Financial Integration:
The Role of Tradable and Non-tradable Goods

Cahit Guven *
University of Houston

Dietrich Vollrath †
University of Houston

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Abstract

We examine the effect of financial integration on capital stocks and income per capita, explicitly taking into account the division of output between tradable and non-tradable goods. Capital per worker in a financially integrated country is shown to depend on the size and relative capital-intensity of the tradable sector. Using a panel of 67 countries over the period 1976-1999, we show a weakly positive interaction of financial integration and the tradability of output. However, for sub-samples of countries in the middle range of institutional development, the interaction is strongly negative. This interaction suggests that countries with a large tradable sector will benefit less from financial integration than those with more non-tradable output, and implies that the tradable sector is less capital-intense than the non-tradable sector in these middle-income countries.

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*Department of Economics, University of Houston, TX, 77204 e-mail: cguven@mail.uh.edu, tel:713 7433818

†Department of Economics, University of Houston, TX, 77204, e-mail: devollrath@uh.edu, tel: 713 7433806

1 Introduction

The integration of the world economy over the last thirty years has involved the increased movement of both goods and factors across borders. Fundamental theory (Samuelson, 1948; Mundell, 1957) suggests that trade in either could, under certain circumstances, equalize the prices of the other across countries.

With this interaction of trade in goods and factors in mind, we examine the experience of financial integration over the last thirty years. The basic intuition behind our approach comes from trade theory. If due to trade in goods a country fulfils the conditions for factor price equalization (FPE), then the gains from trade in factors (such as capital) are non-existent. The financial integration of such a country will have no appreciable effect on its capital stock or income level. In contrast, a country that produces largely non-tradable goods has more to gain from financial integration as it is less likely to have met the conditions for factor price equalization.[1]

FPE requires a very special set of circumstances that do not appear to hold in the real world.[2] As we show in the paper, though, even without the strict assumptions of FPE there is a distinct interaction of financial integration with the tradability of output. In this broader setting, the capital intensity of the tradable sector relative to the non-tradable sector is crucial in determining the direction of this interaction. If the non-tradable sector is relatively capital-intense, then the gains from financial integration increase with the size of the non-tradable sector within a country.

Using a panel of 67 countries over the period 1976-1999, we address the empirical evidence regarding the interaction of trade and financial integration. To do so we develop an index of the tradability of output by country that is based on worldwide trade, as opposed to only country level exports plus imports. We utilize the financial integration index of Chinn and Ito (2005), and examine how the interaction of tradability and financial integration affects the levels of the capital-labor ratio and income per capita within our panel.[3]

In fixed effects estimates, and in dynamic panels estimated using GMM, we find tenuous support for a positive interaction of financial integration and tradability in the full sample of 67 countries. That is, the effect of financial integration on capital stocks and income per capita is increasing with trade. However, when we restrict our analysis to sub-samples of middle-income developing countries, we find strong evidence of a negative interaction. For these countries, the benefits of financial integration fall as

[1] Deardorff and Courant (1990) show that an increase in the size of the non-tradable sector reduces the size of the cone of diversification within which FPE holds. For a given endowment of factors, an increase in the size of the non-tradable sector makes it less likely that this endowment falls within the cone.

[2] See Helpman (1998), Repetto and Ventura (1998) and Feenstra (2004) for summaries of the evidence contradicting the predictions of FPE.

[3] Our focus on capital-labor ratio and income per capita levels, as opposed to growth rates, follows from the prediction of neoclassical theory that financial integration should affect these levels permanently, but growth rates only temporarily. See Henry (2006) for a complete discussion of this issue.

their output becomes more tradable on the world market. Our findings provide a new avenue towards understanding the sometimes conflicting evidence on international capital flows.

Lucas (1990) famously asked why capital did not flow from rich to poor countries, and he focused on differentials in human capital between countries to explain his own paradox. Reinhart and Rogoff (2004), Lane (2003), Portes and Rey (2005) and Stulz (2005) all suggest that frictions in international capital markets prevent flows from occurring. Tornell and Velasco (1992) and King and Rebelo (1993) suggest that fundamental differences in technology, policies, and institutions are responsible for the small observed flows, a view supported by the empirical work of Alfaro, Kalemli-Ozcan, and Volosovych (2007). Work by Caselli and Feyrer (2007) suggests that marginal products of capital across countries are roughly equal, rationalizing the small flows of capital from rich to poor countries. Their calculations take into account the relatively high price of capital in poor countries, in line with the findings of Hsieh and Klenow (2003).

Our work suggests that part of the reason we do not see massive capital flows to poor countries is that increasing trade in goods has limited the gains possible from the movement of capital. This finding also speaks to the somewhat muddled evidence regarding financial integration and capital account liberalization.

Neoclassical theory suggests that financial integration should benefit developing countries by lowering their cost of capital, leading to increased investment (Obstfeld, 1998; Rogoff, 1999; Henry, 2006). Empirical evidence of these benefits is mixed, though. Papers by Rodrik (1998) and Stiglitz (2000) questioned the wisdom of liberalizing capital markets. Several surveys have found very limited evidence of a positive impact of financial integration on growth rates (Eichengreen, 2001; Edison, Klein, Ricci, and Sløk, 2004; Prasad, Rogoff, Wei, and Kose, 2003). Gourinchas and Jeanne (2006) calibrate a neoclassical model and find extremely small welfare gains from financial integration. Studies that examine policy reforms explicitly, though, show that stock market liberalizations raise stock prices and lower dividend yields, both indications that the cost of capital has fallen (Bekaert and Harvey, 2000; Bekaert, Harvey, and Lundblad, 2005; Henry 2000).

This literature has not considered the potential interaction of trade and financial integration, and this may be part of the reason that the gains of integration appear unclear. Due to trade in goods, financial integration may in fact have limited potential to benefit a country. However, for countries without much tradable output, financial integration can prove to be of great value. Mingling these two kinds of countries together in empirical samples when examining the experience of integration could lead to inconclusive results.

A recent study that does take into account the nature of tradable versus non-tradable output is from Tornell, Westermann, and Martinez (2004) that examines whether the volatility induced by financial

liberalization is actually beneficial to growth. Their model is based on the structure of output, but with a different theoretical focus. In their model firms producing non-tradable output differ from tradable firms in their ability to access capital markets, while we do not assume any difference between the sectors in this dimension. For Tornell et al, financial liberalization allows the non-tradable firms to escape their credit constraints and this increases productivity. Thus countries with a large degree of non-tradable output benefit more from financial liberalization. Empirically, they focus on the size of the non-tradable sector in response to financial liberalization, but they do not establish that the effect of financial liberalization is contingent on the structure of output in the first place.

Our results show that an evaluation of financial integration depends crucially on how tradable output is within a country. A developing country already integrated into the market for goods may have already exhausted the gains from financial integration, while a country without much external trade in goods may benefit greatly from a similar integration. The paper proceeds as follows: section 2 discusses theoretically the interaction of tradability and integration, section 3 describes the new index of trade we develop, as well as other data sources for our empirical work, section 4 presents the estimations involving the interaction of tradability and integration, and section 5 concludes.

2 Trade and Financial Integration

We consider a simple model of financial integration that involves two sectors within each economy: a tradable sector (denoted T) and a non-tradable sector (denoted N).[4] Starting with a country closed to capital flows, we then ask how much capital would flow into the country to bring its rate of return down to a given world rate of r^*. In other words, what is the effect of financial integration on the size of the capital stock?

Both sectors employ capital and labor, and the production functions are denoted $F_T(K_T, L_T)$ and $F_N(K_N, L_N)$. The production functions are assumed to be linearly homogenous and strictly concave. We can therefore write them intensive form as $f_T(k_T)$ and $f_N(k_N)$ where k_i is the capital-labor ratio in either sector.

We presume that factor markets operate perfectly, so that given the prices of the two goods, the value marginal products are equalized across sectors.

$$p_T f'_T(k_T) = p_N f'_N(k_N) = r \tag{1}$$

[4]The role of non-tradable goods in standard trade theory was examined by Komiya (1967). He showed that the general conclusions of trade theory (factor price equalization, the Stolper-Samuelson theorem, and the Rybczynski theorem) all survive the inclusion of non-traded goods, provided that technologies are identical across countries. Helpman and Krugman (1985) also discuss the inclusion of non-traded goods, and Deardorff and Courant (1990) show that factor price equalization is less likely to occur in the presence of non-traded goods.

$$p_T(f_T(k_T) - k_T f_T'(k_T)) = p_N(f_N(k_N) - k_N f_N'(k_N)) = w \tag{2}$$

where $f_i'(k_i)$ is the derivative of the production function.

The price of tradable goods, p_T is taken as given by each country, while the price of non-tradables, p_N is endogenously determined. With immobile factors, equations (1) and (2) are not sufficient to characterize the three unknowns: p_N, k_T, and k_N. Full financial integration, though, allows for capital mobility and forces the interest rate in the economy to go to r^*, the world interest rate.

With the world interest rate and the price of tradable goods fixed by world markets, this fixes the capital-labor ratio in the tradable sector at k_T^*. Knowing this capital-labor ratio, this fixes the wage rate at w^*. With the wage rate and interest rate fixed by world markets, this leaves us two equations in two unknowns that can be solved for the capital-labor ratio in non-tradables, k_N^*, and the price of non-tradables, p_N^*.

To characterize further the effect of financial integration on the size of the capital stock and on income per capita requires information on the nature of demand for the non-tradable good. For simplicity, we assume that utility over the two goods is Cobb-Douglas, so that demand for non-tradable goods can be described as

$$D_N = \frac{\gamma Y}{p_N}. \tag{3}$$

Total income, Y, is the total value of output produced so that $Y = p_N L_N f_N(k_N) + p_T L_T f_T(k_T)$. Note that total output of the non-tradable sector is $L_N f_N(k_N)$. Combining this with the definition of income as well as demand from (3) gives the following

$$\frac{1-\gamma}{\gamma} \cdot \frac{p_N}{p_T} \cdot \frac{f_N(k_N)}{f_T(k_T)} = \frac{L_T}{L_N}. \tag{4}$$

The labor endowment of the economy is given by L, so that $L = L_N + L_T$. Under financial integration, however, the size of the capital stock is not fixed. Given the capital labor ratios of k_N^* and k_T^* the aggregate capital-labor ratio under integration can be written as

$$\frac{K^*}{L} = k_N^* \frac{L_N}{L} + k_T^* \frac{L_T}{L}. \tag{5}$$

Combining this with equation (4) and $L = L_N + L_T$ allows us to solve for the optimal aggregate capital-labor ratio as a function of $\frac{1-\gamma}{\gamma}$, a term that represents the relative preference for tradable output versus non-tradable output.

The derivative of the aggregate capital-labor ratio with respect to $\frac{1-\gamma}{\gamma}$ can be evaluated as follows

$$\frac{\partial(K/L)^*}{\partial(1-\gamma)/\gamma} = \frac{(k_T^* - k_N^*)}{(1+\Omega)^2} \frac{p_N^*}{p_T} \frac{f_N(k_N^*)}{f_T(k_T^*)} \tag{6}$$

where $\Omega = \frac{1-\gamma}{\gamma} \frac{p_N^*}{p_T} \frac{f_N(k_N^*)}{f_T(k_T^*)}$. As can be seen, the sign of this derivative depends crucially on the capital-intensity of the tradable sector relative to that of the non-tradable sector. If the tradable sector is more capital-intense, then an increase in the demand for tradable goods will raise the aggregate capital-labor ratio.

In examining financial integration, then, we can ask how the relative size of the tradable sector will influence the size of the capital flows that follow. Take a country that is closed to capital flows, and has an initial aggregate capital-labor ratio of k_0. Since we are interested primarily in developing countries, we assume that the return to capital prior to integration is such that $r > r^*$.

The actual increase in the capital-labor ratio, $k^* - k_0$, that follows integration depends on the size of the tradable sector relative to the non-tradable sector. If $k_T^* - k_N^* > 0$, then from (6) we see that a country with more tradable output will gain more from integration of its financial markets. If $k_T^* - k_N^* < 0$, then a country with more tradable output will actually gain less capital from integration. Regardless of the sign, the effect of financial integration on the size of the capital-labor ratio depends crucially on the composition of output. The sign of this interaction depends in turn on the relative capital intensities of the two sectors.

Given that theoretically the interaction can go either way, the empirical analysis will attempt to identify the actual sign of this effect, or if it exists in the first place.

3 Data Sources and Construction

To proceed in testing for the interaction of tradability and financial integration, we require measures of both. For financial integration, we adopt the index of Chinn and Ito (2005), which is a continuous variable available for 183 countries over the period 1970-2004. They base their index on the IMF Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), and we describe the construction of this variable in more detail in the Appendix.

We denote the Chinn-Ito index F_{it}, and summary statistics can be found in table 1, along with summary statistics for other variables included in the empirical analysis. For the whole sample, we have 63 countries with observations that range from 1976-1999. As some countries are not observed in every year, our total sample consists of only 1112 observations. The mean value of F_{it} is 0.24, with a minimum of -1.75 and a maximum of 2.62.

To measure tradability of output we have developed our own index. Goods produced domestically may be tradable on the world market, yet be consumed domestically. Thus a standard measure of trade openness, such as exports plus imports over GDP, may understate tradability of output.

We calculate our tradeability index as $T_{it} = \sum_{k=1}^{K} S_{kit} D_{kt}$ where S_{kit} is the share of sector k in country i at time t. The share is measured by the share share of total value added, $S_{kit} = VA_{kit}/GDP_{it}$.[5] D_{kit} is the ratio of total sector k exports in the world at time t to the total world output of sector k at time t, $D_{kt} = X_{kt}/WGDP_{kt}$.[6] Therefore T_{it} is simply a weighted average of the tradability of sectors within a country. The tradability of a sector k is determined by the actual amount of world trade that takes place relative to the total output of that sector in the world, so that every country is measured by a similar metric for tradability.

The data for the calculation comes from the World Trade and Production Database of the World Bank. The database contains trade, production and tariff data for 67 developing and developed countries at the industry level over the period 1976-1999. The sector disaggregation in the database follows the International Standard Industrial Classification (ISIC) and is provided at the 3 digit level (28 industries) for 67 countries and at the 4 digit level (81 industries) for 24 of these countries. Further details of the construction of the tradability index can be found in the Appendix.

T_{it} lies in the interval of $(0, 1)$, with higher values indicating that output in country i is more internationally tradable. Table 1 presents summary statistics of this index. The mean tradability index over all the observations is 0.19, with a minimum of 0.11 and a maximum of 0.63.

As established in the previous section, the sign of the interaction of T and F depends on the capital intensity of the tradable sector relative to the non-tradable sector. Using the World Trade and Production Database, we are able to construct capital stocks by sector for our sample of countries. Using this, we will be able to establish in which countries tradable sectors are more capital intense than non-tradable sectors. This work is incomplete at this point, and is not reported in this draft.

4 The Interaction of Financial Integration and Trade

As discussed previously, the full effect of financial integration on the capital-labor ratio depends on the tradability of output as well as the capital intensity of the two sectors in the economy. We thus examine the interaction of tradability and financial integration on the level of the capital-labor ratio (in logs). In addition, we will examine the effect of this interaction on income per capita levels (which depend on capital-labor ratios) and on the investment rate (investment relative to GDP). Summary statistics for all

[5] We can alternatively measure sector share by the share of labor employed in the sector, $S_{kit} = L_{kit}/L_{it}$. The results in the paper are not sensitive to this change, so we report only those using the value-added shares.

[6] We do not use total sector trade, exports plus imports, since this will be double counting total trade in the world.

of these variables can be found in table 1, while details on the sources of this data can be found in the Appendix.

In the case of the capital-labor ratio and income per capita, we will be interested in the effect of integration and tradability on the levels of these variables (in logs), not their growth rates. Financial integration is predicted theoretically to affect growth rates only temporarily, but levels permanently. As described in Henry (2006), looking for the effects of financial integration on growth rates can lead to faulty conclusions regarding its effectiveness.

4.1 Base Specifications

We begin by specifying our basic estimation equation as

$$ln(k_{it}) = \beta_0 + \beta_1 T_{it} + \beta_2 F_{it} + \beta_3 (F_{it} * T_{it}) + v_i + w_t + \xi_{it} \tag{7}$$

where v_i is a country fixed effect, w_t is a year fixed effect, and ξ_{it} is an i.i.d. error term.[7]

According to theory, if $k_T^* > k_N^*$ then we should expect that $\beta_3 > 0$, or the effect of financial integration on the capital labor ratio is increasing in the tradability index. However, if $k_T^* < k_N^*$, then we should find $\beta_3 < 0$. In this case the gain in capital from financial integration decreases with the tradability of output.

Table 3 reports the results of estimating (7) for our full sample of 63 countries over the years 1976-1999. Column (1) shows the results when the time dummies are dropped, and column (2) shows the effect of their inclusion. In both cases β_3 is estimated to be positive, indicating that tradable output increases the gain from financial integration. The inference that could be made from this result is that $k_T^* > k_N^*$ across the whole sample.

However, the coefficient is not significantly different from zero when the time dummies are included. This is perhaps not surprising given the strong time trends of both T_{it} and F_{it}. So for the whole sample, there is weak evidence of positive interaction of tradability and financial integration.

For the tradability index itself, though, there is a clear positive effect on the capital-labor ratio, lending support to the idea that $k_T^* > k_N^*$, and consistent with the literature on the benefits of international trade for development. In contrast, the coefficient estimate on F_{it} is insignificant and negative, in line with previous evidence that finds no clear benefit of financial integration.

The pattern of these results is similar in columns (3) and (4), which use the log of output per capita as the dependent variable. In this case, we again see that T_{it} has a strong direct effect. The interaction term is again positive, but also insignificant. Financial integration is now positive, but not significant.

[7] Specifications using $ln(y_{it})$ or I/Y as the dependent variable are identical in form

The tentative results in table 3 are potentially due to the fact that the full sample contains within it countries at various levels of development. To clearly identify the interaction of financial integration and tradability requires us to distinguish the capital intensity of the tradable sector more clearly.

Aside from direct measures of capital intensity, we examine the interaction of financial integration and tradability for subsamples of countries distinguished by their institutional structure. The motivation for this approach comes from the work of Tornell et al (2006), who suggest that financial integration has its greatest benefits to those countries within a middle range of financial development.

Table 4 shows similar regressions for a smaller sample of countries that have an index of legal enforcement (La Porta et al, 1997) with values between 5.8 and 6.3, putting them in the middle range of all countries. A full list of the countries included in this sample (and all other sub-samples) can be found in the appendix. As can be seen, the results for the 23 countries here have a clear negative interaction between tradability and financial integration. That is, the positive direct effects of financial integration are completely offset if a country's tradability index reaches a value of 0.27 or higher. This is a value barely over one standard deviation higher than the mean value of tradability for the entire sample. Liberalization is significantly positive by itself, but this effect is maximized in a country with completely non-tradable output.

Similar to this, table 5 reports the results for a sample of countries in which creditor rights take the value of 2 or 3 (out of a range of 0 to 4). Columns (1) and (2) show that the interaction effect is strongly negative for the size of the capital stock. The size of the estimates suggest that with a tradability index of about 0.25 or higher, financial integration has no positive (and possibly a negative) effect on the size of the capital stock. This is replicated in columns (3) and (4), where we find similar results for income per capita. In countries which have moderate creditor rights, increasing tradability of output acts limits the potential gains of financial integration.

This result is replicated in table 6, which restricts the sample to a group of countries that have a ratio of private domestic credit relative to GDP of less than 0.20, although the significance is not nearly as large as in the creditor rights subsample. In table 7, we restrict the sample to "medium contract enforcability" (MEC) countries, as defined by Tornell et al (2006). Again the results show a strong negative interaction effect.

In all cases, when we focus on those countries within a middle range of institutional development, and thus within the middle range of income per capita, we find a negative interaction of trade and financial integration. For these countries, the experience of integration is tempered significantly by increasing tradability of output. Theoretically, we could infer that $k_T^* < k_N^*$, or that the non-tradable sector is relatively capital-intense.

4.2 Dynamic Specifications

The base specification in (7) allows for time trends and the possibility of serial correlation, but it does not capture the dynamic nature of the capital-labor ratio or income per capita. We therefore modify the specification to include a lag of the dependent variable,

$$ln(k_{it}) = \alpha ln(k_{i,t-1}) + \beta_0 + \beta_1 T_{it} + \beta_2 F_{it} + \beta_3 (F_{it} * T_{it}) + v_i + w_t + \xi_{it} \tag{8}$$

and examine the estimation of β_3 under this assumption.

This dynamic panel specification can be estimated by using the lagged instrumenting technique described in Arellano and Bond (1991). An additional advantage of this method is that it will allow us to address the potential endogeneity of T_{it} and F_{it}.

This section is being completed at this time.

5 Conclusion

Integration of economies proceeds broadly along two lines, in factors and in goods. However, most studies have not addressed the potential interaction of trade and financial integration. We establish in this paper that the tradability of output within a country may be of crucial importance in determining the outcome of financial integration.

Theory suggest that if non-tradable goods are more capital-intense than tradable goods, then the benefits of financial integration are increasing in the size of the non-tradable sector. If non-tradable goods are less capital-intense, then this prediction is reversed.

We examine the interaction of financial integration and trade empirically for a sample of 67 countries over the period of 1976-1999. To perform this analysis we developed a new measure of the tradability of output by country. Our results show that for the overall sample, there is a weak positive interaction of trade and financial integration. However, for sub-samples of countries with institutional structures of medium levels of development, the interaction is strongly negative.

The results suggest that for the set of medium-income countries in the world, the benefits of financial integration actually decline as their output becomes more tradable on the world market. This has the possibility of explaining the conflicting evidence on financial liberalization that currently exists in the literature. Assessing the benefits of financial integration requires a closer examination of the nature of output within countries.

Appendices

A Data Descriptions

Output, Capital, and Investment:

We get real value added (lny), investment(I) and population series from the Penn-World tables 6.2. We use the data from Bernanke and Gurkaynak (2001) where output is real value added and capital stock (lnk) is calculated from investment series by perpetual inventory method.

Tradability Index:

We calculate tradability index as T_{it}= $\sum_{k=1}^{K} S_{kit}{}^{*}\ P_{kt}$ Where S_{kit} is the share of sector k in country i at time t, measured by employment or value added ($S_{kit} = \frac{VA_{kit}}{GDPit}$ or $S_{kit} = \frac{L_{kit}}{L_{it}}$) . P_{kt} is the ratio of sector k exports (or imports) in the world at time t to the the total world output of sector k at time t ($P_{kt} = Exports_{kt}/GDP_{kt}$). We do not use total sector trade (EX+IMP) since it will double count total trade in that sector. We prefer this method to calculate the composition of the traded and nontraded sector in the economy to a more generally used openness index since a good can be tradable but consumed domestically. We use World Trade and Production Database by the World Bank. The database contains trade, production and tariff data for 67 developing and developed countries at the industry level over the period 1976-1999. The sector disaggregation in the database follows the International Standard Industrial Classification (ISIC) and is provided at the 3 digit level (28 industries) for 67 countries and at the 4 digit level (81 industries) for 24 of these countries. The sources of the production data are the CD-ROM versions of UNIDO's Industrial Statistics Database at the 3 and 4 digit level of the ISIC classifications. It includes data on value added, total output, average wages, capital formation, number of employees, number of female employees, and number of firms. We use sector level value added to compute the output share of a sector in a country and use sector level exports data to compute the world tradability of a sector.

Financial Integration Index:

We use the Chin-Ito (2005) index of financial integration which is a continuous variable available for 183 countries from 1970-2004. The Chin-Ito index shows the degree of financial openness for a country at a time period. Construction of capital account openness is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMFs Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Up to 1996, the dummy variables reflected the four major categories on the restrictions on external accounts. These variables are:

k1: variable indicating the presence of multiple exchange rates

k2: variable indicating restrictions on current account transactions

k3: variable indicating restrictions on capital account transaction

k4: variable indicating the requirement of the surrender of export proceeds.

In 1996, the classification method in the AREAER changed and these four categories became more disaggregated as an effort to reflect the complexity of capital controls policies. For the extension of the four binary classifications after 1996, they follow Mody and Murshid (2005). In order to focus on the effect of financial openness rather than controls they reverse the values of these binary variables, such that the variables are equal to one when the capital account restrictions are non-existent. Moreover, for controls on capital transitions (k3), they use the share of a five-year window (encompassing year t and the preceding four years) that capital controls were not in effect (SHAREk3). Then they construct an index for capital openness (KAOPENt), which is the first standardized principal component of k1t, k2t SHAREk3, k4t. This index takes on higher values the more open the country is to cross-border capital transactions. By construction, the series has a mean of zero.

Creditor Rights : An index aggregating different creditor rights. The index is formed by adding 1 if: (1) the country imposes restrictions, such as creditors' consent, to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. The index ranges from 0 to 4. The countries used in the regression that has the creditor rights 2 or 3 are:

Japan, Norway, Belgium, Lithuania, Spain, Armenia, Jamaica, Uganda, Taiwan, China, China, Tanzania, Belarus, Ukraine, Namibia, Malawi, Madagascar, Moldova, Sierra Leone, Chile, Mongolia, Russian Federation, Turkey, Nepal, Bangladesh, Haiti, Uzbekistan, Georgia , Thailand, Kazakhstan, Cambodia, Egypt Arab Rep., India, Bulgaria, Sri Lanka, Iran Islamic Rep., Honduras, Slovak Republic, Indonesia, Mozambique, Dominican Republic, Bolivia, United Arab Emirates, Serbia and Montenegro, Italy, Netherlands, Singapore, Korea Rep., Denmark, Botswana, Australia, Germany, Latvia, Azerbaijan, El Salvador, South Africa, Czech Republic, Malaysia, Bosnia and Herzegovina, Saudi Arabia, Austria, Albania, Kuwait, Croatia, Ethiopia, Venezuela, RB, Kyrgyz Republic, Macedonia, FYR, Israel, Uruguay, Syrian Arab Republic, Slovenia, Angola.

Contract enforceability: Measures the relative degree to which contractual agreements are honored and complications presented by language and mentality differences. Higher scores for superior quality; average over 1980-95; Source: Knack and Keefer (1995), using data from Business Environmental Risk Intelligence (BERI). The countries used in the regression that have the enforceability index between 5.8 and 6.3 are:

Romania, Mali, Jordan, Canada, Zimbabwe, Nepal, Panama, Yemen Rep., Kenya, Saudi Arabia,

Colombia, Bangladesh, Hungary, Haiti, Uzbekistan, Austria, Georgia, Philippines, Ecuador, Albania, Kuwait, Thailand, Rwanda, Pakistan, Kazakhstan, Cambodia, Vietnam, Algeria, Mauritania, Egypt Arab Rep., Croatia, Ethiopia, Mexico, India, Bulgaria, Sri Lanka, Peru, Lao, PDR, Venezuela, RB, Oman, Burkina Faso, Senegal, Kyrgyz Republic, Macedonia, FYR, Burundi, Argentina, Cote d'Ivoire, Chad, Togo, Iran Islamic Rep., Honduras, Costa Rica, Congo Rep., Slovak Republic, Brazil, Benin, Indonesia, Mozambique, Dominican Republic, Cameroon, Israel, Bolivia.

The variable is from LLSV (1997) and (1998) who collected these data from national bankruptcy and reorganization laws.

Private Credit: Claims on private sector by deposit money banks and other financial institutions as share of GDP. This is the average over the period 1980-95. The countries used in the regression that have the index less than 0.2 are :

Congo Dem. Rep., Sierra Leone, Angola, Chad, Guinea, Kyrgyz Republic, Azerbaijan, Central, African Republic Congo, Rep. El Salvador, Niger, Uganda, Albania, Algeria, Tanzania, Yemen Rep., Cambodia, Lao, PDR, Zambia, Armenia, Georgia, Madagascar, Malawi, Romania, Belarus, Cameroon, Mozambique, Syrian Arab Republic, Rwanda, Venezuela, RB Benin, Burkina, Faso, Ghana, Lesotho, Cote d'Ivoire, Lithuania, Kazakhstan, Moldova, Nigeria, Papua New Guinea, Ukraine, Bulgaria, Haiti, Mongolia, Russian Federation, Togo, Mali, Mexico, Botswana, Argentina, Macedonia, FYR, Senegal. Taken from Beck, Demirguc-Kunt and Levine(2000).

Tornell, Westerman and Martinez Classification: HEC: Australia Austria, Canada, Denmark, Finland, France, Germany Italy, Japan, Netherlands, New Zealand, Norway Sweden, Switzerland, United Kingdom, United States. MEC: Argentina, Bangladesh, Belgium, Brazil, Chile, China, Colombia, Ecuador, Egypt, Greece, Hong Kong, China, Hungary, India, Indonesia, Ireland, Israel, Jordan, Korea, Rep., Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Portugal, South Africa, Spain, Sri Lanka, Thailand, Tunisia, Turkey, Uruguay, Venezuela, Zimbabwe

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Table 1: **Summary Statistics**

FULL SAMPLE	63 countries				
Variable:	Obs	Mean	Std. Dev.	Min	Max
lny	1112	9.18	0.91	6.85	10.77
lnk	1112	9.34	1.28	5.31	11.65
I/Y	1112	0.17	0.08	0.02	0.52
Legal Enforcement	1086	6.41	2.14	3.17	9.98
Creditor Rights	1128	1.85	1.20	0	4
PrivateCredit/GDP	1128	0.60	0.42	0.05	1.64
Tradability Index (T)	1128	0.19	0.06	0.11	0.63
Liberalization Index (F)	1128	0.24	1.56	−1.75	2.62
ENFORCEMENT SUBSAMPLE	23 Countries				
Variable:	Obs	Mean	Std. Dev.	Min	Max
lny	400	8.82	0.76	7.02	10.48
lnk	400	8.81	1.14	5.80	11.17
I/Y	400	0.14	0.06	0.02	0.39
Legal Enforcement	391	5.33	1.73	5.8	6.3
Creditor Rights	400	1.52	1.28	0	4
PrivateCredit/GDP	400	0.40	0.29	0.06	1.04
Tradability Index (T)	400	0.19	0.09	0.11	0.63
Liberalization Index (F)	400	−0.18	1.43	−1.75	2.62
CREDITOR RIGHTS	30 Countries				
Variable:	Obs	Mean	Std. Dev.	Min	Max
lny	535	9.11	0.97	6.85	10.63
lnk	535	9.30	1.33	5.31	11.65
I/Y	535	0.18	0.09	0.03	0.52
Legal Enforcement	542	6.54	2.10	3.17	9.85
Creditor Rights	551	2.41	0.49	2	3
PrivateCredit/GDP	551	.64	0.40	0.05	1.42
Tradability Index (T)	551	0.19	0.03	0.11	0.63
Liberalization Index (F)	551	0.22	1.55	−1.75	2.62

Notes:. All variables are yearly variables in levels. GDP and components of GDP are measured in per capita and in logs.

Table 2: **Summary Statistics**

DOMESTIC FINANCIAL DEVELOPMENT	14 countries				
Variable:	Obs	Mean	Std. Dev.	Min	Max
lny	212	8.41	0.88	6.85	9.84
lnk	212	8.32	1.13	5.31	10.17
I/Y	212	0.11	0.066	0.02	0.37
Legal Enforcement	200	4.98	0.95	3.32	6.33
Creditor Rights	212	1.33	1.30	0	4
PrivateCredit/GDP	212	0.11	0.04	0.05	0.19
Tradability Index (T)	212	0.21	0.13	0.11	0.63
Liberalization Index (F)	212	−0.55	1.07	−1.75	2.62
TORNELL SUBSAMPLE	29 countries				
Variable:	Obs	Mean	Std. Dev.	Min	Max
lny	539	9.11	0.63	7.60	10.54
lnk	539	9.20	0.91	7.22	11.09
I/Y	539	0.17	0.07	0.03	0.41
Legal Enforcement	522	5.62	1.31	3.17	8.37
Creditor Rights	543	1.71	1.10	0	4
PrivateCredit/GDP	543	0.57	0.38	0.11	1.54
Tradability Index (T)	543	0.19	0.03	0.13	0.63
Liberalization Index (F)	543	−0.19	1.38	−1.75	2.62

Notes:. All variables are yearly variables in levels from 1978-1998. GDP and components of GDP are measured in per capita.

Table 3: **Estimation of the Interaction of Financial Integration and Trade**

FULL SAMPLE

	(1)	(2)	(3)	(4)
	Dependent Variable:			
Explanatory Variable:	ln(k)	ln(k)	ln(y)	ln(y)
Tradability Index (T)	0.54***	0.35**	0.35***	0.24**
	(4.0)	(2.7)	(3.3)	(2.7)
Interaction (T x F)	0.25**	0.15*	0.15*	0.06
	(2.5)	(1.6)	(1.8)	(1.6)
Liberalization Index (F)	−0.01	−0.03	0.02	0.01
	(0.7)	(1.3)	(1.3)	(0.6)
Year Dummy	No	Yes	No	Yes
N. of Obs.	1112	1112	1112	1112
N. of Countries	63	63	63	63

Notes: All variables are yearly variables in levels between 1978-1998. All regressions estimated with Fixed Effects specification. Liberalization (F) is the Chin-Ito index. Robust t-statistics are in parenthesis and in absolute values, ***, **, * denotes 1%, 5%, and 10% significance respectively.

Table 4: **Estimation of the Interaction of Financial Integration and Trade**

Subsample for Legal Enforcement

	(1)	(2)	(3)	(4)
		Dependent Variable:		
Explanatory Variable:	ln(k)	ln(k)	ln(y)	ln(y)
Tradability Index (T)	0.03	−0.10	−0.05	−0.10
	(0.2)	(0.8)	(0.5)	(0.9)
Interaction (T x F)	−0.22**	−0.22**	−0.20**	−0.21**
	(2.2)	(2.2)	(2.3)	(2.4)
Liberalization Index (F)	0.06**	0.06**	0.07***	0.08***
	(2.9)	(3.0)	(4.1)	(4.0)
Year Dummy	No	Yes	No	Yes
N. of Obs.	400	400	400	400
N. of Countries	23	23	23	23

Notes: All variables are yearly variables in levels between 1978-1998. All regressions estimated with fixed effects specification. Liberalization (F) is the Chinn-Ito index. Robust t-statistics are in parentheses and in absolute values, ***, **, * denotes 1%, 5%, and 10% significance respectively. The sample includes only those countries whose legal enforcement index is between 5.8 and 6.3. Source: La Porta et al (1997).

Table 5: **Estimation of the Interaction of Financial Integration and Trade**

Subsample for Creditor Rights

	(1)	(2)	(3)	(4)
		Dependent Variable:		
Explanatory Variable:	ln(k)	ln(k)	ln(y)	ln(y)
Tradability Index (T)	4.55***	3.90***	3.34***	2.42***
	(7.9)	(7.3)	(7.6)	(6.4)
Interaction (T x F)	−1.35***	−1.30***	−1.09***	−0.90***
	(4.8)	(5.0)	(5.1)	(5.0)
Liberalization Index (F)	0.31***	0.25***	0.26***	0.18***
	(5.5)	(4.9)	(6.2)	(4.9)
Year Dummy	No	Yes	No	Yes
N. of Obs.	535	535	535	535
N. of Countries	30	30	30	30

Notes: All variables are yearly variables in levels between 1978-1998. All regressions estimated with fixed effects specification. Liberalization (F) is the Chinn-Ito index. Robust t-statistics are in parentheses and in absolute values, ***, **, * denotes 1%, 5%, and 10% significance respectively. The sample includes only those countries whose legal creditor rights are measured at either 2 or 3. Source: La Porta et al (1997).

Table 6: **Estimation of the Interaction of Financial Integration and Trade**

Subsample for Domestic Financial Development

	(1)	(2)	(3)	(4)
		Dependent Variable:		
Explanatory Variable:	ln(k)	ln(k)	ln(y)	ln(y)
Tradability Index (T)	−0.09	−0.07	−0.11	−0.02
	(0.7)	(0.6)	(1.0)	(0.3)
Interaction (T x F)	−0.24**	−0.18	−0.24**	−0.26***
	(2.3)	(1.8)	(2.8)	(3.5)
Liberalization Index (F)	0.04*	0.05**	0.08***	0.08***
	(1.7)	(2.2)	(4.0)	(4.7)
Year Dummy	No	Yes	No	Yes
N. of Obs.	212	212	212	212
N. of Countries	14	14	14	14

Notes: All variables are yearly variables in levels between 1978-1998. All regressions estimated with fixed effects specification. Liberalization (F) is the Chinn-Ito index. Robust t-statistics are in parentheses and in absolute values, ***, **, * denotes 1%, 5%, and 10% significance respectively. The sample includes only those countries whose private credit to GDP ratio is less than 0.2. Source: Demigurc and Levine.

Table 7: **Estimation of the Interaction of Financial Integration and Trade**

Subsample from Tornell et al (2006) Classification

	(1)	(2)	(3)	(4)
		Dependent Variable:		
Explanatory Variable:	ln(k)	ln(k)	ln(y)	ln(y)
Tradability Index (T)	5.39***	2.21***	3.78***	1.24**
	(8.7)	(3.5)	(7.6)	(2.5)
Interaction (T x F)	−2.23***	−1.04***	−1.63***	−0.67**
	(7.0)	(3.4)	(6.4)	(2.7)
Liberalization Index (F)	0.45***	0.19**	0.36***	0.14**
	(7.3)	(3.2)	(7.2)	(2.9)
Year Dummy	No	Yes	No	Yes
N. of Obs.	539	539	539	539
N. of Countries	29	29	29	29

Notes: All variables are yearly variables in levels between 1978-1998. All regressions estimated with fixed effects specification. Liberalization (F) is the Chinn-Ito index. Robust t-statistics are in parentheses and in absolute values, ***, **, * denotes 1%, 5%, and 10% significance respectively. The sample includes only those countries included by Tornell et al (2006) in their medium-enforceability countries.