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CORPORATE FINANCING AND CONTRIBUTION TO ECONOMIC GROWTH: PROMOTING FINANCIAL MARKET INTEGRATION. AN EMPIRICAL APPROACH

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Abstract

This paper provides estimates of the relationship between financial market development and corporate growth and assesses the impact of financial market integration on this relationship with reference to European Union (EU) countries. The regression results obtained using this panel support the hypothesis that financial development promotes growth, particularly in industries that are financially more dependent on external finance. The assumption that EU countries will raise its regulatory and legal standards to the U.S. standards appears unrealistic; therefore we studied a scenario with EU countries raising their standards to the highest current EU standard.

KEYWORDS: Financial development, Economic growth, Industry-level, Banks, Investor protection.
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Introduction

Financial development can affect growth via three channels (Pagano, 1993): (i) it can raise the fraction of savings funneled into investment, reducing the costs of financial intermediation; (ii) it may improve the allocation of resources across investment projects, thus increasing the social marginal productivity of capital; and (iii) it can influence households' saving rate. For these reasons, the studies of the effects of financial development (e.g., King and Levine, 1993; Jayaratne & Strahan, 1996; Rajan & Zingales, 1998; Vojinovic, 2004a) have used alternative measures based on readily available data. In this respect, most of the measures of financial development currently used are a compromise between theoretical rigor and data availability. Data constraints are particularly severe in cross-country studies, considering measures close to what theory suggests seem hard to obtain and compare for many countries. The regression results obtained using this panel support the hypothesis that financial development promotes growth, particularly in industries that are financially more dependent on external finance. In practice, two types of indicators are normally used to capture a phenomenon as complex as financial development: the size of financial markets where potential investors can raise external funds and the efficiency with which funds are intermediated, which affects the cost of funds and the quality of the investment opportunities that are financed. All of the indicators of financial development used in the cross-country literature belong to one of these two broad categories and refer either to markets or to financial intermediaries[2].

As market becomes more integrated, firms of less financially developed countries can in an easier way have access to major financial centers by listing their shares on foreign stock exchanges. They may want to do so for a variety of reasons: overcoming equity rationing in the domestic market, reducing their cost of capital by accessing to a more liquid market, signaling their quality by accepting the scrutiny of more informed investors or the rules of a better corporate governance system (Pagano, Röell, Randl & Zechner, 2001; Pagano, Röell & Zechner, 2002, Vojinovic, 2004b).

Whatever the incentives, by listing their shares abroad, firms of less financially developed countries contribute to the stock market capitalization and turnover of those markets, rather than to their domestic exchanges, as documented by Claessens, Klingebiel and Schmukler (2002).

[2] In exceptional periods of financial crises, one can use the number of bank failures as a proxy for individual access to funds (Bernanke, 1983).

Therefore, the increase in domestic stock market capitalization may underestimate the impact of financial integration on access to equity markets by firms located in less financially developed countries. In fact, while integration may expand the financial sector primarily in the already financially developed countries of the area, it may even decrease the availability of funding their non-financial firms, which will now compete with foreign firms for such funds. However, the crowding-out effect is likely to be outweighed by the increased efficiency of financial centers associated with their expanded activity. If so, financial integration would increase the availability of funds and financial service efficiency in all integrating countries.

External dependence

Data on external dependence are taken from Rajan and Zingales (1998), who measure the dependence of US industries on external finance using the Compustat database. The external dependence of industry *j* is the share of capital expenditure that the median firm in the industry cannot finance through internal cash flow. Rajan and Zingales note that where financial markets are well developed, as in the U.S., the supply of funds is very elastic, so that the use of external finance reflects primarily the demand for finance, rather than its supply. Hence, the identifying assumption is that differences across industries in financial dependence are mainly dictated by technological differences.

In addition, it is assumed that these technology-dictated differences in financial dependence are the same in all countries. Therefore, the financial dependence of industries in countries with well-developed financial markets (the U.S.) can be used as an indicator of the financial dependence of the same industries also in other countries. The Compustat database used to construct the indicator of financial dependence includes only publicly listed firms, but this is an advantage since these firms are less likely to be constrained in capital markets. To avoid biasing the measure of financial dependence with business cycle factors, the indicator is averaged over the 1980-90 period.

Financial development

Data on financial development are drawn from the database provided with the book by Demirgüç-Kunt and Levine (2001). In Chapter 2 of the same book, Beck, Demirgüç-Kunt, Levine and Maksimovic (2001) define three sets of indicators of financial intermediary and stock market developments: (1)

finance-activity indicators; (2) finance-size indicators; and (3) finance-structure indicators. Finance-activity indicators refer to the overall activity of financial intermediaries and markets, which can be measured by private credit (claims on the private sector by deposit money banks and other financial institutions) divided by GDP, or value traded (total value of shares traded on the stock market) and stock market capitalization divided by GDP. Finance-size indicators are intended to measure the overall size of the financial sector, and can be measured by the sum of private credit and stock market capitalization. Finally, finance-efficiency indicators relate to the efficiency of financial intermediaries and markets, and can be proxied by the overhead costs of the banking system relative to the banking system assets, insofar as large overhead costs reflect inefficiency. In principle, none of these indicators is superior to the others: they can rather be regarded as complementary. Efficiency measures have ambiguous effects on growth. For instance, this applies to efficiency measures based on the degree of credit market competition.

The indicators of financial development that contribute most to the growth in output and value added are: (i) the ratio of stock market capitalization to GDP; (ii) the ratio of private credit to GDP; and (iii) the sum of the two ratios. In our preferred specification we use the latter indicator as an overall measure of financial development.

Institutional variables and other instruments

It is very hard to classify legal institutions and compress their description into quantitative indicators that are the essential input of statistical analysis. Such an attempt was made by LaPorta et al. (1998), who constructed measures of creditor rights and of shareholder rights by collecting information on some characteristics of the legal system in 49 countries. To characterize the degree of creditor rights protection, they identify five features of the legal rules governing loan contracts, by asking if: (i) reorganization procedures require an automatic stay on the borrower's assets, preventing secured creditors from seizing collateral;

(ii) the secured creditors' right to seize collateral is secondary to those of the government and workers; (iii) management can obtain protection from creditors by starting a reorganization procedure without creditors' consent; (iv) management remains in charge during reorganization procedures; (v) firms must maintain a minimum capital to avoid automatic liquidation. Depending on how it is charged on each of the first four criteria, each country receives a certain total score, which measures its degree of creditor rights protection, or "creditor rights" variable. Another country-risk rating agency, Business

International Corporation, produces a "judicial efficiency" indicator, which is a survey-based assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms." "Legal origin", built by La Porta et al. (1998), classifies countries in four groups, depending on whether the origin of their legal system is Anglo-Saxon, French, German or Scandinavian. Finally, in some regressions we use average years of schooling and per capita GDP as additional regressors. Average years of schooling in the total population over 25 in 1980 are drawn form Barro and Lee (1996). Real GDP per capita in 1980 is from Alan Heston, Robert Summers and Bettina Aten, Penn World Table Version 6.0, Center for International Comparisons at the University of Pennsylvania (CICUP), December 2001.

Regression results

Table 1 reports regressions for the growth of value added. The upper panel considers the same sample of 41 countries as in Rajan and Zingales. We adopt a slightly more restrictive choice including sectors in the industry panel, since we retain observations only if output or value added is reported between 1981 and 1991 respectively. This results in a slightly lower number of observations than Rajan and Zingales (around 1,100 against around 1,200). Sensitivity analysis shows that this choice makes very little difference.

In fact, the results do not change if we use the 1980-95 growth rates. However, in this case the number of missing sectors increases, (so we focus on the 1981-91 growth rates). The United States is excluded from the sample because it is the reference country whose capital markets are assumed to be frictionless. The estimation includes fixed industry and country effects, which control for all time-invariant country and industry variables that are potentially important for growth.

This is a considerable advantage in specification choice, since it would be very difficult to account explicitly for all such variables in the regression. Inevitably, some variables would be omitted due to erroneous specification or lack of information[3]. All regressions include the industry's share of total value added at the beginning of the sample period (1981), and in all regressions the standard

[3] When interpreting and simulating the effects of financial integration on economic growth it is important to remember that the presence of country fixed effects might attenuate the coefficient estimate of financial development on growth. Suppose that financial development affects growth also through different channels than relaxing financial dependence, for instance because countries with larger financial markets are also able to allocate funds more cheaply, regardless of the financial dependence of each particular industry. Country fixed effects will pick up these and other country-specific effects that do not operate by relaxing financial dependence.

errors of the coefficient estimates are robust unknown forms of heteroskedasticity. The regression in the first column of the upper panel uses stock market capitalization as proxy for financial development. The estimated coefficients refer to a regression of the growth of value added on the relevant industry's initial share of value added and the interaction between external dependence and market capitalization (the *DiFc* variable in equation 1). The coefficient of the interaction term is positive and statistically different from zero at the 1-percent level, indicating that financial development affects growth, particularly in those sectors that rely more intensively on external finance.

The second regression replaces market capitalization with domestic private credit. The results are similar: the coefficient of the interaction term is again positive and precisely estimated. The regression reported in the third column uses our preferred indicator of financial development, namely the sum of stock market capitalization and private credit, which we call "total finance". In the fourth regression, external dependence is interacted with accounting standards. In each of these regressions the impact of financial development on value added growth is positive and statistically different from zero at the 1-percent level. In the lower panel of Table 1 we use the maximum number of countries with valid data on value added growth and indicators of financial development. The data collected by Demirgüç-Kunt and Levine (2001) allow us to consider 20 additional countries with respect to the Rajan-Zingales sample. Expanding the sample in this direction is quite important in the present context, because the Rajan-Zingales sample does not include Ireland. Except for Luxembourg, which we drop because the development of its financial sector is statistically anomalous, we have therefore all EU countries in our sample. Expanding the set of countries, besides increasing the precision of the estimates, also increases the size of the coefficient of the interaction term between financial dependence and financial development by one third.

Table 1: Financial Development and Growth of Industry Value Added

Rajan and Zingales Sample					
Share of value added, 1981	-0.260 (0.064)**	-0.266 (0.064)**	-0.268 0.064)**	-0.252 (0.054)**	-0.268 (0.064)**
External dependence x market capitalization	0.029 (0.015)*				
External dependence x domestic credit private sector		0.028 (0.013)*			
External dependence x total finance			0.019 (0.008)*		0.018 (0.008)*
External dependence x accounting standards				0.094 (0.032)**	
External dependence x financial development x non-OECD dummy					0.001 (0.008)
Constant	0.047 (0.028)	0.044 (0.018)*	0.038 (0.029)	0.083 (0.022)*	0.038 (0.029)
Observations	1.145	1.145	1.145	946	1145
R-squared	0.36	0.36	0.36	0.46	0.36
Extended Sample					
Share of value added, 1981	-0.280 (0.060)**	-0.277 (0.054)**	-0.299 (0.064)**	-0.368 (0.081)**	-0.301 (0.064)**
External dependence x market capitalization	0.038 (0.014)**				
External dependence x domestic credit private sector		0.035 (0.014)*			
External dependence x total finance			0.023 (0.008)**		0.026 (0.009)**
External dependence x accounting standards				0.070 (0.037)*	
External dependence x financial development x non-OECD dummy					-0.008 (0.008)
Constant	-0.141 (0.095)	-0.151 (0.094)	-0.150 (0.095)	0.005 (0.037)	-0.150 (0.095)
Observations	1593	1690	1571	995	1571
R-squared	0.38	0.36	0.37	0.39	0.37

Note. The dependent variable is the growth rate of real value added for each ISIC industry in each country from 1981 to 1991. External dependence is the fraction of capital expenditure not financed with internal funding. All regressions contain a full set of country and industry dummies. Standard errors robust to unknown form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

One rationale for this result is that, compared to the sample used by Rajan and Zingales, the extended sample includes several countries that are even less financially integrated with the rest of the world economy, thus making national financial development even more important for domestic growth. Despite the additional countries, the effect of financial development in non-OECD countries is not statistically different than that of OECD countries, as shown by the results reported in the last column of the lower panel.

In Table 2 we report regressions for output growth. The structure of the table is the same as Table 1. The upper panel refers to the Rajan-Zingales sample, and the lower panel to the extended sample. For each sample we report five regressions, as in Table 1. The first four specifications include interactions of external dependence with market capitalization, private credit, the sum of the two, and accounting standards. The results confirm that financial development promotes industry growth, since the coefficient of the interaction term is always positive and statistically different from zero. The last column tests if the degree of financial integration is the same inside or outside the OECD. Again, this hypothesis is not rejected. In Table 3 we turn to regressions for the number of firms. In this case, the coefficient of stock market capitalization is positive but not statistically different from zero. However, when we interact on external dependence with private credit, with the sum of stock market capitalization and private credit, or with accounting standards, we find that financial development exerts a positive impact on the growth of the number of firms.

Table 2: Financial Development and Growth of Industry Output

Rajan and Zingales Sample					
Share of output, 1981	-0.157 (0.057)**	-0.162 (0.058)**	-0.164 (0.058)**	-0.194 (0.069)**	-0.164 (0.058)**
External dependence x market capitalization	0.037 (0.013)**				
External dependence x domestic credit private sector		0.036 (0.013)**			
External dependence x total finance			0.024 (0.008)**		0.023 (0.008)**
External dependence x accounting standards				0.131 (0.034)**	
External dependence x financial development x non-OECD dummy					0.001 (0.008)
Constant	0.059 (0.031)	0.037 (0.021)	0.047 (0.032)	0.064 (0.020)**	0.048 (0.032)
Observations	1158	1158	1158	939	1158
R-squared	0.35	0.35	0.35	0.47	0.35
Extended Sample					
Share of output, 1981	-0.161 (0.047)**	-0.166 (0.047)**	-0.178 (0.052)**	-0.276 (0.109)*	-0.179 (0.052)**
External dependence x market capitalization	0.042 (0.013)**				
External dependence x domestic credit private sector		0.040 (0.013)**			
External dependence x total finance			0.026 (0.008)**		
External dependence x accounting standards				0.103 (0.038)**	
External dependence x financial development x non-OECD dummy					-0.006 (0.008)
Constant	0.012 (0.032)	-0.061 (0.059)	-0.061 (0.058)	-0.026 (0.039)	-0.062 (0.058)
Observations	1595	1721	1572	989	1572
R-squared	0.38	0.36	0.37	0.43	0.37

Note. The dependent variable is the growth rate of real output for each ISIC industry in each country from 1981 to 1991. External dependence is the fraction of capital expenditure not financed with internal funding. All regressions contain a full set of country and industry dummies. Standard errors robust to_unknown form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

Table 3: Financial Development and Growth of Number of Firms

Rajan and Zingales Sample					
Share of firms, 1981	-0.470 (0.139)**	-0.482 (0.138)**	-0.479 (0.139)**	-0.258 (0.069)**	-0.481 (0.138)**
External dependence x market capitalization	0.035 (0.021)				
External dependence x domestic credit private sector		0.075 (0.017)**			
External dependence x total finance			0.036 (0.011)**		0.044 (0.010)**
External dependence x accounting standards				0.53 (0.033)**	
External dependence x financial development x non-OECD dummy					-0.018 (0.012)
Constant	0.085 (0.030)**	0.011 (0.026)	0.028 (0.025)	0.027 (0.037)	0.027 (0.025)
Observations	1035	1035	1035	905	1035
R-squared	0.50	0.51	0.50	0.50	0.51
Extended Sample					
Share of firms, 1981	-0.387 (0.099)**	-0.420 (0.094)**	-0.433 (0.102)**	-0.282 (0.071)**	-0.435 (0.101)**
External dependence x market capitalization	0.036 (0.020)				
External dependence x domestic credit private sector		0.071 (0.014)**			
External dependence x total finance			0.035 (0.009)**		0.043 (0.009)**
External dependence x accounting standards				0.055 (0.033)	
External dependence x financial development x non-OECD dummy					-0.019 (0.011)
Constant	0.104 (0.029)**	0.002 (0.035)	-0.111 (0.042)**	-0.044 (0.035)	-0.110 (0.042)**
Observations	1732	1454	1349	928	1349
R-squared	0.46	0.50	0.47	0.43	0.48

Note. The dependent variable is the growth rate of the number of firms for each ISIC industry in each country from 1981 to 1991. External dependence is the fraction of capital expenditure not financed with internal funding. All regressions contain a full set of country and industry dummies. Standard errors robust to_unknown form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

In Table 4 the dependent variable is replaced with investment as a share of output for each industry. The results for investment are not as strong as those reported so far. Most of the coefficients are imprecisely estimated, and the overall fit of the regression is consistently below other variables, probably a reflection of the greater volatility of investment or its mis-measurement. In fact, the relevant left-hand side variable should be investment as a share of the beginning-of-period net capital stock, rather than the investment-output ratio, but unfortunately we have no data for the capital stock. The coefficient on the interaction term is always positive, but it is statistically different from zero (at the 5-percent level) only when the proxy for financial development is “total finance”.

Table 4: Financial Development and Investment

Rajan and Zingales Sample					
Share of output, 1981	-0.184 (0.118)	-0.187 (0.119)	-0.188 (0.119)	-0.132 (0.139)	-0.188 (0.118)
External dependence x market capitalization	0.024 (0.014)				
External dependence x domestic credit private sector		0.027 (0.014)			
External dependence x total finance			0.016 (0.008)*		0.014 (0.009)
External dependence x accounting standards				0.029 (0.029)	
External dependence x financial development x non-OECD dummy					0.006 (0.010)
Constant	0.070 (0.030)*	0.064 (0.028)*	0.062 (0.030)*	0.037 (0.031)	0.063 (0.031)*
Observations	850	850	850	732	850
R-squared	0.33	0.33	0.33	0.25	0.33
Extended Sample					
Share of output, 1981	-0.124 (0.063)*	-0.077 (0.066)	-0.121 (0.068)	-0.126 (0.132)	-0.120 (0.068)
External dependence x market capitalization	0.028 (0.015)				
External dependence x domestic credit private sector		0.023 (0.012)			
External dependence x total finance			0.015 (0.008)		0.013 (0.008)
External dependence x accounting standards				0.030 (0.026)	
External dependence x financial development x non-OECD dummy					0.006 (0.009)
Constant	0.175 (0.038)**	0.136 (0.030)**	0.027 (0.022)	0.061 (0.033)	0.026 (0.023)
Observations	1151	1237	1131	770	1131
R-squared	0.34	0.31	0.34	0.26	0.34

Note. The dependent variable is investment as a share of output for each ISIC industry in each country from 1981 to 1991. External dependence is the fraction of capital expenditure not financed with internal funding. All regressions contain a full set of country and industry dummies. Standard errors robust to unknown_form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

Accordingly, Table 5 displays the coefficient estimates of instrumental variable regressions. To compare with previous results, the first column replicates the OLS estimates for the growth of value added using total finance (scaled by GDP) to measure financial development. The second regression reports the IV estimates. The instruments are institutional variables that affect financial development but are predetermined with respect to economic growth over the time span covered by our data: legal origin of the country, rule of law, and creditor rights. The coefficient of the interaction term increases in value (from 0.023 to 0.033) and retains its statistical significance, indicating that the potential endogeneity of financial development is not an issue in our data.

Table 5: Financial Development and Growth: Sensitivity Analysis

Growth of real value added			
	OLS	IV	*IV-Extended*
Share of value added, 1981	-0.299 (0.064)**	-0.401 (0.081)**	-0.303 (0.072)**
External dependence x total finance	0.023 (0.008)**	0.033 (0.011)**	0.036 (0.016)*
External dependence x schooling			0.001 (0.003)
External dependence x log per capita GDP			-0.005 (0.013)
Constant	-0.149 (0.095)	0-035 (0.020)	0.084 (0.133)
Observations	1571	1154	1131
Growth of real output			
	OLS	IV	*IV-Extended*
Share of output, 1981	-0.178 (0.052)**	-0.254 (0.086)**	-0.196 (0.064)**
External dependence x market capitalization	0.026 (0.008)**	0.035 (0.012)**	0.035 (0.015)*
External dependence x schooling			0.003 (0.003)
External dependence x log per capita GDP			-0.006 (0.012)
Constant	-0.061 (0.058)	0.010 (0-017)	0.069 (0.124)
Observations	1572	1148	1125

Growth of number of firms			
	OLS	IV	*IV-Extended*
Share of firms, 1981	-0.433 (0.102)**	-0.319 (0.070)**	-0.297 (0.068)**
External dependence x total finance	0.035 (0.009)**	0.042 (0.010)**	0.011 (0.016)
External dependence x schooling			0.003 (0.003)
External dependence x log per capita GDP			-0.004 (0.003)
Constant	-0.061 (0.058)	0.010 (0-017)	0.0030 (0.015)*
Observations	1349	1052	1029
Investment			
	OLS	IV	*IV-Extended*
Share of output, 1981	-0.121 (0.068)	-0.118 (0.093)	-0.123 (0.097)
External dependence x market capitalization	0.015 (0.008)	0.007 (0.011)	0.003 (0.015)
External dependence x schooling			-0.001 (0.003)
External dependence x log per capita GDP			0.009 (0.014)
Constant	0.027 (0.022)	0.104 (0.024)**	-0.063 (0.152)
Observations	1131	889	868

Note. The dependent variables are the growth rate of real value added, output, number of firms and investment for each ISIC industry in each country from 1981 to 1991. In the IV regression, the instruments for financial development are dummies for the legal origin of the country (Anglo-Saxon, French, German and Scandinavian), and indicators of the rule of law and the degree of protection of creditor rights. All regressions contain a full set of country and industry dummies. Standard errors robust to unknown form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

The third regression in the upper panel of Table 5 adds to the set of right-hand-side variables the interaction of schooling and initial per capita GDP with external financial dependence. The empirical growth literature shows that schooling and initial GDP per capita affect growth rates. Furthermore, they may influence the effect of financial development on growth: an increased availability of external finance may have a larger growth impact in countries with higher human capital endowment and higher level of economic development (approximated by GDP per capita). This regression is also estimated with instrumental variables, using the same set of instruments as in the second column. The results are qualitatively unchanged: the coefficients of the additional interaction terms are not significantly different from zero. The other three panels report several sensitivity tests for output growth and growth in a number of firms on the extended sample. In each of these panels the first column reports the OLS estimates already shown in Tables 5 and 6 using total finance; the second column the IV estimates and the third the IV estimates with additional regressors.

Did financial integration progress over the 1990s?

Raising this question is important, because the 1990s witnessed a considerable increase in international capital mobility, removals of barriers and exchange controls, as well as a harmonization of financial regulation. If increased integration already weakened the link between domestic financial development and national growth, the benefits from additional integration would be overstated by 1991 data. To check the sensitivity of our findings to the particular sample used, in Table 5 we report estimates obtained extending our sample up to 1995, the most recent year with sufficient observations provided by the UNIDO data set. As in the previous tables, the first column displays the OLS estimates, the second the IV estimates, and the third checks the robustness with respect to the inclusion of additional variables. The estimated coefficients of the interaction term between financial development and external dependence indicate that the effect of financial development on value added or output growth is similar to the previous set of estimates. This suggests that whatever integration took place in the first half of the 1990s, it was partial or has not yet produced its effects on growth.

Table 6: Financial Development and Growth: Sensitivity Analysis, 1981-1995

Growth of real value added			
	OLS	IV	*IV-Extended*
Share of value added, 1981	-0.250 (0.065)**	-0.312 (0.082)**	-0.302 (0.082)**
External dependence x total finance	0.026 (0.011)**	0.051 (0.016)**	0.038 (0.021)*
External dependence x schooling			0.006 (0.004)
External dependence x log per capita GDP			-0.006 (0.014)
Constant	0.004 (0.073)	0.046 (0.021)*	0.064 (0.147)
Observations	1264	926	926
Growth of real output			
	OLS	IV	*IV-Extended*
Share of output, 1981	-0.212 (0.059)**	-0.264 (0.090)**	-0.258 (0.089)**
External dependence x market capitalization	0.025 (0.011)**	0.044 (0.015)**	0.048 (0.020)*
External dependence x schooling			0.004 (0.004)
External dependence x log per capita GDP			-0.015 (0.014)
Constant	0.176 (0.061)**	0.023 (0.018)	0.176 (0.144)
Observations	1293	9438	943
Growth of number of firms			
	OLS	IV	*IV-Extended*
Share of firms, 1981	-0.628 (0.100)**	-0.474 (0.106)**	-0.469 (0.105)**
External dependence x total finance	0.024 (0.014)	0.036 (0.017)*	-0.0016 (0.022)
External dependence x schooling			-0.003 (0.006)

External dependence x log per capita GDP			0.048 (0.028)
Constant	0.155 (0.034)**	0.074 (0.028)**	0.085 (0.027)**
Observations	823	581	5819
Investment			
	OLS	IV	*IV-Extended*
Share of output, 1981	-0.097 (0.075)	-0.173 (0.104)	-0.170 (0.106)
External dependence x market capitalization	0.013 (0.011)	-0.008 (0.014)	0.014 (0.017)
External dependence x schooling			0.001 (0.004)
External dependence x log per capita GDP			-0.013 (0.012)
Constant	0.103 (0.042)*	0.020 (0.023)	-0.044 (0.045)
Observations	1041	819	797

Note. The dependent variables are the growth rate of real value added, output, number of firms and investment for each ISIC industry in each country from 1981 to 1995. In the IV regression, the instruments for financial development are dummies for the legal origin of the country (Anglo-Saxon, French, German and Scandinavian), and indicators of the rule of law and the degree of protection of creditor rights. All regressions contain a full set of country and industry dummies. Standard errors robust to_unknown form of heteroskedasticity are reported in parenthesis. Two stars denote that the coefficient is statistically different from zero at the 1 percent level, one star at the 5 percent level.

Improving the institutional determinants of financial development in the EU

It can be argued that the previous estimates tend to exaggerate the growth benefits of policy actions aimed at promoting financial markets integration because financial integration in not under complete control of policy makers but depends also on spontaneous market developments. In other words, the previous experiment implicitly assumes that domestic financial development is a control variable. In this section, we simulate the growth effects of letting the determinants of financial developments that are under policy control converge to the highest European standard. To perform this exercise, we first regress our measure of total financial development on a set of policy-controlled variables that literature has shown to be relevant for financial markets efficiency[4]. We assume that financial integration leads all integrating countries to adopt the highest value of these determinants in the EU. We then predict the implied value of financial development in each sector and country. Finally, we proceed as in the previous scenario to compute the growth effects. We focus on three (policy-controlled) determinants of financial development: the quality of accounting standards, the degree of creditors' protection and the rule of law.

The simulation clearly requires a regression connecting financial development to its institutional determinants as an intermediate input. This is done in Table 7, which reports the results of the regression of financial development on accounting standards, creditor protection, rule of law and dummies for the country's legal origin (the latter variable is not under policy control). Accounting standards and rule of law appear as the two most effective variables in predicting financial development[5].

[4] In practice, this is the first-stage regression of our procedure with the omission of per capita GDP and schooling.

[5] The regression is robust to the presence of influential values. We run an OLS regression, compute the Cook's distance and exclude any observation for which the Cook's distance is greater than 1. After excluding potentially influential outliers, we proceed in two steps. We run iteratively least squares regressions weighting the observations with Huber weights. After convergence is reached we construct biweights with which we re-weight the observations. We finally run iteratively least squares until convergence is reached. Using a LAD regression we get similar results.

Table 7: The Determinants of Financial Development

	French legal origin	German legal origin	Scandinavian legal origin	Anglo-Saxon legal origin	Accounting Standards	Degree of creditors protection	Rule of Law	Constant
Coefficient	-0.059	0.000	-0.419	-0.111	0.020	0.086	0.118	-0.974
Standard Error	(0.256)	(0.000)*	(0.288)	(0.252)	(0.008)**	(0.070)	(0.054)*	(0.555)*

Summary and conclusions

In this concluding section we summarize the main findings, and assess their limitations and implications concerning the process of EU financial integration. The regression and simulation analysis based on the UNIDO industry-level data suggest several conclusions about the effect of financial development on growth and about the likely effects of financial integration in the EU: (i) there is still considerable dispersion in financial development across European countries, (ii) our estimates imply that gaps in national financial development matter for economic growth in the manufacturing sector, (iii) these effects have not weakened in the early 1990s, when some financial integration occurred, suggesting that financial development can still affect growth, (iv) simulations suggest that the potential benefits from financial integration – interpreted as firms' access to a financial market similar to that of the U.S. (or of the most developed EU economies) – can have potentially large effects on countries and sectors growth. Simulation analysis also shows that the overall effect depends on which institutional determinant of financial development fluctuates to raise the current standards of the EU financial development. Unsurprisingly, the largest benefits accrue when all determinants are supposed to improve simultaneously, (v) overall, we estimate that the impact of raising the level of financial development to the U.S. level on the growth of European manufacturing industry is slightly less than 1 percentage point per year (ranging from 0.75 to 0.94 percentage points depending on the assumed scenario). Of course, the effect would be smaller if financial integration were to occur at a lower level of financial development than that of the United States. Our analysis does not account for these growth effects of financial development because the nature of our data constrains the estimation to manufacturing industry. However, for some financially developed countries these growth effects could be the most important effect at work. In particular, the financial service sector and the professional service sector in the U.K. may greatly

benefit from financial integration in the EU. Conversely, the financial service industries of less financially developed countries may lose market shares and therefore face a downturn in their activity. While financial market integration should enhance the growth and formation of domestic firms in these countries, the same integration process is likely to hurt their financial industry. Therefore, the effect of financial integration on the GDP of these countries is likely to be smaller than its effect on their manufacturing industry.

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