Regional and Global Financial Integration: an Analytical Framework

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Abstract

This paper compares some of the main effects of regional and global financial integration. To do this we propose a simple multi-country model (based on Martin and Rey, 2000) where market size matters because cross-border trade in imperfectly substitutable financial assets is hindered by transaction costs. We analyze the impact of both regional and global financial integration on asset return, risk diversification, breadth of financial markets and the risk of financial crises. Global financial integration is characterized by a symmetric decrease in transaction costs on financial markets between all countries, whereas regional financial integration is characterized by a decrease in transaction costs in a subset of countries. In such a setup, size matters: larger and richer countries benefit from a financial home bias that leads to higher asset prices and in turn a higher number of assets. Global financial integration, lowers market segmentation and leads to an increase in relative asset prices for small countries. When, financial integration is restricted to a subset of countries, it resembles an increase in market size and generates higher demand for assets issued on those markets and to higher asset prices and greater diversification in the integrated area. The model generates testable implications in terms of cross-border trade in financial assets, the financial gravity equation which we examine for equity and bonds with a focus on the European and the Asian cases. When we endogenize financial market location, which we can think as a long term analysis, the conclusions become more complex. We find that financial integration - both global and regional - leads to agglomeration in the largest economy of the integrated area. Finally, taking into account the possibility of financial crises, we find that financial integration between countries very different in size and development (that may characterize global rather than regional financial integration) generates more gains in "good" times but increases the possibility of a financial crisis. This suggests that the comparison between global and regional financial integration involves a tradeoff: the former generates larger gains in "good" times but the later may be more stable.

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1 Introduction

The past two decades have been characterized by a dramatic increase in international financial integration documented in particular by the work of Lane and Milesi-Ferretti (2007 and 2008). These authors point to the fact that different regions and groups of countries have all experienced an increase in cross-border trade in assets but that this wave of financial globalization has not been uniform. In particular, they point to the importance of regional financial integration in Europe in explaining the particularly large decrease in financial home bias among European Union (EU) countries especially in the euro zone. The creation of the euro and of a single market in financial services has led to unprecedented integration of money and credit markets across the member countries. In fact, they report that over the period 1999-2006, the increase in the share of industrialized countries in world cross-border asset holding is fully explained by the increase in intra-euro area holdings. Asia is often presented on the contrary as a region with a relatively-low level of regional financial integration. This is how Lee (2008) interprets the negative impact of the Asian dummy in his regressions exploring whether, controlling for a standard set of explanatory variables, bilateral investment patterns within Asia are significantly different relative to other country pairs.

The objective of this paper is to present a simple theoretical framework that helps to understand some of the consequences of financial integration, a fall in transaction costs on cross-border trade in financial assets, both in its global and regional form. These are questions, which, from both a theoretical and empirical point of view, have been extensively studied for trade in goods. In particular, the choice of regional versus global trade liberalization for Asian countries has been analyzed by Lee and Shin (2005). Asset flows and the impact of financial integration on the cost of capital and the breadth of financial markets have been comparatively less researched. What are the implications of being part of a large and financially integrated area for risk sharing and asset returns? In this paper, we start with a simple model where market size matters. Without these size effects, the difference between the two forms of integration would be less interesting. For market size to matter, we need the following assumptions: i) assets are imperfect substitutes; ii) cross-border asset trade entails some transaction costs; iii) the investment technology is indivisible. With these characteristics, size and integration of financial markets are powerful determinants of asset prices, the cost of capital and risk diversification. The results in this paper are mainly drawn from a set of recent papers (Martin and Rey, 2000, 2004 and 2006 and Coeurdacier and Martin, 2009). We analyze the effects of global and regional financial integration on cross-border asset trade, assets prices, financial market development, risk diversification, the geography of asset markets and financial crises. The theoretical framework we use allows us to analyze these questions which are particularly important for Asian countries. Some of the conclusions we draw (such as those on financial crises) are certainly specific to the type of model we present but we are confident that others...
(such on cross-border trade in assets) are fairly general. One interest of this analysis is that it generates a theory-driven financial gravity equation which we can then test. We also report some empirical findings on the euro that support the results we find on the effect of regional financial integration on cross-border trade in assets. We also report some preliminary empirical findings on the financial gravity equation for Asian countries analyzing the determinants of Asian financial integration.

Our model predicts that a decrease in transaction costs between two financial markets - the way we model financial integration - increases demand for assets and asset prices in the area, induces agents to develop more risky projects and increases the number of assets so that risk diversification increases. This happens because a decline in transaction costs increases demand for assets in the area, so that the effective size of the market is enlarged. The presence of transaction costs and of imperfect substitutability translates this size and demand effect into a price effect. Because the number of assets can be made endogenous in our model, changes in the structure of financial markets also have an impact on the degree of incompleteness of financial markets and on aggregate risk. Financial integration (lower transaction costs between markets) leads to some convergence between asset prices across markets. Financial market segmentation means that there is financial Home market effect favorable to large markets. Both regional and financial integration means that smaller and poorer countries gain. This is the more so the more different (in size and development) markets are.

What is the impact of regional financial integration on the rest of the world? We show that when two countries form a financially integrated area, which is like an increase in the size of their market, the welfare impact for the rest of the world is ambiguous: on the one hand there is a positive impact, because the increase in the total number of assets enables agents to diversify risk better as markets become less incomplete. On the other hand, the financial terms of trade of the country left outside the financial bloc deteriorate because the price of assets in the integrated area increases.

What happens to the geography and the relative importance of financial centres when we allow for international cross-listings of companies that is when we endogenize the location of financial markets? In this case, small and poor countries may experience a process of financial agglomeration towards larger markets. The results are therefore more ambiguous than when financial geography is given. Entrepreneur’s decision to list on one or several markets depends on the relative sizes of the various economies, as well as the relative magnitudes of the fixed and variable transaction costs that he faces. Fixed costs can be interpreted as differences of accounting procedures, legislation, and information asymmetries across countries. Variable costs can be linked to proportional commissions and fees charged by various financial intermediaries, including foreign exchange transaction costs, as well as other types of informational asymmetries. Regional financial integration, in the form of lower transaction costs, leads to a more concentrated financial geography inside the zone that integrates. This is because firms can issue on the largest
market (where they get the highest price), save on issuing fixed costs and sell relatively easily (because of lower transaction costs inside the integrated zone) to the investors in the small market. This financial agglomeration process may not be detrimental to countries from which financial markets delocate because the concentration of financial markets generates efficiency gains.

Finally, motivated by the present financial crisis and the question of the role of financial integration in it, we analyze the impact of financial integration on the possibility of a specific form of financial crises in our framework: those generated by self-fulfilling expectations of a crash in a context where capital flight to a "safe heaven", a large and rich country, is possible. One can interpret regional financial integration, as financial integration between countries of similar development and size. Our framework (based mostly on Martin and Rey, 2006) suggests this type of financial integration to be less risky than financial integration between countries which are very different is size and development. The later type of financial integration can be thought of as more characteristic of global financial integration. Hence, a trade-off may appear: gains from global financial integration (between very different countries) may be larger for small/poor countries in "normal" times but the risk of crises may be more important than when financial integration takes place between similar countries, something may be more characteristic of regional financial integration. We also argue that it is legitimate to think of trade and financial integration as two complementary processes that should come together. Trade integration is a stabilizing factor that reduces the likelihood of a financial crisis that can be increased by financial integration.

The next section introduces a simple theoretical framework which we use in the rest of the paper. Section 3 analyzes the main effects of global financial integration. Section 4 compares them with regional financial integration. Section 5 reports some empirical results which are consistent with some of the predictions on cross-border flows of section 4. Section 6 endogenizes the geography of financial markets. Section 7 shows how the possibility of financial crises in our framework is affected by financial integration.

2 A simple model of global and regional financial integration

We use a simplified version of the model developed by Martin and Rey (2000, 2004 and 2006) to derive the demands for financial assets. We focus here on the main assumptions, results and mechanisms and derive some results through a graphical analysis.

For those readers familiar with new trade theory, many of the mechanisms we are going to derive are going to sound familiar. This is not by chance. Some ingredients are indeed common to the two sorts of models (trade and finance) which imply that market size is important. The reason is that assets are imperfect substitutes and that transaction costs exist to trade those assets across markets. Hence, markets are not perfectly integrated. This means that the size of aggregate demand will affect asset prices contrary to a classic model where asset prices are solely determined by dividends.
There are $N$ countries populated with $L_i$ (i $\in$ N) risk averse agents who live for two periods. Agents can develop projects and assets correspond to claims on those risky projects. The number of traded projects/assets is $n_j$ for country $j$. The number of shares per asset is normalized to one. The cost of an asset issued by an agent in country $j$ and bought by an agent in country $i$ is $p_j \tau_{ij}$ where $p_j$ is the price of the asset and $\tau_{ij} > 1$ is the bilateral financial transaction cost between the two countries. As in the trade literature, the simplifying assumption is that this cost takes a iceberg form meaning here that the transaction fee is paid in units of the asset itself. We have a very broad interpretation of these transaction costs which include currency risk, trading and liquidity related costs, taxation differentials, differences in accounting and legal standards, and information asymmetry. To simplify expressions, we assume that financial transaction costs inside a country are zero.

In the second period, there are $Z$ exogenous and equally likely states of nature (the number of states of nature is assumed to be larger that the number of traded assets), and the realization is revealed at the beginning of that period after all decisions have been taken. As in Martin and Rey (2004), the technology implies that each project gives dividends in only one state of nature. In all other states of nature, the dividends are zero. All risky claims to operating profits are traded on the stock market at the end of period one, so that each claim corresponds to an Arrow-Debreu asset. No duplication occurs in equilibrium so that each investment/asset in the world is unique. This modelling introduces a simple incentive for agents to diversify their portfolios. Importantly for the results, assets are imperfect substitutes.

A representative agent in country $i$ maximizes utility subject to the first period budget constraint (in second period consumption is the dividend of shares purchased in first period):

$$\begin{align*}
\text{Max } E(U_i) & = \ln C_{1i} + \beta \ln \left[ \sum_{z=1}^{Z} \frac{1}{Z} C_{2i}(z)^{1-1/\varepsilon} \right]^{\frac{1}{1-1/\varepsilon}} \\
& = \ln C_{1i} + \beta \ln \left[ \frac{1}{N} \sum_{i=1}^{N} (d_{ih} s_{ih})^{1-1/\varepsilon} \right]^{\frac{1}{1-1/\varepsilon}} \\
\text{s.t. } & y_i = C_{1i} + \sum_{h=1}^{N} \sum_{l_j=1}^{n_j} \tau_{ih} p_h s_{ih}
\end{align*}$$

which is of the non-expected form introduced by Epstein and Zin (1989) and Weil (1990). This allows the intertemporal elasticity of substitution (which we assume to be 1 for simplicity) to be different from the coefficient of relative risk aversion ($1/\varepsilon$) . $C_{1i}$ and $C_{2i}$ are consumption in first and second period respectively, $y_i$ is per capita income and $s_{ij}$ is the demand by an agent of country $i$ for the asset of agent $l_j$ of country $j$. Remember that assets are all different in the sense that they give dividends in different states of nature but they are symmetric in the sense that they all give in only one state of nature. $\varepsilon$ can be interpreted as the elasticity of substitution between assets. In what follows, we impose $\varepsilon > 1$ to have financial home bias and therefore realistic asset demands.
If we call $\rho = \phi = \pi$, the expected return of asset $\rho$, it can be shown that utility maximization gives the following value of the aggregate demand by country $i$ agents for assets issued in country $j$ is (exclusive of transaction costs):

$$Asset_{ij} = L_i p_j n_j s_{ij} = \frac{\beta L_i y_i n_j}{(1 + \beta)} \left( \frac{r_j Q_i}{\tau_{ij}} \right)^{\epsilon - 1} , \quad Q_i = \left[ \sum_{h=1}^{N} n_h \left( \frac{r_h}{\tau_{ih}} \right)^{\epsilon - 1} \right]^{\frac{1}{\epsilon - 1}} \tag{1}$$

This is a financial gravity equation. Note that as in the trade literature a “price index" $Q_i$ specific to each country appears in the demand for assets. We can think of it in our context as a financial price index for all assets that compete with the imported asset. It measures financial remoteness (see Anderson and van Wincoop, 2004, and Head and Mayer, 2004, for the trade version). A country with a low $Q_i$ (for example because its own financial markets are very diversified and it issues many assets) is a country to which (for a given relative return and bilateral transaction cost) it is difficult to sell financial assets.

Equation (1) can be tested directly. This is also a way to understand how financial integration (regional and global) can affect bilateral financial flows. The aggregate bilateral demand by country $i$ agents for assets issued in country $j$ is (exclusive of transaction costs) is:

$$X_{ij} = L_i n_j p_j s_{ij} = \frac{\beta L_i y_i n_j p_j^{1-\epsilon}}{1 + \beta} \left( \frac{d_j Q_i}{Z \tau_{ij}} \right)^{\epsilon - 1} \tag{2}$$

The value of the demand for an individual asset of country $j$ is given by the sum of the demands of domestic and foreign agents:

$$p_j s_j = \frac{\beta}{1 + \beta} \left[ L_i y_i (r_j Q_j)^{\epsilon - 1} + \sum_{i=1, i \neq j}^{N} L_i y_i \left( \frac{r_j Q_i}{\tau_{ij}} \right)^{\epsilon - 1} \right] \tag{3}$$

Suppose the supply of each asset is exogenous and normalized to unity. Any increase in demand will then increase the asset price and lower the asset return.

First note that in such a context where assets are imperfect substitutes and where financial markets are imperfectly integrated, market size matters for asset prices and returns. Indeed, from (3) one can see that a larger or richer country (high $L_i y_i$) benefits from a higher aggregate demand for its assets as long as transaction costs exist ($\tau_{ij} > 1$), that is as long as domestic demand has a larger weight in aggregate demand than foreign demands. This is a direct effect of the Home financial bias, a counterpart to the Home bias in trade.

Consequently, it can be shown that larger (higher number of agents or $L_i$) and richer (higher income per capita or $y_i$) countries have higher asset prices. The size effect comes from the combination of transaction costs and imperfect substitutability of assets. International trading costs induce agents to increase the purchase of domestic assets rather than foreign assets. This hurts the assets of the poorer/smaller economy since it relies more heavily on foreigners to purchase their shares.
To see this, take a two country world (countries A and B). The market equilibrium (the total demand for an asset equals the supply of this asset which we normalize to unity) implies:

\[
p_A = \frac{\beta}{1 + \beta} \left[ L_A y_A \left( r_A Q_A \right)^{\varepsilon-1} + L_B y_B \left( \frac{r_A Q_B}{\tau_{AB}} \right)^{\varepsilon-1} \right]
\]

\[
p_B = \frac{\beta}{1 + \beta} \left[ L_B y_B \left( r_B Q_B \right)^{\varepsilon-1} + L_A y_A \left( \frac{r_B Q_A}{\tau_{AB}} \right)^{\varepsilon-1} \right]
\]

\[
Q_A = \left[ n_A r_A^{\varepsilon-1} + n_B \left( \frac{r_B}{\tau_{AB}} \right)^{\varepsilon-1} \right]^{\frac{1}{\varepsilon-1}} ; \quad Q_B = \left[ n_B r_B^{\varepsilon-1} + n_A \left( \frac{r_A}{\tau_{AB}} \right)^{\varepsilon-1} \right]^{\frac{1}{\varepsilon-1}}
\]

If transaction cost do not segment financial markets, prices do not depend on market size:

\[
p_A / p_B = \left( \frac{d_A}{d_B} \right)^{(\varepsilon-1) / \varepsilon}
\]

Suppose that we go to the other extreme of financial autarky due to infinite financial transaction costs \((\tau_{AB} \to \infty)\), then demands for assets are domestic only and domestic market size has maximum effect on relative asset prices:

\[
p_A / p_B = \frac{L_A y_A}{L_B y_B} \frac{n_B}{n_A}
\]

Hence, larger \((L_A > L_B)\) and/or richer economies \((y_A > y_B)\) have higher asset prices.

The following graph shows the demand and equilibrium prices for a small and a large economy. Here, what matters is the size of aggregate income which determines the size of aggregate saving. The asset price is higher in the larger economy. This has several positive welfare consequences. A country with a higher asset price is richer because it benefits from higher financial terms of trade.

Higher asset prices also lead to a higher number of assets if this is made endogenous. We have not specified up to now how the number of projects/assets is determined. Suppose as in Martin and Rey (2006) that the marginal cost of projects (then floated on the stock market) is increasing in the number of projects so that quite intuitively the number of assets increases with asset prices. Hence, larger/richer countries have a higher number of assets not only because of a higher number of investors but also because each investor invests more and this leads to a higher number of assets. In turn, this has also a positive welfare effect because it reduces market incompleteness. This benefit of better risk diversification is shared both by the large country and the other countries.
Suppose now that the world experiences financial integration at the global level in the form of lower transaction costs between all markets ($\tau_{ij}$ falls for all country pairs by the same percentage). It can be checked that the price difference between any two economy decreases when expected dividends (firms profits) are equalized across countries.

**Result 1:** In relative terms, the asset price of the poorer/smaller economies increases with global financial integration when expected dividends are not too different across countries.

The reason is that lower transaction costs enable the rich/large economy to buy more assets of the poor/small economy. These assets are cheaper (for a given dividend) due to the financial home bias effect and lower transaction costs enable investors to arbitrage this difference. Agents of the poor/small economy can also buy more assets of the rich/large economy. However, due to the large size of the rich/large economy, the first effect dominates and there is a net increase in the demand for the assets of the poor/small economy and asset prices in the poor/small economy rise. In essence, lower financial transaction costs imply that market segmentation is weakened and that the difference in market size matters less.

What happens to financial market development in this case? One consequence is on the number of projects/assets $n_i$. Remember that it increases with asset prices.
Result 2: The number of assets floated in the poorer/smaller economies increases with global financial integration when expected dividends are not too different across countries. The size of financial markets in the poorer/smaller economies therefore increases.

This means that markets become less incomplete in this case because the difference between the number of assets and the number of states of nature decreases.

Overall, global financial integration in this context reduces the segmentation of financial markets and generates asset prices to move closer to their fundamental value. Hence, market size matters less and dividends (and more generally asset performance) matters more.

In this case, welfare improves for different reasons. In the poor/small countries, if their relative asset price increases with financial opening, there is a positive financial terms of trade effect: the cost of capital falls and the number of investment projects (and assets) increases. Another gain, this time for both sets of countries, is that the fall in transaction costs makes it less expensive to diversify risk when buying foreign assets. Finally, again for both sets of countries, because the number of assets rises, financial incompleteness falls. Remember that each investment project/asset covers one state of nature. In equilibrium, markets are incomplete because some states of nature are not covered by assets. As the total number of assets rises, the number of these "uncovered" states of nature falls.

4 Regional financial integration

What are the effects of regional financial integration in this theoretical context? It can most obviously be interpreted as a decrease in transaction costs \( \tau_{ij} \) between two countries \( i \) and \( j \) inside a specific zone. Although we cannot analyze the full general equilibrium implications of such a policy change (it would involve analyzing its impact on all asset prices in the world and in return all financial price indices in the world), we can analyze some of its most direct effects.

Result 3: Cross-border trade in assets in the region that experiences financial integration rises as well as asset prices in the countries of the financially integrated region.

This result is clear from equations (1) and (3). As transaction costs fall between the two countries, agents buy more assets of the other countries in the region. This shifts demand to the right on graph 2. In effect, regional integration is similar to an increase in market size.
If regional financial integration takes place between countries of different size, then the same conclusion arises as for global financial integration: because segmentation is reduced asset prices reflect more fundamentals (dividends) and less so market size. From this point of view, the small country gains more than the large country.

Does regional integration lead to diversion in the sense that countries that integrate trade less assets with the rest of the world when they trade more among themselves? We can analyze the impact of regional financial integration on diversion by analyzing its impact on the financial price index of the countries in the region, $Q_i$. When transaction costs $\tau_{ih}$ between countries $i$ and $h$ to trade assets fall, then the financial price index in these countries, for example country $i$, also falls. This can be seen from the second part of equation (3) and the definition of the price index: $Q_i = \left[ \sum_{h=1}^{N} n_h \left( \frac{x_h}{\tau_{ih}} \right)^{\varepsilon-1} \right]^{\frac{1}{\varepsilon-1}}$.

This is intuitive: lower transaction costs mean that it is easier for agents in country $i$ to buy assets and diversify risk which translates into a lower price index. This also implies that a diversion effect exists. For country $i$ in the region that integrates financially, this fall in the financial price index lowers the demand for assets of countries outside the integrating zone. This can be seen from the first part of equation (3) where $x_h$ the total demand for an asset of country $j$, $\left[ \sum_{i=1}^{N} L_i y_i \left( \frac{x_i}{\tau_{ij}} \right)^{\varepsilon-1} \right]$, increases with the financial price indices of all the countries it sells to. Hence, regional financial integration and the lower transaction costs and price index it produces, mean that it becomes relatively more difficult to sell assets to the countries in the region.
**Result 4:** Regional financial integration generates a diversion effect in the sense that agents redirect their asset demand from the rest of the world to the assets of the region that integrates.

These results have several welfare consequences. For countries inside the integrated region, financial integration is unambiguously beneficial: higher asset prices lead to a lower cost of capital and an increase in financial terms of trade (the relative price each country trades its assets with the rest of the world). Due to this increase in asset prices, financial markets develop in the sense that there is an incentive to create new assets. This itself reduces market incompleteness. For countries outside the integrating zone, the implications are more ambiguous. On the one hand, the financial terms of trade deteriorate: it becomes relatively more expensive to buy assets from the integrating zone. On the other hand the financial development of the integrating zone benefits all countries in the zone because it means that it becomes easier to diversify risk. Martin and Rey (2000) analyze in more details these results.

**5 Empirical implications: the case of the euro and some preliminary results for Asia**

Some of the implications of financial integration we have analyzed cannot be tested easily: on prices, financial development, risk diversification and welfare. But we can at least analyze some of its implications on cross-border asset trade, i.e. on asset demands. Equation (1) which is a financial gravity equation that can be tested. Taking the log of it we get the financial version of the gravity equation for the holdings of assets of country \( \phi \) by country \( \tau \) (ignoring constants):

\[
\log(\text{Asset}_{\tau \phi}) = \log L_i y_i + \log n_j - (\varepsilon - 1) \log \tau_{ij} + (\varepsilon - 1) \log r_j + (\varepsilon - 1) \log Q_i
\]

The first term is a size factor and corresponds to the GDP of country \( i \). The second one is the number of assets in country \( j \). This latter variable may be related to economic size (GDP and market capitalization) but also to the financial sophistication of the country that may be linked to its status as a financial center. The third term indicates that transaction costs between the two countries have a negative impact on asset cross-border holdings. The effect depends on the elasticity of substitution which may be different for different assets: typically higher for bonds than for equities. The fourth term implies that countries with high expected returns should get more demand for their assets. The last term is the financial price index which is specific to each country. Note that only one variable is country pair specific: the bilateral transaction costs. All other terms are country specific. Note also that, in a given class of assets (bonds or equities), the reaction of the demand to a change in transaction costs depends on \( \varepsilon \), the elasticity of substitution between assets. It therefore assumes that this elasticity is not affected by the change in the transaction cost itself.

Coeurdacier and Martin (2009) test the type of model presented in this paper and focus on one important example of regional financial integration, namely the impact of the euro, which is interpreted
as a fall in transaction costs between a subset of countries. The data set used concerns the year 2001 and the sample contains 27 “source” countries (those who buy assets and export capital) and 61 “destination” countries (those who sell assets). The Coordinated Portfolio Investment Survey (CPIS) provided by the IMF is the main data source for bonds and equities.

The estimates suggest that the euro has had a large effect on cross-border trade in assets. The portfolio bias towards the euro-zone is large: for equities, investors hold around 60% more euro assets than predicted by the usual gravity variables and this number goes up to around 100% for bonds and banking assets. Second, the euro works like a preferential financial agreement. The average country exhibits a euro bias but this bias is significantly larger when the two countries are in the euro zone. Quantitatively this effect is also very large: the euro increases by 150% bilateral bond holdings between two euro countries while equity holdings rise by around 45%. The results confirm those of Lane (2005) on the positive role of the euro on bond holdings between countries of the euro zone. The euro effect does not hold only for bonds but also for equity although with a smaller coefficient. If we interpret the euro effect as a decrease in the transaction costs then, given that bonds are closer substitutes than equities, we should expect the impact of the elimination of currency risk to be larger on bonds than on equities.

Equation (9) can be used to estimate the fall in transaction costs consistent with the increase in asset demand. For this, the elasticity of demand (\(\varepsilon\)) for asset must be estimated. Coeurdacier and Martin (2009) find this elasticity to be equal to 4 for equities and 6.5 for bonds. As expected, estimates of this elasticity is higher for bonds than for equities.

The fall of transaction cost to trade euro assets due to the euro is estimated by around 17% for equity and 14% for bonds. This has benefited both those countries that are in and outside of the euro zone: the transaction cost \(\tau_{ij}\) to buy assets in country \(i\) (in the euro zone) has fallen for all countries which buy these assets (whether \(j\) is in the euro zone or not). On top of this effect, those countries inside the euro zone benefited from a 17% and 10% decrease of transaction costs for bonds and equities respectively. Hence, for a country inside the euro zone the transaction cost for the cross border purchase of a euro bond or equity has decreased by 31% and 24% respectively. Hence, the euro can be interpreted as both preferential and unilateral financial liberalization.

However, contrary to this literature Coeurdacier and Martin (2009) find no effect that the euro has decreased the transaction cost for euro countries of purchasing assets outside the euro zone. In fact, for equities some evidence that diversion has taken place in the sense that euro countries buy less equities from outside the euro zone. The comparison of asset trade between euro zone countries and the Nordic countries in (Finland) and out (Sweden, Norway, Denmark) of the euro zone suggests that for equity holdings some trade diversion due to the introduction of the euro exists. This diversion effect does not come from an absolute increase in transaction costs for buying assets from the rest of the world but from
a relative cost effect.

These results confirm some of the predictions of the theoretical section on a specific example of regional financial integration, namely European financial and monetary financial integration: by reducing transaction costs, it increase cross-border trade in assets and the demand for assets of the integrating zone.

We now use the same data as Coeurdacier and Martin (2009) to check whether Asian countries financial trade in equity and bonds differs from the rest of the world. We also use the Coordinated Portfolio Investment Survey (CPIS) in 2001\(^1\) provided by the IMF. The associated dependant variables are (Equity\(_{ij}\)) which is the log- of aggregate equity holdings in country (j) of investors in country (i) (in US dollars) and (Bond\(_{ij}\)) which is the log- of aggregate bond holdings in country (j) of investors in country (i) (in US dollars).

We estimate the following equation using country i (the "source" country that buys the asset) fixed-effects (\(\alpha_i\)). We use the GDP of country j (GDP\(_j\)) for the market size (\(n_j\)) of the “destination” country (the country that sells the asset and imports capital). We also proxy the financial sophistication of market (j) by the ratio of stock market capitalization over GDP (\(\frac{MktCap}{GDP}\)_j). We do not have to proxy the market size (\(L_{ij}\)) for the “source” country (the country that buys the assets and exports capital) since it is included in the fixed-effect (\(\alpha_i\)). Expected returns in country j are approximated by the log of the average gross equity return in US\$ over the period 1990-2001 (log \(r_j\)). We only use this variable for equity not for bonds.

\[
\log(Asset_{ij}) = \alpha_i + \beta \log(GDP_j) + \gamma \left( \frac{MktCap}{GDP} \right)_j + (\varepsilon - 1) \log Z_{ij} + (\varepsilon - 1) \log r_j
\]

where \(Z_{ij}\) are the transaction costs on international financial markets. We assume the specific functional form:

\[
Z_{ij} = Distance_{ij}^{\delta_1} \exp(\delta_2 \text{euro}_{ij} + \delta_3 \text{commonlang}_{ij} + \delta_4 \text{legal}_{ij} \ldots)
\]

where Distance\(_{ij}\) is the bilateral distance, euro\(_{ij}\), commonlang\(_{ij}\), legal\(_{ij}\) are dummies that indicate that both countries belong to the euro zone, share a common language and a common legal system.

The use of fixed-effects in the source country dimension (i) allows to control for the financial price index \(Q_i\). Indeed, as shown by Anderson and Van Wincoop (2004), this strategy allows to control for the “multilateral resistance term” (\(Q_i\)) which we have shown also exists for the financial gravity equation. Since transaction costs affect the financial price index, the omission of source country fixed-effects might bias the estimated coefficients. This specification has the main advantage to keep variability in two dimensions (country j and bilateral dimension). Strictly speaking, this equation is the exact counterpart

\(^1\)The country list is the same as in Coeurdacier and Martin (2009). The included destination Asian countries are: China, Hong Kong, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand.
of equation (9). In this specification we control for the financial remoteness of country \((i)\) and we keep a reasonable number of parameters to estimate. However, without fixed-effect in the country \((j)\) dimension, we might not control perfectly for some unobservable country-specific factors that can affect international asset holdings. In order to deal with this issue, we will add a large set of control and dummy variables in the country \((j)\) dimension (financial sophistication, corruption index, presence of tax havens and financial centers in the sample).

Table 1 presents the results. In a first regression, in addition to the fixed effect on the \(i\) dimension (the country that buys the asset), we simply add the two most basic gravity determinants: GDP (in the \(j\) dimension) and the bilateral distance. In this basic regression, we also add a dummy \(Asia_{ij}\) when both destination and source countries are Asian countries, in order to check whether Asian financial integration is different from what is predicted by basic gravity determinants. Regression 1 shows that Asian countries trade no more equity among themselves than what is predicted by the two basic gravity variables. For bonds trade, Asia appears less integrated as the dummy is negative and significant. This last result is consistent with Lee. In regression 2, we add several other financial gravity variables and
controls: The market capitalization to GDP ratio, the return for equities for the destination country, the bilateral trade ratio (Aviat and Coeurdacier, 2007 analyze in detail the relation between trade in goods and trade in assets), the legal distance between the two countries, the existence of a common language, the level of corruption, the existence of financial center or a tax haven in the destination country, and the fact that both countries belong to the euro zone. With these controls, the Asia dummy becomes positive for equity and insignificant for bonds. One should however be cautious on the interpretation because in the data (see Coeurdacier and Martin, 2009, for the full country list) there are few source countries that are Asian (Hong-Kong, Japan, Malaysia and Singapore) so that many poorer Asian countries are excluded. Interestingly, we have checked that it is the inclusion of the corruption index in the $j$ dimension (destination country that sells the asset) that makes the $Asia_{ij}$ dummy positive and significant in all our equity regressions. The corruption index, not surprisingly, has a strong negative impact on asset trade for all countries. The fact that the $Asia_{ij}$ dummy becomes positive once the corruption dummy is included suggests however that corruption is higher in Asian countries. We add in regression 3, two interaction terms on bilateral trade and the common legal system, that can be interpreted partially as the result of integration policies. For Asian countries bilateral trade in equity, bilateral trade integration has a lower impact than for the rest of the world. However, a common legal system seems to have a larger effect for Asian countries than for the rest of the world. For bonds, the evidence is more mixed and somewhat different. In the first specification without the interaction terms, intra Asian trade in bonds seems well predicted by the standard financial gravity variables as the Asia dummy is insignificant. However, in the specification with interaction terms, it is again positive and significant as for the equity trade equation. Note that contrary to equity, bonds trade among Asian countries seems to be more positively affected by trade in goods than the rest of the world. Overall, the results suggest that Asian financial integration may be more advanced that what is often believed. However, these regressions should be seen as very preliminary and simply an invitation to go further to analyze the specificity of Asian financial integration. Lee (2006) whose paper estimates a financial gravity model with a focus on East Asia finds that East Asia is less integrated than Europe. His paper is certainly richer than the preliminary estimates presented here but he does not consider the impact of corruption on financial flows. Kim, Lee and Shin (2005) also examine the degree of regional vs. global financial integration of East Asian countries. Their results suggest that East Asian financial markets, particularly compared to the European ones, are relatively less integrated with each other than to global markets. The low financial integration within East Asia is attributed to the low incentives for portfolio diversification within the region, the low degree of development and deregulation of financial markets, and the instability in monetary and exchange rate regime which we have not considered here.
6 Financial market geography and financial integration

Up to now, we have assumed that financial markets location is given exogenously. Firms in a country issue their stocks in the financial market of their country. A Japanese or American investor who wants to buy the shares of an Indonesian firm has to transact on the Indonesian stock market to buy those shares and therefore has to pay the transaction costs that are involved by this cross-border transaction. However, in the long run financial market location is endogenous and financial integration can therefore affect this location.

To make the question relevant, we need to assume that in addition to transaction costs there exists some cost to issue shares on multiple financial centers. If this was not true, then firms would issue on all world financial centers. Hence, we assume that firms have to pay an issuing cost \( I \) per market. There is an extra fixed cost to pay to issue on a foreign market, \( I^F \). This cost reflects in particular the changes in accounting standards and procedures which are required to list on other stock exchanges. The compliance to the US Generally Accepted Accounting Principles (GAAP), for instance, is a major fixed cost for non-US companies wishing to be listed on the NYSE. The decision whether to issue on a market or not depends on its relative profitability. Suppose that a firm choice is between issuing its shares on its own domestic market and on a foreign market. In both cases, it can be shown that the profit increases with the price of the asset. Remember that the asset price is higher on the largest market.

There are two competing forces that determine the decision to issue shares on a financial market. On the one hand, the fixed cost of issuing means firms want to minimize the number of markets on which they issue shares. This pushes towards financial geography agglomeration. On the other hand, cross-listing enables to sell shares directly to investors without transaction costs on cross-border asset trade. We therefore assume that if an Indonesian firm lists its shares on the Japanese stock market, the transaction costs that a Japanese investor pays to buy those shares when the firm is listed on the Indonesian stock market disappear.

Cross-listing therefore increases the demand for shares and leads to a price increase due to the fall in transaction costs. Cross-listing acts like a rightward shift in the demand for assets as in figure 2. This is in line with empirical evidence on cross-listing, as surveyed in Karolyi (1998) for example.

Higher fixed costs tend to foster agglomeration whereas higher transaction costs foster dispersion. The full analysis of all possible issuing choices is very complicated as there many alternatives (issuing on all markets, on your own market, on a subset of markets...). Therefore we only explain the main mechanisms and refer to Martin and Rey (2000) for formal proofs of the arguments. We assume that financial integration only affects transaction costs to trade assets but not fixed costs of issuing. First remember that larger/richer countries have a higher demand for assets so that asset prices on those markets are higher. This clearly gives an incentive to issue on those markets. How does lower transaction
costs affect this incentive?

To see the impact of a fall in transaction costs clearly, we start from a situation where transaction costs are extremely high to trade assets across markets, at least relative to issuing fixed costs. In this case, it is clear that firms will want to issue on many markets to save on these transaction costs and sell directly to local investors. Now suppose transaction costs fall at least relatively to issuing fixed costs. To save on fixed costs, firms can now issue on fewer markets and sell to investors from those markets. On which markets will they stop issuing? The preceding section has shown that smaller/poorer markets have lower demands and lower asset prices. Everything else equal, it is always less profitable to issue on smaller markets. Clearly this implies that as transaction costs fall, firms will stop issuing on the smaller markets and concentrate issuing on larger markets. This pattern resembles the "new economic geography" in the context of the integration of goods markets. This is not surprising as our framework relies on the same type of mechanisms: fixed costs which give an incentive to issue on a smaller number of markets and transaction costs which segment financial markets and give an incentive to issue on the largest markets.

Result 5: Financial integration in the form of lower transaction costs leads firms to issue on the largest markets. The financial geography becomes more concentrated.

This result holds both for global and regional financial integration. Indeed, regional financial integration, in the form of lower transaction costs, leads to a more concentrated financial geography inside the zone that integrates. Again, this is because firms can issue on the largest market (where they get the highest price), save on issuing fixed costs and sell relatively easily (because of lower transaction costs inside the integrated zone) to the investors in the small market. This means that the financially concentrated geography that may emerge from financial integration may not come at a cost to firms of the small market that cease to list on their domestic market and start to list on the large one. Indeed, they also gain from issuing on larger markets through higher asset prices (lower cost of capital) and saving on issuing fixed costs on multiple markets. This is exactly as Boston firms which can live with the fact that New York is the financial center of the US. Agglomeration generates efficiency gains and this is also the case of financial markets.

One also can ask what happens to cross-listing incentives between the integrated zone and the rest of the world. If the fixed cost of issuing has not been modified, then the incentive for firms to list in the integrated area increases. The reason is simply that financial integration between countries $i$ and $j$ means that the overall market size and asset demand of $i$ and $j$ has increased relative to the rest of the world (see previous section). Another way to say this is that with financial integration in the euro zone, an American firm has a stronger incentive to list in Frankfurt or Paris as it can sell its shares easily to German, French... investors from either financial center. If London was not financially integrated to the other European financial markets, this would not be the case.
Result 6: Regional financial integration in the form of lower transaction costs leads firms from the rest of the world to increase issuing in the integrated area.

Note therefore that once the financial geography is made endogenous, some of the results on financial integration have to be amended. In particular, the impact on small and large markets is different. When financial geography is exogenous, the consequence of either global or regional financial integration is that small markets benefit from higher demand and higher asset prices. Financial development follows. When financial market geography is endogenous, the conclusion becomes more ambiguous. Agglomeration of financial markets may actually lead to concentration of financial activities in the largest markets. The welfare implications of such financial concentration are ambiguous. On the one hand the presence of local financial markets may help local development so that small markets may loose from financial agglomeration. On the other hand, like any process of agglomeration, financial agglomeration brings efficiency gains.

7 Regional, global financial integration and financial crises

Up to now, we have studied the effect of the two types of financial integration in the case where "things go well". Clearly, the financial crisis of 1997-1998 in emerging markets and the global financial crisis of 2008-2009 show that the impact of financial liberalization on the possibility of a crisis is a relevant question. It is also one that goes beyond the scope of this paper but we want to analyze briefly how regional and global financial integration can affect the possibility of financial crises and derive some policy implications for the case of East Asia. In the context of the model presented in this paper, where the financial geography is given, financial crises generated by self-fulfilling expectations, are indeed possible as shown in Martin and Rey (2006). It is defined as a situation where, due to a change of expectations from "optimistic" to "pessimistic", no firm has an incentive to invest given that no other firm is investing. This will be the case when the expected asset price is low enough (a "crash") so that no firm indeed finds it profitable to invest because the cost of capital becomes too high. This is what Martin and Rey (2006) call the pessimistic equilibrium. To be more precise, for such a crash to be a possible equilibrium a fixed cost to start investing must be introduced. Hence, the profit to invest in a project and issue an asset attached to this project is:

\[ E(\pi_i) = E(p_i n_i - \frac{1}{2}n_i^2 - F) \]

where \( p_i \) is the asset price, \( n_i \) is the number of investment projects/assets and \( F \) is the fixed cost to start investing. \( \frac{1}{2}n_i^2 \) is the proportional quadratic cost for investment. If investment is non zero, profit maximization means that the number of investment projects/assets developed and issued by firms is such that the marginal cost of investment is equal to its revenue/price: \( n_i = p_i \) so that the total expected profit of investing is \( E(\pi_i) = E(\frac{1}{2}p_i^2 - F) \) and increases with the expected asset price. The crash (a situation such that \( E(\pi_i) < 0 \) so that no investment takes place) is generated by a self-fulfilling expectations mechanism: suppose that expected asset prices \( E(p_i) \) are low so that the operating profit
of starting investment projects does not cover the fixed cost $F$. This implies that expected aggregate investment (the investment of the representative agent) and the investment payoff fall to zero in this equilibrium. This in turn reduces aggregate income. Aggregate income is equal to aggregate wages plus the aggregate investment payoff: $L_i y_i = L_i w_i + L_i \pi_i$. In a crisis, where expected aggregate investment payoff is zero, it is therefore reduced to $L_i w_i$. The total demand for domestic assets (see equation (3)) therefore falls. Note importantly that due to transaction costs on the purchase of foreign assets and the home financial bias that is created, the fall in the demand for assets is concentrated on domestic assets. Hence, the fall in the demand for domestic assets validates the fall in expected domestic asset prices and the crash in both asset prices, investment and income.

When is such a self-fulfilling crash generated equilibrium possible, that is, when can a situation where no agent invests given that all expect the others not to invest be an equilibrium from which no agent has an incentive to deviate? The condition is such that the expected profit to deviate (invest) is negative when no other agent is expected to invest ($E(n_i) = 0$): $E(\pi_i(n_i = 0) < 0$. In Martin and Rey (2006), it is shown that intermediate financial openness between a rich country and an emerging market (characterized by lower productivity and income) makes this equilibrium possible. To understand why intermediate levels of financial integration are necessary, take the two extremes. In a situation, without capital flows or financial autarky (very high transaction costs), where agents can only save by buying domestic assets, a self-fulfilling expectations driven crash is not possible. The reason is that this puts a floor on the demand for domestic financial assets and their expected price as capital flight (buying foreign assets) is not possible. To see this, note that in financial autarky when $\tau_{ij}$ goes to infinity $Q_i$ goes to infinity when $n_i = 0$, so the price of the asset/investment of a single investor who invests while nobody else does goes to infinity. In our setup, a crash is not possible in financial autarky.

At the other extreme, in a situation with zero transaction costs on financial flows and no segmentation, arbitrage implies that agents in the industrialized country would rush to buy the assets in the event of a crash in the emerging market. The price of an asset in the emerging market cannot differ from the price of a similar asset in the industrialized country. The absence of some form of financial market transaction costs and segmentation rules out the possibility of a crash.

A key point is that when financial markets are segmented and assets are imperfect substitutes, the fall in the demand for assets during a crash affects local assets disproportionately. Emerging markets are more vulnerable to this type of crash. The rich country benefits from higher income (and saving) in the rich country, so that the demand for assets (and therefore asset prices), even when depressed by pessimistic expectations, is always higher than in the emerging market. Size therefore matters also for the possibility of a self-fulfilling expectations driven crash with capital flight and this is important for the debate on financial integration.
What then is the effect of financial integration in this context? Martin and Rey (2006) show that it has an ambiguous effect when it takes place between an emerging market and a rich country. One can think of an emerging market as a country which, because of asymmetric information, higher instability..., is such that perfect international arbitrage. The reason that financial integration is risky in this context is that lower transaction costs \( \tau_{ij} \) between the two countries \( i \) and \( j \) makes capital flight easier during a crash. This implies that if expectations turn pessimistic in the emerging market (on domestic asset prices, investment and income), agents save by switching to foreign assets easily in a process which validates the pessimistic expectations. The fact that financial integration takes place between two countries with different levels of productivity and income is important. Indeed, if countries are identical in terms of income level, such a crash is not possible. The reason is that capital flight to the country more immune to a self-fulfilling expectations driven financial crash (the rich country with a higher demand for assets even in the pessimistic equilibrium) is essential to the possibility of a crash in the emerging market. The possibility of a "safe heaven" (a rich/large country) to which capital may flight during a crash makes it easier for such a crash to materialize.

This result has an important consequence for the question of analyzing the difference between regional and global financial integration. One way to think of this difference is that the regional financial integration takes place between countries which are more similar than in the case of global financial integration. Hence, the results of Martin and Rey (2006) suggest that financial integration between a group of countries of similar development level (say emerging markets) and size does not raise as much the risk of a financial crash as financial integration between countries of dissimilar development level and size. Again, the main reason is that a crash is made easier by the possibility of capital flight to a "safe heaven", i.e. a rich and or large country. In fact, given that larger/richer countries are more immune to this type of crash (because the size of demand for domestic assets is large even when agents turn pessimistic), the creation of a financially integrated area between small and similar countries reduces the likelihood of a crash with capital flight between this group of countries and the rest of the world. Another way to say this is that small similar countries have indeed an interest to integrate to form a larger and therefore more stable financial area.

Two important caveats must however be stressed.

First, the gains from financial integration in "normal times", i.e. in situations where financial crises do not occur as in section II are larger when countries are more different, at least when the financial geography is given. This is also one of the results on Martin and Rey (2006). This is not a very surprising result as it just replicates, in the financial arena, the result that gains from trade are larger the more different countries are. In the specific model presented here, financial integration between a rich country and an emerging market means that the later country benefits from both increased number of financial
assets (financial markets become less incomplete) and from an increasing financial terms of trade (the relative asset price of the emerging market increases). What emerges then is a trade-off: regional financial integration between more similar countries (for a given financial geography) generates fewer welfare gains than between dissimilar countries in "normal" times. However, financial integration between countries with similar development level may increase less the risk of financial crises than between more dissimilar countries.

A second important caveat, is that we have focused on a specific type of financial crises where self-fulfilling expectations and market size play key roles because of the possibility of capital flight. Financial crises, as we see presently, come in very different forms, and the results that come in the context that we analyze may not be robust to other types of financial crises.

A final point of importance is the relation between financial crises and trade integration. Recent empirical work shows that goods trade openness influences the frequency of crashes in emerging markets. Eduardo A. Cavallo and Jeffrey A. Frankel (2004) find that trade openness (instrumented by gravity variables) reduces the vulnerability of countries to sudden stops. The Argentina of the 1990s is often presented as a typical example of a financially open economy relatively closed to goods trade. It has suffered heavily from sudden stops (see Guillermo A. Calvo et al., 2004, Calvo and Ernesto Talvi, 2005).

These contradictory effects of financial and trade globalization are illustrated in Martin and Rey (2006) who report the average number of financial crashes per year for developed and emerging economies, dividing each group along the dimensions of financial and trade openness. Their results suggest that opening to capital movements is very positively correlated with the frequency of crashes for emerging markets but not for industrialized countries. This is consistent with the theoretical model analyzed above although the present crisis which has hit both industrialized and emerging markets may change the picture. Trade openness, however, is associated with a large decrease in the frequency of crashes for emerging markets.

In Martin and Rey (2006), a theoretical explanation is given to the stabilizing effect of trade openness on the possibility of a financial crash. The circular causality at the core of the possibility a crash is reduced if trade costs are low since firms’ profits and dividends in more open economies are less dependent on the level of local demand. They are therefore less at risk when expectations turn pessimistic. This suggests also that it is legitimate to think of trade and financial integration as two complementary processes that should come together. Trade integration reduces the likelihood of a financial crisis that can be increased by financial integration. Hence, from this point of view, financial integration between countries that are very open to trade with each other makes sense. If capital from country A flights during a crash to country B, the crash will be weakened or even eliminated, if country A and B trade a lot. The reason is that the capital inflow in country B will increase income and imports from country A. In turn, this will
increase profits and dividends in country A. Hence, trade integration between two countries is a financial stabilization mechanism for both. This can be viewed as a legitimate reason to favor regional financial integration accompanied by regional trade integration.

8 Conclusion and implications for Asian countries

A common theme of this paper is that size matters in financial markets and that therefore regional financial integration by creating large financially integrated zones has an impact on asset demands, prices and the likelihood of financial crashes with capital flight. In this paper, we have reviewed with the help of a single theoretical framework, the main differences between regional and global financial integration. When not taking into account financial geography or the possibility of a crisis, financial integration, either global or regional is always a good thing. The more different countries are (in terms of financial development, size or income), the better. This result in a sense reproduces some well known results from trade theory. The gains of trade are larger when countries are more different. From this (classical) point of view, regional financial integration is good but global financial integration is better. Note also that in this case, small, poor countries gain more than large, rich countries because segmentation of financial markets and the market size effect that follows hurts small and poor countries more than others. Things become more complicated when endogenous financial market geography is endogenized: in this case, countries, especially if not large and rich, may prefer regional to global financial integration. The reason is that with financial integration, firms may prefer to issue their assets on the largest markets and financial market agglomeration may follow that may penalize financial development of smaller markets. However, if regional financial integration takes place between countries of very different size and development, financial agglomeration to the largest markets is also predicted towards the largest markets of the region. Finally, we have also analyzed the impact of financial integration on the possibility of a specific form of financial crises in our framework: those generated by self-fulfilling expectations of a crash in a context where capital flight to a "safe heaven", a large and rich country, is possible. With this issue in mind, financial integration between countries of similar development and size (without a large and rich "safe heaven" towards which capital flies during a crash) is suggested to be less risky. Hence, a trade-off may appear: gains from global financial integration may be larger in good times but the risk of facilitating crises with financial integration may be lesser at the regional than at the global level. This tradeoff is a natural implication of our theoretical setup but we have not tested it empirically. We leave this important question for future research.

There are several implications that can be derived from this theoretical work in the case of Asian countries. First, compared to trade integration, financial integration appears more ambiguous. Trade integration in our framework is unambiguously stabilizing in the sense that it reduces the probability of
a financial crisis with capital flight. Given the history of financial crises in the region (especially the 1998 crisis), this suggests that Asian countries should give priority to trade integration. It suggests a gradualist approach where trade integration comes before financial integration. As for financial integration, our framework suggests both advantages and drawbacks to regional (relative to global) integration for Asian countries. The main advantage is that (given a sufficient high level of regional trade integration) if there is more similarity among Asian countries than between Asian countries and the rest of the world, then the risk of a financial crash is lower with regional than global financial integration. This can also be seen as a gradualist strategy: first integrate regionally, then globally. However, one challenge for Asian countries is, especially compared to European countries, the high level of heterogeneity in terms of their development level and size. This suggests that Asian financial integration will generate concentration of financial centers. As suggested by our framework, this may be a more efficient for Asian firms (even of small countries that would loose their financial markets) that can finance themselves on large and liquid international markets. However, the political economy consequences of a very concentrated Asian financial geography may be more difficult to handle as some countries may resent seeing their financial markets to larger regional markets. As suggested by our framework, this regional heterogeneity may also mean that even regional financial integration can lead to financial crises (but still less so than global financial integration). The challenge of integration of heterogenous Asian countries can lead to two different roads which need not be exclusive. One is to start financial integration among the most similar and richest countries of the zone. The second is to help convergence between the poorer and richer countries of the zone. Here, both theory, empirics and the European experience suggest that trade integration is a very powerful tool for convergence.
References


