart from constructing a measure for the origin of laws and their enforcement. The creditor and investor protection indexes are developed from bankruptcy and company regulations. Both indexes, as the authors recognise, are not complete. There are other laws that affect directly the level of investor protection which are not taken into account in these indexes. We have filled this gap by analysing additional economic norms in order to be closer to the true structural environment.

Henceforth, after the revision of the regulations previously cited, shareholder protection index, which we will call "*share*", has 9 categories. Therefore it can have values between 0 and 9. These categories are the ones developed by La Porta et al. (1998): mail voting allowed for general meeting; no need to deposit the shares before voting, cumulative voting allowed, protection to small shareholders, preemptive right to buy new issues of stock and finally the required percentage to attend a shareholder meeting is inferior to 10%; and the new ones from merger law: equal treatment to shareholders, control of directors, forbidden manager protection practices (such as poison pills). Accordingly, the new creditor index, "*cred*", ranges between 0 and 5, being the categories: "stay on assets" procedure allowed, no priority to other stakeholders (employees, government or public entities), managers are not allowed to begin the reorganisation process without the consent of creditors, creditors have the right to impose an external administrator and finally explicit protection in merger procedures.

For both indexes higher values are associated to better protection. USA is the country with the maximum shareholder protection, scoring 8. Belgium presents the minimum value 1. In relation to creditor index, Denmark presents a score of 4 being the maximum, and France with a 0 value is the minimum. Panel A and B of table 3 presents the construction of these variables. Investor protection is important for the economic

development because it conditions investment and therefore industrial economic growth (Levine 1998, 2000).

We have also included a variable, which captures the quantity of information required to public firms: "*disclos*". We analyse the need of compulsory disclosure in four different situations: merger, auditing, deciding to go public as well as the contents of annual accounts. Thus, "*disclos*" will range from 0 to 4. Accordingly, higher values of "*disclos*" imply more information available to markets and investors. When comparing *"disclos"* values, a great uniformity is observed among European countries. The constitution treaty of the European Community (1952) established the mutual recognition of national firms. Harmonisation, however, has not finished yet, even though there are some fields where it has evolved more quickly. Information requirement is one of the most homogeneous fields. The main work has been made on public firm information related to mergers and acquisition of companies, annual account balance and auditory norms[5]. In this sense, Kukies (2000) points out that the success of European Single market has been mainly driven by better disclosure requirements. Therefore, disclosure requirements seem relevant for the finance development and economic growth relation we want to investigate.

Then, we have analysed banking regulation, whose objective is to protect and assure the stability of such a sensitive system to economy. Following a paper by Allen and Gale (1995) we have analysed the main features, through ten categories[6], of banking regulation in order to measure the prudence of the national regulation. The ten categories can be subdivided in 3 groups according to their main goal. The first group refers to activity control. The second group controls activity scope. The third group refers to risk control. Therefore, "*bca*" will range between zero and ten when none or all categories are present in a national system. Higher values imply tighter controls. Values for each category and each country are shown in table 3, panel C. USA is the country where "*bca*" has the highest value.

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[5] European Interior Market Review 1993.
[6] Similar categories have also been used in a study on European banking regulation developed by Interbank Research Organization (1978). Parejo Gamir (1993) has used this idea of categories to analyse banking regulation as well.

With the inclusion of these regulations, we have come closer to the true institutional environment faced by firms. We are interested in how these variables condition the relationship between financial systems and economic growth. Variables are summarised in table 4. We have not included any variable for the origin of the law. The main reason for this exclusion is legal innovations and reforms. Rajan and Zingales (2001) point out that legal origin does not have the same explanatory power over time. Therefore, we are not sure that the legal origin still has an explanatory power, as legal systems continuously change to adapt new scenarios.

The analysis of the legal innovations in the 1990-2000 period, is especially relevant for disclosure requirements and banking regulation. With regard to disclosure rules, it can be observed that they have become stricter for Denmark and Netherlands since 1993. In connection to banking law, American innovations suppose a tendency towards higher geographical competition and fewer restrictions[7]. The remaining norms have remained stable since the Eighties. Therefore, in our period of study, the legal environment is nearly stable. As a consequence, and due to the lack of data, we would rather analyse the period of interest as a whole than divide it into two subperiods.

4.3. Data on Industries.

Data on industries come from the European database BACH. Data are disaggregated in 23 sectors, following the new NACE classification. BACH contains data from Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal, Spain and USA. The advantage of this base is that data are harmonised and there is consistency among them. We want to investigate the relationship between economic industrial growth and the national financial and legal systems. To account for the industrial growth we use the geometric average rate of growth of real value added for each sector in each country between 1990 and 2000. Panel A of table 5 presents this variable for industries and panel B for countries.

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[7] Geographical controls for branch establishment have been present until 1997. The Riegle-Neal Interstate Banking and Branching Efficiency Act enables banks to establish branches and buy other banks across the country. The passing of this act ends a long deregulatory process started in 1978. By 1993, the state-level deregulatory process was essentially completed: all states but Arkansas, Iowa and Minnesota allowed statewide branching, and all states but Hawaii permitted out of state bank holding companies to enter (Jayaratne and Strahan, 1997).

In addition to this, we have calculated a measure of the external financial needs "*fineeds*" for the 1990-2000 period. Data come from BACH again. To proxy for the external financial needs, we will use the leverage ratio. This ratio includes banking credit, trade creditors and debenture loans. We are conscious of the limits of this measure, since it does not reflect all the financing possibilities financial markets allow. However, due to the fact that we are working with book data and that only large firms have effective access to capital markets, we think leverage ratio is a good signal of firm ability to attract external investor to finance firm investment projects.

We will include an interaction term between legal structure and the measure of external financial needs. We try to check the relevance of the institutional scenario for the economic growth of financial constrained firms when a large set of economic regulations is considered. Table 5, panel A collects the financial needs across industries, panel B reports the variable across countries in the sample. Table 6 presents the correlations between the main variables.

5.- Legal Framework, Financial Development and Sector Growth.

5.1 The Basic Test.

The first model explores the role of legal structure for industrial results. We include a complete set of legal variables to capture various aspects of economic legislation. We are interested in banking and capital markets rules mainly. We correct for country and industry characteristics using indicator variables, one for each country and industry. The basic regression is:

$$\text{Growth}_{j,k} = \alpha + \beta_1 * \text{Industry dummies}_j + \beta_2 * \text{country dummies}_k + \beta_3 * \text{legal variables} + \varepsilon_{j,k}$$

$$(1)$$

Where a subscript j indicates that the variable refers to the j-th industry. Similarly, a subscript k indicates a variable regarding the k-th country.

We estimate the equation for the period 1990-1999. We calculate the growth for every year and each sector, and then we introduce in the regression the average of the period for each sector. The legal variables refer to 1990. We introduce dummy variables for each country and each sector, in order to assure that results are not driven by any

omitted effect. Furthermore, we run two additional regressions with national variables which account for the degree of development. In these specifications, we do not introduce country dummies. In all specifications, we introduce size controls as well.

5.2 Results from the basic regression.

Table 7 presents the results from the above regression. We report for brevity only the coefficients of interest, namely the legal variables. We compute standard errors and t-statistics corrected for heteroskedasticity. We have run three regressions. All specifications include dummies for sectors and size. The first two introduces country controls traditionally used in the literature instead of country dummies. Accordingly, we include the financial development index at the beginning of the period to account for the degree of financial development. We introduce the logarithm of per capita gdp in 1990 to measure the degree of development of national economy in the second regression. We also use three variables to characterise the institutional framework of countries: enforceability of contracts (enforce) rule of law (rule) and corruption (enfy).

The result obtained for financial development coefficient is positive and significant (column 1), therefore better financial systems encourage economic growth. However, when we introduce in the analysis the per capita income logarithm, the financial development coefficient is not significant any more (column 2). The per capita income is negative and significant. Hence, more developed countries present lower growth. With regard to the institutional quality variables, all of them are significant. Rule of law presents a positive sign. Therefore, better legal systems foster economic growth. Enforceability of contracts presents a negative coefficient. As can be observed in table 6, the relationship between contract enforceability and per capita income is strong. Furthermore, in related papers, this variable has been used as a proxy for economic development. Therefore, this negative sign has to be interpreted in the same spirit as the per capita income one. The more developed countries the lesser growth. Corruption presents a positive and significant coefficient. Lower values of *enfy* are associated to higher corruption. Hence, corruption has a depressing effect on growth.

In connection with the legal variables, shareholder protection coefficient enters with a positive and significant coefficient, while, banking regulation and disclosure requirements protection coefficients are significant, but negative. Henceforth, there is

mixed evidence on the influence that a developed legal environment has on industry growth. In general terms, sector effects and size effects are found significant sources of differences in growth.

In column (3), we run the regression with the legal variables alone. In order to control the fixed effects associated with countries we introduce dummy variables instead. Again, we also use dummies in order to control size and industry effects. Thereby, we can ensure that these results are not driven by omitted variables. In this case, things are very similar. The estimated coefficient for banking regulation is negative and significant. Therefore, legislation restricting banking hinders economic growth as predicted by Pagano (1993). The coefficient for disclosure requirements is negative and significant as well. Creditor and shareholder protection coefficients are positive and significant. Henceforth, when sector and country differences are considered results confirm the hypothesis that developed institutional protection to investors promotes economic development. In this case, both country and size effects account for differences in growth.

In table 8, we provide a metric to assess the economic significance of the estimated coefficients in specification (1) (column 3 of table 7). For each country in the sample, we compute an estimate of the elasticity of the sector growth with respect to variation in the legal development measures. The elasticity is computed at the average value of the variables[8].

The results show that the effect of institutions on sector revenues is economically significant. A 10% improvement in the shareholder protection is associated in average with a 2.80% increase in the results. A 10% increasing protection of banking law affects negatively economic growth (2.85%). We are conscious that with this metric we are not measuring exactly independent effects. Due to the correlations

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[8] The elasticity of g_i, the real economic growth in country i, relative to the institutional variable $INST_j$ is computed as:

$$\eta_{i,j} = \widehat{f}_j \cdot \frac{INST_{ij}}{g_i}$$

where $INST_{ij}$ is the value of $INST_j$ in country i, $\widehat{f}_j$ is the estimated coefficient in specification (1) for the corresponding institutional variable and g_i is the average of real economic growth in country i.

between the legal variables (table 6), we would expect that the "partial derivative" effect of each institutional variable, controlling for the value of the others, would be smaller in absolute value than their "total derivative" effects. Despite this lower economic impact, we consider more important to account for the partial effect, as long as institutional factors impact simultaneously to economic decision making. The general message from Table 7 and 8 is that institutional environment affects statistically and economically economic growth during the 90´s.

5.3. The interaction analysis.

The previous section reported the test of equation (1). We found evidence that economic growth is a function of the legal framework. That is, the approach outlined above enables us to identify an economy-wide effect of legal environment common to all economic sectors and countries. Therefore, this would be the effect we would find if we studied national aggregated data. Next, we analyse more in detail the role played by the legal structure for economic sectors through the introduction of two different interaction variables. Thus we use two new specifications:

$$Growth_{j,k} = \alpha + \phi_1 * Industry\ dummies_j + \phi_2 * country\ dummies_k + \phi_3 * legal\ variables + \phi_4 * (financial\ development * legal\ variable_k) + \varepsilon_{j,k} \qquad (2)$$

$$Growth_{j,k} = \alpha + \psi_1 * Industry\ dummies_j + \psi_2 * country\ dummies_k + \psi_3 * legal\ variables + \psi_4 * (external\ dependence_{j,k} * legal\ variable_k) + \varepsilon_{j,k} \qquad (3)$$

In specification (2) we introduce the interaction between national institutional variables and financial development. We test whether sectors operating in a developed financial setting obtain disproportionately higher or lower results. As we have explained, American financial system is said to be one of the most developed in the world (Rajan and Zingales, 1998) and its legal setting is considered encouraging for economic activity as well (La Porta et al. 1998). Accordingly, we pose two additional questions. First, we test what would happen with industry growth if they faced a developed legal and institutional framework, like the American one. Secondly and

complementarily, we test how American financial development would affect industry growth.

The third specification analyses the effect of the institutional framework across industries through the combination of external financial needs and institutional framework. Henceforth, we test whether sectors that are more in need of external finance, grow significantly more if they are in a country with an adequate legal and institutional structure. In this case, we also compute what would happen to economic growth if the legal environment were the American one, instead of their own legal setting. These computations resemble in spirit what has been done in recent papers by Rajan and Zingales (1998) and Cetorelli and Gambera (2000).

Table 9 reports the estimation of equation (2). In column 1, we estimate the equation introducing all interaction terms. The coefficients of the basic variables are significant only for banking regulation and shareholders protection. With respect to the interaction terms, all are significant except for the shareholder one. Banking interaction is negative, hence prudent banking regulation hinder economic growth in those countries with a developed financial system. Disclosure requirement interaction presents a negative coefficient, implying that the general depressing effect on economic growth is more relevant when the financial system is more developed. Creditor protection indirect effect is positive. Thereby, creditor protection affects growth more when financial markets are developed. Shareholder interaction does not affect growth; hence we consider eliminating it. Results are the same (column 2). In column 3, we eliminate the creditor interaction effect. In this case, the creditor protection does affect economic growth significantly. In column 4, we present the results for the interaction variables alone. Results confirm those obtained in table 7, being prudent banking regulation and disclosure requirements depressing for economic growth. On the contrary, strict investor protection enhances economic growth in particular where financial systems are developed.

These findings suggest that legal improvements in creditor and shareholder protection promote economic growth. Furthermore, these effects are stronger in those countries with a well-developed finance sector. However, banking regulation and disclosure requirements hinder economic growth.

Next, we compute what would happen if European countries had to face American context. We calculate the impact of each interaction term on economic growth in a similar vein to the metric used in table 8. For each country in the sample, we compute an estimate of the elasticity of the sector growth with respect to variation in the interaction term[9]. Afterwards, we replace the national values of the legal variables and financial development for the American ones. First, we introduce the American financial development alone (panel A). Secondly, we replace the legal variables instead (panel B). We also compute the difference in growth in the diverse situations. Results are shown in table 10.

As it can be observed from panel A, if economic sectors enjoyed American financial development, ceteris paribus, all effects would be more pronounced. However, as observed in the last column the combined effect on growth shows mixed evidence of the influence on economic growth exerted by the American financial development. For some countries, there would not be significant differences between facing their own national financial development or the American one. These countries present similar national financial development to the American one (as can be observed from table 1). These are Denmark, France, Germany and The Netherlands. Austria, Spain and Portugal, would growth more if their firms faced the American financial development. Therefore, those countries less financially developed enjoyed higher growth rates if they had American financial system. However, Italy and Belgium would present a deadweight loss if their sectors faced American financial system.

In panel B, we replicate the computations, this time with the American legal variables. Again, slight differences can be seen between the real influence on growth and the simulated one. If firms operated in their own financial system but with the American legal environment, the effects on growth would be stronger. Individually

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[9] The elasticity of g_i, the real economic growth in country i, relative to the interaction term INT_j is computed as:

$$\eta_{i,j} = \widehat{f}_j \cdot \frac{INT_{ij}}{g_i}$$

considered, American shareholder protection would double its impact on growth (from .248 to .567). The negative effect of the interaction term with banking regulation would increase from .511 to .731. If economic sectors faced American institutional environment, they would grow more. Therefore, the main insight of this comparative exercise is that provided industries face the national financial degree of development, American legal system will encourage industry growth. These findings suggest that legal environment is more important when financial system is less developed. Looking at financial data, we can observe that in 1990 USA presented the most developed financial system of the sample. Therefore, USA legal framework encourages growth for those countries with smaller capital markets.

Table 11 presents the estimation of specification (3). As can be observed from column 1, when introducing all the interaction variables, the results for the basic variables are very similar to those obtained in the basic specification. However, in some regressions, creditor protection is not significant. Related to the banking interaction effect, it presents a negative and weakly significant coefficient. Henceforth, prudent banking norms whose objective is solvency impacts more negatively more leveraged sectors. The disclosure requirement interaction term presents a negative and significant coefficient. Thus, disclosure requirements affect negatively those sectors which are more dependent on external finance as well. Creditor and shareholder interaction terms enter with positive and significant coefficients. Therefore, strict investor protection has a second order effect on leveraged sectors.

Columns 2 to 6 estimate different specifications. In column 2, we eliminate the banking interaction term. Results for the basic variables and interaction terms hold except for creditor protection which becomes not significant. If we take our creditor interaction results still hold (column 3). Yet, if the eliminated interaction is the shareholder protection one, none of the rest is significant (columns 4 and 5). Finally, regression 6 presents the results if we include interaction variables alone. Previous results still hold. Therefore, banking regulation affects negatively economic growth as well as disclosure requirements. Henceforth, both impact negatively those sectors which

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where INT_{ij} is the value of legal variable$_j$* *financial development* in country i, $\hat{f}_j$ is the estimated coefficient for the corresponding interaction term in specification (2) and g_i is the average of real economic growth in country i.

are more dependent on external finance. Furthermore, disclosure requirements have a negative effect on economic growth (-0.0668) that affects all sectors. Moreover, when we introduce a measure of external financial needs, we evidence a minor industry-specific, positive effect (-0.0413). Similarly, shareholder increasing effect grows up to 0.0644 showing a higher industry effect.

The positive effect of creditor interaction term seems to support orthodox theories. Strict creditor protection leads to cheaper credit. Consequently, many valuable investment projects, which would not be otherwise funded because of moral hazard problems, may be financed. Additionally, firm growth may improve. This effect may be especially important for leveraged sectors.

We have estimated the different interaction effects on growth. In this case, we compare the interaction of national legal structure and financial dependence (colum1) if the industry faced American legal environment rather than the national one. Results are shown in table 12. We compute the difference of industry growth in both situations as well[10]. We find evidence that American institutional environment does encourage growth more than the national setting.

6. Robustness.

We now present a large battery of robustness test to assure that the interaction effect we have found is not driven by the sample chosen. First, we check if the correlation is sensitive to the size of national sectors. Afterwards, we focus on substantial industries.

6.1. Size analysis.

We have analysed all sector sizes indiscriminately. However, size has been proved to be an important conditioning factor in economic growth. Henceforth, we consider interesting to examine if the general correlations found are valid, when considering particular sector sizes independently. We separate the economic sectors into two categories: large sectors on one hand and small and medium ones on the other.

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[10] We estimate the prediction including the significant variables alone and introducing all of them. In both cases, the mean comparison test gets the same results.

Financial patterns are said to be affected by firm size, since size is a proxy for efficient past (Rajan and Zingales, 1995). Moreover, reputation may alleviate information asymmetries and thus can improve access to credit (Giannetti, 2000). Therefore, focusing specially on larger sectors, we might expect a less important effect of the legal scenario on sector growth.

Table 13, panel A reports the results for small and medium sectors and panel B, the results for large sectors. Different patterns appear depending on the size. In column 1 and 2, we present the results for specification 2. The results in both cases are very similar to the ones obtained for the complete sample. However, banking law affects positively firm growth for large sizes.

In columns 3 and 4, we present evidence for specification (3). Results are pretty similar for small and large sectors, but slightly different from those showed for the general case. Now, conclusions are weaker both for basic variables and interaction terms. For small sectors, only disclosure requirements and shareholder protection are significant, being all interaction effects no significant. However, banking regulation and creditor interaction affect significantly economic growth for larger sectors.

When size is taken into consideration, results show a significant impact on growth, although they reveal different patterns associated to size specially for more leveraged sectors. Shareholder protection encourages growth for both sizes. However, with regard to the interaction analysis, legal development effects are less pronounced for leveraged smaller and medium sectors than larger ones.

6.2. Manufacturing industries.

Both theoretically and empirically, it has been shown that there are strong differences between manufacturing industries and services. Therefore, we consider interesting to focus on manufacturing sectors to complete the analysis of the robustness of results. Results are reported in table 14. We find evidence that institutional factors impact manufacturing as well. Results for this more homogeneous sample mainly replicate those obtained for the complete sample, except for the more leverage case, where interaction effects are not significant. Therefore, results are robust to the inclusion of different activities.

7. Concluding remarks.

As claimed by Cetorelli and Gamberra (2001), after the contributions that established that financial development matters for economic growth, the next step in the research agenda involves examining deeply the reason of this nexus. In this context, we investigate the effects that legal environment may have on economic growth. The first question to address is what we mean by institutional environment. We call institutional environment those legal and compulsory norms that shape and condition economic transactions. Banking law, disclosure requirements, legal protection to investor and company law are the institutional scenario considered.

The evidence found suggests a significant impact of the legal environment, say banking regulation disclosure requirements and investor protection, on industry growth in general terms. This finding is consistent with the papers by La Porta et al. (1996, 1998) and Rajan and Zingales (2001). There is evidence that banking regulation has a first-order negative effect on growth. This finding is consistent with the theoretical prediction that tighter controls decrease market competition and as a consequence the amount of credit available is lower. Moreover, we also find evidence that sectors operating in more developed financial systems are more affected by this negative effect from a prudent banking law, as predicted by Suarez (1993b).

When we examine the interaction between financial and institutional development, we find evidence that creditor protection affects positively firm growth in those countries with developed financial systems. This effect is common to all sectors. This finding supports those opinions that defend strict creditor protection because it leads to cheaper credit and therefore, more valuable projects would be financed and results grow (Padilla and Requejo, 1998). Shareholder protection has a general promoting effect on growth as well. However, we find evidence that shareholder protection is less relevant to economic growth in those countries with a developed financial system. Moreover, shareholder protection has a heterogeneous effect across industries. In particular, we find that more leveraged sector growth is more positively impacted by shareholder protection.

In order to check the welfare effects of the national systems, we have realised comparisons between national legal systems and the American one. Results show that given the degree of development of national financial system, the American legal environment promotes industry growth more than the national ones. Furthermore, it does not seem to improve the performance of those sectors more in need of external finance.

Finally, our results may be relevant in the debate about what structure should adopt economic regulations in order to promote economic growth. To the extent that sector growth is affected by national creditor and shareholder protection laws as well as banking rules, the adoption of an adequate legal environment may become a comparative advantage for national industries competing internationally. Especially for those sectors more externally dependent and when financial markets are small.

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TABLE 1: FINANCIAL DEVELOPMENT ACROSS COUNTRIES.

The cred/ratio is the private credit (IFS line 32d) to gdp. The cap/gdp ratio is the stock market capitalization over GDP at the end of the year as reported by International Federation of Stock Exchanges (FIBV). Data for 1990.

	cred/gdp	cap/gdp
Austria	0.74	0.17
Belgium	0.37	0.33
Denmark	0.83	0.28
France	0.97	0.26
Germany	0.94	0.21
Italy	0.40	0.14
Netherlands	0.54	0.40
Portugal	0.47	0.13
Spain	0.70	0.23
USA	0.73	0.48

TABLE 2: SUMMARY STATISTICS ACROSS COUNTRIES.

Enforce is the "index of enforceability of contracts" constructed by BERI. This index has a range between 0 and 4. Rule accounts for the "law and order" in the country. Enfy accounts for corruption (ICR´s corruption index) in the government. Lower scores indicate higher corruption. Lperca measures the income per capita logarithm (data come from IFS statistics).

cntry		enforce	enfy	rule	lperca
Austria	average	3.30	8.33	10.00	9.96
	median	3.30	8.33	10.00	9.96
	stand dev	0.00	0.00	0.00	0.04
Belgium	average	3.30	7.84	10.00	9.92
	median	3.30	8.33	10.00	9.92
	stand dev	0.00	0.76	0.00	0.03
Denmark	average	3.18	10.00	10.00	10.18
	median	3.20	10.00	10.00	10.15
	stand dev	0.04	0.00	0.00	0.04
France	average	2.50	8.69	9.52	9.97
	median	2.50	9.16	10.00	9.96
	stand dev	0.00	1.40	0.76	0.02
Germany	average	3.40	9.30	9.44	10.01
	median	3.40	9.58	9.58	9.99
	stand dev	0.00	0.75	0.62	0.07
Italy	average	2.14	5.71	8.33	9.88
	median	2.20	5.00	8.33	9.87
	stand dev	0.09	0.82	0.00	0.02
Netherlands	average	3.20	10.00	10.00	9.91
	median	3.20	10.00	10.00	9.90
	stand dev	0.00	0.00	0.00	0.04
Portugal	average	2.00	8.33	8.99	8.92
	median	2.00	8.33	8.33	8.91
	stand dev	0.00	0.00	0.75	0.05
Spain	average	2.70	6.90	8.57	9.49
	median	2.70	6.66	10.00	9.47
	stand dev	0.00	1.39	1.65	0.04
USA	average	3.50	8.33	10.00	10.04
	median	3.50	8.33	10.00	10.03
	stand dev	0.00	0.00	0.00	0.04
average		**2.91**	**8.31**	**9.45**	**9.82**
median		**3.20**	**8.33**	**10.00**	**9.93**
stand dev		**0.50**	**1.55**	**0.91**	**0.33**

TABLE 3: LEGAL VARIABLES.
Panel A: Shareholder and Creditor Protection.

Shareholder and creditor protection extends La Porta et al (LLSV) indexes for including merger regulation. We control for specific protection of shareholders. We will sum one point to LLSV shareholder index, if control of boards of Directors is present (Dir. Cont), that is no restriction to market mechanism. When equal treatment to all shareholders is guaranteed we will sum one point as well. Thirdly we will increase the index in one unit more if defective tactics are absent. Creditor index is an extension of LLSV such that it includes merger protection to firm operations and creditors.

Regulation	Shareholder protection					Creditor protection		
	LLSV	Dir cont	Eq. treat	Def tacts	**Total**	LLSV	Merger	**Total**
AUSTRIA	2	0	1	1	**4**	3	0	**3**
BELGIUM	0	0	1	0	**1**	2	1	**3**
DENMARK	2	0	1	1	**4**	3	1	**4**
FRANCE	3	1	1	0	**5**	0	0	**0**
GERMANY	1	0	1	1	**3**	3	0	**3**
ITALY	1	0	0	0	**1**	2	0	**2**
NETHERLANDS	2	0	0	0	**2**	2	0	**2**
PORTUGAL	3	1	1	0	**5**	1	0	**1**
SPAIN	4	0	1	0	**5**	2	0	**2**
USA	5	1	1	1	**8**	1	0	**1**

TABLE 3: LEGAL VARIABLES.
Panel B: Information requirements and information quality.

Diclosure requirements (disclos) capture all the information available for investors. If balance sheet has to present a strict pattern we sum one unit to the index. If merger information must be public at the same time it is communicated to authorities, we add one point. We sum one point for information requirements to participate in stock markets. Finally, we sum an extra point when auditing is compulsory for all large firms (not only firms participating in capital markets).

	Disclosure requirements (disclos)				
	Strict	Merger	Stock mkt	Auditing	**Total**
AUSTRIA	1	1	1	1	**4**
BELGIUM	1	1	1	1	**4**
DENMARK	0	1	1	0/1*	**2/3***
FRANCE	1	1	1	1	**4**
GERMANY	1	1	1	1	**4**
ITALY	1	1	1	0	**3**
NETHERLANDS	0	0/1*	1	1	**2/3***
PORTUGAL	1	1	1	1	**4**
SPAIN	1	1	1	1	**4**
USA	1	1	1	1	**4**

*From 1993 the partial score is one and therefore the total value of disclos increased. It reflects a legal change.

TABLE 3: LEGAL VARIABLES.
Panel C:Banking Legislation.

Variable construction has done from comparative studies by InterBank Research Organization (1978) and Parejo and Gamir (1992). Furthermore national legislations have been used. Innovations taken into consideration since 1990. There are ten categories. License granting needed, necessity from community, board of directors requirements, separation of activities, restriction to participations held in nonfinancial firms and other financial entities respectively, restriction to own share holding, loan concentration risk control, merger permision, restriction to branch opening and disclosure requirements.

Regulation Procedure	Lisence grant	Com. need	Board capabty	Separ. activity	Particip. Restrict.	Own share restrict.	Loan concen.	Merger control	Branch control	Disclos. Require.	TOTAL
AUSTRIA	1	0	1	0	1+1	1	1	1	0	1	**8**
BELGIUM	1	1	1	0	1+0	0	1	1	0	0 (1)$_a$	**6 (7)$_a$**
DENMARK	1	0	1	1	1+1	1	1	1	0	1	**9**
FRANCE	1	1	1	0	1+0	0	1	1	0	1	**7**
GERMANY	1	0	1	0	1+0	0	1	1	0	1	**6**
ITALY	1	1	1	0	1+0	0	1	1	1	1	**8**
NETHERLANDS	1	0	1	0	1+0	0	1	1	0	1	**6**
PORTUGAL	1	0	1	0	1+0	0	0	1	0	1	**5**
SPAIN	1	0	1	0	0+0*	1	1	1	0	1	**6**
USA	1	1	1	1	1+1	0	1	1	1(0)$_b$	1	**10(9)$_b$**

Note: * Lowest limitation to non financial firm participations, therefore very weak control (almost non existence).
a: values valid from 1993.
b: values valid from 1997.

TABLE 4: LEGAL VARIABLES.

CRED ranges between 0 and 5, SHARE among 0 and 8. They captures creditor and shareholder protection respectively. Higher values indicate better protection. DISCLOS measures the quantity of information requirements.. Higher values of DISCLOS means higher information disclosure. BCA captures banking regulation, it ranges from 0 to 10. Superior values are associated to stricter controls to banking activity. All legal changes have been taken into account and included in the elaboration of the variables.

	CRED	SHARE	DISCLOS	BCA
AUSTRIA	3	4	4	8
BELGIUM	3	1	4	6 (7)[a]
DENMARK	4	4	2(3)[a]	9
FRANCE	0	5	4	7
GERMANY	3	3	4	6
ITALY	2	1	3	8
NETHERLANDS	2	2	2(3)[a]	6
PORTUGAL	1	5	4	5
SPAIN	2	5	4	6
USA	1	8	4	10(9)[b]

Note: [a] It takes a value in brackets from 1993, [b] 9 from 1997.

TABLE 5: SUMMARY STATISTICS.

Panel A: Growth and external financing across industries.

To proxy for industry growth we use the geometric average rate of growth of real value added for each industrial sector in each country between 1990-1999. To proxy for industry external financing needs we use the ratio of credit with financial intitutions, trade credit and debenture loans over total assets.

		avg. growth	ext. finance
1	Energy	0.94	0.53
2	Ind. Sectors	0.97	0.56
3	Building	0.98	0.71
4	Trade	0.97	0.67
5	Transport	0.96	0.58
6	Other Services	1.01	0.59
21	Int.Products	0.97	0.51
22	Invest.Goods	0.97	0.58
23	Non.Dur.Goods	0.98	0.57
41	Whole.Trade	0.96	0.67
42	Motor Vehicles Trade	1.03	0.69
43	Retail Trade	0.98	0.66
44	Hotels	0.98	0.62
211	Metal.Extraction	0.94	0.57
212	Non-Metal.Extraction	0.98	0.51
213	Chemicals	0.97	0.51
221	Manuf.Of Metal	0.98	0.58
222	Electronic Equip.	0.95	0.56
223	Transport Equip Manuf.	0.97	0.62
231	Food	0.98	0.57
232	Textiles	0.95	0.57
233	Timber and Paper	0.99	0.58
234	Other Manuf.	0.99	0.57

TABLE 5: SUMMARY STATISTICS.

Panel b: Growth and external financing across countries.

To proxy for industry growth we use the geometric average rate of growth of real value added for each industrial sector in each country between 1990-1999. To proxy for industry external financing needs we use the ratio of credit with financial intitutions, trade credit and debenture loans over total assets.

	avg. growth	ext. finance
Austria	0.97	0.682
Belgium	0.70	0.584
Denmark	1.06	0.615
France	1.00	0.663
Germany	0.99	0.598
Italy	1.03	0.650
Netherlands	1.01	0.540
Portugal	1.09	0.532
Spain	1.00	0.550

TABLE 6: CORRELATIONS.

Lperca is the per capita income logarithm. *Fd90* is the financial development. *Enforce* is the degree of enforcement. *Enfy* is the corruption index. *Share* is the shareholder protection index. *Disclos* is the disclosure requirement index. *Bca* is the banking regulation index and *cred* is the creditor protection index.

	lperca	fd90	enforce	enfy	share	disclos	bca	cred
lperca	1							
fd90	0.4700*	1						
enforce	0.5575*	0.4465*	1					
enfy	0.3328*	0.4332*	0.5617*	1				
share	-0.3794*	0.4852*	-0.2621*	-0.1061	1			
disclos	-0.2559*	0.0327*	-0.0258	-0.5022*	0.3062*	1		
bca	0.6003*	-0.0110	0.1004	0.0958	-0.1828*	-0.3591*	1	
cred	0.3885*	-0.1142*	0.6607*	0.2453*	-0.4387*	-0.2762*	0.4103*	1

TABLE 7: ESTIMATION OF THE BASIC TEST.

Results from the following empirical specification:

Growth$_{j,k}$= α + ß$_{1*}$Industry dummies$_j$ + ß$_2$*country dummies$_k$ + ß$_3$*legal variable + ß$_4$*financial development$_k$ + ε$_{j,k}$

The dependent variable, growth$_{j,k}$, is the average rate of growth of real value added for each industrial sector in each country between 1990-1999. In specification (1) we include some country controls. *fd90* is a measure of the financial development in 1990, it is the ratio of domestic credit and stock market capitalisation over GDP. Furthermore we introduce *lperca90,* which is the logarithm of per capita gdp in 1990 and *enforce* measures contract enforceability, *rule* accounts and *enfy* is a measure of the degree of corruption in the country in 1990. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). Standard errors and t-statistics are corrected for heteroskedasticity. Sector and size dummies used in both regressions. Country dummies used in run (2).

	(1)	(2)	(3)
fd90	0.1119***	0.0000	
	(6.55)	(.)	
enforce	-0.1115***	-0.1106***	
	(7.26)	(7.23)	
rule	0.1376***	0.1238***	
	(27.69)	(20.14)	
enfy	-0.1300***	-0.1129***	
	(17.47)	(13.74)	
lperca90		-0.0816***	
		(6.55)	
bca	-0.0527***	-0.0616***	-0.0415***
	(20.90)	(23.20)	(7.32)
disclo	-0.1659***	-0.1586***	-0.0931***
	(25.36)	(22.99)	(27.10)
cred	0.0055	0.0076	0.0131**
	(1.09)	(1.47)	(2.29)
share	0.0991***	0.1086***	0.0845***
	(29.95)	(46.16)	(20.77)
Constant	0.6462***	-0.0729	0.2718***
	(19.31)	(0.67)	(10.36)
Observations	520	520	520
R-squared	0.86	0.86	0.86

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.

TABLE 8: ESTIMATED ELASTICITIES.

For each country, we compute an estimate of the elasticity of the sector growth with respect to variation in the legal development measures to assess the economic significance of the estimated coefficients in specification (1) (column 2 of table 7). The elasticity is computed at the average value of the variables

	National legal environment			
	bca	**disclos**	**share**	**cred**
Austria	-0.337	-0.383	0.348	0.040
Belgium	-0.349	-0.528	0.120	0.056
Denmark	-0.348	-0.175	0.318	0.049
France	-0.286	-0.370	0.421	0.000
Germany	-0.249	-0.376	0.256	0.040
Italy	-0.319	-0.272	0.082	0.026
Netherlands	-0.243	-0.184	0.167	0.026
Portugal	-0.189	-0.086	0.389	0.012
Spain	-0.246	-0.372	0.423	0.026
mean	**-0.285**	**-0.305**	**0.280**	**0.031**
median	**-0.286**	**-0.370**	**0.318**	**0.026**

TABLE 9: INTERACTION ANALYSIS; FINANCIAL DEVELOPMENT AND LEGAL ENVIRONMENT.

Results from the following empirical specification:

Growth$_{j,k}$ = α + ϕ_1*Industry dummies$_j$ + ϕ_2*country dummies$_k$ + ϕ_3* (national financial development*legal variable$_k$) + $\varepsilon_{j,k}$

The dependent variable, growth$_{j,k}$, is the average rate of growth of real value added for each industrial sector in each of the countries between 1990-1999. The ratio measuring financial development (*fd90*) includes of domestic credit and stock market capitalisation over GDP. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). All scores for 1990. Standard errors and t-statistics are corrected for heteroskedasticity. Sector, country and size dummies introduced.

	(1)	(2)	(3)	(4)
bca	-0.0066*	-0.0066*	0.0031	
	(1.87)	(1.87)	(0.89)	
disclos	0.0000	0.0000	0.0000	
	(.)	(.)	(.)	
cred	0.0000	0.0000	0.0153***	
	(.)	(.)	(5.91)	
share	0.0340***	0.0340***	0.0347***	
	(7.23)	(7.23)	(7.25)	
df90*bca	-0.0099***	-0.0099***	-0.0074***	-0.0762***
	(3.62)	(3.62)	(2.98)	(19.81)
df90*discl	-0.0184***	-0.0184***	-0.0181***	-0.0387***
	(6.18)	(6.18)	(6.10)	(10.27)
df90*cred	0.0127***	0.0127***		0.0738***
	(5.91)	(5.91)		(34.17)
df90*share	0.0000			0.1503***
	(.)			(33.11)
Const	-0.0094	-0.0094	-0.0116	-0.0465
	(0.35)	(0.35)	(0.43)	(1.53)
Obs	520	520	520	520
R-squared	0.86	0.86	0.855	0.84

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.

TABLE 10.A: AMERICAN FINANCIAL DEVELOPMENT AND LEGAL ENVIRONMENT.

We calculate the estimated elasticity for the interaction term between legal factors and financial development. First we use the national financial development. Then we substitute it for the American one. In the last column, we compare national real growth rates with the predicted growth in case we replace the national financial system with the American one. A positive (negative) sign implies significantly greater (smaller) estimated growth. No sign indicates no significant mean difference.

	National financial development				American financial development				diff.
	bca	disclos	share	cred	bca	disclos	share	cred	
Austria	-0.566	-0.144	0.274	0.419	-0.763	-0.194	0.369	0.549	+
Belgium	-0.453	-0.154	0.073	0.447	-0.789	-0.267	0.127	0.758	-
Denmark	-1.136	-0.128	0.489	0.996	-0.786	-0.089	0.338	0.670	
France	-0.654	-0.190	0.452	0.000	-0.646	-0.187	0.447	0.000	
Germany	-0.533	-0.180	0.258	0.525	-0.562	-0.190	0.272	0.540	
Italy	-0.318	-0.060	0.038	0.157	-0.722	-0.138	0.087	0.347	-
Netherlands	-0.306	-0.052	0.099	0.201	-0.550	-0.093	0.178	0.352	
Portugal	-0.211	-0.021	0.204	0.083	-0.426	-0.043	0.413	0.164	+
Spain	-0.424	-0.144	0.342	0.279	-0.556	-0.188	0.449	0.356	+
mean	-0.511	-0.119	0.248	0.345	-0.644	-0.154	0.298	0.415	**-**
median	-0.453	-0.144	0.258	0.279	-0.646	-0.187	0.338	0.356	**-**

TABLE 10.B: FINANCIAL DEVELOPMENT AND AMERICAN LEGAL ENVIRONMENT.

We calculate the estimated elasticity for the interaction term between legal factors and financial development. First we use the national legal environment. Then we substitute it for the American one. In the last column, we compare national real growth rates with the predicted growth in case we replace the national legal environment with the American one. A positive (negative) sign implies significantly greater (smaller) estimated growth. No sign indicates no significant mean difference.

	National legal environment				American legal environment				diff.
	bca	disclos	share	cred	bca	disclos	share	cred	
Austria	-0.566	-0.144	0.274	0.419	-0.708	-0.144	0.549	0.175	+
Belgium	-0.453	-0.154	0.073	0.447	-0.756	-0.154	0.586	0.184	+
Denmark	-1.136	-0.128	0.489	0.996	-1.262	-0.256	0.978	0.078	+
France	-0.654	-0.190	0.452	0.000	-0.934	-0.190	0.724	0.101	+
Germany	-0.533	-0.180	0.258	0.525	-0.888	-0.180	0.688	0.149	+
Italy	-0.318	-0.060	0.038	0.157	-0.397	-0.081	0.308	0.249	+
Netherlands	-0.306	-0.052	0.099	0.201	-0.510	-0.104	0.395	0.139	+
Portugal	-0.211	-0.021	0.204	0.083	-0.421	-0.086	0.326	0.083	+
Spain	-0.424	-0.144	0.342	0.279	-0.707	-0.144	0.547	0.140	+
mean	-0.511	-0.119	0.248	0.345	-0.731	-0.149	0.567	0.144	+
median	-0.453	-0.144	0.258	0.279	-0.708	-0.144	0.549	0.140	+

TABLE 11: FINANCIAL DEPENDENCE AND LEGAL ENVIRONMENT.

Results from the following empirical specification:

$Growth_{j,k} = \alpha + \beta_1 * Industry\ dummies_j + \beta_2 * country\ dummies_k + \beta_3 * (financial\ dependence_j * legal\ variable) + \beta_4 * financial\ development_k + \varepsilon_{j,k}$

The dependent variable, growth$_{j,k}$, is the average rate of growth of real value added for each industrial sector in each of the countries between 1990-1999. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). External financial dependence (EFD) is a ratio of banking and trade credit and debenture loans on total assets, Standard errors and t-statistics are corrected for heteroskedasticity. Sector and size dummies used in both runs. Country dummies introduced in all specifications.

	(1)	(2)	(3)	(4)	(5)	(6)
bca	-0.0210**	-0.0419***	-0.0420***	-0.0344***	-0.0351***	
	(2.18)	(5.53)	(6.33)	(4.22)	(5.69)	
disclos	-0.0668***	-0.0589***	-0.0599***	-0.0925***	-0.0925***	
	(4.61)	(3.97)	(3.69)	(5.69)	(5.79)	
cred	-0.0118	0.0124	0.0139**	0.0113	0.0129*	
	(0.73)	(0.57)	(2.16)	(0.55)	(1.92)	
share	0.0478***	0.0574***	0.0576***	0.0846***	0.0847***	
	(3.13)	(4.89)	(4.56)	(16.86)	(17.56)	
FDE*bca	-0.0347^			-0.0096	-0.0087	-0.0347^
	(1.61)			(0.68)	(0.52)	(1.61)
FDE*disc	-0.0413*	-0.0576**	-0.0557**	0.0001	0.0002	-0.0413*
	(1.65)	(2.38)	(2.34)	(0.00)	(0.01)	(1.65)
FDE*shar	0.0644**	0.0468*	0.0464*			0.064**
	(2.05)	(1.96)	(1.80)			(2.05)
FDE*cred	0.0441*	0.0023		0.0025		0.0441*
	(1.93)	(0.09)		(0.10)		(1.93)
Cons	0.2602***	0.2669***	0.2461***	0.2615***	0.2616***	0.0818*
	(10.25)	(10.29)	(9.96)	(10.13)	(10.28)	(1.84)
Obs	520	520	520	520	520	520
R-squared	0.8637	0.8623	0.8574	0.8562	0.8565	0.8610

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.

TABLE 12: FINANCIAL DEPENDENCE AND LEGAL AMERICAN ENVIRONMENT. 1990-1999.

We calculate the estimated elasticity for the interaction term between legal factors and financial dependence. First we use the national legal variables. Then we substitute them for the American ones. In the last column, we compare national real growth rates with the predicted growth in case we replace the national variables with the American ones A positive (negative) sign implies significantly greater (smaller) estimated growth. No sign indicates no significant mean difference.

	National variables				American variables				diff.
	ni1 (EFD* bca)	ni2 (EFD* disclos)	ni3 (EFD* cred)	ni4 (EFD* share)	ni1 (EFD* bca)	ni2 (EFD* disclos)	ni3 (EFD* cred)	ni4 (EFD* share)	
Austria	-0.215	-0.244	0.026	0.221	-0.268	-0.244	0.009	0.443	+
Belgium	-0.240	-0.311	0.033	0.071	-0.400	-0.311	0.011	0.565	+
Denmark	-0.207	-0.104	0.029	0.189	-0.230	-0.208	0.007	0.379	
France	-0.176	-0.228	0.000	0.259	-0.251	-0.228	0.000	0.414	+
Germany	-0.149	-0.226	0.024	0.154	-0.249	-0.226	0.008	0.410	+
Italy	-0.212	-0.181	0.017	0.109	-0.265	-0.241	0.008	0.438	+
Netherlands	-0.130	-0.098	0.014	0.089	-0.216	-0.196	0.007	0.357	+
Portugal	-0.100	-0.182	0.006	0.207	-0.200	-0.727	0.006	0.330	
Spain	-0.138	-0.208	0.015	0.237	-0.230	-0.208	0.007	0.378	+
mean	-0.174	-0.198	0.018	0.171	-0.257	-0.288	0.007	0.413	+
median	-0.176	-0.208	0.017	0.189	-0.249	-0.228	0.007	0.410	+

TABLE 13.A: SIZE ANALYSIS. SMALL AND MEDIUM SECTORS, 1990-1999.

The dependent variable, growth$_{j,k}$, is the real value added growth between 1990-1999 on industry k and country i at time t. FD is a measure of the financial development in 1990. It is the ratio of domestic credit, and stock market capitalisation over GDP. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). External financial dependence (EFD) is a ratio of banking and trade credit and debenture loans on total assets, Standard errors and t-statistics are corrected for heteroskedasticity.

	(1)	(2)	(3)	(4)
bca	-0.0089*		-0.0143	
	(1.66)		(0.69)	
disclos	0.0000		-0.0761**	
	(.)		(2.26)	
cred	0.0000		0.0066	
	(.)		(0.27)	
share	0.0387***		0.0560***	
	(5.88)		(2.86)	
df90*bca	-0.0088**	-0.0727***		
	(2.17)	(14.14)		
df90*disclos	-0.0156***	-0.0393***		
	(3.58)	(7.55)		
df90*cred	0.0124***	0.0705***		
	(4.31)	(26.18)		
df90*share	0.0000	0.1495***		
	(.)	(25.07)		
FDE*bca			-0.0325	-0.0325
			(0.77)	(0.77)
FDE*disclos			-0.0152	-0.0152
			(0.25)	(0.25)
FDE*cred			0.0110	0.0110
			(0.31)	(0.31)
FDE*share			0.0540	0.0540
			(1.37)	(1.37)
Constant	-0.0706**	-0.0678**	0.1614***	0.0370
	(2.02)	(2.08)	(5.07)	(0.52)
Observations	341	341	341	341
R-squared	0.84	0.84	0.85	0.85

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.

TABLE 13.B: SIZE ANALYSIS. LARGE SECTORS, 1990-1999.

The dependent variable, growth$_{j,k}$, is the real value added growth between 1990-1999 on industry k and country i at time t. FD is a measure of the financial development in 1990. It is the ratio of domestic credit, and stock market capitalisation over GDP. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). External financial dependence (EFD) is a ratio of banking and trade credit and debenture loans on total assets, Standard errors and t-statistics are corrected for heteroskedasticity.

	(1)	(2)	(3)	(4)
bca	0.0069**		-0.0404***	
	(2.24)		(4.11)	
disclo	0.0000		-0.0631**	
	(.)		(2.49)	
cred	0.0000		-0.0105	
	(.)		(0.78)	
share	0.0270***		0.0562***	
	(12.25)		(2.83)	
df90*bca	-0.0151***	-0.0829***		
	(6.72)	(36.60)		
df90*disclos	-0.0200***	-0.0373***		
	(7.73)	(18.48)		
df90*cred	0.0148***	0.0804***		
	(6.86)	(31.70)		
df90*share	0.0000	0.1514***		
	(.)	(39.91)		
FDE*bca			-0.0178	-0.0178
			(1.10)	(1.10)
FDE*disclos			-0.0633	-0.0633
			(1.60)	(1.60)
FDE*cred			0.0506**	0.0506**
			(2.09)	(2.09)
FDE*share			0.0452	0.0452
			(1.29)	(1.29)
Constant	0.0940***	0.0147	0.3401***	0.0333
	(4.06)	(0.86)	(10.99)	(0.81)
Observations	179	179	179	179
R-squared	0.94	0.94	0.94	0.94

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.

TABLE 14: INDUSTRIAL SECTORS, 1990-1999.

The dependent variable, growth$_{j,k}$, is the real value added growth between 1990-1999 on industry k and country i at time t. FD is a measure of the financial development in 1990. It is the ratio of domestic credit, and stock market capitalisation over GDP. Legal variables included are banking law (bca), creditor protection (cred), shareholder protection (share) and disclosure requirements (disclos). External financial dependence (EFD) is a ratio of banking and trade credit and debenture loans on total assets, Standard errors and t-statistics are corrected for heteroskedasticity.

	(1)	(2)	(3)	(4)
bca	-0.0064^		-0.0309***	
	(1.57)		(2.98)	
disclos	0.0000		-0.0759***	
	(.)		(6.89)	
cred	0.0000		-0.0133	
	(.)		(0.82)	
share	0.0293***		0.0757***	
	(13.08)		(8.02)	
df90*bca	-0.0068**	-0.0713***		
	(2.58)	(45.94)		
df90*disclos	-0.0165***	-0.0346***		
	(5.56)	(16.42)		
df90*cred	0.0099***	0.0708***		
	(5.22)	(36.66)		
df90*share	0.0000	0.1450***		
	(.)	(85.84)		
FDE*bca	-0.0792***	-0.1357***	-0.0017	-0.0017
	(3.02)	(12.57)	(0.10)	(0.10)
FDE*disclos	376	376	-0.0344*	-0.0344*
	0.91	0.91	(1.74)	(1.74)
FDE*cred			0.0275	0.0275
			(0.98)	(0.98)
FDE*share			0.0047	0.0047
			(0.28)	(0.28)
Constant	0.1824***	-0.0997***	0.2333***	0.0531
	(7.62)	(9.95)	(9.27)	(1.45)
Observations	376	376	376	376
R-squared	0.91	0.91	0.91	0.91

*indicates rejection of the null at the 10 percent significance level, ** indicates 5 percent significance level and *** indicates 1 percent significance.