

Exchange Rate Policy Dissension in East Asia
An Impediment in the Way of Regional Economic
Cooperation

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Abstract

ASEAN is acknowledged to be the second largest regional cooperation association after European Union. However, unluckily, the region exhibits highly varied and unmatched exchange rate arrangements, although the growing interdependence of East Asian economies calls for ensuring intra-regional macroeconomic stability particularly with reference to monetary policy and exchange rate coordination. The study has explored whether the real effective exchange rate misalignments in each member states of the region is more contributed from regional partners or from non-regional ones. The empirical verification is done through employing panel unit root test with two way effects and impulse response function. Results strongly recommend that East Asian economies are suffering more from intra-regional instability in comparison to ex regional disturbances. The probable solutions to the problem is to keep foremost focus on deviation in exchange rate policies while selecting trading partners, ensuring more coordinated macroeconomic policy and development of a more accommodating international financial architecture.

Key Words: Regional cooperation, real effective exchange rate, monetary policy coordination, exchange rate misalignment, international capital markets.

Introduction

The growing interdependence of East Asian economies calls for ensuring intra-regional macroeconomic stability particularly with reference to monetary policy and exchange rate coordination. This will indeed be helpful in synchronizing intra-regional trade and investment and will surely provide the region with a high way to realize its dream of economic regionalism. It is foreseen that in the next five years East Asia will be the largest regional trading bloc, probably larger than European Monetary Union. So, under this anticipation, it is inevitable for the participant economies to have a harmonized and well coordinated intra-regional exchange rate mechanism.

Nevertheless, the task is highly challenging in today's global environment where economies all over the world are tightly integrated and up to some degree economically interdependent upon each other. The global financial crisis of 2007 originated from United States has made the world economy exceedingly volatile and irregular. The tempt for developing Asia's strong fundamentals along with unstable global economic setting has lowered down the international investors' risk appetite, thus lead towards growing volatility in capital movements.

Keeping all these facts in view, a greater extra-regional exchange rate flexibility against developed economies may proved to be highly accommodating in a sense that it will indeed bring macroeconomic and financial stability to the region. Thus Asian economies may gain much from ensuring a relatively stable exchange rate within the region and opting for relatively

flexible exchange rates against their ex-regional trading partners. But this could only be achieved by establishing a certain degree of exchange rate policy compatibility.

The depreciation of any other regional member state's currency may put all the other currencies of the region into currency crisis. Specially, it can undermine the integrity of partners' commitment to a fixed parity and may cause to generate speculative attack on its currency. Such a problem is most likely to occur during the times of financial chaos. The fact is well evident from Asian financial crisis of 1998 which actually originated from Thailand but made Indonesia, Philippines and Malaysia to see sizeable currency depreciations and caused momentous devastations in their financial system. In July 1997, the devaluation of Thai Baht was prompted by investors' observations of worsening financial environment of the region and of indefensible overvaluation of currency. Resultantly, within one month of this collapse of Thai Baht, the financial catastrophe entered Philippines, Indonesia, Malaysia and Korea in an unleashed manner. The momentum and extent of this 'regional financial infection' was really frightening as well as alarming.

Exchange Rate Settings in East Asia

Keeping in view rising interdependence of East Asian economies, it is highly desirable to ensure stable and if necessary homogenous kind of intra-regional exchange rate arrangements through policy synchronization. US Dollar has remained no good benchmark after the Asian financial crisis of 1997-98 and global financial crisis of 2007-08, so efforts should be directed towards obtaining regional exchange rate stability despite of retaining stability vis-à-vis US Dollar.

However, unluckily, the region exhibits highly varied and unmatched exchange rate arrangements. Furthermore, region's exchange rate regimes and policies are highly disarrayed.

Before the Asian financial crisis 1997-98, most of the East Asian states used to maintain de jure or de facto regimes (pegged against US Dollar). But the period after this crisis shows abruptly diverse behavior on part of these economies where they followed a mix of highly divergent exchange rate regimes. In other words, each state is trying to serve its own independent and sovereign national monetary policy agendas but this course of action is highly unwise and lamentable as on the other hand, these economies are profoundly trying to promote economic cooperation in their region through trade, finance and labor mobility. Thus the two strategies are highly conflicting as none of the two purposes can be served properly in these circumstances of exchange rate policy disparity.

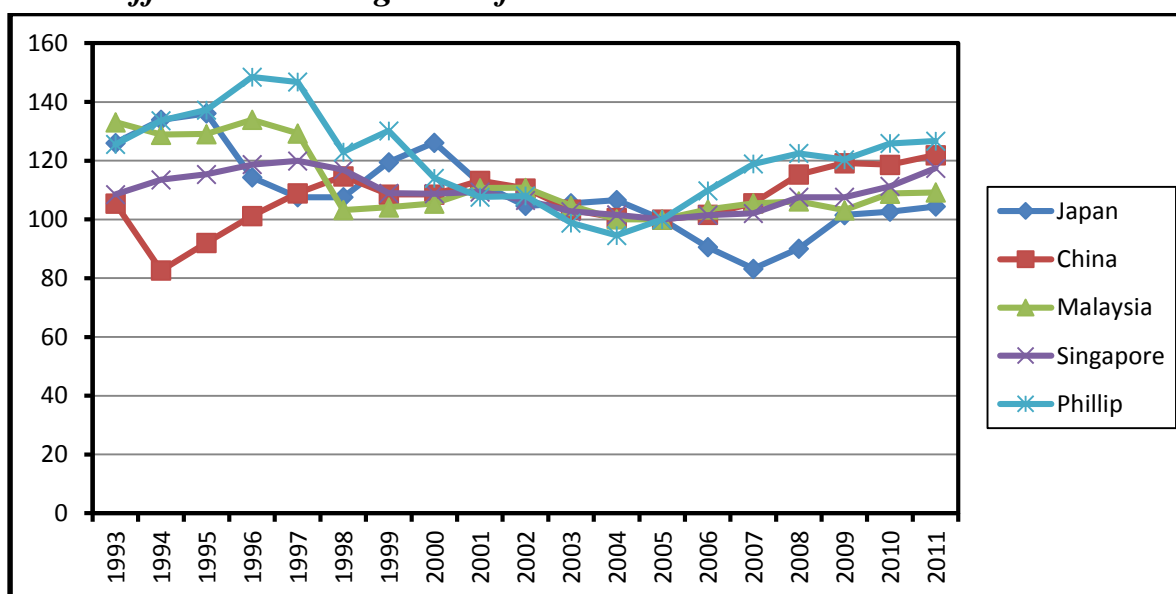
East Asian De Jure Exchange Rate Arrangements, 2008

Countries	Exchange Rate Arrangements
Brunei Dar ul Salam	Currency board Peg
China	Conventional fixed Peg
Cambodia	Managed float with large rate fluctuations
Indonesia	Managed float with large rate fluctuations
Korea	Independent Float
Japan	Free float
Laos	Managed float with large rate fluctuations
Malaysia	Floating with limited rate fluctuations
Philippines	Independent Float
Singapore	Floating with limited rate fluctuations
Thailand	Managed float with large rate fluctuations
Vietnam	Floating with very limited rate fluctuations

Sources: Annual Reports on Exchange Arrangements and Exchange Restrictions, 2007 by IMF

The two largest economies of East Asia i.e. China and Japan are said to be mainly responsible for this concern. Japan has its own policy of freely floating exchange rate and China is standing on the other pole with tightly managed exchange rate regime. The other key economies of the region have their own distinct policy of intermediate exchange rate regimes like managed float where US dollar is serving as the main anchor currency. This mismatch of exchange rate strategies has made the region to face numerous events of exchange rate volatility led by hostile capital movements. The most recent example is of Korean Won which has undergone an intense depreciation immediately after the global financial crisis of 2008.

Real Effective Exchange Rate for South and North East Asian Economies



Sources: Global Financial Data and World Development Indicators

This study aims at exploring whether the exchange rate misalignment in any country is contributed more from the side of its regional trading partners or ex-regional trading partners. Thus the findings will lead towards a conclusion that is if the exchange rate disagreements are more harmful amongst regional trading partners or not.

What will be the gains from this type of exploratory study? Indeed, Regional Trade Agreements are not damaging themselves, but the problem arises when due to occurrence of currency crisis in its regional trading partners, a state loses its export market and try to search for some other good alternative. Due to preferential access under regional trade agreements, it is customary that a country may start exporting those goods and services to its regional trading partners in which she actually does not hold any competitiveness in international market. So, currency depreciation in any of its regional trading country will make it very difficult for her to search alternative markets outside the region. In short, our basic hypothesis is to see whether exchange rate disagreements are more costly for a country if they are with regional trade members besides ex-regional members.

Review of Literature

This study is distinctive in a sense that the role of exchange rate policy mismatch in the context of regional economic cooperation is least talked about earlier. Due to the same reason, it is expected to give some worthwhile contribution to the existing research on preferential trade agreements in an environment of divergent intra-regional monetary and exchange rate policies.

Why the absence of compatibility in exchange rate strategies is highly detrimental for all regional participants, one possible argument in this context can be about those protectionist pressures which are brought into effect in the periods of currency crisis and they supersede all the plausible gains of regional integration agreements.

In the context of establishment of European Monetary Union, Eichengreen (1993) said that the biggest probable rationale for forming this biggest monetary union of the world is to combat these undesirably adopted resistive protectionist measures. For European region, there are

number of incidence of protectionist pressures that led to momentous exchange rate swings. The most memorable one is that became cause of September 1992 EMS crisis and strained the economic linkages of EU member states. The basic stimulus behind this tension was the relocation of those several production plants from Italy, France and Portugal to United Kingdom which caused the Sterling to depreciate sharply at later stages. The relationships got more stressed in June 1995 when at the EU summit organized in Cannes, Jacques Chirac, President of France, publically complained that the devaluation of Italian Lira has given a historic set back to the France's conventional exports to Italy.

Here, the Brazilian devaluation of 1999 is worth mentioning which made Mercosur quite controversial and put two of its key member states into a never ending dispute with each other. Just because of this Brazilian devaluation, the region faced acute financial distress which ultimately resulted into severe contraction in aggregate demand. This not only put further downward pressure on Real but the bilateral exchange rate of other participant economies also suffered from huge volatility.

Inter-American Development Bank conducted a very comprehensive exploratory study (2002) in order to explore the role of disagreements in exchange rate policies amongst member states of a region in the perspective of their participation in regional trade agreements. Using annual data from 1989-2000 for a cross section of 37 countries, a mix of member states from six various RIAs, the study shows that there are prominent and significantly large differences in the impacts of regional REER misalignments and non regional ones with respect to trade volumes of a country. Using panel regression analysis with two way effects, an attempt was made to see the individual effects of misalignments originating from regional and non regional trading members on total trade volumes of a country. Afterwards, same data is split into two distinct categories,

developed and developing countries and the same hypothesis is tested. The results once again favored the same notion that REER misalignments arising from regional trading members are more crucial in determining the volumes of trade of a country in comparison to non regional trading partners.

Claiming exchange rate coordination vital in this era of growing globalization and economic interdependence, Gupta (2012) attempted to estimate the degree of exchange rate harmony among Asian economies. Degree of convergence amongst various currencies is tested by unit root test with the help of Asian Currency Unit formulate as a basket of currencies of 15 East and South East Asian economies. Significant divergence is found in exchange rate behaviors of all these participant countries actually driven by adoption of variant exchange rate mechanisms. However, future exchange rate and monetary coordination, which is inevitable for ensuring sound working of deepening Asian intra regional linkages can be facilitated through multilaterized swap structures, a well organized system for regional economic surveillance and development of stable and reliable Asian bond market.

In the context of regional economic development Kuroda and Kawai (2003) regard regional spillover effects and externalities due to financial interdependence as the most obvious rationale for regional economic macroeconomic coordination. For regional member states, being highly integrated with each other, coordination process may take efforts towards formulating a prescribed mechanism for ensuring intra-regional exchange rate policy consistency, unconventional provisions for smooth and stable exchange rates or the member states may form a common currency union. Need is to prevent competitive depreciation at the regional levels which can only be done through developing a more coherent framework of intra-regional exchange rate policies.

Methodological Framework

Nominal exchange rate of country is the value of some country's currency in terms of some other currency. This value may be determined by a number of factors like interest rates, rate of inflation, growth in money supply and the future anticipated behavior of all these variables. On contrary, the real exchange rate as the counter part of nominal exchange rate is the ratio of price levels between two economies. Calculating the real exchange rate and its movement towards medium and long term equilibrium takes one to decide about the appreciating or depreciating behavior of a country's real exchange rate. Besides, it also high lights the expected developments in real as well as nominal exchange rate of a country in line with domestic price trends in comparison to rest of the world.

With the increasing participation in global economic networks and growing economic linkages, it is preferable to measure and represent real exchange rate in form of a multilateral index. Such an index is called Real Effective Exchange Rate Index (REER) incorporating the bilateral exchange rate of some country with its most prominent trading partners, relative weightage of each trading partner into the trade of subject country and specific price indices (CPIs and WPIs).

Real Effective Exchange Rate can be measured as the geometrically weighted index of price level of global economy in comparison to price level at home.

$$REER = \sum_{f=1}^k w_f (E_f \cdot P_f / P_h)$$

w_f Represents the weight attached to each trading partner according to its participation in total trade volume, E_f is the nominal exchange rate against each trading partner, P_f is the price index of each foreign competitor and P_h is the price index at home.

As recommended by Bergara et al (1995), the goods and services for which it is hard to relocate them to some other ex-regional market, they will be considered in this study as ‘Regional Goods’. If due to regional integration agreements (RIAs) the importance of regional goods is increased, then it is anticipated that the elasticity of total exports with reference to exchange rate misalignments will be considerably higher provided the sources of misalignment lie within RIA region. To check this hypothesis, a model is built where a country’s total exports depend on its real effective exchange rate misalignment from equilibrium levels plus a set of other variables.

$$\ln(EXP_{i,t}) = \alpha + \beta REER_{i,t} + \gamma \ln(Y_{i,t}) + \mu_i + T_t + \varepsilon_{i,t} \quad \text{----- (1)}$$

Where $EXP_{i,t}$ = Total exports of the country i at time t

$REER_{i,t}$ = Multilateral real effective exchange rate misalignments of country i at time t

$Y_{i,t}$ = Total GDP of country i at time t

(Exports and GDP are measured in terms of current dollars)

μ_i = This represents country fixed effects controlling country specific permanent differences that remain constant over time.

T_t = This represents time fixed effects whose impact is common to all groups but vary over years, controlling dollar inflation and the trade which is increasing over the time.

$\varepsilon_{i,t}$ = Residual term.

Here it is assumed that exports elasticity with respect to exchange rate misalignments has nothing to do with the sources of misalignment no matter they lie within or outside RIA region. It is anticipated that if the equation (1) holds true then real exchange rate misalignments must be statistically significant with respect to exports i.e. appreciation in real effective exchange rate must lead towards decline in export volume of the country and vice versa.

In order to see whether these Elasticities vary or not, real effective exchange rate misalignment is decomposed into two components: regional component that is about the RIA member countries and non regional component that is about non RIA member countries.

$$REER_{i,t} = REG_{i,t} + NONREG_{i,t} \quad \text{-----} \quad (2)$$

$$REER_{i,t} = W_i REG_REER_{i,t} + (1 - W_i) NONREG_REER_{i,t} \quad \text{-----} \quad (3)$$

Where W_i = weight associated to RIA trading partner on behalf of its share in total trade in country i .

$(1 - W_i)$ = weight associated to non RIA trading partner on behalf of its share in total trade in country i .

$W_i REG_REER_{i,t}$ = Contribution in total real effective exchange rate misalignment made by RIA member country i at time t .

$(1 - W_i) NONREG_REER_{i,t}$ = Contribution in total real effective exchange rate misalignment made non RIA member country i at time t .

Substituting equation (2) into equation (1) the basic model will be transformed as:

$$\ln(EXP_{i,t}) = \alpha + \beta REG_{i,t} + \delta NONREG_{i,t} + \gamma \ln(Y_{i,t}) + \mu_i + T_t + \varepsilon_{i,t} \quad \text{-----} \quad (4)$$

Now the main hypothesis to be tested is whether $\beta > \delta$ that is the major portions of real effective exchange rate misalignments are arising more from the side of regional or non regional trading partners. In other words, anticipate about equation (4) is made that the contribution made by regional partners in real exchange rate misalignment must bring about a quantitatively larger fall in exports in comparison to non regional trading partners.

Empirical Evidences

In order to test the proposed model empirically, cross sectional data is taken up. The employment of Panel data will make the regression model to add in both the spatial and temporal aspects in its analysis. The spatial aspect will represent the cross sectional units of time series. A set of variables consisting of these cross sectional units observed for a specific time period will be represented by temporal dimension. Panel data are used with the assumption that subject variable heavily depends on those unobserved explanatory variables which are highly correlated with the observed explanatory variables. Assuming these unobserved variables constant over time, panel data estimators facilitate the regular estimation of the impacts of observed explanatory variables.

If the purpose of study is to control for the time invariant country specific characteristics, fixed effect model of panel data is best suited. Fixed effect defines the relationship between predictor and explanatory variables for an entity like any particular state, individual, organization, etc. The model aims to represent the short term and entity specific effects. Every individual entity is characterized by certain features which may or may not determine the subject variable. As discussed earlier, while using fixed effect, it is primarily assumed that the individual traits of an entity may influence the outcome and the explanatory variables are these influences are supposed to be controlled. This behavior gives the reason for assuming certain level of association and

correlation between entity's error term and subject variables. Before opting for fixed effect model, Hausman (1978) test was used to choose between random effect and fixed effect models. A main assumption in random effects estimation is that the random effects are uncorrelated with the explanatory variables, Wooldridge (2002). The results of Hausman test indicate that the null hypothesis of random effects estimators cannot be accepted in all cases, thus fixed effect model is employed to serve the purpose of study.

In order to carry our investigation, authors have opted for ASEAN+2 regions that is the study undertake two groups of intra-regional and ex-regional trading countries. Intra-regional group includes five high income ASEAN economies of Malaysia, Singapore, Thailand, Philippines and Indonesia and two North East Asian states of China and Japan. The rationale for including these two states from North is their crucial role in determining intra-regional trade and activities and their significant position in determining the financial and capital flows of Asia not only within the continent but also with rest of the world. The other group of ex-regional trading partners consists of ten economies including three prominent economies of EU (Denmark, Sweden and United Kingdom), Canada, Australia, New Zealand, India, Hong Kong, Korea and United States. The sample period employed is from 1991 to 2008 containing the catastrophe of 1998 Asian financial crisis. The data is primarily sourced from World Development Indicators, International Financial Statistics and IMF Direction of Trade Statistics.

Table 1: Panel Regression Analysis Results for Exports and REER Misalignment

Variables	Coefficients	t-statistics	p-value
<i>Dependent Variable: Log (Exports)</i>			

<i>REER misalignment</i>	0.284216	2.337307	0.0214
<i>GDP</i>	1.019742	14.42034	0.0000
<i>C</i>	-0.423800	1.676589	0.0967
<i>R-squared</i>	0.978	<i>Durbin-Watson stat</i>	0.558
<i>Adjusted R-squared</i>	0.973	<i>F-Statistics</i>	181.21

Estimating equation 1, it is clearly evident that real effective exchange rate misalignments are statistically significant with considerable large coefficient depicting their quantitative significance as well. Theoretically speaking, 1 percent appreciation of real effective exchange rate will bring about a fall of 0.2 percent fall in exports. Besides, as assumed earlier, GDP is also proving itself to be one of the major determinants of total export volume of a country.

Table 2 represents the results obtained by estimating equation 4. Through this estimation we get clear confirmation for the significantly different impacts of regional and non regional REER misalignment on total exports. The entire sample confirms our main hypothesis that β is sufficiently larger and significant than γ . An appreciation of one percentage point in regional REER will bring about a fall of approximately 0.3 percent in total exports. On the contrary, the coefficient for non regional REER is insignificant and besides this insignificance the coefficient is considerably smaller than the coefficient for regional REER misalignment. Hence, the exploration of our focused hypothesis ends up with the conclusion that exports are more sensitive towards those sources of exchange rate misalignment which lie with RIA member economies.

Table 2: Panel Regression Analysis Results for Exports and Regional and Non Regional REER Misalignment

Variables	Coefficients	t-statistics	p-value
<i>Dependent Variable: Log (Export)</i>			
<i>Regional misalignment</i>	0.224654	0.02111	0.0139
<i>Non Regional misalignment</i>	0.018486	0.84966	0.3976
<i>GDP</i>	1.024495	14.53724	0.0000
<i>C</i>	-0.338536	-1.359154	0.1772
<i>R-squared</i>	0.979	<i>Durbin-Watson stat</i>	0.586
<i>Adjusted R-squared</i>	0.973	<i>F-Statistics</i>	180.25

Innovations to Exports by Regional and Ex Regional Trading Partners

Impulse Response Function

The IRF maps out the directional responses of a variable to a one standard deviation shock of another variable. This means that one may observe the trend, extent and persistence of total exports innovations brought by regional and non regional REER individually.

The procedure adopted for the assessment of each of the disturbance generated by IRF is as follows. At the first stage, the Autoregressive (AR) model for total exports is estimated after the appropriate selection of AR lags. The residuals calculated from AR regression are used as dependent variables for the estimation of moving average (MA) equation. Afterwards Impulse

response function is employed to assess which of the two types of REER shocks cause more visible and persistent innovation to total exports.

If Z_t is the structural shocks to each of regional and non regional REER, the AR process in which each element of Z_t is regressed on lagged values of all the elements of Z_t can be written as

$$Z_t = \beta_1 Z_{t-1} + \beta_2 Z_{t-2} + \dots + \beta_n Z_{t-n} + \varepsilon_t$$

Where ε_t represent the residuals from the AR equation for each series of REER. We can denote the residuals individually as ε_{RG} for regional and ε_{NRG} for non regional REER equation. Following Bayoumi and Eichengreen (1994), we consider a system in which the true model can be represented by an infinite moving average of Z_t and an equal number of shocks ε_t . The error from AR process can be shown as a linear combination of current and past shocks by the following moving average process:

$$\varepsilon_t = \alpha_0 \varepsilon_t + \alpha_1 \varepsilon_{t-1} + \alpha_2 \varepsilon_{t-2} + \dots = \sum L_i \alpha_i \varepsilon_t$$

The matrix α_i represents impulse response functions of the shocks to the elements of Z_t .

Figure 1: Response of Regional REER to Cholesky one S.D Innovation

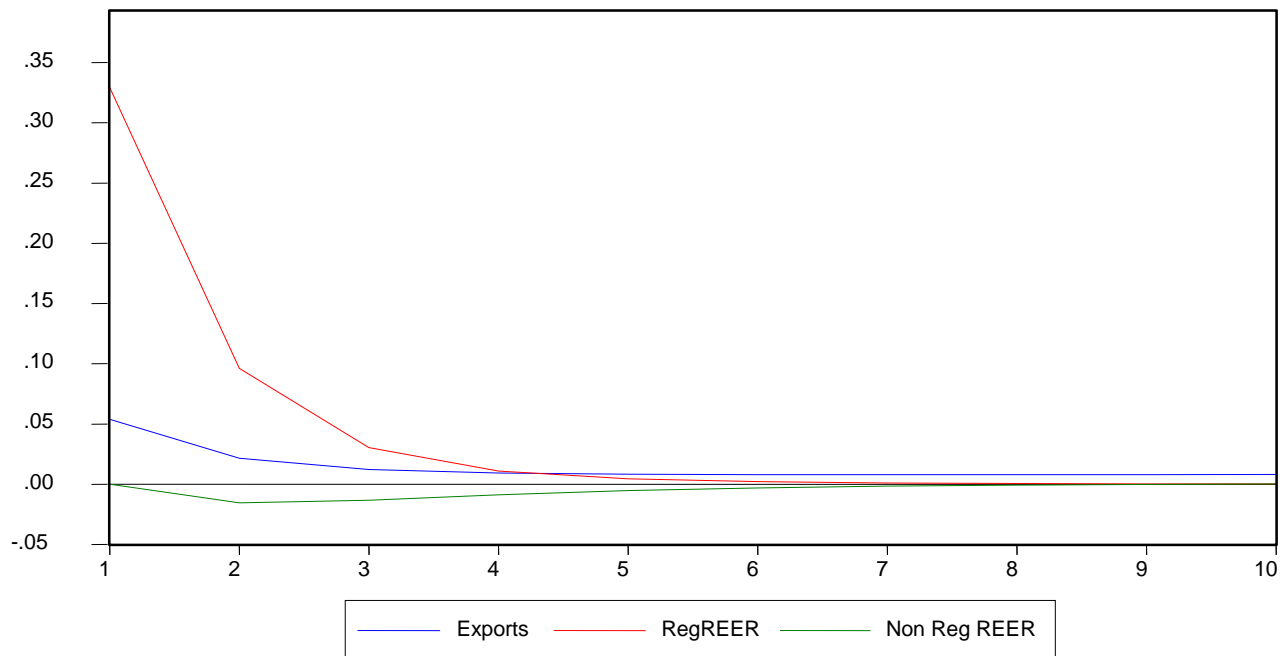
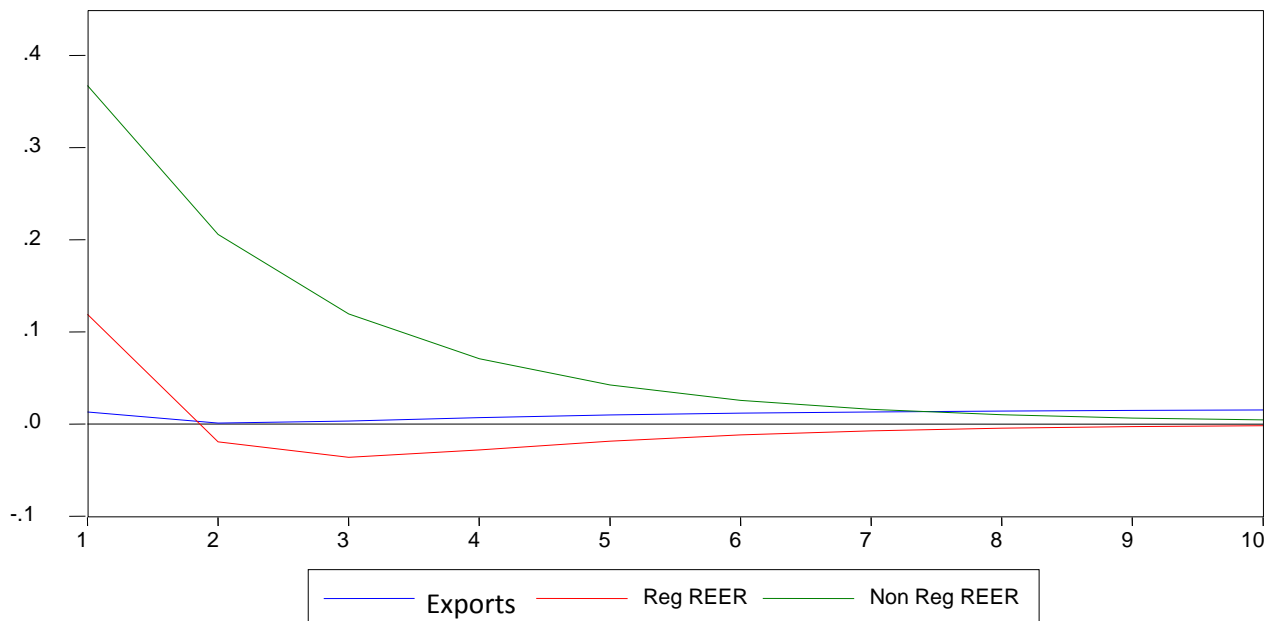


Figure 1 and 2 are representing the dynamic effect of one standard deviation structural shock in regional and non regional REER on total exports over a span of 10 periods for all of the states under study. One may observe that the path of response is much more observable and well defined for regional REER shocks in comparison to non regional REER shocks. Almost all the countries are taking an approximate time of 3-4 periods to make adjustments towards the equilibrium of their total export volume in response to a regional REER shock. As far as the impact of non regional REER shocks is concerned, one may see they these shocks are imparting almost negligible impacts to total exports of the region. These findings are in line with our previous results that the factors responsible for REER misalignment lying within the region are more pronounced as compared to those which are arising from ex regional trading states.

Figure 2: Response of Non Regional REER to Cholesky one S.D Innovation



Concluding Remarks

The paper has analyzed the probable impacts of exchange rate dissension among the ASEAN +2 member states on total export volumes of the region. By taking regional and ex-regional real exchange rate misalignments into the account, the authors have made an attempt to draw attention to the growing role of intra regional factors which may once again make the region to see another episode of currency crisis, like the one of 1997-99 financial meltdown of East Asia. The estimated impact of real exchange rate misalignment originating from the member economies of ASEAN+2 region is much more pronounced than the impacts arising from ex-regional trading partners of the region. The fact leads towards a strong support for the hypothesis that within-RIA exchange rate misalignments are more critical in the perspective of currency crisis in a region in comparison to the same misalignments arising somewhere else.

Regardless of the need of intraregionally harmonized exchange rate mechanism, at present there are no such prominent arrangements for monetary and exchange rate policy coordination as each East Asian state wants to pursue its own independent macroeconomic goals. In the last thirteen years the region has experienced a significant economic integration through the channels of trade and finance and is anticipated to appear as the largest economic block in the years to come. This calls for a dire need of stable and well coordinated exchange rate framework for the region. Such a highly integrated market driven regionalization need much more assurance than before that national macroeconomic objectives of each East Asian state would not be damaged by exchange rate misalignments of other regional member states. Keeping in mind the Asian financial crisis of 1997, to save the region from experiencing any such economic catastrophe once again, the

entire region will have to surrender their individual economic interests and their sovereign economic agendas and will have to work towards developing a more organized and coherent monetary and exchange rate policy structure. This does not only serve their personal national interests but also the role of East Asia as a regional economic entity will be more distinct and reliable in the entire continent.

Obviously the most sophisticated recommendation that may be forwarded in this context is to keep foremost focus on deviation in exchange rate policies while selecting trading partners during constituting an RIA. Naturally, it is never advisable to go into deep economic monetary and exchange rate linkages with those states where large macroeconomic discrepancies are present. Hence developed economies, with lower macroeconomic vulnerability and countries with compatible monetary and exchange rate arrangements and parallel macroeconomic structures are better and more prospective candidates for profound economic integration.

More coordinated macroeconomic policy is indeed one of the most crucial requisite in order to make a deep RIA a real success. In particular, key emphasis must be given to exchange rate coordination, so that destructive misalignments amongst regional partners may be avoided. This exchange rate consistency is a matter of common interest for all agreement members as it will reduce the dependence of all participants on their domestic monetary policies. Here the idea of constructing a monetary union is worth focusing which may absolutely eradicate the evil of exchange rate misalignment in an RIA. This idea may be channelized through adopting a common currency of some leading member country or formulating a new currency (structure through basket of all agreement member currencies).

Lastly, a supportive and accommodating international financial structure is undoubtedly helpful in managing cross borders trade and minimizes the hazards associated with lack of exchange rate harmony in an RIA. Smooth access to international capital and foreign exchange markets lowers the chances of an exchange rate crisis in a region. In fact, one may say that besides domestic monetary policy and macroeconomic imbalance, exchange rate misalignment may be a byproduct of abrupt changes in international financial structures. It is therefore absolutely agreed notion to have favorable restructuring of international financial structures to realize the dream of making regional trade agreements work in an unobstructed way.

Bibliography

Bayoumi, T and B. Eichengreen (1988), One Money or Many? Analyzing the Prospects for Monetary Unification in Various Parts of the World. *Princeton N.J International Finance Section, Department of Economics*, Princeton University.

Bayoumi, T and P. Mauro (2001), The Suitability of ASEAN for a Regional Currency Agreement. *World Economy* 24, Vol.7, pp.933-954

Enders, W and S. Hurn (1994), Theory and Tests of Generalized Purchasing-Power Parity: Common Trends and Real Exchange Rates in the Pacific Rim. *Review of International Economics* 2, Vol. 2, pp. 179–90.

Horvath, J and R. Grabowski (1997), Prospects of African Integration in Light of the Theory of Optimum Currency Areas. *Journal of Economic Integration* 12, Vol. 1, pp. 1–25.

Kwack, S. Yeung (2004), An Optimum Currency Area in East Asia: Feasibility, Coordination, and Leadership Role. *Journal of Asian Economics* 15, Vol. 1, pp. 153–69.

Ling, P and H. Yuen (2001), Optimum Currency Areas in East Asia: A Structural VAR Approach.” *ASEAN Economic Bulletin* 18, Vol. 2, pp. 206–17.

Gregorio, J. D and H. C. Wolf (1994). Terms of Trade, Productivity and The Real Exchange Rate. *NBER Working Paper Series No. 4807*, pp. 448-467.

Azam, N and t. Partisiwi (2010), Testing the Feasibility of Asean+3 Single Currency Comparing Optimum Currency Area and Clustering Approach. *International Research Journal of Finance and Economics, Issue. 37*, pp. 69-75.

Baffes, J and I. Alison (1997), Single-Equation Estimation of Equilibrium Real Exchange Rate. *Policy Research Working Paper Series 1800* , pp. 378-396.

Clark, P. B and R. McMillan (1998), Exchange Rate and Economic Fundamentals: A Methodological Comparison between BEERs and FEERs. *IMF Working Paper Series, Paper No. 67* , pp. 1-34.

McDonalald,s and S. Robinson (2008), Asian Growth and Trade Poles: India, China and East and South East Asia. *World Development* 2, Vol. 36, No.2 , pp. 210-234.

Taguchi, H (2010), Feasibility of Currency Unions in Asia- An Assessment Using Generalized Purchasing Power Parity. *Policy Resaerch Institute, Ministry of Finance, Japan Public Policy Review 5, Vol. 6, 859-872*