

INTERNATIONAL FINANCIAL LIBERALIZATION AND INDUSTRY GROWTH

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ABSTRACT

The growth effects of international financial liberalization and integration are investigated using the methodology and data developed by Rajan and Zingales (1998). The main result is that industries highly dependent on external financing do not experience higher growth in value added in countries with liberalized financial markets. Liberalization does, however, increase the growth rates of both output and firm creation among externally dependent industries—given that the countries have reached a relatively high level of financial development. These results are consistent both with increased competition and increased outsourcing. Some tentative evidence points towards the latter explanation. Copyright © 2005 John Wiley & Sons, Ltd.

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NON-TECHNICAL SUMMARY

This paper investigates the growth effects of international financial liberalization and integration. While previous work has mainly approached this problem by considering aggregate growth rates, our paper analyses the growth effects at the industry level, using the data and methodology developed by Rajan and Zingales (1998).

The results are both interesting and somewhat puzzling. The main result is that industries highly dependent on external financing do not experience a higher growth in value added among countries with liberalized capital accounts or equity markets. The same result holds for countries more integrated with the international capital market in terms of actual capital flows and stocks. Although it is plausible that the growth effects of financial liberalization and integration differ between countries at different levels of financial development, we cannot find any results pointing in this direction. We do, however, find significant positive effects of liberalizing capital accounts and equity markets on the creation of new firms and growth in output—given that countries have relatively well-developed financial markets. Hence, there may be growth effects of financial liberalization other than in value added. In a dynamic perspective, accelerated firm growth is important for a functioning creative destruction and thereby also for sustained long-run economic development.

Increased competition provides a straightforward explanation of this pattern of results. Financial liberalization stimulates firm creation, which increases competition and output. Value added, on the other hand, does not necessarily increase since the prices of final goods fall. A second potential explanation is based on outsourcing. If the setting up of new plants is made less expensive by the liberalization of financial

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markets, firms become more inclined to outsource the parts of their production. Since outsourcing means breaking up value added chains, it could result in a pattern of increased firm creation, increased measured output and zero growth in value added. The results on an outsourcing and/or competition effect following financial liberalization and integration open up a new research agenda. Some tentative evidence points towards an explanation based on outsourcing rather than increased competition, but to fully analyse the question more research is needed.

1. INTRODUCTION

The real growth effects of international financial liberalization and integration have been under theoretical and empirical scrutiny for quite some time. Despite substantial research efforts, it is fair to say that a consensus remains to be reached.¹ Whereas previous empirical work has mainly approached the issue by considering growth rates of country aggregates, this paper analyses growth effects at the industry level, using the well-known methodology and data from Rajan and Zingales (1998). While these authors investigate the growth effects of financial development, we extend their analysis by testing if industries highly dependent on external finance experience faster growth in countries with liberalized capital accounts, liberalized equity markets, and that are well integrated with global capital markets.² This approach allows us to test if liberalized financial markets disproportionately benefit the industries that, *a priori*, are expected to be the most favoured by a lower cost of capital and eased credit constraints.

The main result is that growth in value added is unrelated to all the investigated dimensions of financial liberalization and integration. However, both growth in the number of establishments and output is higher when financial markets are liberalized—given that countries have reached a relatively high level of financial development. These results are consistent with two explanations, a competition effect and an outsourcing effect. If financial liberalization stimulates firm creation, this can lead to increased competition and output. Markups, and eventually profits, should, however, fall as a result of these changes in the market structure. Hence, while there may be more firms and higher output in a market, the margins for each firm shrink and industry value added may therefore be unaffected or even decrease. Outsourcing, on the other hand, would mean breaking up value added chains. A pattern of constant value added, a larger number of firms and a higher level of (measured) output can therefore emerge. Some tentative and indirect evidence points towards the latter explanation. To our knowledge, these links between international financial liberalization, outsourcing and competition have not previously been analysed, and this paper is a first attempt to draw attention to these issues.

The literature on the real effects of financial liberalization and integration that this paper relates to is so large that only a partial list can be given here. In a widely cited study, Rodrik (1998) finds no effect of liberalized capital accounts, either on per capita GDP growth rates or the investment to GDP ratio. Using a somewhat different indicator of capital account liberalization, as well as different econometric techniques, both Quinn (1997) and Edwards (2001) find positive growth effects. Edwards qualifies his finding by noting that a certain level of economic development must be reached before an open capital account has positive growth effects. The controversy between Rodrik and Edwards is discussed by Arteta *et al.* (2001), who argue that it is largely due to the use of different indicators of capital account liberalization. While Rodrik uses the IMF binary indicator, Edwards uses a multi-level index of Quinn (1997) which, according to Arteta *et al.*, also seems to be the more comprehensive of the two. More recently, Edison *et al.* (2002b) use a similar set of indicators of international financial liberalization and integration as in our study, and fail to find any effects on aggregate economic growth, whereas Eichengreen and Leblang (2003) find that there may be both positive or negative growth effects of capital account liberalization depending on whether one controls for the occurrence of financial crises or other country-specific features.

Another branch of the literature focuses on the effects on capital constraints and growth by liberalizing equity markets. Henry (2000a,b) applies an event study approach to his careful classification of economic reforms in 11 developing countries and finds a temporary increase in stock prices and investments following stock market liberalization. Bekaert and Harvey (2000) use a similar approach and find the cost of capital

to be somewhat reduced after a stock market liberalization. Using firm level evidence, Chari and Henry (2004) document an increase in firms' capital stocks post liberalization, but cannot confirm that this is due to a lower cost of capital. Using a different methodology to classify liberalization events, Bekaert *et al.* (2000, 2005) find a temporary increase in per capita growth rates following equity market liberalization. Finally, Harrison *et al.* (2004) combine firm level and macroeconomic data and find that foreign direct investments ease firms' credit constraints, while capital account restrictions make these constraints more severe. Although this last paper is close in spirit to ours, it uses a completely different methodology. While we assume the industry dependence on external funds to be equal across countries, Harrison *et al.* calculate a proxy for firm level financial constraints using Euler equations. Although their proxy gives a more precise estimate of a firm's financial position than our indicator of external dependence, it is also subject to more severe endogeneity problems. Hence, the two approaches should be seen as complements rather than substitutes.

2. THE BASIC METHODOLOGY

When countries liberalize their capital accounts and stock markets, the costs of capital to industrial firms are reduced. As shown by Henry (2003), this effect is theoretically based on two mechanisms. First, investors can after liberalization improve the diversification of their assets by investing in other countries, which thereby lowers their required risk premium on the stock of national firms. This effect works through the standard observation that the returns volatility on a national market is higher than the covariance between the national and world returns. Second, firms can after liberalization attain funding at the lowest interest rates internationally rather than only the lowest rates nationally. At the empirical level, Henry (2000a,b) gives ample evidence that financial liberalization actually reduces the capital costs of industrial firms. Moreover, he shows that this has significantly positive effects on the level of investment and of output growth.

In this study, we exploit the negative relation between financial liberalization and capital costs of firms to analyse the specific question whether industries that are highly dependent on external capital raising grow faster in countries with more liberalized capital accounts and stock markets or, similarly, are more integrated with international capital markets. Rajan and Zingales (1998) ask the related question, if industries highly dependent on external financing grow faster in countries with relatively developed financial markets. As the methodology of Rajan and Zingales can easily be extended to our focus on the real growth effects of financial liberalization, we employ both their test methodology and basic data set.

The growth definitions in our study are divided on the three different variables: real value added, real output and number of establishments, all measured on industry level. Whereas growth of real value added or of real output are two standard representations of economic growth, growth in number of establishments is less common. It is, though, highly motivated as the creation of new firms is by many considered to be a crucial source of economic growth and its relation to the cost of capital is also straightforward. Hence, we estimate the following empirical growth relationship:

$$\begin{aligned} Growth_{ij} = & \beta_1 (External\ dependence_i \times Liberalization_j \text{ (or) } Integration_j) \\ & + \beta_2 (External\ dependence_i \times Financial\ development_j) \\ & + \beta_3 Industry\ share\ in\ 1980_{ij} + \sum \beta_{4,i} D_i + \sum \beta_{5,j} D_j + \varepsilon_{ij} \end{aligned} \quad (1)$$

where i is the industry and j the country subscript. $Growth_{ij}$ is the average annual growth rate over the period 1980–1990 of real value added, the number of establishments or real output. In the analysis below, we examine these three measures separately. $Industry\ share\ in\ 1980_{ij}$ is industry i 's share of total value added in manufacturing in country j in 1980, D_i is a set of industry dummies and D_j a set of country dummies. Our primary variable of interest is the interaction variable between different financial liberalization or integration indicators and the proxies of *external dependence*, an industry measure created by Rajan and Zingales. The liberalization and integration indicators belong to three classes: rule-based indicators on

capital account liberalization; rule-based indicators of equity market liberalization; and actual capital market integration as measured by flows and stocks of foreign direct and portfolio investments. The time period of the study, 1980–1990, is determined by the measure of external dependence being calculated using 1980s data. Although we would have liked to include data from the 1990s in our analysis, we are aware of the fact that the external dependence measure, on which the entire approach crucially hinges, seems quite variable over time and hence needs to be updated as often as possible without creating serious inconsistencies in the results.³ To account for the effect from financial development found by Rajan and Zingales, we also include an interaction variable between the external dependency of industries and the level of *financial development*, measured as the total amount of stock market capital and credits of each country.

The specification (1) means that we are looking for a growth effect of financial liberalization and integration on top of the growth effect of financial development. This is important to keep in mind since a possible channel through which international financial integration can affect growth is by enhancing the performance of the domestic financial sector (see, e.g., Levine and Zervos, 1998; Klein and Olivei, 1999; Levine, 2001). Throughout the analysis we also split the country sample according to the level of financial development, having one group of countries above and one group below the median level of financial development. The background is the recent findings (e.g., Laeven, 2003; Edwards, 2001) that the impact of financial liberalization on growth may depend on the level of financial development in a country.⁴ Basically, this is mainly due to the fact that developed economies are better able to make productive use of new capital inflows than are emerging market economies. There is, however, no broad consensus along these lines and few studies have actually examined this impact.

As is common in the growth regression framework, there may be potential concerns about the endogeneity of the regressors. It is possible that countries where externally dependent industries were expected to grow rapidly during the 1980s were more prone to liberalize capital movements at the beginning of the decade. Therefore, besides the ordinary least squares, we will also run two-stage regressions in order to instrument for the liberalization indicators. The instruments are described in the following section.

3. DATA

Except for data on capital account liberalization, equity market liberalization, international financial integration and industry level output, all other data is thoroughly described by Rajan and Zingales (1998). For this reason, the discussion of these variables and their sources will be kept brief here. The period under consideration is the 1980s, and the data covers a maximum of 42 countries (for the country coverage among different subsamples, see Table A1).

3.1. *Financial dependence*

Rajan and Zingales' indicator of industry dependence on external financing is based on the assumptions that there are underlying technological reasons why industries differ in their use of external funds, and that these persist across countries. Furthermore, they note that when financial markets work relatively frictionless, the supply of external financing will be very elastic. Differences in the actual use of external financing in such an economy will hence mainly reflect differences in demand for this type of funding. Arguing that the US financial markets are the most advanced in the world, Rajan and Zingales use data on the actual external financing pattern of US firms to calculate their measure of external dependence. More precisely, their measure is defined as capital expenditures minus the cash flow from operations, divided by capital expenditures. To smooth fluctuations, they use data on the firm's external financing and capital expenditure over a 10-year period. The median value of this calculation is then used to indicate the external dependency for each respective industry.⁵

3.2. Financial development

Following much of the literature on the impact of the financial sector on growth, we use the *total capitalization* measured as the sum of domestic credits and stock market capitalization over GDP. Data on domestic credit is from the IMF's *International Financial Statistics* (IFS), and stock market capitalization from the IFC's *Emerging Stock Markets Factbook*.

3.3. Liberalization data

As we incorporate indicators of capital account liberalization, equity market liberalization and actual flows and stocks of international capital flows, we employ data from a variety of sources described below, which all use somewhat different methodologies when calculating their indicators. Here, all rule-based indicators are normalized between zero and one, where zero implies full restriction and one, full liberalization according to the respective index. In Table 1, summary statistics and the correlates between the different indices are shown. As can be seen, these correlates are generally quite high.

Capital account liberalization—The most commonly used indicator of capital account liberalization is based on data from the IMF's *Exchange Arrangements and Exchange Restrictions*, which is a qualitative yearly review of the laws that limit the ability of private citizens either to pay or receive payment for economic exchanges with nonresidents. In its simplest form, this indicator can be transformed into a dummy variable reflecting either presence (dummy = 0) or absence (dummy = 1) of restrictions on payments by residents of capital account obligations. Although this is a very crude measure, it will be used for the year 1980 (IMF80) as a starting point for our analysis. If the interaction term between external dependence and IMF80 is positive, this shows that industries highly dependent on external financing experienced a faster subsequent growth in countries where the capital account was open in 1980. As an alternative, this indicator is averaged over the 1980s (IMF8090), which means that it measures the proportion of years during the 1980s when the capital account has been classified as open by the IMF.⁶ While the IMF indicators tell us whether a restriction is in place, they have little to say about how severe these restrictions actually are. In an attempt to correct for this shortcoming, Quinn (1997) has constructed an index for several years and a wide cross-section of countries, based on how strict the imposed regulations actually are.⁷ Specifically, he discriminates between the severity of taxes or other forms of multiple currency rules regarding cross-border transactions, whether there are laws, such as licences, with specific quantitative restrictions and to which extent the exchange is associated with the need for authority approval or not. Here, we use the Quinn index from 1982 (QCAP82) as well as the average between the values from 1982 and 1988 (QCAP8288). The Quinn indices overlap with the rest of the data for 39 countries.

Which of these indices to use is not evident as Rodrik (1998), using the IMF index, and Edwards (2001), using the Quinn indices, actually reach different conclusions. Arteta *et al.* (2001) try to evaluate this controversy by testing the quality and consistency of the two indices. They find that the Quinn indices seem more useful and coherent than those of the IMF, although the latter contain a larger sample of countries. All the same, we use both indicators because the underlying issue remains unsolved. As will be seen, our results are basically consistent across these indices.

Equity market liberalization—In order to measure equity market liberalization, we first follow the classification in Bekaert *et al.* (2005). This indicator takes the value of one if equity markets are officially liberalized for foreign investors at a certain date, and zero otherwise. BHL80 thus indicates the policies in place in 1980, while BHL8090 is the proportion of years between 1980 and 1990 that equity markets were officially liberalized. These indicators are available for our full set of countries. Our second indicator is from Kaminsky and Schmukler (2001), who have constructed a database that attempts to take into account both different aspects of the liberalization process and the severity of the restrictions in place. Here, we use their index of stock market liberalization (KSSTOCK80 and KSSTOCK8090), which relates to the acquisition of shares in the domestic market by foreigners, the repatriation of capital, and the repatriation of interest and dividends. Unfortunately, these indices only overlap with the rest of the data for 22 countries.

Table 1. Summary statistics and correlates

	IMF80	IMF8090	QCAP82	QCAP8288	BHL80	BHL8090	KSSTOCK80	KSSTOCK8090	CAPSTOCK	CAPFLOW	TOTCAP
IMF8090	0.82 (0.00)	1									
QCAP82	0.53 (0.00)	0.68 (0.00)	1								
QCAP8288	0.44 (0.00)	0.66 (0.00)	0.96 (0.00)	1							
BHL80	0.20 (0.00)	0.39 (0.00)	0.71 (0.00)	0.76 (0.00)	1						
BHL8090	0.24 (0.00)	0.47 (0.00)	0.74 (0.00)	0.82 (0.00)	0.94 (0.00)	1					
KSSTOCK80	0.15 (0.00)	0.27 (0.00)	0.74 (0.00)	0.76 (0.00)	0.63 (0.00)	0.62 (0.00)	1				
KSSTOCK8090	0.16 (0.00)	0.35 (0.00)	0.74 (0.00)	0.80 (0.00)	0.64 (0.00)	0.72 (0.00)	0.95 (0.00)	1			
CAPSTOCK	0.28 (0.00)	0.35 (0.00)	0.41 (0.00)	0.42 (0.00)	0.44 (0.00)	0.37 (0.00)	0.34 (0.00)	0.31 (0.00)	1		
CAPFLOW	0.46 (0.00)	0.63 (0.00)	0.67 (0.00)	0.69 (0.00)	0.61 (0.00)	0.65 (0.00)	0.47 (0.00)	0.59 (0.00)	0.56 (0.00)	1	
TOTCAP	0.18 (0.00)	0.36 (0.00)	0.46 (0.00)	0.49 (0.00)	0.36 (0.00)	0.46 (0.00)	0.42 (0.00)	0.62 (0.00)	0.02 (0.48)	0.55 (0.00)	1
# Obs.	42	42	39	39	42	42	22	22	39	41	41
Mean	0.31	0.28	0.52	0.56	0.31	0.38	0.47	0.56	0.76	0.03	0.72
Std. Dev.	0.46	0.41	0.23	0.24	0.46	0.44	0.46	0.40	0.50	0.03	0.37

Note and source: IMF80 and IMF8090 are the IMF indicators of an open capital account, for 1980 and the average between 1980–1990. QCAP82 and QCAP8288 are the Quinn (1997) indicators of financial liberalization in the year 1982, and the average of the 1982 and 1988 values. BHL80 and BHL8090, KSSTOCK80 and KSSTOCK8090 are, respectively, the Bekeart *et al.* (2001) and Kaminsky and Schumkler (2001) indicators of equity market liberalization. CAPSTOCK is the average of the sum of the stock of inward and outward direct investment and the stock of portfolio equity and portfolio debt assets and liabilities, as share of GDP over the period 1980–1990, taken from Lane and Milesi-Feretti (2001). CAPFLOW are the equivalent figures but on flows instead of stocks, collected from the IFS. TOTCAP = Total capitalization, the sum of domestic credits and stock market capitalization, divided by GDP. *p*-Values are in parentheses.

Integration data—Measuring capital market integration is a well-known difficulty and several candidate measures are proposed in the literature, all carrying specific pros and cons. In this study, we consider capital flows and stocks relative to the GDP of each country. The focus is mainly on the effects of capital flows, but Lane and Milesi-Feretti (2001) argue that stocks of capital constitute a measure alleviating some of the problems often associated with flow data, such as sharp fluctuations across short periods. Recognizing this point, we include both estimates of capital stocks (with the variable name CAPSTOCK) and flows (CAPFLOW) to achieve as complete a picture as possible. Specifically, we use stocks and flows of inward and outward direct investments and portfolio assets and liabilities as a share of GDP, calculated as annual averages over the period 1980–1990 and using data from Lane and Milesi-Feretti (2001) for stock and the IFS for flows. As always when using data on cross-country investments, the measures should be treated with great caution since the choice of calculation methods may be important.⁸

Instruments—As reported above, we will run instrumental variables (IV) estimations parallel to the ordinary least squares regressions in order to check for the potential reversed causality. As the instruments should be highly correlated with the exogenous variables but not with the endogenous variable, we take lagged index values for the various liberalization indexes. Specifically, for IMF80, we use the IMF indicator value of 1970 and the QCAP of the years 1958 and 1973. Similarly, QCAP82 is instrumented with its lagged values from 1958 and 1973, and BHL80 and KSSTOCK80 are both instrumented with the Quinn capital account indexes from 1958 and 1973 as well as the Quinn (1997) indicator of both capital and current account regulation from the years 1958 and 1973. CAPSTOCK and CAPFLOW are instrumented with the country area (in square kilometres), population size in 1980, total trade in 1975 and government spending in 1975, respectively, as shares of GDP. These data are from the World Bank's *World Development Indicators* (World Bank, various years).⁹

3.4. Industry data

The industry data is from the UN's *Industrial Statistics Yearbook* and covers manufacturing firms at the three- or four-digit ISIC level. From Rajan and Zingales' data set, we get data on growth in value added and the number of establishments, or firm creation.¹⁰ As a complementary measure of economic growth, we introduce growth in real output published in the *Industrial Statistics Yearbook* (and the more recent *International Yearbook of Industrial Statistics*) as output in nominal producer prices. To deflate the output, we follow the procedures of Rajan and Zingales (1998) to make the data comparable. This means that the Producer Price Index (PPI) is the prime deflator and for countries where no such index is available, an effective deflator is computed by dividing the growth in nominal output for the entire manufacturing industry (ISIC 300) by the index of industrial production, taken from the IFS statistics. For Jamaica and Turkey neither an index of production nor a PPI are available, and we have thus used the Consumer Price Index to deflate the nominal output growth. In the case of Brazil, none of these procedures could produce a satisfactory deflator, mainly due to the extreme inflation and a large number of devaluations in Brazil during the 1980s.

4. RESULTS

Throughout, OLS estimates and IV estimates are reported, together with a set of diagnostic tests. First, a Hausman test of exogeneity tests whether the IV and OLS estimates differ significantly and hence if instrumenting would be necessary in the first place.¹¹ Second, an *F*-test shows whether the instruments explain a great deal of the variation in the instrumented variable, which is desirable. Finally, a Sargan test of overidentifying restrictions shows whether the instruments have an impact of their own on the dependent variable, which is not desirable. We exclude the results for the indicators representing multi-year averages (IMF8090, QCAP8288, BHL8090 and KSSTOCK8090), since they produce practically identical results as the respective initial year indices.

4.1. *Effects on growth in value added*

Here, we analyse how the liberalization of international capital movements and the integration of capital markets affect industry growth in value added, i.e. the industry level equivalent to GDP growth, according to equation (1).

Table 2 reports the first set of our results. Liberalizing capital accounts does not seem to have any direct effects on industry growth in value added. None of the liberalization and integration indicators, interacted with the external dependency measure, produce significant results in either the OLS or the IV regressions. This is also true for the indicators of equity market liberalization and capital market integration.¹² Another finding is that the strong connection between the level of financial development and growth in value added, originally suggested by Rajan and Zingales (1998), is robust to controlling for financial liberalization and integration, as shown by the positive and significant coefficients of the interaction between external dependency and financial development.

In Table 3, we test the hypothesis that the level of financial development is of importance for the effect of liberalization and integration on growth. This is done by splitting the sample of countries with respect to the median value of the two measures of financial development.¹³ Once more, there seem to be practically no growth effects of financial liberalization or capital market integration except in one single case (KSSTOCK80).¹⁴ The results hence contradict the evidence of Laeven (2003), suggesting a positive correlation between financial liberalization and growth, given a relatively high level of financial development.

4.2. *Effects on firm creation*

Table 4 reports the results of our tests for a link between financial liberalization as well as financial integration and growth in the number of firms, or firm creation, within industries highly dependent on external financing. Neither liberalization nor integration categories produce significant coefficient estimates consistent across both the OLS and IV specifications. For IMF80 and the two integration measures, CAPSTOCK and CAPFLOW, the OLS estimates are positive and significant, but the IV estimates are not. According to the diagnostic tests reported, the IV estimates should be followed.

In Table 5, we have split the sample into two groups of countries, either above or below the median level of financial development. The picture is now somewhat different. In countries with a 'high' level of financial development there are strong effects on firm creation within industries dependent on external financing. This result holds for most liberalization indicators across both the OLS and the IV specifications. The integration variables only produce positive significant coefficients in the OLS regressions, but since the diagnostic tests (especially Hausman) do not suggest any statistical endogeneity, these results can be accepted all the same. Some potential concerns could be raised when the Sargan tests of overidentifying restrictions are checked, but since the Hausman tests do not indicate that IV regressions are necessary, the positive and significant OLS estimators should suffice for the results to be consistent.

In a more general sense, these findings suggest that more accessible foreign funding helps cash-constrained entrepreneurs active in industries relatively dependent on external financing to establish new firms. Naturally, we cannot tell whether they use the foreign funding directly or the domestic creditors become keener on investing in new firms, but the final effect is the same. In essence, this result confirms the findings of Laeven (2003) that small firms benefited more from financial liberalization than did large firms since the latter had access to preferential credit already in the closed system due to favouritism and personal connections.

4.3. *Effects on growth in output*

In the final set of regressions, reported in Tables 6 and 7, we test whether financial liberalization and integration have any effect on real growth in output in externally dependent industries. As before, the full sample results (reported in Table 6) contain no significant coefficients for our parameter of interest, except in the case of BHL80, which is positive and significant. There may hence prevail some positive effects on

Table 2. Growth in value added, measures of financial liberalization and integration. Full sample

	Capital account liberalization measured as:						Stock market liberalization measured as:						Capital market integration measured as:					
	IMF80		QCAP82		BHL80		KSSTOCK		CAPSTOCK		CAPFLOW							
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV						
Industry share	-0.952*** (0.251)	-0.580*** (0.149)	-0.584*** (0.151)	-0.577*** (0.146)	-0.963*** (0.250)	-0.606*** (0.148)	-0.622*** (0.290)	-0.625*** (0.278)	-0.585*** (0.155)	-0.587*** (0.154)	-0.951*** (0.230)	-0.959*** (0.254)						
Ext. dep. × Financial development	0.071*** (0.024)	0.051*** (0.019)	0.049** (0.025)	0.053* (0.029)	0.066*** (0.025)	0.044** (0.016)	0.040** (0.020)	0.038* (0.020)	0.052*** (0.018)	0.052*** (0.018)	0.065*** (0.029)	0.060** (0.026)						
Ext. dep. × IMF80	0.006 (0.014)	0.002 (0.014)																
Ext. dep. × QCAP82			0.010 (0.034)	-0.003 (0.053)														
Ext. dep. × BHL80					0.017 (0.013)	0.023* (0.013)												
Ext. dep. × KSSTOCK							0.007 (0.011)	0.011 (0.016)										
Ext. dep. × CAPSTOCK									0.009 (0.008)	0.011 (0.029)								
Ext. dep. × CAPFLOW											0.167 (0.321)	0.296 (0.456)						
<i>F</i> -test (<i>p</i> -value)	419 (0.00)	371 (0.00)	368 (0.00)	188 (0.00)	36 (0.00)	79 (0.00)	188 (0.00)	36 (0.00)	36 (0.00)	36 (0.00)	79 (0.00)	79 (0.00)						
Sargan test (<i>p</i> -value)	0.27 (0.87)	0.12 (0.73)	2.20 (0.53)	6.37 (0.09)	6.37 (0.09)	3.69 (0.30)	6.37 (0.09)	3.69 (0.30)	6.37 (0.09)	6.37 (0.09)	4.98 (0.17)	4.98 (0.17)						
Hausman test (<i>p</i> -value)	0.01 (0.90)	0.13 (0.72)	1.13 (0.29)	0.10 (0.75)	0.10 (0.75)	0.01 (0.94)	0.10 (0.75)	0.01 (0.94)	0.01 (0.94)	0.01 (0.94)	0.05 (0.82)	0.05 (0.82)						
No. of observations	1152	1106	1106	1106	1152	1106	666	666	1106	1106	1116	1116						
<i>R</i> ²	0.29	0.33	0.33	0.33	0.29	0.33	0.40	0.41	0.33	0.33	0.28	0.28						

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in real value added for the period 1980–1990 for each ISIC industry in each country. 'Industry share' is each industry's share of total value added in manufacturing within each country in 1980. 'Ext. dep.' is a proxy for external financial dependence from Rajan and Zingales (1998), described in the text. The other variables are described in Table 1 and instruments used in the IV estimations are reported in the text. Country and industry fixed effects are not included in the table. *F*-test of excluded instruments, Sargan test of overidentifying restrictions and Hausman (or Davidson–MacKinnon) test of exogeneity of the regressors. Heteroskedasticity robust standard errors are in parentheses.

Table 3. Growth in value added, financial liberalization and integration. Split sample

Indicator of Fin. lib. or integration	Level of Fin. dev.	Model	Industry share	Ext. dep × Fin. dev.	Ext. dep × Fin. lib. or integration	Diagnostic tests			N	R ²
						Hausman	F	Sargan		
IMF80	High	OLS	-0.434** (0.191)	0.064** (0.033)	0.008 (0.018)				622	0.31
		IV	-0.450** (0.181)	0.056 (0.034)	0.019 (0.023)	0.78 (0.38)	137 (0.00)	1.71 (0.43)	622	0.31
	Low	OLS	-1.417*** (0.363)	0.230* (0.119)	0.010 (0.029)				530	0.34
		IV	-0.850*** (0.250)	0.110 (0.070)	-0.011 (0.025)	0.01 (0.94)	663 (0.00)	0.41 (0.93)	484	0.39
QCAP82	High	OLS	-0.434** (0.187)	0.068** (0.029)	0.011 (0.047)				622	0.31
		IV	-0.451*** (0.175)	0.065** (0.030)	0.032 (0.076)	0.22 (0.64)	203 (0.00)	0.55 (0.46)	622	0.31
	Low	OLS	-0.861*** (0.271)	0.119* (0.065)	0.039 (0.048)				484	0.39
		IV	-0.846*** (0.252)	0.126** (0.061)	-0.025 (0.084)	0.75 (0.39)	195 (0.00)	0.11 (0.74)	484	0.39
BHL80	High	OLS	-0.431** (0.192)	0.070*** (0.025)	0.003 (0.015)				622	0.31
		IV	-0.457*** (0.190)	0.072*** (0.025)	0.016 (0.011)	1.34 (0.25)	340 (0.00)	6.15 (0.10)	622	0.31
	Low	OLS	-1.427*** (0.362)	0.046*** (0.015)	0.038 (0.023)				530	0.34
		IV	-0.868*** (0.252)	0.074 (0.080)	0.039 (0.032)	0.03 (0.87)	147 (0.00)	2.86 (0.41)	484	0.40

KSSSTOCK80	High	OLS	-0.416** (0.206)	0.051* (0.031)	0.030** (0.012)	368	0.49
		IV	-0.418** (0.192)	0.052* (0.031)	0.031** (0.014)	368	3.86 (0.28)
	Low	OLS	-1.067* (0.578)	0.204*** (0.071)	-0.007 (0.025)	298	0.43
		IV	-1.076** (0.531)	0.204*** (0.066)	-0.007 (0.033)	298	0.28 (0.96)
CAPSTOCK	High	OLS	-0.450** (0.204)	0.080*** (0.029)	0.017* (0.009)	622	0.32
		IV	-0.400** (0.189)	0.058** (0.025)	-0.017 (0.016)	622	2.03 (0.57)
	Low	OLS	-0.850*** (0.266)	0.132** (0.066)	-0.017 (0.037)	484	0.39
		IV	-0.100 (0.162)	0.185*** (0.057)	0.027 (0.020)	484	3.62 (0.16)
CAPFLOW	High	OLS	-0.420** (0.188)	0.071** (0.022)	-0.037 (0.345)	622	0.31
		IV	-0.403** (0.189)	0.058** (0.024)	-0.017 (0.026)	622	2.69 (0.44)
	Low	OLS	-1.446*** (0.391)	0.201** (0.101)	0.571 (0.582)	494	0.21
		IV	-1.463*** (0.371)	0.118 (0.074)	2.274 (1.642)	494	2.59 (0.46)

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in the number of establishments for the period 1980–1990 for each ISIC industry in each country. 'Fin. lib.' represents the liberalization indicator of either the capital account or the stock market. 'Fin. dev.' is financial development as measured by total capitalization. See Table 2 for a description of the rest of the variables. 'High' ('Low') financial development refers to countries with above (below) median total capitalization. Heteroskedasticity robust standard errors are in parentheses, except for the diagnostic tests where *p*-values are reported.

Table 4. Firm creation, measures of financial liberalization and integration. Full sample

	Capital account liberalization measured as:						Stock market liberalization measured as:						Capital market integration measured as:					
	IMF80		QCAP82		BHL80		KSSTOCK		CAPSTOCK		CAPFLOW							
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV						
Industry share	-0.264*	-0.374***	-0.380***	-0.384***	-0.257*	-0.378***	-0.192	-0.198	-0.365**	-0.356***	-0.268*	-0.226						
	(0.152)	(0.139)	(0.189)	(0.142)	(0.153)	(0.139)	(0.151)	(0.143)	(0.144)	(0.138)	(0.161)	(0.151)						
Ext. dep. × Financial development	0.022*	0.022*	0.015	0.013	0.027**	0.020	0.042**	0.038*	0.025**	0.029**	0.014	0.052*						
	(0.016)	(0.012)	(0.014)	(0.015)	(0.013)	(0.013)	(0.020)	(0.018)	(0.012)	(0.012)	(0.015)	(0.029)						
Ext. dep. × IMF80	0.021**	0.013																
	(0.010)	(0.012)																
Ext. dep. × QCAP82	0.034	0.042																
	(0.021)	(0.034)																
Ext. dep. × BHL80			0.009	0.016														
			(0.009)	(0.012)														
Ext. dep. × KSSTOCK					0.003	0.015												
					(0.010)	(0.014)												
Ext. dep. × CAPSTOCK									0.013*	-0.032								
									(0.007)	(0.021)								
Ext. dep. × CAPFLOW											0.333**	-0.441						
											(0.166)	(0.445)						
F-test (<i>p</i> -value)	322 (0.00)	0.54 (0.76)	300 (0.00)	0.01 (0.91)	304 (0.00)	3.63 (0.30)	157 (0.00)	3.92 (0.27)	30 (0.00)	8.34 (0.04)	52 (0.00)	5.52 (0.14)						
Sargan test (<i>p</i> -value)	1.09 (0.30)	1.09 (0.30)	0.06 (0.81)	0.06 (0.81)	0.31 (0.58)	0.80 (0.37)	0.80 (0.37)	0.80 (0.37)	3.55 (0.06)	3.55 (0.06)	2.72 (0.10)	2.72 (0.10)						
Hauman test (<i>p</i> -value)	1034	986	986	986	1034	732	598	598	986	986	998	998						
No. of observations	0.46	0.47	0.47	0.47	0.45	0.47	0.47	0.47	0.47	0.46	0.46	0.45						
R ²																		

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in real output for the period 1980–1990 for each ISIC industry in each country. See Table 2 for a description of the rest of the variables. Heteroskedasticity robust standard errors are in parentheses, except for the diagnostic tests where *p*-values are reported.

Table 5. Firm creation, financial liberalization and integration. Split sample

Indicator of Fin. lib. or integration	Level of Fin. dev.	Model	Industry share	Ext. dep × Fin. dev.	Ext. dep × Fin. lib. or integration	Diagnostic tests		N	R ²	
						Hausman	F			Sargan
IMF80	High	OLS	-0.388 (0.264)	0.006 (0.018)	0.039*** (0.013)			530	0.33	
		IV	-0.410 (0.253)	-0.010 (0.020)	0.057*** (0.019)	2.49 (0.11)	112 (0.00)	5.91 (0.05)	530	0.33
	Low	OLS	-0.100 (0.162)	0.185*** (0.057)	0.027 (0.020)				504	0.54
		IV	-0.273** (0.136)	0.207*** (0.063)	0.042 (0.027)	1.62 (0.20)	394 (0.00)	7.85 (0.02)	456	0.57
QCAP82	High	OLS	-0.404 (0.274)	0.025 (0.018)	0.065** (0.029)			530	0.32	
		IV	-0.506* (0.265)	0.003 (0.018)	0.173*** (0.055)	4.31 (0.04)	115 (0.00)	2.64 (0.10)	530	0.31
	Low	OLS	-0.268* (0.153)	0.146*** (0.047)	0.003 (0.034)				456	0.57
		IV	-0.272** (0.136)	0.143*** (0.045)	0.012 (0.045)	0.15 (0.70)	333 (0.00)	7.88 (0.01)	456	0.57
BHL80	High	OLS	-0.366 (0.271)	0.039** (0.016)	0.012 (0.011)			530	0.32	
		IV	-0.388 (0.252)	0.039** (0.016)	0.023** (0.011)	1.44 (0.23)	257 (0.00)	7.49 (0.06)	530	0.32
	Low	OLS	-0.098 (0.161)	0.168*** (0.053)	-0.008 (0.015)				504	0.54
		IV	-0.235* (0.133)	0.219*** (0.073)	-0.063* (0.033)	4.52 (0.03)	141 (0.00)	5.06 (0.16)	456	0.56
KSSTOCK80	High	OLS	0.188 (0.248)	0.057 (0.038)	0.036*** (0.014)			312	0.47	
		IV	0.175 (0.228)	0.059 (0.036)	0.042*** (0.017)	0.60 (0.44)	176 (0.00)	1.41 (0.70)	312	0.47
	Low	OLS	-0.286 (0.226)	0.146*** (0.051)	-0.044* (0.026)				286	0.49
		IV	-0.286 (0.207)	0.147*** (0.046)	-0.043* (0.022)	0.01 (0.92)	1091 (0.00)	6.55 (0.09)	286	0.49

Table 5 — continued

Indicator of Fin. lib. or integration	Level of Fin. dev.	Model	Industry share	Ext. dep × Fin. dev.	Ext. dep × Fin. lib. or integration	Diagnostic tests		N	R ²	
						Hausman	F			Sargan
CAPSTOCK	High	OLS	-0.358 (0.263)	0.047*** (0.016)	0.014** (0.007)			530	0.32	
		IV	-0.352 (0.253)	0.044*** (0.014)	0.010 (0.012)	0.29 (0.59)	95 (0.00)	1.67 (0.64)	530	0.32
	Low	OLS	-0.269 (0.143)	0.130 (0.046)	0.027 (0.023)				456	0.57
		IV	-0.269** (0.134)	0.129*** (0.044)	0.029 (0.024)	0.02 (0.88)	333 (0.00)	8.71 (0.04)	456	0.57
CAPFLOW	High	OLS	-0.392 (0.274)	0.018 (0.021)	0.389* (0.212)			530	0.32	
		IV	-0.357 (0.259)	0.033 (0.023)	0.116 (0.244)	2.28 (0.13)	153 (0.00)	1.98 (0.58)	530	0.32
	Low	OLS	-0.073 (0.168)	0.160*** (0.050)	0.036 (0.346)				468	0.54
		IV	-0.081 (0.162)	0.119** (0.049)	0.733 (0.644)	1.88 (0.17)	85 (0.00)	8.81 (0.03)	468	0.54

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in the number of establishments for the period 1980–1990 for each ISIC industry in each country. See Tables 2 and 3 for a description of the other variables. 'High' ('Low') financial development refers to countries with above (below) median total capitalization. Heteroskedasticity robust standard errors are in parentheses, except for the diagnostic tests where *p*-values are reported.

Table 6. Growth in output, financial liberalization and integration. Full sample

	Capital account liberalization measured as:						Stock market liberalization measured as:						Capital market integration measured as:					
	IMF80		QCAP82		BHL80		KSSTOCK		CAPSTOCK		CAPFLOW		CAPSTOCK		CAPFLOW			
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV		
Industry share	-0.328*** (0.173)	-0.356*** (0.075)	-0.359*** (0.077)	-0.365*** (0.076)	-0.330*** (0.072)	-0.365*** (0.976)	-0.416*** (0.124)	-0.421*** (0.121)	-0.346*** (0.079)	-0.343*** (0.073)	-0.332*** (0.074)	-0.324*** (0.072)						
Ext. dep. × Financial development	0.045*** (0.013)	0.053*** (0.012)	0.049*** (0.014)	0.040*** (0.013)	0.044*** (0.014)	0.045*** (0.012)	0.067*** (0.021)	0.061*** (0.018)	0.052*** (0.013)	0.054*** (0.012)	0.037*** (0.014)	0.057*** (0.018)						
Ext. dep. × IMF80	0.005 (0.009)	0.003 (0.010)																
Ext. dep. × QCAP82			0.057 (0.020)	0.049 (0.031)														
Ext. dep. × BHL80					0.005 (0.009)	0.022** (0.011)												
Ext. dep. × KSSTOCK							0.011 (0.010)	0.024 (0.016)										
Ext. dep. × CAPSTOCK									0.003 (0.006)	-0.019 (0.015)								
Ext. dep. × CAPFLOW											0.222* (0.135)	-0.212 (0.290)						
F-test (<i>p</i> -value)	444 (0.00)	479 (0.09)	420 (0.00)	1.98 (0.16)	420 (0.00)	361 (0.00)	159 (0.00)	159 (0.00)	82 (0.00)	82 (0.00)	92 (0.00)	92 (0.00)						
Sargan test (<i>p</i> -value)	0.31 (0.57)	0.31 (0.57)	1.38 (0.24)	1.38 (0.24)	1.38 (0.24)	5.12 (0.16)	12.5 (0.01)	12.5 (0.01)	2.01 (0.57)	2.01 (0.57)	2.78 (0.42)	2.78 (0.42)						
Hausman test (<i>p</i> -value)	1154	1154	1154	1154	1154	1154	674	674	1165	1165	1187	1187						
No. of observations	1223	1154	1154	1154	1223	1154	674	674	1165	1165	1187	1187						
R ²	0.44	0.50	0.50	0.50	0.44	0.50	0.60	0.60	0.50	0.50	0.44	0.44						

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in real output for the period 1980–1990 for each ISIC industry in each country. See Table 2 for a description of the other variables. Heteroskedasticity robust standard errors are in parentheses, except for the diagnostic tests where *p*-values are reported.

Table 7. Growth in output, financial liberalization and integration. Split sample

Indicator of Fin. Lib. or integration	Level of Fin. dev.	Model	Industry share	Ext. dep. Fin. dev.	Ext. dep. Fin. lib. or integration	Diagnostic tests		N	R ²
						Hausman	F		
IMF80	High	OLS	-0.511*** (0.131)	0.046** (0.019)	0.034*** (0.013)			635	0.43
		IV	-0.514*** (0.215)	0.039** (0.018)	0.044*** (0.017)	0.93 (0.34)	140 (0.00)	3.62 (0.16)	635
	Low	OLS	-0.264*** (0.080)	0.121** (0.060)	-0.015 (0.017)			588	0.47
		IV	-0.283 (0.084)	0.177*** (0.055)	-0.003 (0.016)	0.00 (0.99)	583 (0.00)	2.34 (0.31)	519
QCAP82	High	OLS	-0.520*** (0.131)	0.065*** (0.019)	0.045* (0.025)			635	0.43
		IV	-0.554*** (0.131)	0.055*** (0.018)	0.120*** (0.044)	2.52 (0.11)	186 (0.00)	0.50 (0.48)	635
	Low	OLS	-0.286*** (0.089)	0.184*** (0.050)	0.036 (0.038)			519	0.57
		IV	-0.288*** (0.084)	0.186*** (0.048)	0.060 (0.051)	0.37 (0.54)	233 (0.00)	0.93 (0.33)	519
BHL80	High	OLS	-0.520*** (0.131)	0.071*** (0.019)	0.002 (0.011)			635	0.42
		IV	-0.520*** (0.127)	0.074*** (0.019)	0.016 (0.010)	2.61 (0.11)	349 (0.00)	6.57 (0.09)	635
	Low	OLS	-0.267*** (0.080)	0.111* (0.058)	0.026 (0.019)			588	0.47
		IV	-0.285*** (0.083)	0.136*** (0.052)	0.043* (0.024)	1.34 (0.25)	180 (0.00)	1.33 (0.73)	519

KSSTOCK80	High	OLS	-0.519** (0.214)	0.111*** (0.043)	0.036*** (0.013)	366	0.50
	Low	IV	-0.524*** (0.202)	0.112*** (0.042)	0.041*** (0.015)	366	0.50
CAPSTOCK	High	OLS	-0.434** (0.172)	0.215*** (0.058)	0.009 (0.018)	308	0.70
	Low	IV	-0.433*** (0.159)	0.214*** (0.053)	0.019 (0.025)	308	0.70
CAPFLOW	High	OLS	-0.505*** (0.131)	0.077*** (0.020)	0.010 (0.007)	635	0.42
	Low	IV	-0.505*** (0.125)	0.077*** (0.019)	0.009 (0.014)	635	0.43
KSSTOCK80	High	OLS	-0.273*** (0.085)	0.199*** (0.055)	-0.027 (0.022)	530	0.57
	Low	IV	-0.274*** (0.080)	0.201*** (0.053)	-0.030 (0.030)	530	0.57
CAPFLOW	High	OLS	-0.511*** (0.132)	0.060*** (0.020)	0.257* (0.146)	635	0.43
	Low	IV	-0.506*** (0.126)	0.066*** (0.021)	0.121 (0.216)	635	0.43
KSSTOCK80	High	OLS	-0.263*** (0.085)	0.129** (0.058)	0.149 (0.425)	552	0.47
	Low	IV	-0.255*** (0.081)	0.203*** (0.068)	-1.200 (1.181)	552	0.46

Note: *** indicates significance at the 1% level, ** at the 5% level, * at the 10% level. The dependent variable is the annual compounded growth rate in the number of establishments for the period 1980–1990 for each ISIC industry in each country. See Tables 2 and 3 for a description of the other variables. 'High' ('Low') financial development refers to countries with above (below) median total capitalization. Heteroskedasticity robust standard errors are in parentheses, except for the diagnostic tests where *p*-values are reported.

production after liberalizing equity markets, but not after capital account liberalization or as a result of being integrated in global capital markets.

When splitting the sample into two according to the level of financial development, as reported in Table 7, we once more obtain different results than in the full sample case. It is clear that the growth in real output is boosted by the financial liberalization in countries with relatively well-developed financial markets, regardless if OLS or IV estimators are used. BHL80 once more fails to generate significant positive results for the high-development group. The effect on total output—also a relevant welfare indicator—can be linked to the expansion in the number of firms.

4.4. *Summing up: a competition or an outsourcing effect?*

Altogether, considering the results reported in Tables 2–7, it seems that for countries at a relatively high level of financial development, there is a clear firm-creation effect from international financial liberalization (Table 5) that translates into a growth effect in output (Table 7), but not into any such effects on the growth of real value added (Table 3). We have not seen any results in previous research pointing in this direction and thus, they are somewhat unexpected and our interpretations are preliminary and tentative.

One explanation consistent with the results presented here is a *competition effect*. Financial liberalization spurs firm creation. Basic IO theory teaches us that when new firms enter a market this generally means an increase in competition and aggregate output. Markups, and eventually profits, can decrease for incumbent firms on that market. Hence, while there may be more firms in a market, the margins for each firm shrink and industry value added may be unaffected or even decrease.¹⁵

Our findings could also be interpreted from the perspective of industrial vertical disintegration and corporate *outsourcing*. The basic argument would then be as follows. When financial markets become more liberalized, this reduces the costs for firms and entrepreneurs of finding financiers. These reduced capital costs for start-ups and corporate expansions, in turn, influence the choices of existing firms when it comes to considering outsourcing parts of their production to other units. Outsourcing has become less costly and, *ceteris paribus*, therefore more likely. Outsourcing can yield the observed pattern by breaking up value added chains.

To make the outsourcing argument more clear, consider the following two-period example. In period 1, an industry consists of a single firm producing 100 units of final goods. For this purpose, it first produces 50 intermediate inputs, using zero inputs, and then 100 units of final goods, using these intermediate inputs. For the industry, the firm hence creates a value added of 100. In the second period, this firm decides to outsource its intermediate production to another firm. A subsidiary firm is set up to produce the 50 units of intermediate inputs that are delivered to the final good producer for its production of the 100 units of final goods. The final good producer has a production of 100 units of final goods but only a value added of 50, since it uses 50 units of 'external' inputs. The subsidiary produces 50 units, which is also its value added. The growth in value added between period 1 and 2 is therefore zero, but the growth in (measured) output is 50. Further, there is a growth in number of firms. Hence, this simple outsourcing example closely replicates our findings.¹⁶

Given the data at our disposal, we cannot perform a direct test that discriminates between the two hypotheses put forward here. If, however, price increases are relatively low in sectors where firm creation is high, this yields some, albeit weak, support for the competition hypotheses. In order to recover industry-level price series, we need data on value added (or output) in both current and constant prices. These data are not available in the UN *ISY* database, but do exist for a subset of countries in the *STAN* database from the OECD (OECD, 1998).¹⁷ To compute the change in producer prices between 1980 and 1990 for each ISIC industry, we extract industry price series by dividing value added in current prices by value added in constant prices. The price changes for the 1980s (in percent) are then regressed on the growth rates of firm creation and a set of industry and country dummies.

As can be seen in column 1 of Table 8, there is a positive and statistically significant partial correlation between firm creation and price increases. Since firm creation and increasing prices are expected to go hand in hand if, for example, demand is increasing, we control for growth in value added in the second column.

Table 8. Explaining changes in price levels

	Dependent variable is the percentage change in industry price levels between 1980 and 1990			
Growth in number of establishments 1980–1990	1.644*** (0.552)	1.282** (0.542)	2.097*** (0.682)	0.205 (0.914)
Growth in value added 1980–1990		1.201*** (0.449)		3.375*** (1.322)
No. of observations	324	323	230	229
R^2	0.91	0.91	0.80	0.81

Note: *** indicates significance at the 1% level and ** at the 5% level. The dependent variable is the percentage change in price levels between 1980 and 1990 for each ISIC industry in each country. Country and industry fixed effects are included but not shown. Heteroskedasticity robust standard errors are in parentheses.

This does not affect the result. In columns 3 and 4, only countries with above median values of total capitalization are included. When not controlling for growth in value added, the positive correlation remains in this subsample, but firm creation is insignificant in the final specification.

The results in Table 8 point towards an explanation based on outsourcing rather than increased competition. It is important to note, however, that this is an interpretation based on an indirect test at the industry level. Actual outsourcing decisions are carried out at the firm level. To fully analyse the question, we would need more detailed data.

Much of the previous research on explaining the observed increase in global outsourcing in recent decades has primarily focused on technology enhancements and improved contracting environments (see, e.g., Carlsson, 1999; Grossman and Helpman, 2002). Our finding on improved financing opportunities through international financial liberalization hence suggests a partly new research agenda on the links between international financial liberalization and economic development.

5. CONCLUSIONS

This paper investigates the growth effects of international financial liberalization and integration. While previous work has mainly approached this problem by considering aggregate growth rates, our paper analyses the growth effects at the industry level, using the data and methodology developed by Rajan and Zingales (1998).

The results are both interesting and somewhat puzzling. The main result is that industries highly dependent on external financing do not experience a higher growth in value added among countries with liberalized capital accounts or equity markets. The same result holds for countries more integrated with the international capital market in terms of actual capital flows and stocks. Although it is plausible that the growth effects of financial liberalization and integration differ between countries at different levels of financial development, we cannot find any results pointing in this direction. We do, however, find significant positive effects of liberalizing capital accounts and equity markets on the creation of new firms and growth in output—given that countries have relatively well-developed financial markets. Hence, there may be growth effects of financial liberalization other than in value added. In a dynamic perspective, accelerated firm growth is important for a functioning creative destruction and thereby also for sustained long-run economic development.

Increased competition provides a straightforward explanation of this pattern of results. Financial liberalization stimulates firm creation, which increases competition and output. Value added, on the other hand, does not necessarily increase since the prices of final goods fall. A second potential explanation is based on outsourcing. If the setting up of new plants is made less expensive by the liberalization of financial

markets, firms become more inclined to outsource the parts of their production. Since outsourcing means breaking up value added chains, it could result in a pattern of increased firm creation, increased measured output and zero growth in value added. The results on an outsourcing and/or competition effect following financial liberalization and integration open up a new research agenda. Some tentative evidence points towards an explanation based on outsourcing rather than increased competition, but to fully analyse the question more research is needed.

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APPENDIX

Table A1. Indicators of liberalization

Country	IMF80	QCAP82	BHL80	KSSTOCK80	CAPSTOCK	CAPFLOW
Australia	0	0.5	1	–	0.742694	0.0562806
Austria	0	0.75	1	–	1.172527	0.0383822
Bangladesh	0	–	0	–	–	0.0000203
Brazil	0	0.375	0	0.5	0.4665384	0.0083611
Canada	1	0.75	1	1	1.1765	0.0572943
Chile	0	0.5	0	0	1.031781	0.0228369
Columbia	0	0.375	0	0	0.5325444	0.0147017
Costa Rica	1	0.375	0	–	1.21825	0.0235035
Egypt	0	0.375	0	–	1.274474	0.0262076
Finland	0	0.5	1	0.5	0.6951951	0.0392009
France	0	0.625	1	1	0.8920823	0.0359365
Germany	1	1	1	1	0.7598786	0.0354987
Greece	0	0.5	0	–	0.0488642	0.0115876
India	0	0.25	0	–	0.1782569	–
Indonesia	1	0.625	0	0	0.4505696	0.005563
Israel	0	0.5	0	–	0.0612123	0.0266216
Italy	0	0.75	1	1	0.5622534	0.0168005
Jamaica	0	–	0	–	1.255333	0.0095036
Japan	1	0.625	0	0	0.4995376	0.0504401
Jordan	0	0.375	0	–	1.004601	0.0109161
Kenya	0	–	0	–	–	0.0062992
Korea	0	0.5	0	0	0.4965836	0.0109355
Malaysia	1	0.5	0	0.5	0.5231221	0.0537342
Mexico	1	0.375	0	0	0.5225904	0.0200498
Morocco	0	0.125	0	–	0.9217592	0.0039101
Netherlands	1	0.75	1	–	1.947572	0.0912627
New Zealand	0	0.625	0	–	1.236027	0.0484484
Nigeria	0	0.25	0	–	–	0.0184015
Norway	0	0.5	1	0	0.8998007	0.0466735
Pakistan	0	0.25	0	–	0.470136	0.0053546
Peru	1	0.375	0	0	0.6959333	0.0020136
Philippines	0	0.25	0	0	0.7374972	0.0080224

Table A1 — continued

Country	IMF80	QCAP82	BHL80	KSSTOCK80	CAPSTOCK	CAPFLOW
Portugal	0	0.375	0	0	0.1630504	0.0261469
Sri Lanka	0	0.125	0	–	0.6738331	0.0074351
Singapore	1	1	1	–	0.8321908	0.1469173
South Africa	0	0.375	0	–	0.0678706	0.011975
Spain	0	0.5	0	1	0.4833221	0.024915
Sweden	0	0.75	1	1	0.916338	0.0437282
Turkey	0	0.25	0	–	0.3829049	0.0056955
UK	1	1	1	1	2.664083	0.1067
USA	1	1	1	1	0.5350813	0.0265935
Venezuela	1	0.75	0	1	0.6150251	0.0474498

Note: IMF80 is the IMF indicator of an open capital account for 1980. QCAP82 is the Quinn (1997) indicator of capital account liberalization in the year 1982. BHL80 and KSSTOCK80 are the Bekeart *et al.* (2001) and Kaminsky and Schumkler (2001) indicators of equity market liberalization. CAPSTOCK is the average of the sum of the stock of inward and outward direct investment, and the stock of portfolio equity and portfolio debt assets and liabilities, as a share of GDP over the period 1980–1990, taken from Lane and Milesi-Ferretti (2001). CAPFLOW constitute the equivalent figures, but on flows instead of stocks, collected from the IFS.

NOTES

1. See, for example, the surveys by Eichengreen (2001), Arteta *et al.* (2001) and Edison *et al.* (2002a).
2. We consider, in turn, the growth rates of real value added, real output and the number of establishments.
3. Rajan and Zingales (1998) compute external dependency measures for 1970 and 1980 and report a correlation between these of approximately 0.75.
4. Edwards (2001) actually uses income rather than financial development when dividing the sample of countries into high and low levels. We argue, however, that financial development is a more relevant dimension, since what really counts is the ability to allocate the capital to producers in the economy and not whether the country in general is rich.
5. According to this indicator, drugs and medicines (ISIC 3522) constitute the most externally dependent industry, while the tobacco industry (ISIC 314) is the least so.
6. Similar indicators have been used by, for example, Alesina *et al.* (1994) in a study of the determinants of capital controls, and Rodrik (1998) in a study on how capital controls affect growth, inflation and investments.
7. Using the Quinn index of capital account restrictions, Edwards (2001) finds that an open capital account spurs aggregate economics growth.
8. For example, it could be of importance whether the investments are counted at market or book value, at which time of the year this is done, and in which of the two countries the valuation is done.
9. We have also run specifications using dummies of the countries' legal origins (see La Porta *et al.*, 1998) as instruments for both financial development and international financial liberalization. The results from this exercise are basically consistent with the results presented in the paper.
10. Establishments can principally be treated as firms, although in some cases the collected data underlying the ISY variable was not sufficiently legally strictly defined to eliminate the possibility that establishments are not 'plants within one firm'.
11. To be precise, our version of the Hausman test was actually proposed by Davidson and MacKinnon (1993).
12. The possible exception is the IV result of BHL80, which is weakly significant at the 10% level.
13. As an alternative approach, we have run regressions with dummy variables for low, medium and high financial development interacted with the interaction term between financial liberalization and external dependence. The results from this exercise are similar to those presented here.
14. CAPSTOCK has a positive significant sign in the OLS regression, but an insignificant sign in the IV and since the Hausman test indicates endogeneity, we focus on the IV results.
15. Rajan and Zingales (2003) propose an 'interest group' theory of financial development where incumbents oppose financial development and deregulation because it breeds competition. The theory predicts that the incumbents' opposition will be weaker when an economy allows both cross-border trade and capital flows.
16. Note that outsourcing only yields our pattern of results if it mainly takes place *within* an industry.
17. The countries for which the data overlaps are Austria, Canada, Finland, France, Germany, Greece, Italy, Korea, Mexico, Netherlands, Norway, Portugal, Spain, Sweden, UK, USA. The positive growth effects on output holds in some and the positive growth effects on firm creation holds in most specifications for this sample of countries when total capitalization is above the median value (results available upon request).

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