Trade liberalization, Capital Account Liberalization and the Real Effects of Financial Development

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Abstract: This paper provides evidence that international economic integration changes the real effect of domestic financial institutions. Using a cross-country panel we show that domestic financial development has a smaller effect on growth in countries that are open to trade and capital flows than among countries that are closed in both dimensions. We then use sectoral data to show that this decline in the importance of financial development can be explained by its irrelevance for tradable sectors in countries that are fully integrated to the world economy. In contrast to non-tradable sectors, for tradable sectors international economic integration seems to be a good substitute for domestic financial development. We also explore the consequences of these findings for the sequencing of reform.

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1. Introduction

The last 30 years have witnessed a burst in trade and capital account liberalization. For instance, according to Wacziarg and Horn Welch (2003) the percentage of countries open to trade increased from 16 to 73 percent between 1960 and 2000, and Edwards (2004) reports that the degree of capital mobility has increased in all regions of the world between 1970 and 2000. Also, as we will show later, in our sample of 108 countries for the 1970-2003 period, the number of countries that allow free trade grew from 24 to 88 in the case of goods, and from 10 to 47 for capital.

A number of studies have attempted to document the real effects of international integration (Sachs and Warner (1985), and Quinn (1997), among many others). The benefits on the aggregate of lifting barriers to trade and capital flows, and particularly the latter, are still debated. Indeed, the disparate performance –both in terms of the effects on growth and the continuation of the reform process- of many middle-income countries that liberalized since the late 1980s precipitated research on the question of weather international integration has different effects across countries with dissimilar domestic institutional quality (Rodrik (1999)). A related angle is the impact that integration can have on the development of local institutions (see Rodrik (2000), Levine and Schmukler (2005), and Klein and Olivei (1999)). As more and more research points to the importance of institutions for growth (see Acemoglu et al (2005) for a review of the literature), determining the way the massive process of integration might interact with these becomes essential.

This paper explores the question of how international integration affects the role of one particular institution that has been shown to be quite important for growth: the development of the financial system (see, for instance, King and Levine (1993), Demirguc-Kunt and Maksimovic (1998), Rajan and Zingales (1998), Jayaratne and Strahan (1996)).

Whether international integration and domestic financial development are substitutes or complements is in the end and empirical question that is quite important in designing the reform process. A few papers have looked at this question from the perspective of whether the level of financial development affects the relation between capital account liberalization and average growth across countries (see Kraay, 1998; and Arteta et al., 2001). Others have focused on documenting the relation between policies and outcomes in the integration front with those related to the domestic financial system. For instance, Aizenman and Noy (2004) and Ito and

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Chinn (2004) look at whether trade openness leads to financial openness and vice versa, and at the relation between financial openness and domestic financial development.

Our approach is different. Instead of relating openness to domestic finance directly, we look at whether international integration affects the *importance* of the domestic financial system for economic growth. In that sense we complement the existing literature by saying something about why these two reforms might be related. Theoretically, the relation between trade and capital account liberalization is not a simple one. On one hand, integration raises new investment opportunities and calls for capital reallocation, both of which would make domestic financial development more relevant. On the other hand, integration could allow some –the tradable sectors, in particular- to gain greater access the international capital markets, making the local financial system less relevant.

We first use cross country data to show that the real effects of financial development on growth are much stronger when a country is closed to both trade and capital flows. In fact, the real effects of domestic financial development are largely insignificant in countries that are open in both dimensions. We next use sectoral data to explore the causes of this differential effect of financial development across regimes. We find that financial development has a relatively smaller effect on tradable sectors, especially so when a country is open to both trade and capital flows. So, our sectoral results indicate that the small real effect of financial development in countries that are open to trade and capital flows is probably the result of the irrelevance of domestic financial development for tradable sectors when a country is integrated with the global economy.

We build on our results on the relative importance of domestic financial development for tradable sectors across regimes to explore the implications for the sequencing of reforms. As domestic financial development is less important for tradable sectors when a country is open to trade and capital flows, the demand for domestic financial liberalization may be significantly weakened once a country is completely open if the tradable sector is relatively large. We find some evidence in this regard: when capital account liberalization has already occurred the chances that a country liberalizes its domestic financial sector are increasing in the size of the non-tradable sector. In other words, if a country liberalizes the capital account before engaging in domestic financial liberalization, the non-tradable sector has to be relatively large for the latter to effectively happen.

Our aggregate analysis of the impact of integration on the real effects of financial development is related to the papers that have studied the interaction between financial development and capital account liberalization that we cited above (Kraay, 1998; and Arteta et

al., 2001). There are however several differences between these papers and our analysis. First, these papers focus exclusively on capital account liberalization, while we look at the overall integration process (both in goods and capital markets). Second, the evidence presented in this literature comes almost exclusively from cross-section regressions of a country's average growth over a given period of time on its level of capital openness and the interaction of this level with a measure of the country's degree of financial development, thus treating capital openness as a continuous variable and exploiting its cross-country variation for identification. Instead, we treat the different dimensions of openness as defining regimes in a discrete fashion, therefore exploiting large and persistent differences in these variables within and across countries, and rely extensively on the within-country, time series dimension of the data for identification. The use of the time dimension is important because it is easy to show that if the underlying model is state dependent, as assumed in this paper and implicitly assumed in the literature cited above, time-dependent aggregation can result in important biases.[1] Nevertheless, it is useful to notice that, despite these differences, our results are qualitatively similar to those reported by Kraay (1998), who obtains a negative sign for the interaction between financial development and openness in growth regressions.[2]

Our look at the differential effect of financial liberalization for tradable and non-tradable sectors is related to Tornell, Westerman and Martinez (2003), and Ranciere, Tornell, and Westerman, (2003, 2006). Their focus on crises and financial development -arguing that financial development spurs growth by inducing firms to take credit risk, which unavoidable results in sporadic crises- is rather different. Still, our results on the greater importance of financial development for non-tradables are consistent with, and significantly expand theirs by showing how this effect varies across openness regimes, and then linking this to the sequence of reforms. Moreover, our empirical design –the use of industry-level data- provides us with many more degrees of freedom to tackle the issue.

In the next section we measure the trade, capital, and financial liberalization. Section 3 determines whether the effect of financial development on growth varies across integration

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[1] The bias will depend on the fraction of the period in which countries in the sample are closed (or financially underdeveloped, depending on the specification) and on the cross-country variation in the level of financial development (or capital openness) in closed versus open countries (financially developed versus underdeveloped). The largest the fraction of the period in which countries were closed, the most likely is that the bias will result in attenuation. This may partly explain, for instance, Arteta et al. (2001) findings that capital openness had a significant impact on growth only in the latter part of their sample.

[2] It is difficult to compare our results with those of Arteta et al. (2001) because they do not include the level of financial development as a control in their regressions. Thus the interaction coefficient may be capturing the positive level effect of financial development on growth. However, at least in one period they do report a negative sign for the interaction between financial development and capital openness.

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regimes both across and within countries. We find that indeed, it seems to matter mostly when countries are not integrated. Section 4 explores industry data and shows that the former result is mostly due to the fact that tradables seem unaffected by domestic financial development when the economy is integrated. Section 5 explores what these results can tell us about the sequencing of reform in a political economy context. We conclude in section 6.

2. Measuring the Timing of liberalization

Determining the real effects of domestic financial development across different stages of liberalization requires first to determine whether a country has liberalized trade or capital flows at each specific date. Of course, although in many cases the effective integration to goods and capital markets was very likely a discrete event following legal changes, in general it needs not be. Legal liberalization is not the only potential cause of integration. Also, even if the liberalization is what leads integration, the process can be gradual. Moreover, the degree of integration is most likely a continuum. By using de-jure measures we assume that liberalization has an effect on effective integration, and by splitting the data into regimes that there are discrete differences in integration. We do this for several reasons. First, the data that proxy for the degree of integration is very noisy and using them directly would significantly decrease the power of our tests. Second, one of our main motivations is to understand the impact that *persistent* changes in the degree of international integration have on the role of domestic institutions instead of determining the marginal effect of an increase in openness in countries with different institutional settings. Finally, we also want to explore the link between the effects of opening up to trade in goods and capital and the sequencing of legal reform. In section 4 we somewhat relax the assumption that legal changes are related to effective changes in integration and classify the data according to de-facto measures of openness.

In the case of trade we rely on the liberalization dates estimated by Sachs and Warner (1995) and extended and updated by Wacziarg and Horn Welch (2003), which is the most comprehensive set of dates available in the literature. This measure, based on a number of (mostly) de-jure indicators in each country and available for 141 countries, has been used extensively in the trade and growth literature.

For capital flows the choice is not as straightforward because there are few studies that have compiled liberalization dates for a comprehensive sample of countries and even less agreement on what the most appropriate measures of the extent and intensity of capital controls

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are.[3] For instance, Tornell et al. (2003) use de-facto net capital inflows during the period 1980-1999 to estimate liberalization dates for a sample of 33 countries. They estimate these dates by looking at structural breaks in the series of net capital flows using the CUSUM test and country-by-country observation to back out the beginning of the break. The de-jure approach has been used by Bekaert et al. (2000), who -based on a variety of sources- determine the dates of official stock market liberalization, the date of the first time a local firm places an ADR in international stock exchanges, and the date the first country fund is listed in the U.S., for a sample of 43 countries.

We do not use these existing estimates of capital account liberalization because none of them gives us both extensive coverage and the broad definition of liberalization we need. Instead we build our own estimates focusing on de-jure restrictions to capital flows in order to determine the liberalization dates of different countries. For this purpose we use the index of capital account openness computed by Ito and Chinn (2005). This is the most comprehensive set of de-jure indicators of capital account restrictions currently available. This index corresponds to the principal component of four indicator variables capturing the presence (absence) of multiple exchange rates, restrictions on current account transactions, capital account transactions, and requirements to surrender export proceeds. We estimate the liberalization date of each country by determining the first year in which there is a significant break in the index that shifts its long term average from below to above zero (which is the mean of the index). Closing dates were estimated similarly by looking at persistent downward shifts in the series. Countries whose index was always above zero were considered as always open and countries whose index did not experience a break leaving it persistently below zero were classified as always closed. A detailed description of the procedure followed to compute the liberalization dates is given in Appendix 1.

The trade and capital account liberalization dates estimated for the 108 countries included in the sample are reported in Table 1. As seen in column 1, almost half the countries (52) did not liberalize capital between 1970 and 2003, 10 countries were liberalized during the whole period, and 9 countries experienced reversals from liberalized to non-liberalized. For the rest (37 countries) a unique liberalization date was identified. Column 2 shows that in the case of trade liberalization there are only 20 countries that were still closed as of 2003, while 24 were open at the beginning of the period and remained so.

Notice also that the fact that trade liberalization has typically preceded capital account liberalization seems to be well established in the data. Of the 73 cases in which there were no

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[3] See Chin and Ito (2002) and references therein for a discussion on various measures of capital controls.

reversals and had liberalized at least one of the two dimensions during the period (i.e. excluding those cases that were liberalized or closed in both dimensions during the whole period), in 68 cases trade liberalization occurred before capital account liberalization. This can also be seen in looking at the fraction of the sample countries that were liberalized trade and capital each year. Trade liberalization peaks much earlier than capital account liberalization. By 2003 eighty-one percent of the countries in the sample had liberalized trade, while only 51 percent had done so with capital flows. This difference is twice as large as the difference at the beginning of the period -where 15 percent of the countries had liberalized trade versus 28 percent of the countries that had liberalized capital.

The Sachs and Warner (1995) dates have been extensively used in the literature and therefore we do not delve deeper into it.[4] However, our estimate of the capital account liberalization dates deserves some further discussion. As expected given the way they are computed, our liberalization dates explain most of the time series variation in the Ito and Chinn index of capital account openness –70% of the time-series variation on the average country. Our dates are also significantly positively correlated with other existing liberalization dates. For the countries included in our sample, the correlations with the Tornell et al. (2003) index of capital account liberalization and the Bekaert et al. (2003) index of stock market liberalization are 0.48 and 0.46, respectively. Both figures are significant at the 5 percent level.

The liberalization dates also have large explanatory power over de-facto capital flows. In unreported results, we ran two simple regressions of the log gross capital flows to GDP (obtained from Lane and Milessi-Ferreti (2005)) on the capital account liberalization dummy. The coefficient on our liberalization dummy turned out to be positive and significant at the 1 percent level no matter what controls we included. It was also quite similar across the specifications, implying that capital account liberalization increases gross flows to GDP by about 20 to 30%[5].

Using our estimated trade and capital account liberalization dates, we classify country-years into four possible *Regimes* according to the number of dimensions (trade and capital account) that are liberalized in that particular year. At a given year, a country is in *Regime 1* if it is closed to both trade and capital flows, in *Regime 2* if it is open only to trade (but closed to capital flows), in *Regime 3* if only the capital account is liberalized, or in *Regime 4* if both trade flows and the capital account are liberalized. To avoid the problems associated with transitions, as well as to account for uncertainty on the exact liberalization dates we drop from our analysis

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[4] See Wacziarg and Horn Welch (2003) for a discussion.
[5] These results are included in the working paper version of the paper.

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those years corresponding to a 5-year window around a regime transition (i.e. from 2 years before to 2 years after the transition). The most frequent regime is Regime 1, with almost twice as many country-year observations as Regimes 2 and 4 (1,218 vs. 525 and 693, respectively). This is not surprising considering that most of the countries are in this regime at the beginning of the sample and shift to another regime as time goes by. The least frequent regime is Regime 3, with only 78 country-year observations corresponding to just 11 countries. Most of these observations correspond to countries that temporarily opened their capital accounts in the late 1970s before being classified as open to trade, or that temporarily imposed restrictions to trade flows (e.g. Guatemala, Honduras, Haiti, and Venezuela). As we have seen, most countries open to trade before liberalizing capital flows. For this reason, and considering that the small number of countries that are ever in Regime 3, we drop this regime from our empirical analysis. However, as it is explained later, this decision is only motivated by consistency and does not materially affect the conclusions of the paper.

Although the main focus of this paper is the effects of trade and capital account liberalization on the importance of financial development, in section 5 we will explore the consequences of our results for the sequencing of reform, specifically for the impact of capital account liberalization on the future undertaking of domestic financial reforms. To this end, we also estimated dates of domestic financial liberalization for the broadest sample of countries possible. Unfortunately, there is considerably less comprehensive data on this aspect of liberalization. We construct our dates based on the Abiad and Mody (2005) indices of financial liberalization, the dataset with the broadest coverage we are aware of. These data include indexes for five characteristics of the domestic financial markets: (i) credit controls, (ii) interest rate controls, (iii) entry barriers, (iv) quality of regulations, and (v) privatization. Each of these indices can take values between zero and three, with zero corresponding to being fully repressed, one to partially repressed, two to largely liberalized, and three to fully liberalized.[6]

We estimate the dates of liberalization in two different ways. The first measure uses the same procedure we employed to estimate the dates of capital account liberalization. To apply this procedure we first construct a measure of overall domestic financial liberalization by adding the indices corresponding to the five dimensions mentioned above. By construction, therefore, this index will take values between 0 and 15. We then looked for the first significant break in the series in a similar fashion as described using a value of 5 as threshold, which is the median value

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[6] Consistently with the underlying series used to build the dates of capital account liberalization, the Abiad and Mody (2005) indices capture de-jure restrictions.

of the index across countries and years.[7] Our second measure builds a simple index that considers a country financially liberalized if (i) credit controls and the interest rate controls have been at least largely liberalized, and (ii) the country is at least partially open in the other three dimensions. As noted by Abiad and Mody (2005), credit and the interest rate controls are the most frequently used indicators of domestic financial repression, and quite likely the most important ones.

We were able to estimates these dates for 33 countries. These are reported in columns 3 and 4 of Table 1. The liberalization dates obtained with these two definitions are highly and significantly correlated (correlation of 0.85, significant at 1 percent level). Both help explain most of the within country variation of the underlying index (58 and 78 percent respectively). Moreover, both have a significant positive effect on de-facto financial development within countries based on regressions of (log) private credit (as a fraction of GDP) on each index (not reported). The economic effect is, again, also relevant: domestic financial liberalization is associated with an increase in private credit to GDP of between 15 and 30%.

3. Financial development and growth across open and closed countries

Cross country evidence

We first estimate the impact of financial development on growth using the following cross-sectional specification:

$$g_i = \alpha\, y_{0i} + \beta\, FD_i + \gamma' X_i + \varepsilon_i, \tag{1}$$

where g_i is the average GDP per capita growth rate of country i, y_{0i} the (log) initial level of GDP per capita, FD_i is the corresponding average level of private credit to GDP, and X_i is a conditioning set that includes average CPI inflation, government expenditure, volume of trade to

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[7] We also used a value of 7 as threshold, which is the median of the index in the second half of the sample. Although by construction liberalizations estimated using 7 as a threshold occur later than those estimated using 5, the results we report later were not importantly affected by this choice.

GDP, black market premium, and initial schooling[8]. This is Levine et al. (2000)'s benchmark specification[9].

Our data on real GDP per-capita adjusted by Purchasing-Power Parity (PPP) were obtained from the Penn-World Tables (version 6). Financial development corresponds to private credit by banks and other financial institutions and comes from Beck et al. (2004, 2006). Data on inflation, government expenditure, and openness were gathered from World Bank (2006) World Development Indicators; schooling comes from Barro and Lee (2000), and data on black market premium is from Global Development Network Database. The details of the construction of the different variables and data sources are reported in Appendix 2.

We first estimate the parameters by pooling the data for all the liberalization regimes. In this case the different variables are computed over the whole period in which data are available for a given country. We also estimate three separate regressions where the variables are computed over those years corresponding to each possible regime in which a country can be at each point in time according to whether its current account or capital account is open or closed (excluding regime three because of the small number of country-years classified in this regime).[10] These different regressions will thus indicate the overall effect of financial development on growth and its effect within each regime.

The parameters of each of the five regressions are estimated by OLS and by 2SLS -where financial development (*FD)* is instrumented by a country's legal origin in order to address potential endogeneity concerns. The results obtained by OLS are reported in Table 2. The table shows a positive and highly significant effect of financial development on growth for the overall sample (column 1). The economic significance of the coefficient is also consistent the results previously reported in the literature: an exogenous increase in financial development from the average level of Colombia (0.25, which corresponds to the median average level in our sample) to

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[8] The black market premium was used by Sachs and Warner (1995) as a criterion to establish the liberalization dates, which could raise some concerns on the use of this variable as a control. Of course the same applies to the volume of trade. These variables are included just to make the specification fully comparable to the ones reported in Levine et al. (2005) but the results are robust to dropping them from the control set.

[9] It might be argued that what matters for long term growth is the availability of long term credit, which may not be appropriately captured by the ratio of private credit to GDP. The reason to use the latter as a measure of financial development is that it is standard in the literature, and that there is no widespread data on the composition of credit across countries that would allow us to decompose this measure according to maturity.

[10] We have 11 countries that are at some point in this regime, so our conditional regressions have just one degree of freedom. Although we could later include this regime in the panel regressions we prefer to drop it completely from the analysis for consistency. Nevertheless, the main conclusions of the paper are not affected by this choice.

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the average level of Australia (0.45, which is the 75th percentile of the average level of financial development in our sample) would have resulted in an increase of around 0.8 percentage points in Colombia's annual GDP growth.

However, financial development has a significant impact on growth only when a country is in Regime 1- that is when is closed to both trade and capital flows (column 2). When a country is open to trade (column 3) the coefficient is still positive but not statistically significant and much smaller. A similar pattern is observed when a country is open to both trade and capital flows (Regime 4). Interestingly, the point estimates are decreasing in the number of dimensions that a country has liberalized, which suggests that each different dimension of opening decreases the real effects of financial development. Columns 5 to 8 run the same regressions, but this time restricting the sample to include only those countries that engaged in the liberalization of either trade or capital flows during the sample period (i.e. dropping those countries that were permanently in the same regime). The general pattern is similar. The sample is reduced importantly, so the results should be taken more cautiously than those previously reported, however. Financial development has a large, positive impact across regimes and this is mainly driven by its impact on countries that are closed to both trade and capital flows. This exercise confirms that the general result is not just driven by systematic differences between liberalizing and non-liberalizing countries. The results are not driven by differences in the typical length of the periods involved in the within regime regressions either. There are many more country-years in Regime 1 than in the other regimes, which is largely due to the large number of closed countries at the beginning of the sample period. If this translated into countries having longer spells within Regime 1 and financial development mattered mostly in the long run, we could therefore explain our findings. To check for this possibility we run similar regressions than those reported in columns 1 to 3 of Table 2 restricting the sample to include just the post-1980 period. This significantly shortens the length of the spells that countries spend in Regime 1. The results (not reported) are completely analogous, both qualitatively and quantitatively.

Figure 1 presents the partial regression coefficients between financial development and growth for the whole sample and the different regimes reported in Table 2. The different slopes do not appear to be driven by a few outliers but rather seem to reflect a robust pattern in the data. It can be clearly seen that the relation between financial development and growth is much sharper when countries are closed to both trade and capital flows. The result for the whole sample is driven by this sub-sample plus the variation across regimes.

The results obtained with 2SLS are similar to those obtained with OLS, as it can be seen in Table 3, which reports the parameters obtained when financial development is instrumented by a country's legal origin as it is standard in the literature and the additional control variables are replaced by their initial values within each regime to reduce endogeneity concerns.[11] Financial development still has a significant, positive impact overall. The economic magnitude of the effect is somewhat larger than before. Again, across regimes we observe a positive significant relationship only among countries that are closed to both trade and capital flows. In this case, however, the point estimates are not decreasing with the number of dimensions that have been liberalized as it was the case in the OLS regressions. When we restrict the sample to include only those countries that liberalized some dimension during the sample period we find that the legal origin dummies are extremely poor instruments, and private credit is not statistically significant either overall or in any regime (not reported). It seems therefore that the explanatory power of these instruments stem mainly from the differences between countries that are permanently open or closed. Below we exploit the panel dimension of the data to address endogeneity concerns within this sub-sample. As before, we also checked that differences in the typical length of the periods involved in the within regime regressions are not driving our results in the IV regressions. We restricted the sample to include only post-1980 years before forming the within-regime, cross-country regressions. Again, the results indicate that this is not a mayor problem (not reported).

Finally, in order the check the sensitivity of the results to the choice of using de-jure measures of trade and capital liberalization we classified each country-year observation using the series of volume of trade to GDP and gross international financial position to GDP (the sum of the absolute value of foreign assets and international liabilities, from Lane and Milessi-Ferreti, 2006). We think this way of measuring openness has a number of drawbacks. First, the endogeneity issue is more problematic when using de-facto measures. Second, the changes in the levels of the underlying variables may be due to many reasons not related to openness (such as changes in terms of trade, collapses of GDP, etc.) that we would not necessarily like to associate with a change in regime. In fact, the annual data is so noisy that most of the statistic methods for finding breaks were not very useful. The starting point for the estimation of the breaks was the Berg et al. (2006) implementation of Bai-Perron (2003)'s test[12]. Despite these drawbacks and the

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[11] This replicates the procedure used in Levine et al. (2000)

[12] In particular, we used an intersticial value of 5 and kept the breaks that were significant at a 25% confidence. Among these, we kept the breaks in which the difference in the rate of growth of the series was larger in absolute value than 2% for trade and 5% for capital. We then visually excluded the all the breaks

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noisiness of the estimation of the regimes, Table 4 shows that the basic message is unchanged: financial development has a significant effect on growth only in regime 1, that is, when countries are closed in both dimensions. Given that the estimated dates using the de-jure and the de-facto mechanisms are not exactly the same, these results also suggest that small changes in the dates are not material for the conclusions drawn.

 Evidence from panel data

Table 5 presents the panel results obtained using the system estimator for dynamic panels developed by Arellano and Bond (1991) and Bond and Blundell (1998) to control for the potential endogeneity arising from reverse causality between financial development and aggregate growth. The specification we estimate in this case corresponds to:

$$g_{i,t} = \alpha y_{i,t-1} + \beta FD_{i,t} + \gamma' X_{i,t} + \eta_i + \theta_t + \varepsilon_{i,t} \tag{2}$$

where $g_{i,t}$ is the average growth rate of country's i real GDP per capita (PPP adjusted) during period t, $y_{i,t-1}$ is the log of its real GDP per capita at the beginning of period t, and $FD_{i,t}$ is its average level of private credit to GDP during period t. $X_{i,t}$ is the same set of controls described in (1), but now the values correspond to the average over period t, except for schooling, which corresponds to the value at the beginning of each period. Finally, η_i and θ_t are country and period fixed effects respectively. The periods t correspond to 1971-1975, 1976-1980, 1981-1985, 1985-1990, 1990-1995, and 1995-2000. Notice that this specification is identical to the system estimator of Levine et al. (2000).

The results reported in Table 5 confirm those obtained in the cross-country dimension. Column (1) of the table shows that financial development has a positive significant effect on growth, and the control variables have the expected signs. However, when looking at the relation between financial development and growth across different regimes we find again that financial development has a positive significant impact only during years in which a country is closed to both trade and capital flows. When a country is either open to trade or capital the estimated coefficient is positive but not statistically significant, and much smaller. Importantly, these results

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that were not deemed to be persistent and economically significant. Further details are available from the authors upon request.

were obtained exploiting the within-country time-series dimension of the data (as they control for country fixed effects).[13]

We obtained similar results when using the sample of countries that engaged in liberalization within the sample period (not reported). The coefficient of private credit was again significantly positive for countries that are closed in both dimensions and significantly smaller for countries that are open in either one of them. As before, the Sargan test could not reject the hypothesis of correct specification for a wide margin. These results therefore indicate that the finding that financial development has a larger and stronger impact on growth among countries that are closed to both trade and capital flows is not driven just by the difference between countries that are permanently closed and permanently open. Within countries, financial development is much more important before engaging in liberalization.

Despite the evidence presented in section 2 that our liberalization dates are economically meaningful, we are aware of the fact that there is no consensus on when a country should be considered as liberalized (or for that matter on the concept of liberalization itself). Equally reasonable procedures could produce different liberalization dates for some countries. Although our precaution of excluding the 5-year window around the transition year partially addresses the issue, we check that our results are not crucially tied to our particular dates, but are instead determined by the broad differences in openness observed within and across countries. We looked at the relation between financial development and growth across regimes defined using some of the liberalization dates available in the literature. As mentioned above, the main problem with this exercise is the limited coverage of the existing dates, both in terms of the number of countries and time period. We address this problem by using the alternative liberalization dates when available and complementing them with our dates when not. In this way, we are at least extending the coverage in a way that makes the results comparable to our benchmark regressions in terms of the sample of countries involved. Our test therefore determines whether replacing our estimated dates by other existing in the literature (and restricting the sample period to that over which the other dates are available) affects our findings significantly. We conducted this exercise for the Tornell et al. (2003) trade and capital account liberalization dates, and the Bekaert et al. (2000) dates of the official liberalization of stock markets. As Bekaert et al. (2000) does not focus on trade liberalization, we defined the regimes using their dates of stock market liberalization (when available), and our trade liberalization dates. The overall pattern remained unchanged, with

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[13] The results reported correspond to the standard two-step estimator, which is the one used by Levine et al. (2000). If we instead used the robust two-step estimator we only get a significant coefficient for Regime 1, and not for the overall regression.

financial liberalization having a larger effect on closed economies. The coefficient for open economies is was statistically significant, but still much smaller than the one in Regime 1.[14] Therefore, changing our specific dates for the sample of countries for which there are alternatives available do not seem to affect the main findings of the paper.

4. Why is financial development more important in closed economies?

From a theoretical perspective, the development of domestic financial markets can affect a country's growth rate because it increases the access of local firms with good investment projects to external funds with which to finance them. It does so by relaxing information asymmetries, mobilizing savings, and pooling risks (see Levine (1998) for a discussion of the various links between finance and growth). Arguably, this link may be weaker if domestic firms have access to other sources of funds. This observation has been, at least partly, behind the literature on capital account liberalization and growth (Eichengeen (2003), Bekaert et al. (2005), and Galindo et al. (2002), among others). In this literature, capital account liberalization has an impact on growth because it helps domestic financial markets to develop or because it provides firms with direct access to international financial markets where they can tap for funds, leapfrogging the domestic financial system. Of course, not all firms may be able to tap international markets for their financing needs. Even in the most developed financial markets, information asymmetries between borrowers and lenders lead to financial contracts that require the borrower to participate in the financing of the project and/or pledge some collateral that can be seized in case of default (see, for instance, Fazzari et al (1988), Rajan and Zingales (1995), Braun (2003)). This is a crucial observation because the ability of domestic firms to pledge collateral in international financial markets will vary with the type of goods they produce. While firms producing tradable goods that are exported to international markets can easily pledge their export receipts as collateral for international loans, this option is closed to producers of non-tradable goods. In other words, firms in tradable sectors typically have more "international collateral" than non-tradable firms (see Caballero and Krishnamurty (2001)).[15]

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[14] As it was the case with the benchmark regression, if the robust two-step standard errors are used instead of the un-corrected ones, only the coefficient of Regime 1 remains significant. The results are reported in the working paper version.

[15] Tornell and Westermann (2003) present some micro evidence consistent with this idea. They show that in a sample of mostly open middle-income countries, firms in non-tradable sectors were more likely to report that finance was a major obstacle for running their businesses.

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Although non-tradable producers can use other avenues to access international financial markets, other things equal we would expect capital account liberalization to help relatively more those firms in sectors producing tradable goods and therefore make the development of domestic financial markets less relevant for these firms. It is easy to see how this could explain why the relation between domestic financial development and growth is weaker when a country is open to trade and capital goods. Before trade liberalization all sectors are effectively non-tradable. Trade liberalization makes the tradable and non-tradable goods practically different in terms of their ability to pledge international collateral; whether this difference results in increased access to international financial markets will depend on whether it is possible to circumvent restrictions on capital flows. Finally, capital account liberalization makes this circumvention unnecessary and facilitates the access of tradable good sectors to international financial markets, making the domestic financial system less relevant for the development of these sectors.

Of course, it is also possible that capital account liberalization may ease the access of non-tradable sectors to international financial markets, as it has been the case with major utilities companies, so the relevance of the argument above is an empirical question. In what follows we check the empirical relevance of this argument by formally testing the hypothesis that domestic financial development affects relatively more the growth of non-tradable sectors when a country is open to trade and capital flows than when a country is closed in both dimensions.

To test this hypothesis we use disaggregated data on real value added growth for six broad sectors that comprise total GDP: (i) Agriculture, Forestry, and Fishing; (ii) Mining and Quarrying; (iii) Manufacturing; (iv) Utilities; (v) Construction; and (vi) Services. The data come from the World Bank, World Development Indicators (2005), and corresponds to an unbalanced panel covering the period 1970-2003 for the 108 countries listed in Table 1. The criteria to include the countries in the sample was that they had to had data on real value added growth for at least one tradable and one non-tradable sector, and domestic financial development for a period of at least 10 consecutive years. As before, financial development is measured as the ratio of private credit by domestic banks and other financial institutions to GDP and was obtained from Beck et al. (2003). The details of the construction of the different variables are reported in Appendix 1. With these data we estimate the parameters of the following specification:

$$g_{i,c,t-\tau,t} = \theta_{i,c} + \theta_{c,t} + \alpha\, y_{i,c,t-\tau} + \beta\, T_i \times FD_{c,t-\tau,t} + \gamma'\, T_i \times Z_{c,t-\tau,t} + \varepsilon_{i,c,t} \qquad (3)$$

where $g_{i,c,t-\tau,t}$ is the average growth rate of real per-capita value added in sector i, in country c, during the period t-τ, and t, with τ equals to 5 years, $y_{i,c,t-\tau}$ is the (log) of real per capita value

added of the same sector in year $t-\tau$, which controls for convergence effects, T_i is a dummy variable that indicates whether a sector is tradable or non-tradable a priori, and $FD_{c,t-\tau,t}$ is the average level of private credit to GDP in country c during the period $t-\tau$, and t. $Z_{c,t-\tau,t}$ is a set of other country level variables that can have a differential effect on tradable and non-tradable goods, including the average real-exchange-rate appreciation or the occurrence of crises during the period (see Tornell et al. (2003)), and which we may want to control for. $\varepsilon_{i,c,t}$ is the error term, which by reasons we discuss below we allow to be serially correlated. α, β, and γ' are parameters, and $\theta_{i,c}$ and $\theta_{c,t}$ are country-industry and country-year fixed effects respectively. The presence of these fixed effects means that our estimators will be based on the within-country, across-industries, time-series variation of the data. In other words, with these fixed-effects we are controlling for the fact that some industries grow relatively faster in some countries for structural reasons related with resources endowments, comparative advantages, institutions, etc. We are also controlling for all other country-level, time-varying factors that have common effects across the tradable and non-tradable industries. In this way, our estimator only relies on the differential effect of some country-level variables across industries and time.

To maximize the use of the time-series content of our regression we follow Bekaert et al. (2001, 2005) and estimate the parameters using overlapping data. We correct for the serial correlation introduced by this approach by clustering the errors at the country-industry level. In this way our estimators are based on all the possible 5 year averages contained in the data, and therefore do not depend on the specific periods used to cut the sample, as it may be the case with non-overlapping data.

We estimate the parameters of equation (3) separately within each regime defined by the dimensions in which a country is liberalized at a given date. As before, we drop the transition years from the estimation (averages corresponding to the 5 year window around the liberalization date) to allow for uncertainty in the specific liberalization years. According to the hypothesis that financial development matters relatively less for tradable goods when a country is open to trade and capital flows than when it is closed in both dimensions, the parameter γ should be significantly negative in the former regime but non-significant in the latter.

Preliminary results

Before reporting the results obtained for equation (3) we present first a series of regressions that provide a useful background for our test. Columns (1) and (2) of Table 6 show the results of OLS

regressions of sectoral growth rates on financial development pooling all regimes together, without and with controlling for other determinants of sectoral growth and including country-industry and year fixed effects. The coefficients reported there therefore correspond to the unconditional and conditional average correlation between financial development and sectoral growth in our sample, and establish the baseline for our estimator based on the differential effect across sectors (akin to a differences-in-differences estimator). More precisely, the estimated regression corresponds to

$$g_{i,c,t-\tau,t} = \theta_{i,c} + \theta_t + \alpha\, y_{i,c,t-\tau} + \beta FD_{c,t-\tau,t} + \gamma' X_{c,t-\tau,t} + \varepsilon_{i,c,t} \tag{4}$$

where the notation is the same as in equation (3) but we have replaced the country-year fixed effect $\theta_{c,t}$ by a year fixed-effect θ_t in order to estimate the average effect of financial development (otherwise country-level variables are partialled-out by the fixed-effect). Also, here we control by X which includes variables that affect the average level of growth, instead of Z which includes only those that are expected to have a differential effect across sectors. The conditioning set X includes the same variables used to control the cross-country regressions. The results show that both the conditional and unconditional effects of financial development of sectoral growth are positive and significant. The magnitude of the coefficient is also similar to that obtained using aggregate data, which establishes that the average relation between financial development and growth in our sectoral data is similar to the one reported in section 3.

Columns (3) to (4) report the differential effect of financial development on tradable sectors when pooling all regimes together. As we are looking at the differential effect, we include the country-year fixed effect to control for all country-level determinants of country-level growth (both fixed and time varying). The results show that, overall, financial development affects relatively more the growth of non-tradable sectors, which is consistent with the hypothesis that these sectors are on average more dependent on domestic financial conditions. The result holds both for the unconditional regressions and for the regressions controlling by the differential effect of average real exchange rate depreciation and crises on tradable goods. The magnitude of the coefficient is also economically meaningful, as it can be quickly seen by comparing it with the coefficient of the average effect of financial development. An exogenous improvement in financial development that moved an open country from the median level to the 75th percentile of the distribution of average private credit (roughly the difference between Colombia and Australia) would increase growth in non-tradable sectors by 0.6 percentage points more than in tradable sectors.

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We also estimated the differential effect of financial development on growth across regimes based on sectoral data (not reported[16]), using both the conditional and unconditional specifications. Again, the results clearly showed that the relation between financial development and sectoral growth is much stronger when a country is closed to both trade and capital flows than in the other regimes.

Main specification

After establishing that financial development matters on average in this sample, that its effect is more important when countries are closed to both trade and capital flows, and that on average it benefits relatively more non-tradable sectors, we test the hypothesis that the impact of financial development on tradable sectors' growth is weaker in open economies than in closed ones by estimating the parameters of equation (3). The results are reported in Table 7.

Columns (1), (3), and (5) show the parameters obtained without controlling for other variables that can have a differential effect on tradable sectors. The results indicate that the coefficient of the interaction of the tradable dummy with financial development is negative in all regimes, but it is statistically significant only when a country is open to both trade and capital flows (Regime 4). The point estimates are also increasing in absolute value with the dimensions that have been liberalized. The coefficient in economies that are closed only to capital flows is twice as large as in economies that are closed in both dimensions, and the coefficient in economies that are open in both dimensions is also twice as large as in countries that are open only to trade. This suggests that the progressive liberalization increasingly reduces the importance of the domestic financial system for tradable sectors. However, although the coefficient of the interaction is larger and statistically significant only when a country is open to both trade and capital, the large standard errors of the coefficient estimated in countries that are closed in both dimensions do not allow us to reject the hypothesis that the difference between the coefficient for open economies and closed economies is zero at standard confidence levels. Nevertheless, by looking at one sided tests, we find that while we cannot at all reject the hypothesis that the coefficient for closed economies is larger than for open economies, we can reject the hypothesis that the former is smaller than the latter at the 20 percent level.

Columns (2), (4), and (6) show the parameters obtained when controlling for the average real exchange depreciation and by a dummy variable that indicates whether there is a crisis in the period. These variables have been previously used in a similar setting by Tornell et al. (2003). By

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[16] The results are available in the working paper version of the paper, Table 8.

including these variables we want to control for two main things. First, crises might be more likely to happen in open countries[17], and that might be driving our results either directly or via the effect of changes in the real exchange rate on the growth of tradables vis-à-vis nontradables. Second -and more generally- tradable firms may not be particularly affected by financial underdevelopment and have greater access to international markets when the country is open just because they face the right relative prices, that is because their investment opportunities are better.

In the regressions, a crisis is defined as a 5 percent decline in real GDP, but similar results are obtained when considering 2 percent declines or just a decline to define crises years. We see that the results are similar to those reported before. The coefficient for the interaction between the tradable dummy and financial development is always negative but larger and significant only when a country is open in both dimensions. We also find that real exchange rate appreciations are beneficial for tradable producers only when the economy is open to trade. Crises seem to hit the non-tradable sectors harder, but the coefficient is only significant when a country is open to trade. Although the difference in the coefficients across regimes is sharper than in the unconditional regressions, it is still the case that the large standard errors of the coefficient estimated for closed economies do not allow us to reject the hypothesis that the coefficient is the same as the one obtained for economies open in both dimensions. Again, the one sided tests cannot reject the null that the coefficient for open economies is more negative than the one for closed economies but reject the null that the former is less negative than the latter at 13 percent confidence level.

Robustness

Table 8 reports some robustness analysis of the main result. Columns (1) to (3) show the results obtained for the differential effect of financial development across regimes when looking only at countries that change regime within the sample period. By doing this we test whether the main result is driven by persistent differences in the sectoral impact of financial development across countries instead of being determined by the regime in which a country is in a particular year in terms of liberalization. The results show again that the effect of financial development on the growth of the tradable sectors relative to the non-tradable ones is negatively significant only in countries that are open to both trade and capital flows, confirming that the main finding of the paper does not depend crucially on the differences between those countries that are always open and those that are always closed. Moreover, the difference between the coefficients is much sharper than the one obtained for the whole sample, and a test of the hypothesis that the

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[17] Unfortunately this cannot be tested directly in our setting.

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difference between the coefficients obtained in closed economies and in open economies is zero can be rejected at the 10 percent level. The corresponding one-sided test of the hypothesis that the difference between these coefficients is greater than zero is now rejected at the 5 percent level.

Columns (4) to (6) show the coefficients obtained when agriculture is dropped from the sample. The reason to explore whether our main result is crucially driven by this sector is twofold. First, in many countries agriculture is a traditional sector where small farmers may have limited access to financial markets and strongly determined by a country's geographical conditions. It might then just be the case that financial development does not matter much for agriculture, which could be a problem if agricultural countries tend to be more open. Second, despite the global tendency towards trade liberalization there are still many barriers to agricultural exports which may limit the access to agricultural producers to international financial markets. If this were the case, the difference between the effect of financial development on other tradable sectors and non-tradable producers in open countries may be even larger than the one obtained when including agriculture. The columns show that dropping agriculture does not significantly change the results either qualitatively or quantitatively. It seems therefore that agriculture is not a special sector in this regard. Finally, Columns (7) to (9) present the regressions obtained after dropping the services sector. We explore the impact of dropping this sector because it includes the financial services sector. Although this sector is typically small compared with the other sectors included in services, we want to dismiss any possibility of a mechanical relationship between financial development and the size of the financial sector driving our main finding. The results confirm that this is not the case. Dropping services does not importantly affect the coefficients, and moreover make the distinction between the coefficient obtained for closed economies and open economies even sharper and significant at the 10 percent level.

Economic Magnitude

Having established that financial development matters less for tradable sectors in open economies, we perform a back-of-the-envelope calculation to determine whether this can, at least partially, account for the diminished role of financial development on growth in open economies. According to our estimates, the coefficient of financial development on growth in closed economies is about 1.2 and not significantly different for tradable and non-tradable sectors. Our estimates also indicate that the difference in the impact of financial development on growth among tradables and non-tradables in open economies is about -1.8. Taking the conservative assumption that the effect of financial development on non-tradables' growth in open economies is the same as in open economies, this implies a coefficient of -0.6 for tradables and 1 for non-

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tradables when a country is open in both dimensions. Considering a share of non-tradables equal to the median share of this sector across countries, which is equal to 0.5, this means that the overall coefficient in open economies should drop to 0.2, which is actually smaller than the coefficient obtained in this case with aggregate data. Therefore, the mechanism that we are describing is indeed quantitatively relevant, and can potentially explain the diminished real effect of local financial development on growth in open economies that we document.

5. Implications for the sequencing of reform

The results reported in sections 3 and 4 provide evidence that the positive link between financial development and growth is weaker in countries that are open to both trade and capital flows than in closed economies, and that the difference could in large part be explained by the fact that when a country is open in both dimensions the local financial system loses relevance for the access of tradable sectors to external finance and growth.

These findings may have repercussions for the sequencing of reform because they imply that tradable sectors may lose interest in reforming the domestic financial market after a country has liberalized both trade and capital flows. Therefore, either for pure demand reasons or for political economy considerations opening the capital account before liberalizing the domestic financial market may reduce the probability that financial reform occurs in the future for a given size of the non-tradable sector. This means that, under the hypothesis that capital account liberalization reduces the incentives of tradable goods producers to push for domestic financial reform, we expect that a larger size of the non-tradable sector would be required to engage in financial reform when a country first liberalizes the capital account than when it does not.

To test this hypothesis we use the estimated dates of domestic financial liberalization described in section 2. We first split the sample into those cases in which capital account liberalization occurs before domestic financial liberalization and those where it occurs after it (the latter also include the cases in which it does not occur at all). Next, in each of these two sub-samples we compare the share of the non-tradable sector among countries that do and do not engage in domestic financial liberalization. In other words, what we do is to compare these shares conditional on having or not liberalized the capital account before engaging in domestic financial liberalization.[18] Having only 29 countries with the required data, we focus on the simple

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[18] Among countries that did liberalize the capital account first we use the share of the non-tradable sector the year of liberalization, while among countries that did not liberalize the capital account before, we use

comparison of means across groups, but also report the differences-in-differences estimator for completeness.

The results of this exercise are reported in Table 9. Panels A and B report the test of differences in means for the share of non-tradable sectors among countries that liberalized capital before finance and those that did not, for each of our dates of financial liberalization. We see that, on average, the share of the non-tradable sector is always larger among countries that liberalize the domestic financial system. However, it is especially larger when the capital account is liberalized before engaging in financial liberalization. Typically, the difference in the share of non-tradables between those that liberalize finance and those that do not is around 4 percent among countries that do not liberalize capital first, and around 13 percent among countries that do liberalize capital first. Moreover, while the former difference is never statistically significantly different from zero, the latter is significant at the 5 percent level (when we use the second way of dating financial liberalization), and the hypothesis that it is less than zero can always be rejected at conventional levels. Comparing panels A and B it is apparent that the main difference lies in the fact that the former measure classifies fewer countries as having liberalizing capital before finance, so that the estimator of that difference is much noisier.

We also explored the significance of the difference in shares across the two sub-samples by estimating the corresponding differences-in-differences regressions (not reported[19]). The share of non-tradables was regressed on a dummy that takes the value 1 if a country does not liberalize capital before finance, a dummy that takes the value 1 if a country liberalizes finance, and the interaction between them. The coefficient on the interaction of the dummies measures the difference in the share of non-tradables between those that liberalize finance and those that do not, with that of countries that do and do not liberalize capital first (the diff-in-diff coefficient). The estimate was negative, but significantly different from zero only at the 15 percent level, which is not surprising considering that the small number of observations (29) reduces the power of the test.[20] As before, in both cases the one-sided test rejects the hypothesis that the coefficient is greater or equal as zero against the alternative that it is less than zero at conventional levels. With the caveat that we have only 29 countries with the required data, the results support the hypothesis that a relatively larger non-tradable sector is required to engage in domestic financial liberalization if a country opens its capital account first.

the share at the year of financial liberalization for countries that do liberalize and the average share over the sample for those that do not.

[19] The results are available in the working paper version of the paper, Table 12).

[20] For instance, the probability of rejecting the null that the parameter is zero if the true parameter were negative and twice as large as the point estimate we obtain would be only 42 percent.

We do not believe our mechanism is the only explanation of the sequencing of reforms. In fact, considerations related to the industrial organization of the banking industry -and the role of government ownership in particular- are probably important[21]. We think a thorough investigation into the matter is out of the scope of the paper. However, we looked at the correlations between the share of the banking system that is owned by the government and the sequencing measures we consider here. The data for government ownership was taken from Barth, Caprio, and Levine (2000) and corresponds to a cross-section of countries for 1995. It turns out that the fraction of nontradables in the economy is significantly negatively correlated with the government ownership of banks (probably reflecting the fact that poor countries tend to have both a lower fraction of tradables and higher government ownership of banks). However, whether the financial sector is liberalized at all and whether it happens after or before capital account liberalization is not significantly related to government ownership. This suggests that, although important, the issue of government ownership of banks is at least not entirely driving our results.

6. Concluding Remarks

The effect of financial development on growth is far from homogeneous across sectors and across international integration regimes. Non-tradable sectors are especially promoted by better-functioning financial systems, and domestic financial development exerts a larger impact when the economies are not integrated to the world. Moreover, while tradables and non-tradables benefit significantly from increased financial depth when the economy is closed to trade and capital, the degree of domestic financial development appears to be irrelevant for the tradables whence the economy is fully integrated to the world.

These results are relevant for both the financial development and the international integration literatures. For the former, this paper qualifies the main result that financial development exerts a causal and significant positive effect on growth, extends the evidence by using data across sectors beyond manufacturing, and shows that local factors –the degree of integration, in particular-significantly change the impact of financial development on growth. Overall, despite the fact that the positive effect of domestic financial on growth is shown not to be always present, the evidence is far from damaging for the case in favor of an important role of finance for growth. Indeed, domestic financial development appeared to matter most precisely when it should: when alternative ways of obtaining financing are not as readily available (when the country is not

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[21] We thank Joshua Aizenman for the suggestion.

integrated internationally), and for those sectors that are most dependent on local financial institutions (the non-tradables). Of course, we recognize that our evidence –as in much of the finance and growth literature- is of indirect nature and so our interpretation should be taken with caution[22].

The fact that the effect of financial development does not affect everybody in the same way – increasingly being documented in the literature[23]- is, in our view, critical for understanding the determinants of financial development. For if everybody is equally affected and the effect is strongly positive, it is hard to explain why some countries have achieved development, while others have not. Our evidence on the role of the size of the non-tradable sector for the chances of liberalizing the domestic financial system when the flow of capital is allowed opens an interesting avenue for further research into the determinants of financial development under a political economy context.

The literature on international integration has also focused mostly on the effects of liberalizing trade and capital on aggregate outcomes. By focusing on how domestic institutions work differently under different integration regimes we are able to show that foreign institutions can serve as substitutes for institutional weakness at the local level. But also, that this may not work as well for all the agents, and therefore we are able to provide a link to the determinants of integration.

The main message of this paper is that local financial development and international integration are intertwined. Therefore, we should not treat them separately neither when accessing the virtues of each other nor when determining the chances for different reform schemes.

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[22] An alternative interpretation, suggested to us by Michael Dooley, is simply that countries differ in the degree to which they provide (either explicitly or implicitly) sovereign collateral. If more open countries are willing to provide more collateral, in these countries domestic and international financing would have a higher degree of substitutability. This is quite plausible, however would not explain by itself the difference we find across sectors. Unfortunately data availability rendered us unable to check this alternative interpretation in a direct way.

[23] See, for instance, Rajan and Zingales (1998), Kroszner and Strahan (1999), Braun (2002), Raddatz (2006), Braun and Larrain (2004), and Braun and Raddatz (2004).

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Appendix 1: Estimating the dates of capital account and domestic financial liberalization

As explained in the main text, the dates of capital account liberalization were estimated by finding permanent breaks on the Ito and Chinn (2006) series of capital account restrictions that put the index above a threshold. The specific procedure used was the following.

For each year t between 1975 and 1999, and for each country with data, we run a regression of KAOPEN on a dummy taking the value 1 after t in a 10 year window around t. For instance, in 1980 the regression included data from 1971 to 1989, and the dummy took the value 1 from 1980 onwards. In regressions around the edges, the windows were reduced accordingly. In each regression we recorded the estimated coefficient, its t statistic, and the associated R2.

With this information we then identify the first year in which there is a significantly positive (negative) break in KAOPEN that shifts the 10 year average from below (above) zero to above (below) zero if it exists, and create two dummies, one that takes the value one for years after the first year of a positive significant break and the other that takes it before the first year of a negative significant break. If no significant positive or negative break is identified, the corresponding dummy takes the value zero. Therefore, by construction, the procedure allows only one reversal. By simple inspection of the data, this was deemed sufficient.

We built our indicator of liberalization as the maximum in a given year between the two dummies described above. Thus, this indicator takes the value 1 when a country is deemed liberalized and allows for a temporary reversal in liberalization. Countries where KAOPEN was above zero for the whole period were deemed as open independently of whether a break is found. Finally, we dealt separately with the following special cases: in the case of Brazil, Chile, and Sao Tome and Principe, where after looking at the relation between our estimated dates and the underlying series we used the year that maximized the R2 of the year to year regressions instead of the first significant break. Regardless of these special cases, we visually inspected the relation between our dummies and the evolution of the KAOPEN index country-by-country to make sure that our algorithm was properly capturing relevant changes in the series.

The procedure used to compute the dates of domestic financial liberalization was completely analogous, although because of the shorter span of the series we used 5-year instead of 10-year averages, and the threshold was set at the value 5 instead of zero.

Appendix 2: Variables description and sources

Variable	Description	Source
Growth real GDP per capita (PPP)	Corresponds to the average of the first difference in the log of real GDP per-capita PPP adjusted over a given period. In the cross country-regressions, the period over which the average is computed corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions, the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004.	Penn-World Tables (version 6).
Ln(Initial GDP per capita)	Is the log of real GDP per-capita, PPP adjusted, measured at the beginning of the relevant period. In cross-country regressions, the initial year corresponds to: (i) the first year with data for the overall regressions, (ii) the first year with data in which a country is in a given regime for the within regime regressions. In the panel regressions, the initial year is 5 years before the end of each non-overlapping period. For instance, real GDP per capita in 1974 is used as the initial value for the 1975-1979 period.	Penn-World Tables (version 6)
Ln(Private Credit to GDP)	Is the log of the average ratio of private credit from banks and other financial institutions to GDP over the relevant period. In cross-country regressions, the period corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions using country-level data the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004. In the sectoral regressions the period corresponds to a moving 5-year moving average, so, the value in 1980 corresponds to the average of the years 1976-1980. We used the longest series available between the two available versions of the database because for some countries the newest version has less data than the old one because of comparability problems in the underlying time series used to deflate the ratio.	Beck et al. (2004, 2006)
Ln(1+Inflation)	Corresponds to the log of (one plus) the average CPI inflation rate computed over the relevant period. In cross-country regressions, the period corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions using country-level data the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004. In the sectoral regressions the period corresponds to a moving 5-year moving average, so, the value in 1980 corresponds to the average of the years 1976-1980.	World Bank (2005), World Development Indicators.
Average Years of Schooling	Is the initial value of the average years of secondary schooling in the population over 15. In cross-country regressions, the initial year corresponds to: (i) the first year with data for the overall regressions, (ii) the first year with data in which a country is in a given regime for the within-regime regressions. In the panel regressions, the initial year is 5 years before the end of each non-overlapping period. For instance, real GDP per capita in 1974 is used as the initial value for the 1975-1979 period. In sectoral regressions the initial value corresponds to the value of the variable 5 years earlier or more depending on availability because the underlying data is only available in 5 year intervals (1965, 1970, 1975, etc.). So, the value in 1979 corresponds to the value of the variable in 1970 but the value in 1980 corresponds to the value in 1975.	Barro and Lee (2000)

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Ln(Government Consumption to GDP)	Corresponds to the log of the average ratio of Government consumption to GDP computed over the relevant period. In cross-country regressions, the period corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions using country-level data the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004. In the sectoral regressions the period corresponds to a moving 5-year moving average, so, the value in 1980 corresponds to the average of the years 1976-1980.	World Bank (2005), World Development Indicators.
Ln(1+Black Market Premium)	Corresponds to the log of (one plus) the average Black Market Premium computed over the relevant period. The Black market premium is the ratio of the black market exchange rate and the official exchange rate minus one. In cross-country regressions, the period corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions using country-level data the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004. In the sectoral regressions the period corresponds to a moving 5-year moving average, so, the value in 1980 corresponds to the average of the years 1976-1980.	Global Development Network Growth Database (http://www.nyu.edu/fas/institute/dri/global%20development%20network%20growth%20database.htm)
Ln(Volume of Trade to GDP)	Corresponds to the log of the average ratio of exports plus imports to GDP (nominal values) computed over the relevant period. In cross-country regressions, the period corresponds to: (i) all those years in which data is available for the overall regressions, (ii) all those years in which a country is in a given regime (excluding transition years) for the within regime regressions. In the panel regressions using country-level data the averages are computed over the following 5-year periods: 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004. In the sectoral regressions the period corresponds to a moving 5-year moving average, so, the value in 1980 corresponds to the average of the years 1976-1980.	World Bank (2005), World Development Indicators.
Growth of sectoral real value added per capita	Corresponds to the average growth of the log of real per-capita value added for each of the following six sectors: (i) agriculture, forestry and fishing, (ii) mining and quarrying, (iii) manufacturing, (iv) electricity, gas, and water, (v) construction, (vi) services. The growth of real per-capita value added is the growth of real value added less population growth, both computed as the first difference of the log of the corresponding variable. The average was computed for overlapping 5-year periods, so the variable corresponds to the 5-year moving average of the year-to-year growth rate.	World Bank (2005), World Development Indicators.
Ln(Initial sectoral GDP per capita)	Corresponds to the 5-year lagged value of the log of per-capita value added in 2000 US dollars for each of the following six sectors: (i) agriculture, forestry and fishing, (ii) mining and quarrying, (iii) manufacturing, (iv) electricity, gas, and water, (v) construction, (vi) services. The per-capita value added in 2000 US dollars was computed as the share of a sector in total value added expressed in 2000 US dollars times the GDP per-capita in 2000 US dollars. The share of a sector in 2000 US dollars is the product of its share in constant local currency units and the ratio of the share in local currency units and the share in constant local currency units in the year 2000.	World Bank (2005), World Development Indicators.
RER depreciation	Is the 5-year moving average of the growth of the real exchange rate. The real exchange rate is the real-effective-exchange rate. An increase represents a depreciation.	International Monetary Fund (2006). International Financial Statistics
Crisis	Corresponds to the fraction of years in which there is a crisis in a 5-year window. A crisis year is defined as a year in which real GDP per capita falls by more than 5 percent. Computed by the authors.	Penn-World Tables (version 6).
Share of Non-tradable sector	Corresponds to the share of the following sectors on total value added: (i) electricity, gas and water, (ii) construciton, and (iii) services.	United Nations (2006) Common Database, and World Bank (2005), World Development Indicators.

TABLE 1. TRADE, CAPITAL ACCOUNT, AND DOMESTIC FINANCIAL LIBERALIZATION DATES

Country	Capital Account Liberalization	Trade Liberalization	Domestic Financial Liberalization (1)	Domestic Financial Liberalization (2)
Albania	Never	1992	--	--
Argentina	1993	1991	1992	1973-1982 1987-1996
Armenia	Never	1995	--	--
Australia	1984	Always	1994	1984
Austria	Always	Always	--	--
Burundi	Never	1999	--	--
Belgium	Always	Always	--	--
Benin	Never	1990	--	--
Burkina Faso	Never	1998	--	--
Bangladesh	Never	1996	Never	1990
Bulgaria	Never	1991	--	--
Bolivia	1970-1981 1988-2003	1970-1979 1985-2003	--	--
Brazil	1998	1991	Never	1991
Botswana	1997	1979	--	--
Central African Republic	Never	Never	--	--
Canada	Always	Always	Always	Always
Switzerland	Since 1990*	Always	--	--
Chile	1998	1976	1974-1981 1984-1996	1978
China	Never	Never	--	--
Cote d'Ivoire	Never	1994	--	--
Cameroon	Never	1993	--	--
Congo, Rep.	Never	Never	--	--
Colombia	Never	1986	1991	1990
Cape Verde	Never	1991	--	--
Costa Rica	1991	1986	--	--
Cyprus	Never	Always	--	--
Germany	Always	Always	Always	Always
Denmark	1988	Always	--	--
Dominican Republic	Never	1992	--	--
Ecuador	1970-1982 1992-2003	1970-1982 1991-2003	--	--
Egypt, Arab Rep.	1994	1995	Never	1991
Spain	1993	Always	--	--
Ethiopia	Never	1996	--	--
Finland	1976	Always	--	--
France	1990	Always	1987	1984
Gabon	Never	Never	--	--
United Kingdom	1979	Always	Always	Always
Ghana	Never	1985	1995	1991
Gambia, The	1986	1985	--	--
Guinea-Bissau	Never	1987	--	--
Greece	1992	Always	--	--
Guatemala	1973-1981 1988-2003	1988	--	--
Guyana	1991	1988	--	--
Honduras	1970-1978 1993-2003	1991	--	--
Haiti	1970-1976 1997-2003	Never	--	--
Hungary	2001	1990	--	--
Indonesia	Always	1970	Never	Never
India	Never	Never	Never	1988
Iran, Islamic Rep.	1974-1979	Never	--	--
Iceland	1992	Never	--	--
Italy	1982	Always	1993	1988
Jamaica	1992	1970-1973 1989-2003	--	--
Jordan	1995	Always	--	--
Japan	Always	Always	1991	1979
Kenya	1996	1993	--	--
Korea, Rep.	Never	Always	1991	1981
Sri Lanka	1992	1977-1983 1991-2003	Never	1978
Lesotho	Never	Never	--	--
Morocco	Never	1984	Never	Never
Moldova	Never	1994	--	--
Madagascar	Never	1996	--	--
Mexico	1970-1982 1991-2003	1986	1991	1988
Macedonia, FYR	Never	1994	--	--
Mali	Never	1988	--	--
Mozambique	Never	1995	--	--
Mauritania	Never	1995	--	--
Mauritius	1993	1968	--	--
Malawi	Never	Never	--	--
Malaysia	1975	Always	1987	1978
Niger	Never	1994	--	--
Nigeria	Never	Never	--	--
Nicaragua	1970-1979 1990-2003	1991	--	--
Netherlands	Always	Always	--	--
Norway	1993	Always	--	--
Nepal	Never	1991	Never	Never
New Zealand	1984	1986	1985	1984
Pakistan	Never	2001	1995	1991
Panama	Always	1996	--	--
Peru	1991	1991	1993	1991
Philippines	1992	1988	1983	1980
Papua New Guinea	Never	Never	--	--
Poland	Never	1990	--	--
Portugal	1988	Always	--	--
Paraguay	1992	1989	--	--
Romania	Never	1992	--	--
Russian Federation	Never	Never	--	--
Rwanda	Never	Never	--	--
Senegal	Never	Never	--	--
Singapore	1978	Always	Always	Always
Sierra Leone	Never	2001	--	--
El Salvador	1992	1989	--	--
Sweden	Always	Always	--	--
Swaziland	Never	Never	--	--
Syrian Arab Republic	Never	Never	--	--
Chad	Never	Never	--	--
Togo	Never	Never	--	--
Thailand	Never	Always	1990	1989
Trinidad and Tobago	1992	1992	--	--
Tunisia	Never	1989	--	--
Turkey	Never	1989	1989	1980
Tanzania	Never	1995	--	--
Uganda	1993	1988	--	--
Uruguay	1976	1990	--	--
United States	Always	Always	Always	Always
Venezuela, RB	1970-1984 1996-2003	1989-1993 1996-2003	Never	Never
South Africa	Never	1991	1991	1980
Zambia	1996	1993	--	--
Zimbabwe	Never	Never	Never	1990

TABLE 2. GROWTH AND FINANCIAL DEVELOPMENT IN A CROSS-SECTION OF COUNTRIES: DIFFERENCES ACROSS OPENNESS REGIMES / OLS ESTIMATES

OLS estimates of equation (1). Dependent variable: country average annual real GDP per capita growth. Columns (1) to (4) include all countries in the sample, while columns (5) to (8) include only those that engaged in the liberalization of either trade or capital during the sample period. For each country the sample period is the period for which data are available. Except for initial GDP per capita –which corresponds to the value in the first available year- all the independent variables are country averages for the sample period in columns (1) and (5), and country-regime averages in the rest of the columns. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital.

	(1) All Countries	(2)	(3)	(4)	(5) Liberalizing Countries Only	(6)	(7)	(8)
	All Regimes	Regime 1	Regime 2	Regime 4	All Regimes	Regime 1	Regime 2	Regime 4
Ln(Initial GDP per capita)	-0.727***	-0.901**	0.689	0.099	-0.436	-0.402	1.160**	0.650
	(0.251)	(0.389)	(0.476)	(0.688)	(0.367)	(0.538)	(0.455)	(0.688)
Ln(Private Credit to GDP)	1.324***	0.836**	0.473	0.460	0.797*	0.754	0.344	0.024
	(0.248)	(0.376)	(0.347)	(0.603)	(0.422)	(0.457)	(0.443)	(0.709)
Ln(1+Inflation)	-0.346	-0.521	-5.120**	0.741	-0.059	-1.142*	-5.355***	-1.002
	(0.550)	(0.779)	(2.369)	(6.761)	(0.617)	(0.670)	(1.843)	(8.295)
Ln(1+Average Years of Schooling)	0.338	0.632	-0.428	-0.174	0.683*	0.393	-0.978**	-0.265
	(0.206)	(0.742)	(0.407)	(0.277)	(0.394)	(0.697)	(0.434)	(0.440)
Ln(Government Consumption to GDP)	-1.001	-1.428**	-2.693***	0.880	-0.920	-0.692	-2.836***	1.315
	(0.689)	(0.689)	(0.882)	(1.148)	(0.884)	(0.734)	(0.981)	(1.495)
Ln(1+Black Market Premium)	-0.236	-0.380	2.429	-0.129	-0.624	-0.131	-3.410	-0.601
	(0.422)	(0.570)	(4.517)	(12.872)	(0.498)	(0.458)	(4.261)	(17.061)
Ln(Volume of Trade to GDP)	0.468	0.466	1.068*	0.754	0.758	-1.063	0.846	1.288**
	(0.325)	(0.959)	(0.607)	(0.470)	(0.478)	(0.774)	(0.621)	(0.582)
Constant	10.012***	11.316***	1.990	-3.588	5.593	11.119**	-0.111	-11.776
	(2.104)	(3.474)	(4.941)	(6.459)	(3.811)	(5.079)	(5.799)	(7.453)
Observations	91	54	38	44	62	38	33	34
R-squared	0.38	0.24	0.41	0.17	0.32	0.41	0.48	0.29

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 3. GROWTH AND FINANCIAL DEVELOPMENT IN A CROSS-SECTION OF COUNTRIES: DIFFERENCES ACROSS OPENNESS REGIMES / IV ESTIMATES

IV estimates of equation (1), instrument: origin of the country's legal system. Dependent variable: country average annual real GDP per capita growth. For each country the sample period is the period for which data are available. Except for Private Credit–which corresponds to the average value, all the independent variables correspond to their value in the first available year for each country in columns (1) and (5), and country-regime in the rest of the columns. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital.

	(1)	(2)	(3)	(4)
	All Countries			
	All Regimes	Regime 1	Regime 2	Regime 4
Ln(Initial GDP per capita)	-1.122**	-1.197***	-1.440	-0.030
	(0.560)	(0.428)	(1.556)	(0.755)
Ln(Private Credit to GDP)	2.232*	2.117**	3.878	0.983
	(1.195)	(0.942)	(2.366)	(0.963)
Ln(1+Inflation)	0.422	1.865	4.612	1.242
	(1.382)	(1.562)	(3.937)	(3.128)
Average Years of Schooling	0.051	0.317	-0.580	-0.406
	(0.370)	(0.768)	(0.823)	(0.251)
Ln(Government Consumption to GDP)	0.046	-0.854	-2.632**	0.961
	(0.570)	(0.801)	(1.263)	(1.113)
Ln(1+Black Market Premium)	0.329	-1.816***	-5.131	0.950
	(0.436)	(0.570)	(5.502)	(1.913)
Ln(Volume of Trade to GDP)	0.085	-0.195	2.280**	0.511
	(0.293)	(0.715)	(1.124)	(0.417)
Constant	12.979**	16.982***	18.712	-0.864
	(6.195)	(4.405)	(14.810)	(6.787)
Observations	91	54	38	44

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 4. GROWTH AND FINANCIAL DEVELOPMENT IN A CROSS-SECTION OF COUNTRIES: DIFFERENCES ACROSS OPENNESS REGIMES / OLS ESTIMATES – DE FACTO MEASURES OF LIBERALIZATION

OLS estimates of equation (1). Dependent variable: country average annual real GDP per capita growth. For each country the sample period is the period for which data are available. Except for initial GDP per capita –which corresponds to the value in the first available year- all the independent variables are country averages for the sample period in columns (1) and (5), and country-regime averages in the rest of the columns. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital. Each country-year observation is classified into one regime based on the de-facto evolution of the volume of trade to GDP for trade openness and the gross international financial position to GDP for the capital account.

	(1)	(2)	(3)	(4)
	De Facto Measures of Trade and Capital Liberalization			
	All Regimes	Regime 1	Regime 2	Regime 4
Ln(Initial GDP per capita)	-0.758***	-1.138*	-0.138	-0.236
	(0.245)	(0.613)	(0.557)	(0.577)
Ln(Private Credit to GDP)	1.416***	1.036*	0.241	0.221
	(0.258)	(0.552)	(0.552)	(0.526)
Ln(1+Inflation)	-0.098	0.125	-2.047	3.699
	(1.033)	(1.341)	(2.341)	(2.268)
Ln(1+Average Years of Schooling)	0.267	1.593	0.728**	0.044
	(0.196)	(1.042)	(0.352)	(0.232)
Ln(Government Consumption to GDP)	0.044	-0.234	0.205	1.400
	(0.560)	(1.440)	(0.719)	(1.605)
Ln(1+Black Market Premium)	0.514*	-1.722	1.517***	2.380
	(0.295)	(1.273)	(0.548)	(1.738)
Ln(Volume of Trade to GDP)	0.110	-0.563	-0.504	0.996*
	(0.299)	(0.613)	(0.645)	(0.497)
Constant	8.812***	13.897*	4.382	-3.651
	(2.172)	(7.156)	(4.412)	(3.838)
Observations	91	43	43	36
R-squared	0.36	0.18	0.29	0.23

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 5. GROWTH AND FINANCIAL DEVELOPMENT IN DYNAMIC PANEL DATA: DIFFERENCES ACROSS OPENNESS REGIMES – IV ESTIMATES

Arellano-Bond estimates of equation (2). Dependent variable: country average real GDP per capita growth over each of the following periods: 1971-75, 1976-80, 1981-85, 1985-90, 1990-95, and 1995-2000. Except for initial GDP per capita and schooling –which correspond to the value in the first available year of the period- all the independent variables are country averages for each period. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital.

	(1)	(2)	(3)	(4)
	All Countries			
	All Regimes	Regime 1	Regime 2	Regime 4
Ln(Initial GDP per capita)	-0.582***	-2.408***	-0.206	1.112***
	(0.212)	(0.414)	(0.373)	(0.312)
Ln(Private Credit to GDP)	0.475***	1.582***	0.448	0.492
	(0.155)	(0.229)	(0.429)	(0.330)
Ln(1+Inflation)	-1.622***	-1.488**	0.744	-2.930***
	(0.189)	(0.586)	(0.501)	(0.122)
Average Years of Schooling	1.658***	1.603***	0.114	-0.946***
	(0.237)	(0.390)	(0.519)	(0.198)
Ln(Government Consumption to GDP)	-2.694***	-2.158***	-0.797	-1.896***
	(0.432)	(0.560)	(1.101)	(0.435)
Ln(1+Black Market Premium)	-0.541***	1.483***	-0.416	0.879***
	(0.117)	(0.231)	(0.551)	(0.115)
Ln(Volume of Trade to GDP)	1.125***	-0.055	2.365***	-0.647
	(0.268)	(0.522)	(0.493)	(0.436)
Observations	375	151	90	120
Number of Countries	90	50	36	49
Sargan p	0.80	1.00	1.00	1.00
Country FE	Yes	Yes	Yes	Yes
Period FE	Yes	Yes	Yes	Yes

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 6. GROWTH AND FINANCIAL DEVELOPMENT IN INDUSTRY DATA: TRADABLES AND NONTRADABLES

OLS estimators of equation (3). Dependent variable: country-industry-year average real GDP per capita growth over overlapping 5-year periods. Except for initial GDP per capita and schooling –which correspond to the value in the first available year of the period- all the independent variables are country averages for each period..

	(1)	(2)	(3)	(4)
Ln(Initial sectoral GDP per capita)	-7.921***	-7.960***	-8.967***	-8.961***
	(0.699)	(0.695)	(0.652)	(0.751)
Ln(Private Credit to GDP)	1.151***	0.726*		
	(0.378)	(0.378)		
Ln(1+Inflation)		-0.729*		
		(0.397)		
Average Years of Schooling		0.725		
		(0.469)		
Ln(Government Consumption to GDP)		-1.060		
		(0.766)		
Ln(1+Black Market Premium)		-1.345***		
		(0.494)		
Ln(Volume of Trade to GDP)		3.033***		
		(0.590)		
Tradable x Ln(Private Credit to GDP)			-1.108**	-1.183**
			(0.557)	(0.559)
Tradable x RER depreciation				2.276*
				(1.264)
Tradable x Crisis				0.520
				(0.969)
Constant	43.779***	36.542***	43.370***	41.404***
	(3.712)	(5.224)	(3.077)	(2.964)
Observations	8165	8165	8948	8948
R-squared	0.50	0.52	0.64	0.65
Country-Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No
Country-Year FE	No	No	Yes	Yes

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7. GROWTH AND FINANCIAL DEVELOPMENT IN INDUSTRY DATA: TRADABLES AND NONTRADABLES ACROSS OPENNESS REGIMES

OLS estimators of equation (3). Dependent variable: country-industry-year average real GDP per capita growth over overlapping 5-year periods. Except for initial GDP per capita and schooling –which correspond to the value in the first available year of the period- all the independent variables are country averages for each period. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital. Robust errors clustered at the country-industry level.

	(1)	(2)	(3)	(4)	(5)	(6)
	Regime 1		Regime 2		Regime 4	
Ln(Initial GDP per capita)	-11.698***	-12.191***	-6.243***	-5.364***	-7.305***	-7.158***
	(0.881)	(0.792)	(1.543)	(1.474)	(1.433)	(1.432)
Tradable x Ln(Private Credit to GDP)	-0.433	-0.524	-0.906	-0.967	-1.776**	-2.247***
	(1.250)	(1.407)	(1.385)	(1.344)	(0.714)	(0.686)
Tradable x Crisis		0.916		5.546*		3.359
		(1.551)		(2.936)		(3.790)
Tradable x RER depreciation		-1.295		34.427***		15.185***
		(1.756)		(10.283)		(4.148)
Constant	40.059***	48.039***	35.934***	27.633***	44.503***	41.001***
	(2.833)	(2.975)	(8.482)	(6.972)	(8.306)	(7.902)
Observations	4300	3820	2260	2026	2832	2821
R-squared	0.69	0.69	0.78	0.75	0.73	0.74
Country-Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	No	Yes	No
Country-year FE	No	Yes	No	Yes	No	Yes

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

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TABLE 8. GROWTH AND FINANCIAL DEVELOPMENT: TRADABLES AND NONTRADABLES ACROSS OPENNESS REGIMES / ROBUSTNESS

OLS estimators of equation (3). Dependent variable: country-industry-year average real GDP per capita growth over overlapping 5-year periods. Except for initial GDP per capita and schooling –which correspond to the value in the first available year of the period- all the independent variables are country averages for each period. Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital. Robust errors clustered at the country-industry level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Liberalizing Countries Only			Without agriculture			Without Services		
	Regime 1	Regime 2	Regime 4	Regime 1	Regime 2	Regime 4	Regime 1	Regime 2	Regime 4
Ln(Initial GDP per capita)	-13.141***	-11.357***	-7.262***	-11.988***	-5.885***	-9.640***	-11.483***	-5.945***	-7.561***
	(1.337)	(2.357)	(2.243)	(0.893)	(2.094)	(1.361)	(0.864)	(1.588)	(1.497)
Ln(Private Credit to GDP) x Tradable	1.196	-1.851	-2.569**	-0.545	-0.429	-2.117*	0.962	-1.080	-1.737*
	(1.866)	(1.308)	(1.148)	(1.748)	(1.648)	(1.109)	(1.972)	(1.816)	(0.942)
Constant	57.029***	57.486***	40.554***	45.283***	31.827***	63.071***	39.123***	31.210***	38.145***
	(5.329)	(11.418)	(12.249)	(3.269)	(10.775)	(8.550)	(3.289)	(7.413)	(7.388)
Observations	2269	1711	1886	3311	1767	2155	3334	1768	2155
R-squared	0.73	0.80	0.76	0.71	0.80	0.77	0.70	0.78	0.74
Country-Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 9. THE SHARE OF NONTRADABLES AND THE SEQUENCING OF REFORM

The table reports the moments of the country share of nontradables on GDP across categories defined by the sequencing of reform. Financial Liberalization Measure 1 (Panel A) uses the same procedure we employed to estimate the dates of capital account liberalization based on data from Abiad and Mody (2005). To apply this procedure we first construct a measure of overall domestic financial liberalization by adding the indices corresponding to the five dimensions mentioned above. By construction, therefore, this index will take values between 0 and 15. We then looked for the first significant break in the series in a similar fashion as described using a value of 5 as threshold, which is the median value of the index across countries and years. The measure in Panel B builds a simple index that considers a country financially liberalized if (i) credit controls and the interest rate controls have been at least largely liberalized, and (ii) the country is at least partially open in the other three dimensions.

PANEL A: Financial Liberalization Measure 1

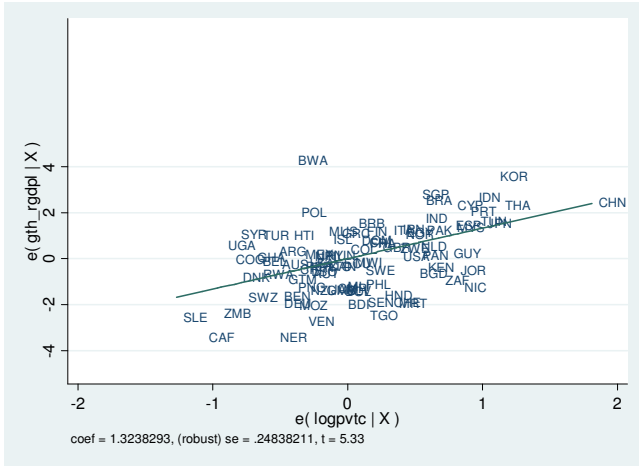| Country liberalizes finance	Capital account liberalization precedes financial liberalization			Capital account liberalization does not precede financial liberalization		
	Obs	Mean	Std. Err.	Obs	Mean	Std. Err.
No	2	0.39	0.03	2	0.46	0.03
Yes	3	0.53	0.07	22	0.51	0.02
Combined	5	0.47	0.05	24	0.51	0.02
Difference in means		-0.13	0.09		-0.05	0.07
	p-value			p-value		
Ho: Difference = 0	0.24			0.5		
Ha: Difference<0	0.11			0.25		
Ha: Difference>0	0.88			0.75		

PANEL B: Financial Liberalization Measure 2

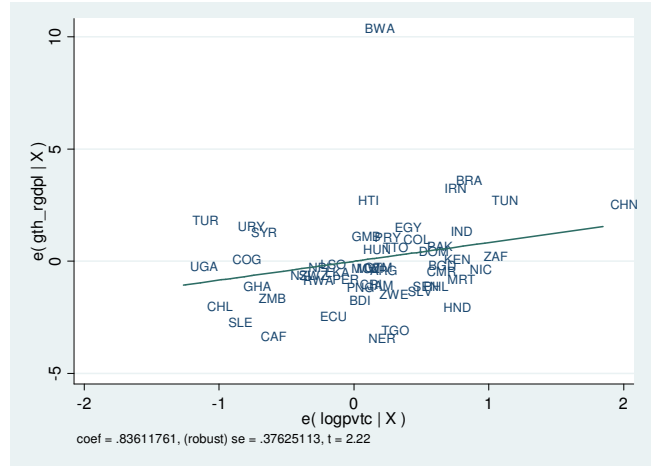| Country liberalizes finance	Obs	Mean	Std. Err.	Obs	Mean	Std. Err.
No	4	0.44	0.03	3	0.48	0.02
Yes	7	0.57	0.04	15	0.52	0.02
Combined	11	0.52	0.03	18	0.52	0.02
Difference in means		-0.13	0.06		-0.04	0.06
	p-value			p-value		
Ho: Difference = 0	0.05			0.45		
Ha: Difference<0	0.02			0.22		
Ha: Difference>0	0.98			0.78		

FIGURE 1. GROWTH AND FINANCIAL DEVELOPMENT IN A CROSS-SECTION OF COUNTRIES: DIFFERENCES ACROSS OPENNESS REGIMES

Partial regressions of GDP per capita growth on Ln(Private Credit to GDP) as specified in Table (3). Regime 1: closed to trade and capital, Regime 2: open to trade but closed to capital, Regime 4: open to trade and capital.
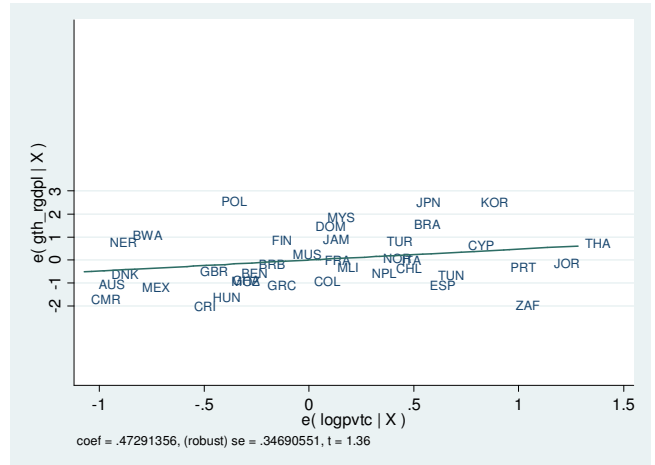

ALL REGIMES POOLED

REGIME 1

REGIME 2

REGIME 4