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Heterogeneity of financial institutions in the process of economic and monetary integration in East Asia

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HETEROGENEITY OF FINANCIAL INSTITUTIONS IN THE PROCESS OF ECONOMIC AND MONETARY INTEGRATION IN EAST ASIA[1]

Luca Alfieri[a]

The paper aims to assess the influence of the heterogeneity of financial institutions in the relationship between bilateral trade and the monetary integration process in East Asia. I used a structural gravity model with similarity of currency regimes and I introduced a heterogeneity of financial institutions variable derived from the World Bank Financial Development and Structure Dataset. The hypothesis is that the more heterogeneous financial institutions are, the less bilateral trade there is. The results show a negative relationship between trade and the heterogeneity of the financial institutions. The similarity of currency regimes has a negative effect on bilateral trade, and that effect increases with the presence of the financial institutions variable. I made a second estimation concerning 184 countries and territories and I replaced the similarity of currency regimes with a standard currency dummy. The results confirmed the negative and significant relationship between the heterogeneity of the financial institutions and trade. The recent reform plans of ASEAN countries should also consider these aspects, which are not limited to financial integration problems.

Keywords: Trade, Institutions, Monetary Integration, Trade Finance.
JEL Classification: F14, F33, N25.

INTRODUCTION

In recent decades, interest in monetary and financial integration in East Asia has appreciably increased, especially after the consolida-

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tion of European monetary integration and the Asian financial crisis of 19971998. One of the most important reasons for proceeding toward a monetary integration process presented by the literature is the potential increase in trade.

However, research aiming to study trade in the East Asia region while also considering monetary integration issues, must consider the evolution of the differentiation of financial institutions in different countries. This study contributes to this research gap in the literature.

The relationship between monetary integration and trade is quite controversial. Even recent works like that by Rose (2017) show how the magnitude and even the sign of the monetary integration effects toward trade has still no definite answer. Baldwin's criticisms (2006) of the past estimations on the effects, especially those related to the reverse causality problem and unavoidable issues with omitted variables, are still present in the literature. The positive effects of monetary integration found by some authors, such as Volz (2009), concerning East Asian region, could be related not only to biased atheoretical estimations, but also insufficiently defined effects on the financial structures and institutions. Indeed, monetary integration can trigger changes in financial institutions in the countries involved. Understanding whether financial variables (especially the differentiation of financial institutions) are the missing link between trade and monetary integration can be an important contribution to the debate.

Another problem in East Asia, related to trade, is that more pronounced differentiation undermines transaction banking, especially trade finance, which is one of the most important means of supporting trade between East Asian countries. Indeed, the trade finance gap is more pronounced in this region of the world. This has also been confirmed in recent surveys by the Asian Development Bank (Di Caprio et al., 2016).Tools such as letters of credit, one of the most used trade finance instruments in East Asia, help developing countries trade. More marked bilateral financial barriers com- pared to the average barriers (multilateral resistance) could affect the possibility to use some of these instruments and consequently the trade

flow between these countries. Moreover, as pointed out by Jaud et al. (2018), a well-developed banking system can reduce the effect of financial shocks on export dynamics.

The contributions of the study are threefold. This paper studies how the heterogeneity of financial institutions affects trade and the relationship between trade and monetary integration in East Asia. Furthermore, this work could add new insights in the literature on trade and financial issues from a structural gravity model perspective. Moreover, both ASEAN (Association of South-East Asian Nations) and the Asian Development Bank (ADB) are studying new regional banking integration frameworks and problems related to bank intermediation and trade finance, especially after changes in the region due to the crisis of 2008-2009. The results of the paper suggest policy implications relevant for those initial projects.

In this paper, I have employed a structural gravity model with bilateral trade as a dependent variable, and the heterogeneity of financial institutions derived using indicators from the World Bank "Financial Development and Structure Dataset" as the independent variable of interest.

The countries of interest are the ASEAN Plus Three (the ASEAN countries plus China, Japan and South Korea). Moreover, I have also considered the similarity of the currency regimes of the East Asian countries, estimated by Volz (2009), the FTAs agreements variable, derived from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), and I have used pair-fixed effects accounting for the typical standard variables of the gravity model: distances, common borders, languages, and common ex-colonizer.

I found a negative but not significant effect of the heterogeneity of financial institutions and bilateral trade in East Asia in the year-by-year analysis. The similarity of the currency regimes has a negative and significant effect on bilateral trade.

The introduction of the financial institutions in the model increased the effect of the similarity of the currency regimes on bilateral trade. Subsequently, I estimated a model with a 3-year interval as suggested by the literature (Piermartini and Yotov, 2016). The heterogeneity of financial institutions showed a negative and statistically signif-

icant result. In addition, I made new estimations considering 184 countries and territories around the world to confirm the results. I have replaced the similarity of the currency regimes with the dummy currency union used in previous literature (Baldwin, 2006). I found an increase in the magnitude of the positive effect of the currency dummy on trade and a negative and significant relationship between the heterogeneity of financial institutions variable of interest in the year-by-year model. The negative and significant result of the heterogeneity of financial institutions is also confirmed by the 3-year-interval model.

In the first part of the paper, I will discuss the previous literature on the relations between financial institutions and trade, the current environment and the debate about financial institutions in East Asia and the relations between financial institutions and economic and monetary integration in East Asia. In the second part, I will present the structural gravity model, the issues concerning the estimations of monetary integration and trade, the methodology used to estimate the model and the data. In the final part, I will illustrate the results and I will conclude together with policy implications.

1. LITERATURE REVIEW

1.1. *Financial Institutions and Trade*

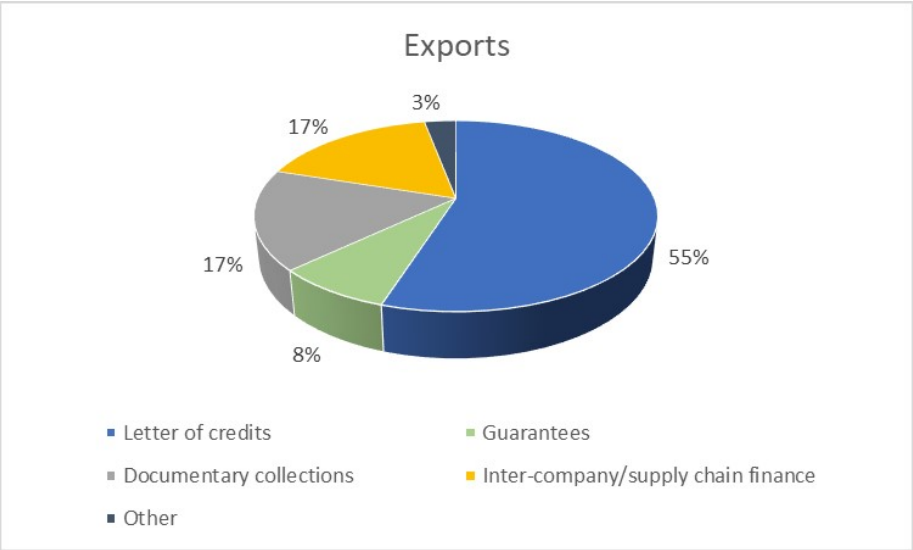
Financial institutions are very important for trade flows around the world. Instruments related to trade finance have acquired growing importance in recent decades. For this reason scholars from different disciplines, including international trade (Di Caprio et al., 2016), finance (BIS, 2014), and economic law (WEF, 2017), are studying how financial institutions could improve their financial services related to international trade and what role public institutions could play locally and internationally in this area.

The Bank of International Settlements (BIS, 2014) affirms that trade finance performs a number of vital roles, including providing working capital to support international trade transfers and reducing payment risks.

According to Van der Veer (2015) financial institutions have a crucial role in making international trade easier. Estimations by the IMF found that 40/50% of world trade is due to some form of banking-intermediate trade finance (Van der Veer, 2015). Trade finance should not be confused with trade credit. Trade credit is a process involving a customer and a supplier. Trade finance instead concerns an exporter asking for credit or other financial services from financial institutions or public institutions to improve its international trade activities. The financial institutions can provide financial funds for exporters and importers (working capital) and trade credit insurances (e.g. to cover risks related to currency fluctuations or political uncertainty). According to Auboin (2009) 80-90% of the trade transactions involve trade finance services. Trade finance instruments like letter of credits counted for the 12,5% of the world trade (2.3 trillion of dollars) in 2011. The current importance of letters of credit among exporters in the world can be seen in Figure 1 derived from data from the WEF (2017) and ICC (2017).

Trade finance seems to be used more in emerging economies where trade flows are dynamic but financial institutions are not really as

FIGURE 1.— Trade Finance Product Mix

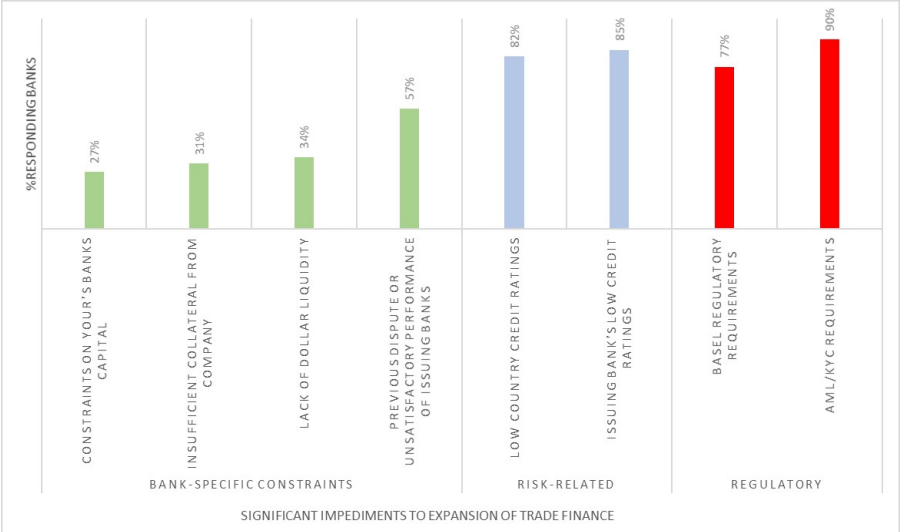


Source: WEF (2017) and ICC (2016)

developed as in OECD countries. Moreover, the Asian continent is the principal user of these kinds of tools. For Niepmann and Schmidt-Eisenlohr (2017), an inverse relationship can be observed in the quality of the institutions in terms of the efficacy of the rule of law in a country and the use of trade finance instruments. Moreover, different regulations and the availability of these instruments in the countries could cause other inefficiencies in terms of financial frictions that are independent from the rule of law. The financial frictions are information asymmetries among banks and firms in different countries (Okawa and Van Wincoop, 2012). Local firms can have easier access to information on the rules and requirements than foreign firms. This can be seen as a sort of "tax", as defined by Okawa and Van Wincoop (2012), on the foreign firms. If foreign agents want to acquire more information to avoid the risk concerning a financial transaction, they have to assume extra costs.

Contessi and de Nicola (2012) suggest that one of the reasons for firms relying on external finance is expenditures on regulatory compliance. The last ADB survey on Trade Finance Gaps, Growth, and

FIGURE 2.— Significant Impediments to the Expansion of Trade Finance



Source: Di Caprio et al. (2016)

Jobs (2017)[1] indicates that the global trade finance gap is equal to 1.5 trillion of dollars [2]. Moreover, 74% of the rejected trade finance transactions concern micro, small and medium-sized enterprises (MSMEs) and midcap firms. Regulatory issues are seen by 515 banks from 100 countries and 1,336 firms from 103 countries as one of the major risks for businesses. Di Caprio et al. (2016) find in their survey that the principal impediments to the expansion of trade finance (Figure 2) from the perspective of the banks are regulatory and credit issues.

Finally, the survey calculated that an increase of 10% in trade finance should cause an employment increase of 1%. The importance of trade finance instruments was demonstrated recently by the decline in trade flows due to the 2008/09 financial crisis. Thirty per cent (30%) of the total decrease, according to Contessi and de Nicola

[1]See Di Caprio et al. (2017)

[2]The trade finance gap concerns firms that cannot access sufficient trade finance instruments. The literature is especially exploring the impacts of the trade finance gap and its causes (Di Caprio et al. 2016, 2017).

(2012), could at least be partially explained by the reduction in the availability of trade finance during the crisis. For the authors, the presence of trade finance services could improve the possibility for certain firms to become exporters and affect the amount of their foreign sales. Moreover, Amiti and Weinstein (2011) demonstrate connections between the health of the bank providing trade finance to exporting firms and how financial shocks that can damage exporter firms are strictly connected to the financial institutions involved in a crisis.

The possibilities for the financial institutions to provide these instruments not only relate to different regulations or capital requirements but also to the efficiency and size of the institutions. Indeed, the collection of the information required in order to extend credit to foreign firms could incur quite high costs and in underdeveloped financial markets such as those in East Asia (except in such countries as Japan or Singapore) very high costs. Presently, there is no particular harmonisation of financial regulations in these countries, and so the regulations are still only national and this causes other costs for foreign firms, even if they are located in a neighbouring country.

1.2. *Issues for Financial Institutions in East Asia*

The East Asian region is the most affected by trade finance issues. Around 34% of the total trade finance transactions that are rejected in the world have occurred in East Asia (Di Caprio et al., 2017). For this reason, the Asian Development Bank has recently increased the capacity of its facilitative trade programme from 400 million dollars to 1 billion dollars. Di Caprio et al. (2016) report that the main cause of the rejections of trade finance requests is the company's inability to fulfil standard bank requirements in the other countries. Moreover, only 37% of the rejected companies tried to get alternative financing. This results in a high loss of potential trade among the countries in the area. Finally, the reduction in inter-bank lending in recent years and the presence or absence of previous relations between the lender and the borrower seem to be among of the most important factors for

decreasing credit lines in developing countries. Hence, these differences in financial institutions have important effects on the potential trade between East Asian countries. Moreover, the region nowadays affected by important changes. After the financial crisis, cross-border lending and investment is growing. This is an important difference considering the past situation where the importance of European and American financial investments was preponderant. For Volz (2016) the development of a strong regional banking system with important services especially in trade finance can have an important positive influence on the development of the regional economy. Furthermore, East Asian nations, especially ASEAN countries, are moving toward a more integrated regional financial market. This could have positive effects on regional development but it also poses significant issues. Volz (2016) indicates that even in a more integrated environment and with quite a harmonised bank regulatory system, like the EU, problems related to a highly integrated financial market could provoke financial contagion as the Eurozone crisis demonstrates. The eruption of the crisis pushed the integration of the banking system forward and brought on the creation of the banking union that included common bank supervision and region-wide macroprudential regulations. In recent years, initiatives like the ASEAN Financial Integration Framework (AFIF) and the ASEAN Banking Integration Framework (ABIF) should improve banking transactions and the provision of financial services reducing the present differences between different bank regulations in the long term. Nevertheless, these differences still exist and trigger higher costs for exporting firms and the financial institutions involved. Moreover, common supervision is at the moment politically unfeasible. Financial supervision, even after the possible implementation of these initiatives, will remain national, so costs due to discrepancies between financial institutions in terms of different regulations, capital requirements and efficiency will remain for the time being.

1.3. *Financial institutions and economic and monetary integration in East Asia*

Volz (2009) implemented a gravity model using panel data from 1980 to 2003 for thirteen East Asian countries considering bilateral trade between these countries as a dependent variable and the intensity of bilateral FDI, the common borders between nations, national GDP, the population and, in particular, the similarity of the currency regimes as independent variables. Volz demonstrates that the similarity of the currency regimes has a positive and significant effect on regional trade. However, as Dévoluy (2011) points out, heterogeneity in economic institutions, such as financial and labour institutions, could have some effects worth considering. Stack (2009), in her work, shows the importance of different degrees of heterogeneity among countries to correctly estimate the effect of different trade policies and regional integration on trade. Moreover, Volz's estimation did not take into account the criticisms of Baldwin (2006); in fact it is an atheoretical model based on the work done by Rose. In addition, Baldwin suggested that financial variables could help understand the relationship between trade and monetary integration issues.

For these reasons, observing the effects of economic institutional variables in a structural gravity model using the similarity of currency regimes estimated by Volz is interesting from an economic scholar's point of view and in terms of possible policy implications.

Scholars have started to focus on regional economic integration among East Asian countries[3] because of the increasing intra-regional trade during the last decades and the regional development framework for new firms in the area since 1990 (Fujita, 2007). The monetary and economic integration of East Asia is also a very important issue for non-Asian economists due to the increasing economic importance of the area, the international economic imbalances (i.e. between China and the United States), the theoretical framework of the optimum currency area, and the present Eurozone crisis.

[3]East Asia is formed by China, Japan, Taiwan the two Korea and the ASEAN's countries (Brunei, Cambodia, Thailand, Philippines, Myanmar, Laos, Vietnam, Malaysia, Indonesia, Singapore).

The emergence of the Chinese economy is triggering new issues. The Spillover Report of China from the IMF (2011) indicates that a revaluation of the renminbi, in the absence of financial reforms, could lead to lower output in China and less requests for intermediate goods for China from the other Asian countries, conversely this could bring advantages for more developed countries in the region, such as Japan and South Korea.

Volz (2009) explains the problems faced by countries with high trade share levels and different exchange rate regimes. In the case of the non-coordination of the exchange rate, one or more country could depreciate their currencies to gain a competitive edge over other countries. Their competitors could evoke protectionism or depreciate their currency as well. Although this is controversial in the literature since the studies by Melitz (2003), it is still one of the argument against depreciation. In the short-run, because of sticky prices and wage rigidities, a devaluation can change relative prices and have effects on tradable and non-tradable sectors and international trade (Auboin and Ruta, 2013). Moreover, this process could trigger a trade war or a round of beggar-thy-neighbour devaluations. Another argument is connected to the presence of regional trade agreements. Swings in bilateral exchange rates could result in changes in the location of investments or incentive new investments in one location rather than in another (Volz, 2009). As Auboin and Ruta (2013) point out, real exchange rates have a potentially strong impact on allocating resources among tradable and non-tradable sectors. A change in exchange rate regimes in one country can trigger an exchange rate crisis in another. Indeed, trade partners could be more sensitive to financial contagion.

Chit et al. (2010) use a generalized gravity model to measure the relationship between exchange rate variability and trade between five East Asian countries. Afterwards they estimate the same relationships considering the five East Asian countries and 13 non-East Asian countries. They find negative relationship, with small effects, between bilateral exchange rate variability and trade. They conclude that there is indeed, an effect but the relationship cannot be determined by one factor only. This is in line with recent literature

(Auboin and Ruta, 2013).
The bilateral financial linkages among East Asian countries are still low in comparison to other developed areas of the world, such as the EU and the USA. This is due to underdeveloped financial markets and different legal frameworks. Moreover, the differences in financial institutions and structures cause problems for different investments and money transfers from one country to another[4].
Lee (2008) affirms that this lack of bilateral integration is caused by underdeveloped financial structures, lower levels of capital account liberalization and higher exchange volatility, and confirms the relationship among financial integration, exchange rate volatility and assets trade.
Nevertheless, Ray (2015) signals greater flexibility in transnational financing in the region in the last years. Even the IMF (2015) stresses that intra-regional linkages have recently deepened especially in Asia, and Law et al. (2015) point out the increasing financial integration in the area and how institutions have been found to have an important role in East Asian economies.
Volz (2013) and Dévoluy (2011) stress how financial integration also has a negative side because it may increase the possibility of systemic shocks. A larger convergence in regulatory frameworks and common supervision is necessary and has to proceed in parallel with the monetary and financial integration process.
For these reasons it could be more useful to observe the bilateral differences between financial institutions among East Asian countries. Less differences in financial institutions could cause less financial frictions. Considering financial institutions and the similarity of the currency regimes should provide more insight into the determinants of trade flows between East Asian countries.

[4]The trade finance gap in developing Asia is equal to 692 billion dollars (estimated data in 2015). See Di Caprio et al. (2016).

2. METHODOLOGY AND DATA

2.1. *The gravity model*

Starting with Tinbergen (1962), the gravity model has become one of the workhorse models in studies of international trade. The model's name "gravity" comes from the resemblance its nonlinear form has with Newton's law of gravity (Head and Mayer, 2014). Exports are proportional to the GDP of exporting and importing countries (a sort of economic mass), and inversely proportional to the distance between them. The gravity model explains how larger country pairs trade more and, at the same time, more distant countries trade less because of higher transportation costs.

Anderson (1979) was the first to create a stronger theoretical foundation for the gravity equation with assumptions of product differentiation on the basis of the place of origin [5] and Constant Elasticity of Substitution (CES) expenditures. and the Constant Elasticity of Substitution (CES) expenditures. The former implies that the price of a unit of utility decreases in the number of goods available. Taking the income of households as fixed, the household would like to have a greater variety of available goods, since it increases the amount of utility. The love for variety generates trade: rather than concentrate spending on one kind of good, the household would rather buy (i.e. import) goods from all countries. The latter is interesting because it does not vary with the quantities of the goods consumed.

The other two most influential papers on structural gravity theories in economics are Eaton and Kortum (2002) and Anderson and Van Wincoop (2003) ones, introducing the microfoundations in the gravity model theory. The work of Anderson and Van Wincoop (2003) especially emphasized the importance of the general equilibrium effects of trade costs.

The most recent studies in the literature have connected works on heterogeneous firms and the determination of bilateral flows (Melitz and Ottaviano, 2008).

[5] See Armington (1969).

2.2. *The Structural gravity model*

Anderson and Van Wincoop (2003) developed Anderson's model using the structural equations in the system of trade. The partial equilibrium model, illustrated by Larch and Yotov (2016), is a system of equations such that:

$$X_{ijt} = \frac{Y_{it}Ejt}{Y_t}\left(\frac{\tau_{ijt}}{P_{jt}\Pi_{it}}\right)^{1-\sigma}, \quad (1)$$

$$\Pi_{it}^{1-\sigma} = \sum_j \left(\frac{\tau_{ijt}}{P_{jt}}\right)^{1-\sigma}\left(\frac{Ejt}{Y_t}\right), \quad (2)$$

$$P_{jt}^{1-\sigma} = \sum_i \left(\frac{\tau_{ijt}}{\Pi_{it}}\right)^{1-\sigma}\left(\frac{Yit}{Y_t}\right), \quad (3)$$

X_{ijt} are the bilateral export flows from country i to j at time t; E_{jt} is the total expenditure of the importer j; Y_{it} is the value of total production in exporter i; Y_t is the value of world output; τ_{ijt} denotes bilateral trade frictions between partners i and j; $\sigma > 1$ is the elasticity of substitution among goods coming from different countries; finally, P_{jt} and Π_{it} are structural terms used by Anderson (1979) for the inward and outward multilateral resistances (MRs). The MRs can be interpreted as indicators of how remote two countries are in comparison to the rest of the world. The remoter two countries are from the rest of the world, the more they will trade. This is because it is possible to create remote indexes using the GDP of countries weighted to average distances as suggest by Larch and Yotov (2016). The multilateral resistances are tools that translate the initial, partial equilibrium effects of trade policy at the bilateral level to country-specific effects on consumer and producer prices, which can also be used with labour market, environment and economic institutional models.

2.3. *Bilateral trade and monetary integration*

Baldwin (2006) analyses the most important problems related to the estimation of the structural gravity model in particular, in case it could be necessary to estimate trade policies and currency unions. He calls these three problems the gold, silver and bronze medals of the gravity model estimation. The bronze-medal mistake is an incorrect deflation of nominal trade values on the basis of the US aggregate price index. One solution is to insert time dummy variables. Each bilateral trade flow is divided by the same price index; this dummy should correct the eventual incorrect deflation procedure.

The silver medal tells us that the gravity equation is a modified expenditure function, which illustrates the spending value of one nation on the goods produced by another nation. Hence, the gravity equation shows uni-directional bilateral trade. In many previous gravity models, trade was not estimated on a uni-directional basis. Rather, it was estimated using average exports from pair-wise countries. This mistake triggers researchers to work with overestimated bilateral trade because it ends up in a residual error and, if the error is correlated with the variables included in the study, the results will bias the estimations upward. If the error was evenly or randomly distributed, the silver medal mistake could have less effect. However, if bilateral trade imbalances are systematically large for nations using the policies in the study, as in East Asia, then the results can be biased. The IMF (2015) affirms that a reduction in cross-border lending could result in limited arbitrage opportunities for firms and less competition between foreign banks and domestic banks; thereby making domestic firms more dependent on non-optimal interest rates in domestic bank markets and subject to higher borrowing costs. Better connections should lead to an increase in trade. Indeed, Baldwin and Taglioni (2006) remark that there is the possibility that nations sharing a common currency could run larger bilateral deficits in goods trade than other nations. In this case, the silver medal error overestimates the results of the trade effects of monetary union.

The gold medal error is related to the inescapable omitted problem issue in the gravity model, since trade frictions (τ) enters directly in Π_i and P_j. Indeed, part of the multilateral resistance exists in the

regression residual (Baldwin and Taglioni, 2006). This correlation exerts a bias on the estimate of trade costs and all its determinants, including the currency union dummy. Moreover, the currency dummy could be related to another problem such as the reverse causality issue. Countries that trade more with each other are more likely to form a monetary union (Baldwin, 2006). These issues may generate an upward bias from the effects of monetary unions on trade, especially in cases where the countries forming a monetary union have imbalanced trade relations such as in East Asia, as suggest by Baldwin and Taglioni (2006). This problem has been faced in two ways in this work. First, the similarity of currency regimes is not a currency dummy but a time variant pair-wise regressor. Second, taking into account Devereux and Lane (2003) and Baldwin (2006), I used a variable describing the heterogeneity of financial institutions. Furthermore, using this variable for the East Asia region has no sense because the only currency union already existing is the one between Singapore and Brunei.

2.4. *Model and Data*

Taking into account the previous formula on partial equilibrium, the normal log-linearized gravity equation is defined as follows:

$$lnX_{ijt} = lnE_{jt}+lnY_{it}\text{-}lnY_{jt}+(1\text{-}\sigma)ln\tau_{ijt}\text{-}(1\text{-}\sigma)lnP_{jt}\text{-}(1\text{-}\sigma)ln\Pi_{it}+\epsilon_{ijt}, \quad (4)$$

where ϵ_{ijt}. is the error term.
Piermartini and Yotov (2016) analyse some of the important problems related to the estimation of this structural gravity equation and how to fix them:

- Zero trade flow problem: an ordinary least square (OLS) estimation is not a good instrument for estimating a structural gravity model because it does not take into account the information derived by zero trade flow when a logarithmic transformation of the value of trade is considered. To solve this issue,

I used the most efficient estimator suggested by the literature: the Poisson Pseudo-Maximum Likelihood (PPML)[6].

- Heteroskedasticity in the trade data: in case of heteroskedasticity, as the literature described by Piermartini and Yotov (2016) showed us, an OLS estimation is not only biased but also inconsistent, especially when the gravity model is estimated in log-linear form as in the case of Volz's estimation. The authors suggest that in this case the use of PPML also deals with this issue rather well.

- Bilateral trade costs: the proper specification of bilateral trade costs is absolutely crucial for a partial equilibrium as well as for a general equilibrium trade policy analysis. The standard variables to proxy bilateral trade costs are: the distances between countries and the presence of common borders, common languages, colony ties and trade policies between the countries as trade agreements. However, in the case of the use of pair-fixed effects, all the effects of the time-invariant variables will be dropped out because of collinearity as also seen in the previous literature.

- Endogeneity of trade policy: it is possible that a trade policy may be correlated with unobservable cross-sectional trade costs. The authors suggest the use of country pair-fixed effects or first-differencing to account for the unobservable ties between the endogenous free trade agreement covariate and the error term in gravity regressions.

Furthermore, there are concerns in the literature on the use of estimating data pooled over consecutive years in the presence of fixed effects that could undermine the capacity of the model to correctly detect the changes in trade policy. In this study, I estimated both

[6]Some other methods considering the problem (Some other methods of considering the problem (e.g. the two step selection process proposed by (Helpman et al. (2008)) are possible but they pose estimation issues and difficulties with panel data (see Piermartini and Yotov (2016))

year-by-year models and 3-year interval models.

Taking into account these suggestions, the estimated model has the following form:

$$X_{ijt} = exp[\pi_{it} + \chi_{jt} + \mu_{ij} + \eta_1 FTA_{ijt} + \eta_2 SIMC_{ijt} + \eta_3 HET_{ijt} + \epsilon_{ijt}],, \quad (5)$$

where X_{ijt} is the nominal trade flow in non-consecutive years t from country i to j. The countries of interest are the ASEAN Plus Three. The source is the Direction of Trade Statistics (DOTS) from the International Monetary Fund (IMF), and the years observed are from 1999 to 2014.
HET_{ijt} is the heterogeneity of financial institutions variables from country i to country j at time t. The variable of interest describing the heterogeneity in financial institutions is created using the World Bank "Financial Development and Structure Dataset". The database shows indicators of financial development and the structure of financial institutions over time for more than 200 countries (31 indicators in total) from 1960 to 2014 [7].
The dataset affords us some insights into the differences among financial institutions in the countries of the area. A better analysis could involve more in-depth evaluations of the differences in bank regulations but this could be difficult due to problems of data availability or because the data concerning these issues are not sufficiently detailed to obtain a significant difference between the financial institutions in different countries. Nevertheless, the World Bank datasets permit the construction of financial indicators to measure differences in depth, access, efficiency and stability in a country's financial institutions. *Depth* is related to the size of the financial institutions. This is the most studied aspect in the literature. Normally, private credit, indicated as deposit money bank credit in the private sector (Cihak et al., 2012), is the principal and classical indicator of these financial institutions and market characteristics.*Access* describes the degree to which economic agents can and do use the financial systems in the countries of interest. *Efficiency* concerns the capacity of

[7]Last update June 2016.

financial institutions to provide financial services. *Stability* refers to the stability of the financial markets and institutions.

TABLE 1

THE CHARACTERISTICS OF FINANCIAL INSTITUTIONS IN THE WORLD IN TERMS OF THE LEVEL OF INCOME IN THE COUNTRIES CONCERNED

Financial Institutions (mean)	High Income	Upper middle income	Lower middle income	Low income
Depth	84	44	28	13
Access	55	32	19	5
Efficiency	86	75	61	42
Stability	35	38	40	35

Source: Cihak et al. (2012). The authors used some of the indicators in their dataset to describe the mean of the different characteristics. Scale 1 100.

All these aspects are important in order to analyse the multifaceted financial institutions and systems and how they work. As we can see in Table 1, the differences in the characteristics of the financial institutions are not related to economic development in a simple direct and linear relationship but in a more complex one.

In this work, I considered data from 1999 to 2014.

The variables taken into account for the estimations are: the deposit money bank assets to bank assets[8]; ratio of liquid liabilities to GDP; bank credit to bank deposits[9]; the average return on assets (net income/total assets); offshore bank deposits relative to domestic deposits.

These variables are chosen in order to use different subgroups of the dataset, as suggested by Cihak et al. (2012), while also considering previous literature.

In order to investigate the heterogeneity of the financial institutions, I discarded the possibility of working with the same methodology

[8]The ratio of deposit money bank claims on the domestic nonfinancial real sector to the sum of deposit money bank and Central Bank claims on the domestic nonfinancial real sector.

[9]Private credit by deposit money banks as a share of demand, time and saving deposits in deposit money banks.

used by Volz to calculate the similarity of currency regimes, in order to avoid the risk of losing information in the case of both countries having less developed or more developed financial institutions. Instead, I used the formula suggested by one of the papers introducing the financial dataset:

$$d(p,q) = \sqrt{\sum_{i=1}^{5}(p_i - q_i)^2} \quad (6)$$

Cihak et al. (2012) called that Euclidean distance d, where p_i and q_i are the values of the ith indicator taking into account for country p and q, respectively. The larger the "distance" the less similar the two countries, so we can observe more financial heterogeneity between the two countries in respect to financial markets and institutions. This formula allows us to create the required heterogeneity of financial institutions variable. Moreover, I used the logarithmic form of this variable, taking the normal use of the natural logarithm for the standard geographical distance in the empirical literature into account as a term of comparison.
π_{it} is the set of time-varying source-country dummies, which controls the outward multilateral resistances, country output shares and other observable and unobservable exporter-specific factors that can influence bilateral trade. χ_{jt} includes the set of time-varying destination-country dummy variables that account for the inward multilateral resistances, total expenditure, and other observable and unobservable importer-specific characteristics that can influence trade. The standard gravity model variables used to estimate these effects are as follows: weighted distances ($DISTANCEWS$), territorial contiguity ($CONTIG$), former colonizer in common ($COLONY$), and common languages ($COMLANG$); they are all derived from the Centre d'Etudes Prospectives et d'Informations Internationales(CEPII) Database. Output ($OUTPUT$) and the expenditures ($EXPEND$) are derived from codes using bilateral trade data [10]. μ_{ij} is the set of country-pair fixed effects.
I used FTA_{ijt} to denote the vector of any time-varying bilateral determinants of trade flows. Possible candidates here include regional

[10]The estimations with these variables are reported in Annex I of this paper.

or free trade agreements or regional trade agreements. The (FTA), as the currency union (CU) variable, comes from the Centre d'Etudes Prospectives et d'Informations Internationales(CEPII) Database.
$SIMC_{ijt}$ is the similarity of currency regimes described by Volz (2009). The similarity of currency regimes data comes from my estimations [11] reproducing the Volz method derived from the paper by Frankel and Wei (1994). I used daily exchange rates from 1/1/1999 to 31/12/2014 from the Bank of Italy historical time series. The model in the work by Volz estimates the different weights of the different currencies in the area to the dollar.
Following the same notations used by Volz (2009), the similarity of currency regimes is calculated taking the pair difference in absolute value into account:

$$D_{ij} = 1 - |w_{it} - w_{jt}|, \quad (7)$$

where w_{it} is the weight of the US dollar in a hypothetical currency basket of country i. In order to estimate the weights of the currencies included in the hypothetical currency baskets against which East Asian countries manage their currencies, Volz regressed each East Asian currency e on a constant c, the US dollar, the euro and the Japanese yen:

$$\triangle ln(e/CHF)_t = c + \beta_1 \triangle ln(USD/CHF)_t + \beta_2 \triangle ln(EUR/CHF)_t + \beta_3 \triangle ln(JPY/CHF)_t + \epsilon_t, \quad (8)$$

The Swiss franc (CHF), which is assumed to be uncorrelated with the three basket currencies, or with the East Asian currencies, is used as numéraire to minimize multicolinearity issues. The β coefficients are the weights of the basket. $\triangle$ are the first-difference operators and t is time. All variables are in natural logarithms. β_1 is used to calculate the indicator D_{ij} ; that is, $\beta_1 = w_{it}$. If both countries have the same weights on the dollar in their (hypothetical) currency basket, D_{ijt} is equal to one; if one of the countries chooses a hard peg to the

[11] See Annex I Table 6 for the different dollar weight average in the considered period.

dollar ($\beta_1 = 1$) while the other one chooses a zero dollar weight in its currency basket ($\beta_1 = 0$), D_{ijt} is zero. ϵ_{ijt} is the error term.
Some works (Bilgin et al., 2017) also introduced other institutional variables or differences between the legal systems in countries (Anderson and Marcouiller, 2002). In my estimations, I avoided introducing them for different reasons. First, some of them are time-invariant variables; hence, they will be dropped out after the introduction of the pair-fixed effects. Second, variables like economic freedom are quite general and do not allow us to observe specific institutional effects. Finally, introducing other economic institutions, following Dévoluy (2011)'s definition (such as labour institutions), is surely a possible path for future research. However, in this work, I preferred to focus on aspects of financial institutions, and leave new estimations involving different economic institutions for future studies.

3. RESULTS

3.1. *East Asian estimations*

The results [12] of the East Asia estimations can be observed in tables 1 and 2. In the year-by-year estimations (Table 2), the similarity of currency regimes shows a negative effect on trade in contrast with Volz's results and a large part of the literature [13]. There could be two reasons for this. First, the similarity of currency regimes was conceived for an atheoretical gravity model. A structural gravity model has a totally different specification and structure. The PPML, for example, that was not used in Volz's estimations, makes it possible to take into account zero flows of bilateral trade. This gives more information in comparison to older methodologies. Second, the pairwise heterogeneity among countries could be highly relevant and a stricter monetary integration at the moment could result in a reduction in trade rather than an increase. This result augments the importance of the introduction of our financial institutions variable. The value of the free trade agreements coefficient is low because of both the low variability of the regressor in the case of East Asia and the endogeneity issues of RTAs/FTAs described by Piermartini and Yotov (2016). This problem could eventually be solved by an intranational trade regressor, which can take into account the diversion from domestic to international sales [14].

[12]The STATA codes used are based on the codes proposed by Professor Yoto Yotov (2016).

[13]Even if negative effects were observed in some studies, as illustrated by Auboin and Ruta (2013) and Rose (2017)

[14]See Piermartini and Yotov (2016) p. 38-39.

TABLE 2

PPML - Gravity model East Asian estimations

	(1) PPML1	(2) PPML2	(3) PPML3
FTA	0.089***	0.087***	0.088***
	(0.031)	(0.031)	(0.031)
SIMC	-0.106***		-0.142***
	(0.054)		(0.048)
HET		-0.032	-0.048
		(0.012)	(0.037)
N	2463	1900	1900
R^2	0.996	0.996	0.996

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Standard errors are reported in parentheses

TABLE 3

PPML - Gravity model East Asian estimations - 3 years intervals

	(1) PPML1	(2) PPML2	(3) PPML3
FTA	0.106***	0.092**	0.094**
	(0.038)	(0.039)	(0.039)
SIMC	-0.013		-0.084
	(0.095)		(0.091)
HET		-0.063	-0.077**
		(0.039)	(0.039)
N	923	634	634
R^2	0.996	0.996	0.996

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Standard errors are reported in parentheses

The results concerning the heterogeneity of financial institutions (*HET*) showed a negative but not statistically significant result.
The estimations over the 3-year interval showed different results (Table 3). In this case, the similarity of currency regimes is still negative but not significant. Instead, the heterogeneity of the financial institutions is negative and statistically significant at 5%. A possible motivation is that changes in financial heterogeneity need time to show their effect on bilateral trade. To obtain a robust analysis of the result, I took into consideration a larger sample encompassing 184 countries.

3.2. *The Global estimations*

The selected sample is composed of 184 countries and territories from 1999 to 2012 and use the same variables as with East Asia

but replace the similarity of currency regimes with the standard *CU* dummy variable. The total number of observations, considering the 5 indicators of the Financial Structure dataset, which composed the *HET* variable, are more than two hundreds thousands.

In our baseline model the *CU* dummy is positive and significant in the PPML estimations (Table 4). Moreover, the currency dummy coefficient increased with the introduction of the heterogeneity of financial institutions regressor. I cannot explain the relationship between these two indicators using the present methodology. It can, however, be pointed out, taking into account Baldwin (2006), that using very different currency unions and very different countries could lead to biased results. Hence this result has to be considered prudently.

Heterogeneity of financial institutions has a negative and strongly significant relationship between the heterogeneity of financial institutions and trade. Piermartini and Yotov (2016) explained that in the case of continuous variables, such as distance, it is simply the elasticity of the value of trade flow (with respect) to that continuous variable. Namely, a 1% increase in the heterogeneity of financial institutions could provoke a decrease in bilateral trade equal to -0.033%. This means that a hypothetical increase of 10% in terms of the heterogeneity of financial institutions around the world will provoke a loss of trade, taking into account the total amount of world trade, in the order of , of tens of billions of dollars. This possibility is not unlikely if we expect a loss of trust in multilateral institutions and rules. The 3-year-interval estimations confirmed these results and increased the effects of both the heterogeneity of financial institutions (-0.035) and the currency union dummy.

TABLE 4

PPML - Gravity model Global estimations

	(1) PPML1	(2) PPML2	(3) PPML3
FTA	0.025	0.002	0.024
	(0.024)	(0.025)	(0.027)
CU	0.179***		0.199***
	(0.047)		(0.050)
HET		-0.035***	-0.033 ***
		(0.012)	(0.012)
N	327977	219379	219379
R^2	0.995	0.996	0.996

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Standard errors are reported in parentheses

TABLE 5

PPML - Gravity model Global estimations -3 years intervals

	(1) PPML1	(2) PPML2	(3) PPML3
FTA	0.038	0.009	0.041
	(0.028)	(0.027)	(0.031)
CU	0.162***		0.226***
	(0.054)		(0.058)
HET		-0.036***	-0.035 ***
		(0.013)	(0.013)
N	111769	73851	73851
R^2	0.995	0.996	0.996

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Standard errors are reported in parentheses

3.3. *Comments on the results*

It is interesting to notice that the coefficients found in the previous East Asian estimations in the 3-year model was -0.077, that is more than double the result of the corresponding model of global estimations. This confirms the literature results assessing the more serious issue of financial heterogeneity in the East Asian region. The non-significant East Asian results in the year-by-year period and, by contrast, the statistically significant effect in the 3-year interval could mean that adjustments in financial institution heterogeneity require time to affect bilateral trade. Indeed, as explained in the methodology part, estimating data year-by-year could imply difficulties in the presence of fixed effects when observing changes in trade policy.
Furthermore, in the global estimations, the heterogeneity of financial institutions is significant in both the year-by-year and 3-year-interval models. This could be due to the presence in the East Asian estimations of more developing and emerging financial markets than already developed ones. The most underdeveloped financial institutions bring down the general effects of the yearly improvement by decreasing the heterogeneity of financial institutions. Adopting the 3-year interval can permit a better observation of the decreasing heterogeneity of financial institutions and its positive effects on bilateral trade because some significant changes can also be seen in these underdeveloped financial institutions.

3.4. *Policy implications and future research*

In order to improve our present knowledge on the East Asian differences in the implications for bilateral trade for financial institutions, it could be more interesting to study microdata panels related to firms and data related to trade finance instruments than those used in our dataset. The most recent literature concerning the structural gravity model is attempting to exploit this data, especially in the case of general equilibrium estimations (Piermartini and Yotov, 2016) and the analysis of trade tariffs at the sector level. At the microeconomic level, trade finance instruments normally concern enterprises in different countries and their connected financial institutions. Studying

data that shows the process among financial institutions and enterprises should give us more relevant and intriguing results. Indeed, this paper looked at aggregate data that may not be able to detect issues related to more specific firm-financial institution relationships. Unfortunately, the microdata on trade finance from private enterprises or international organizations in East Asia is not easily obtained. The data suggested by Jaud et al. (2018) could be used instead.
Furthermore, in this work I did not consider the importance of more homogeneous financial institutions in order to avoid the possible propagation of shocks. Some authors, such as Volz (2013) and Dévoluy (2011) argue that one of the causes of the possible propagation of shocks is the presence of strong financial integration. In particular, Dévoluy (2011) observed how the magnitude of this negative effect could be augmented by the presence of the heterogeneity of economic institutions, like financial institutions. More homogeneous financial institutions could reduce the negative effects in the case of shocks. The work of Raddatz (2010) and Van der Veer (2015) offer some interesting points on these issues. The Eurozone crisis has shown the importance of common framework rules. A problem that the ASEAN countries also need to solve in the near future (Volz, 2016). The findings of Camarero et al. (2017) about the euro effects on trade considering stochastic trends should also be taken into account. Finally, a study observing a dynamic structural gravity model that considers the intermediate good sectors and final good sectors (Larch and Yotov, 2016),could clarify more insights and make work on theoretical issues possible. Indeed, intermediate goods are really important for the economy of the area (Fujita, 2007). The dynamic structural gravity model is also state-of-the-art in this area of research and surely could help clarify the relationship between financial institutions and bilateral trade in East Asian countries. In addition, a clear relationship between financial institutions, the monetary integration process, and their combined effect on bilateral trade still has to be clearly established. The estimations in this study show an increase in the negative effects of the similarity of currency regimes in the year-by-year model. In the global estimations an increase in the importance of the currency union dummy can be noted. Indeed, even if

the direction of the relationship between the heterogeneity of financial institutions and monetary integration is not completely clear, the results illustrate intriguing results.

More robust results on this issue could be obtained by replacing the similarity of currency regimes with a measure of bilateral exchange volatility. In fact, the volatility of the exchange rate and its relationship with bilateral trade is one of the most important topics in current literature (Auboin and Ruta, 2013). Another way could be to use financial variables as instrumental variables instead of the currency union dummy as suggested by Baldwin (2006).

4. CONCLUSIONS

Since European monetary integration, the creation of the euro and the Asian financial crisis of 19971998, scholars have been interested in possible paths toward monetary integration in East Asia.
The potential increase in trade among countries is one of the most important motivations to proceed toward a monetary integration process.
Studying trade in the East Asia region and considering monetary integration issues implies the consideration of the heterogeneity of financial institutions in the countries of the region. The heterogeneity of financial institutions also trigger more difficult transaction banking, especially trade finance, which is one of the most relevant means of aiding trade between East Asian countries. More marked bilateral financial barriers affect the possibility of using some trade finance instruments. This results in less trade flow between East Asian countries.
In the first part of this article, I have considered the literature concerning the relationship between financial institutions and trade, the financial institutions in East Asia and the relationship between monetary and economic integration and trade. In the second part, I have presented the literature concerning the gravity model and the model that combined the findings of Piermartini and Yotov (2016) and Baldwin (2006) with the results of Volz (2009).
In the last part of the work, I have presented the different estimations: East Asian estimations and global estimations. In the East Asia estimations, I found a negative but not significant relationship between the heterogeneity of financial institutions and bilateral trade in year-by-year estimations. Moreover, the effect of the similarity of currency regimes is negative in East Asian estimations. In the 3-year-interval model, the relationship between the heterogeneity of financial institutions and bilateral trade are negative and significant and the one between the bilateral trade and the similarity of currency regimes is not significant.
This result could be explained by the difficulties in the similarity of currency regimes to fit in a structural gravity model rather than an atheoretical model, as in the estimations by Volz estimations.

Moreover, the pair-wise heterogeneity among the countries is very important and a stricter monetary integration at the present time could result in a reduction of trade rather than an increase. This limited and regional sample was not sufficient to completely understand the importance of financial institutions in trade and the monetary integration process. For this reason, I have considered a larger sample of 184 countries and have replaced the similarity of currency regimes variable of the East Asian estimations with the most used in the literature dummy currency union. This change is due to the similarity of currency regimes and concerns in regions of the world where one or a few currencies play an important role in exchange rate regimes. The estimations of global data confirmed the presence of a relationship between trade and the heterogeneity of financial institutions. More heterogeneity results in less bilateral trade. The currency union dummy is significant and increased its positive coefficient with the introduction of the financial institutions' heterogeneity variable. Moreover, the relationship between bilateral trade and the heterogeneity of financial institutions is negative and significant. These results are confirmed both in the year-by-year and 3-year-interval models.

The differences between the East Asian estimations and global estimations could be explained by the presence in the East Asian estimations of more developing and emerging financial markets than developed ones. The most underdeveloped financial institutions in the developing East Asian countries reduce the general effects of yearly improvements in the case of reductions in the heterogeneity of financial institutions. Considering that the 3-year-interval model is better at showing the decreasing heterogeneity of the financial institutions and the positive effects on bilateral trade in East Asia because some significant changes can also be seen in these underdeveloped financial institutions after sufficient time has elapsed. In recent years, initiatives from ASEAN countries have aimed to improve banking transactions and the provision of financial services. This work shows that these initiatives are not only related to simple issues concerning finance or economic development itself but also to bilateral trade. Reducing the present differences among the different

bank regulations, capital requirements, and efficiency, in the long term could decrease costs for the exporter firms involved. Moreover, even if the results cannot give a complete answer to the relationship between bilateral trade, monetary integration and the heterogeneity of financial institutions, it could be relevant for the countries of the ASEAN Plus Three to consider the present level of the heterogeneity of financial institutions in their countries before enhancing further monetary integration processes. Further studies are necessary to clarify the mechanisms between trade, monetary integration and financial institutions. In addition, observing more firm level data in East Asian countries using indicators more related to trade finance issues could define the problem connected to the trade gap in the area.

ANNEX I

TABLE 6

Estimated dollar weights of the different East Asian basket currencies

	Weights
Brunei dollar	0.65
Cambodia riel	1.00
China renmimbi	0.96
Indonesia rupiah	0.81
Japan yen	0.68
Korea won	0.67
Laos kip	1.04
Myanmar kyat	0.98
Malaysia ringgit	0.84
Philippines peso	0.82
Singapore dollar	0.63
Thailand bath	0.77
Vietnam dong	1.00

Average of the observed period (1999-2014).
Source: Bank of Italy - Historical Time series.

In this Annex it is possible to observe the results of the standard baseline OLS model, the OLS model with Remoteness Indexes (REM-EXP and REM-IMP), and the OLS model with pair-fixed effects (Tables 7,8,9,10).
The standard gravity model variables, like weighted distances (*DISTANCEWS*), territorial contiguity (*CONTIG*), former colonizer in common (*COLONY*), and common languages (*COMLANG*) are all derived from the Centre d'Etudes Prospectives et d'Informations Internationales(CEPII) Database. The output (*OUTPUT*) and the expenditures (*EXPEND*) are derived from the codes using the bilateral trade data.
The (*FTA*), as the currency union (*CU*) variable, comes from the Centre d'Etudes Prospectives et d'Informations Internationales(CEPII) Database.
SIMC is the similarity of currency regimes described by Volz (2009). The similarity of currency regimes data comes from my estimations reproducing the Volz method derived from the paper by Frankel and Wei (1994). I used daily exchange rates from 1/1/1999 to 31/12/2014 from the Bank of Italy historical time series. In this work the model estimates the different weights of different currencies in the area to the dollar.
HET is the heterogeneity of financial institutions. The variable of interest describing the heterogeneity of financial institutions is created using five variables from the World Bank Financial Development and Structure Dataset. The database shows indicators of financial development and the structure of financial institutions over time for more than 200 countries (31 indicators in total), from 1960 to 2014.

TABLE 7

Base models - East Asia

	(1) BASE	(2) RMs	(3) FEs
distwces	-0.338**	-0.336***	
	(0.124)	(0.121)	
contig	1.010***	1.063***	
	(0.290)	(0.302)	
comlang	0.079	-0.042	
	(0.324)	(0.338)	
colony	-0.008	0.113	
	(0.271)	(0.290)	
OUTPUT	1.185***	1.131***	
	(0.049)	(0.048)	
EXPEND	1.132***	1.085***	
	(0.057)	(0.054)	
REM-EXP		2.222***	
		(0.588)	
REM-IMP		2.249***	
		(0.672)	
SIMC	1.211***	0.212***	0.071
	(0.450)	(0.444)	(0.125)
HET	0.372***	0.527***	-0.173
	(0.085)	(0.100)	(0.125)
FTA			0.198***
			(0.075)
cons	-17.856***	-53.101 ***	
	(1.545)	(8.587)	
N	1843	1843	1842
R^2	0.817	0.828	0.982

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Standard errors are reported in parentheses

TABLE 8

Base models - East Asia-3 years intervals

	(1) BASE	(2) RMs	(3) FEs
distwces	-0.297***	-0.310***	
	(0.112)	(0.111)	
contig	0.979***	1.008***	
	(0.273)	(0.284)	
comlang	-0.019	-0.133	
	(0.312)	(0.327)	
colony	0.140	0.208	
	(0.260)	(0.283)	
OUTPUT	1.139***	1.098***	
	(0.047)	(0.044)	
EXPEND	1.081***	1.042***	
	(0.058)	(0.054)	
FTA			0.196**
			(0.094)
SIMC	0.314	0.370	0.196
	(0.475)	(0.464)	(0.231)
HET	0.354***	0.494***	0.014
	(0.081)	(0.094)	(0.203)
REM-EXP		1.984***	
		(0.571)	
REM-IMP		2.119***	
		(0.627)	
cons	-16.296***	-48.676***	
	(1.497)	(8.172)	
N	625	625	616
R^2	0.822	0.833	0.987

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Standard errors are reported in parentheses

TABLE 9

Base models - World

	(1) BASE	(2) RMs	(3) FEs
distwces	-1.061***	-1.385***	
	(0.022)	(0.025)	
contig	1.107***	0.599***	
	(0.106)	(0.104)	
comlang	1.070***	0.750***	
	(0.046)	(0.047)	
colony	1.027***	1.253***	
	(0.103)	(0.102)	
OUTPUT	1.156***	1.187***	
	(0.006)	(0.006)	
EXPEND	0.979***	1.013***	
	(0.007)	(0.007)	
REM-EXP		1.198***	
		(0.052)	
REM-IMP		1.006***	
		(0.059)	
FTA	0.112**	0.172***	-0.015
	(0.046)	(0.045)	(0.029)
CU	0.900***	0.786***	0.561***
	(0.069)	(0.065)	(0.060)
HET	0.030*	0.045***	-0.034*
	(0.016)	(0.016)	(0.020)
cons	-10.380***	-27.815***	
	(0.220)	(0.705	
N	184873	184873	183662
R^2	0.638	0.646	0.913

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Standard errors are reported in parentheses

TABLE 10

Base models - World - 3-years intervals

	(1) BASE	(2) RMs	(3) FEs
distwces	-1.086***	-1.381***	
	(0.023)	(0.026)	
contig	1.119***	0.658***	
	(0.106)	(0.104)	
comlang	1.016***	0.720***	
	(0.046)	(0.048)	
colony	1.079***	1.293***	
	(0.107)	(0.106)	
OUTPUT	1.141***	1.168***	
	(0.006)	(0.006)	
EXPEND	0.960***	0.991***	
	(0.007)	(0.007)	
FTA	0.048	0.114 **	0.035
	(0.049)	(0.048)	(0.042)
CU	0.867***	0.754***	0.657***
	(0.072)	(0.069)	(0.083)
HET	0.024	0.035**	-0.036
	(0.017)	(0.017)	(0.026)
REM-EXP		1.098***	
		(0.055)	
REM-IMP		0.931***	
		(0.063)	
cons	-9.792***	-25.838***	
	(0.227)	(0.744)	
N	64540	64540	62088
R^2	0.628	0.635	0.923

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Standard errors are reported in parentheses

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KOKKUVÕTE
IDA-AASIA RAHANDUSLIKUS JA MAJANDUSLIKUS INTEGRATSIOONIS OSALEVATE RIIKIDE FINANTSINSTITUTSIOONIDE HETEROGEENSUS

Artikli eesmärk on bilateraalsete kaubandussuhete, rahanduslike integratsiooniprotsesside ja finantsinstitutsioonide heterogeensuse vaheliste seoste alase teadmiste baasi laiendamine. Rahandusliku integratsiooni ja väliskaubanduse vahelist seost on teaduskirjanduses palju uuritud, kuid avaldatud töödest ilmneb, et rahandusliku integratsiooni ja kaubanduse vahelise seose osas ei olda veel ühemõtteliselt kindlad. Mõnede teadlaste poolt tuvastatud rahandusliku integratsiooni positiivne mõju Ida-Aasia kontekstis võib olla seotud nii empiiriliste, teoorial mitte põhinevate hinnangute kallutatusega kui ka seni veel väheuuritud rahandusliku integratsiooni mõjuga finantsstruktuuridele-ja institutsioonidele.
Uurimistöö peamise hüpoteesi kohaselt on bilateraalset väliskaubandust seda vähem, mida heterogeensemad finantsinstitutsioonid on. Antud uurimistöös koostati selle uurimiseks struktuurne mudel lähtudes valuutarežiimide sarnasusest, mida on kasutanud ka teised uurijad rahandusliku integratsiooni lähendmuutujana Ida-Aasia kontekstis. Lisaks töötas autor Maailmapanga Finantsarengu ja Finantsstruktuuri (Financial Development and Structure Dataset) andmestiku põhjal välja finantsinstitutsioonide heterogeensuse muutuja. Käesoleva uurimistöö huviorbiidis on ASEAN-i liikmesriigid ning Hiina, Jaapan ja Lõuna-Korea (nn ASEAN pluss kolm). Autor võttis arvesse ka vabakaubanduslepingute muutujad ja kasutas hindamistes kaubanduspaaride (omavahelises kaubavahetuses olevate riikide) fikseeritud efekte võtmaks arvesse tavapäraselt gravitatsioonimudelite loomisel arvestatavaid riikidevahelisi muutujaid, nagu kaubavahetuses olevate riikide omavaheline kaugus, ühised piirid, keeled ja ühised endised koloniaalvõimud. Kõik need tegurid on tuletatud CEPII (Centre dEtudes Prospectives et dInformations Internationales) andmestikust. Uurimistöös kasutati aastate 1999-2014 andmeid ning erinevates allikates toodud soovituste kohaselt on läbiviidud kahesuguseid arvutusi, nii iga-aastaste kui ka 3-aastaste intervallidega perioodidega.

Ida-Aasia riikide andmetes leiti negatiivne, kuigi nõrk, seos finantsinstitutsioonide heterogeensuse ja bilateraalse kaubanduse vahel, seda juhul kui kasutati arvutustes iga-aastaseid perioode. Lisaks, valuutarežiimide sarnasuste mõju väliskaubandusele osutus Ida-Aasia riikides negatiivseks. Kasutades arvutustes 3-aastaseid perioode osutus seos finantsinstitutsioonide heterogeensuse ja bilateraalse kaubanduse vahel negatiivseks ja oluliseks, kuid seost bilateraalse kaubanduse ja valuutarežiimide sarnasuse vahel ei ilmnenud. Uuring näitas, et rangem rahanduslik integratsioon võib kaubavahetuses osalevate riikidepaari vahelise heterogeensuse tingimustes endaga kaasa tuua omavahelise väliskaubanduse kasvu asemel hoopiski väliskaubanduse mahu vähenemise. Eelnevate tulemuste saamisel kasutatud Ida-Aasia riikide valim ei ole selle piiratud suuruse ja ühe regiooniga piirdumise tõttu autori hinnangul piisav, et täielikult hinnata finantsinstitutsioonide tähtsust väliskaubandusele ja rahanduslikule integratsiooniprotsessile. Seetõttu kasutas autor täiendavalt suuremat 184 maailma riigist koosnevat valimit ja asendas Ida-Aasia riikide valimil tehtud hinnangutes kasutatud valuutarežiimide sarnasuse muutuja erialakirjanduses enimkasutatud valuutaliidu fiktiivse muutujaga (indikaatormuutujaga). Terve maailma riikide andmeid kasutades leidis kinnitust seos kaubanduse ja finantsinstitutsioonide heterogeensuse vahel mida suurem on finantsinstitutsioonide heterogeensus, seda väiksem on riikidepaari vaheline bilateraalse kaubavahetuse maht. Valuutaliidu fiktiivne muutuja on statistiliselt oluline ja selle niigi positiivne hinnang kasvab täiendavalt koos finantsinstitutsioonide heterogeensuse muutuja kaasamisega regressioonimudelisse. Lisaks osutus seos bilateraalse kaubanduse mahu ja finantsinstitutsioonide heterogeensuse vahel negatiivseks ja statistiliselt oluliseks. Selline tulemus kehtis nii aastaste andmete kui ka 3-aastaste perioodide andmete kasutamisel. Erinevused Ida-Aasia ja maailma riikide andmetel saadud tulemustes võivad tuleneda Ida-Aasia riikide valimis kasvavate ja arenevate turgudega riikide suurest osakaalust. 3-aastaste perioodide andmete kasutamisel saab paremini välja tuua seose finantsinstitutsioonide kahaneva heterogeensuse ja selle bilateraalse väliskaubanduse mahtu suurendama mõju vahel Ida-Aasias, kuna mõned olulised muutused vähemarenenud finantsinstitutsioonides

on pikemate intervallide lõikes ja pikema aja möödumisel paremini eristatavad.