

ECONOMIC CRISIS AND REGIONAL INTEGRATION: EVIDENCE FROM ASEAN

Prerna Prabhakar¹

In this paper, the objective is to evaluate the role of Regional Trade Agreements (RTAs) among developing countries in the context of economic crisis. This paper attempts to examine whether RTAs actually lead to faster regional spread of crisis (within RTA or in non-member country) or whether such arrangements may act as safeguards for members against such crisis. For this purpose, we study the response of the regional integration in the Association of South East Asian Nations (ASEAN) region to the crisis inside and outside the region. We develop an analytical framework that analyses the possible channels of response of regional integration to the occurrence of crisis inside the region or outside the region. To capture the possibility of contagion effect of a crisis inside or outside the region, we compute unconditional probability and conditional probability of three types of economic crisis- currency, stock and banking crisis- in the major ASEAN economies. To capture the possibility of safeguard role of regional integration in an event of economic crisis, we compute the probability of episode of crisis (inside or outside the ASEAN region) being followed by positive growth rate in intra regional trades. We obtain non-zero probabilities in both the cases - contagion and safeguard- indicating possibility of both the responses to a crisis inside or outside a region and the final outcome depends on the net impact of both the effects. However, one important policy implication to be drawn from this analysis is to strengthen the regional integration and substitute it for trade links with external trading partners to curb the effects of an economic crisis in an outside country, thereby strengthening the insulation effects of regional integration.

Keywords: RTA, Economic Crisis, Currency Crisis, Banking Crisis, Stock Crisis, Contagion, Safeguard, ASEAN

JEL classification: F10, F13, F15, F36, F42

1. Introduction

It is established that globalized world is characterised by unfettered international capital flows which has made the global financial system more crisis prone. This has been clearly observed through two recent crisis episodes - The U.S Subprime crisis and Euro-zone crisis. The literature on the economic crisis considers trade linkages to be an important channel for the transmission of the crisis from the affected country to the trade partners of

¹Research Scholar, Department of Business Economics, University of Delhi, South Campus, New Delhi.

that country (Krugman, 1998; IMF, 1998; Summers 1999; Corsetti *et al.*, 1998; Eichengreen and Rose, 1999). This contagion effect of crisis can be expected to exist in an RTA framework where a group of countries enter into an agreement to lower tariff levels and promote trade among them. However, it is expected that in an event of an economic crisis, the member countries of an RTA integrate and are thereby isolated from the adverse effects of the crisis. In this context, it is important to ask whether RTAs actually lead to faster regional spread of crises or whether such arrangements may act as safeguards for members against such crises. In case of the former, the world economy would become more vulnerable if countries increasingly form RTAs. In case of the latter, the growing tendency for RTA formation is likely to impart greater stability to the world economy.

Nowadays, crises affect not just developed countries (as during the Great Depression), but also Emerging Market Economies. Therefore, it has to be evaluated whether RTAs among EMEs protect them from effects of crises or enhance vulnerability owing to contagion effects. Deriving from this belief, we attempt to study the response of Free Trade Agreement in the ASEAN region to the crisis inside and outside the region.

The Association of Southeast Asian Nations (ASEAN) was established on 8 August, 1967 in Bangkok, Thailand. ASEAN Declaration was signed by the founding fathers of ASEAN that includes Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei Darussalam joined in 1984; Vietnam, Lao PDR and Myanmar joined in 1997; and Cambodia joined in 1999. These countries constitute the ten member states of ASEAN. To strengthen the economic co-operation in the ASEAN region, a trade agreement was signed by the ASEAN members.

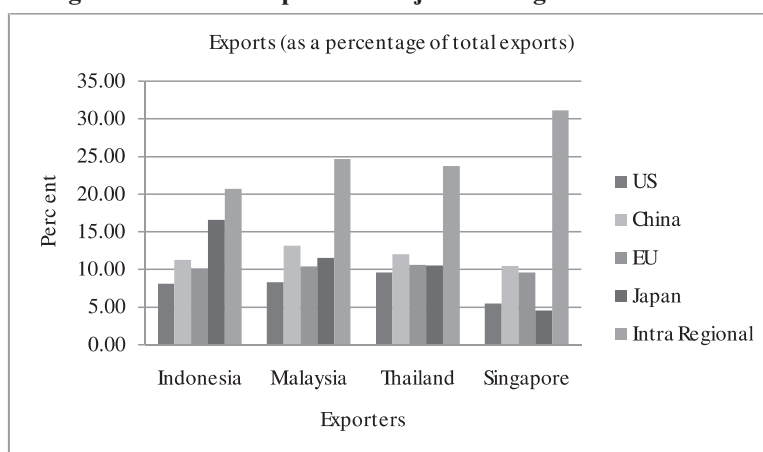
One of the major developments in the history for the ASEAN region has been the signing of ASEAN Free Trade Area (AFTA) at the fourth ASEAN Summit in Singapore in 1992 among the six ASEAN members - Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand (as the other member states joined later in the ASEAN group). AFTA aims at trade liberalization through elimination of intra-regional tariffs and non-tariff barriers. This would ultimately help in achieving the major objective of AFTA i.e. to increase ASEAN's competitiveness in the global market (ASEAN Secretariat).

The main mechanism through which AFTA is implemented is the Common Effective Preferential Tariff (CEPT). Under this mechanism, intra-regional tariff will be brought down to within 0-5% tariff range over a period of time, depending on different members i.e. by 2002 for six original ASEAN members (including Brunei Darussalam,

Indonesia, Malaysia, Philippines, Singapore and Thailand), by 2006 for Vietnam, 2008 for Lao PDR and Myanmar and 2010 for Cambodia. Under the CEPT scheme, non-tariff measures will also have to be eliminated (ASEAN Secretariat).

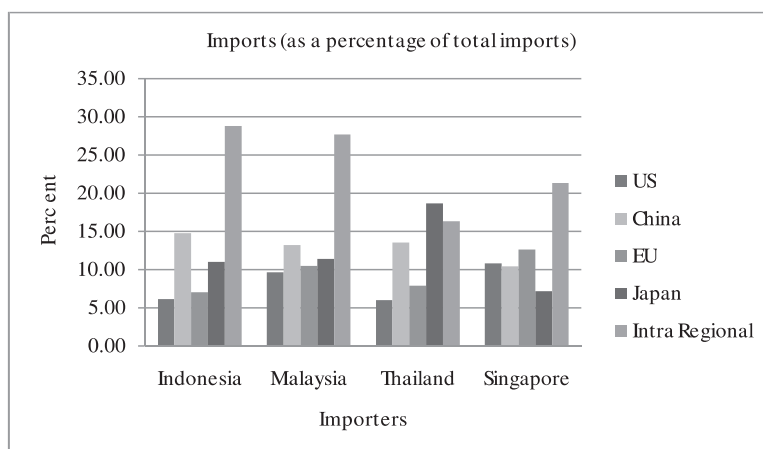
Analysing the export (as a percentage of total exports) and import (as a percentage of total imports) for major economies of ASEAN in the year 2011, it is observed that the intra-regional trade constitutes a major part of export and imports of ASEAN economies. It outweighs the exports to and imports from the top trading partners of these ASEAN members (Figure 1 and Figure 2).

Figure 1: ASEAN Exports to Major Trading Partners in 2011



Source: Based on World Integrated Trade Solution (WITS), World Bank

Figure 2: ASEAN Imports from Major Trading Partners in 2011



Source: Based on World Integrated Trade Solution (WITS), World Bank

The growth of exports and imports of these major ASEAN economies from 1990 to 2011 with respect to China as a trading partner has witnessed the largest increase, followed by intra-regional exports and imports for these ASEAN economies. Growth in intra-regional trade over the years has surpassed the growth of trade of ASEAN economies with important trading partners like USA, EU and Japan. This establishes the importance of intra-regional trade in the ASEAN region (Table 1 and Table 2).

Table 1: Growth Rate (%) of Exports of ASEAN Economies

	Intra-regional	USA	EU	Japan	China
Indonesia	10.70	6.20	6.76	4.89	14.18
Malaysia	7.94	6.05	6.86	6.73	18.48
Singapore	9.65	1.63	6.14	5.57	18.74
Thailand	11.90	5.93	6.63	7.11	21.48

Source: Based on World Integrated Trade Solution (WITS), World Bank

Table 2: Growth Rate (%) of Imports of ASEAN Economies

	Intra-regional	USA	EU	Japan	China
Indonesia	14.85	3.85	1.97	3.21	16.75
Malaysia	9.03	4.89	5.63	2.87	18.66
Singapore	8.08	4.97	6.69	0.69	15.91
Thailand	9.64	4.07	3.69	5.47	17.06

Source: Based on World Integrated Trade Solution (WITS), World Bank

A high degree of trade linkages is expected to be a source of contagion of crisis. However, it is expected that in an event of an economic crisis, the member countries of an RTA integrate and are thereby isolated from the adverse effects of the crisis. In this context, it is important to ask whether RTAs actually lead to faster regional spread of crises or whether such arrangements may act as safeguards for members against such crises.

There is wide literature that evaluates the prospects of RTAs (Panagariya, 2000; Bhagwati, 1995; Baier and Bergstrad, 2006; Kerpaptsoglou *et al.*, 2009; Altomonte, 2007). With regular occurrence of economic crisis of different types, there is a rich literature emerging on various kinds of crises there of their causes, transmission channels and implications thereof (Glick and Rose, 1999; Eichengreen and Rose, 1999; Kaminsky and Reinhart, 2000). However, there remains a gap in terms of the literature that links these two areas. Therefore, our study examines implications of crises for the ASEAN countries that have formed RTAs among themselves and hence, to evaluate the response of RTA membership to the economic crisis inside or outside the South East Asian region.

The analysis includes formulating a framework to understand the possible channels for the response of RTA membership to the economic crisis within the ASEAN region or outside the ASEAN region. To capture the possibility of contagion effect of a crisis inside or outside the region, we compute unconditional probability and conditional probability of three types of economic crisis- currency, stock and banking crisis- in the major ASEAN economies. The conditional probability implies the probability of crisis in any ASEAN country given a crisis in one of the other ASEAN countries (in this case Thailand) inside region or crisis in outside the ASEAN region (US, Japan, Korea, India and China) in the last year and a value greater than zero indicates a possibility of contagion. Further, to capture the possibility of the safeguard role of regional integration in an event of economic crisis, we compute the probability of episode of crisis (inside or outside the ASEAN region) being followed by positive growth rate in intra-regional trade. The analysis of these probabilities provides us the possibility of existence of contagion or safeguard role of regional integration in the ASEAN region in case of an economic crisis inside or outside the region.

2. Review of Literature

The literature that studies the response of RTA membership - contagion or safeguard- to the occurrence of the economic crisis is sparse. Therefore, we review the existing literature on economic crisis and trade; economic crisis and Regional Trade Agreements. Deriving from these studies, we make an attempt to establish a possible response of RTA member to the existence of economic crisis - banking, currency or stock - inside or outside the region.

2.1 Economic Crisis and Trade

Glick and Rose (1999) find strong evidence that currency crises spread along regional lines. This has been tested for five currency crisis in 1971, 1973, 1992, 1994-95 and 1997. The dependent variable used in the study is the crisis indicator which is defined as unity, if country *i* was attacked in a given episode and as zero, if the country was not attacked. It is a function of trade linkage between country *i* and ground zero, a set of macroeconomic control regressors. The significance of the trade linkage variable is tested and the evidence is consistent with the hypothesis that currency crisis spreads because of trade linkages. To empirically analyse the same question, Haidar (2012) uses a three-country dynamic general equilibrium model to see whether and how terms of trade effects can generate a spillover effect or a currency crisis transmission between countries.

Zhu and Yang (2004) analyse the factors that result in financial crisis contagion. For

this purpose, the authors have used gravity model. The paper concludes that financial crisis contagion is positively related to trade and financial linkages and negatively related to distance between crisis originating countries and crisis-affected countries, when macroeconomic fundamentals and institutional factors are controlled.

According to Tayebi and Ramezani (2011), economists believe that trade is an important factor in creating financial crisis for two reasons. First, trade imbalance can cause financial crisis. Second, financial crisis can be transmitted between trading partners from an affected country. The most common empirical tool used to explore effects of trade integration, regional trade agreements (RTAs) and financial integration/crisis on bilateral trade flows is a gravity model. A gravity model involves regressing trade on a series of explanatory variables, then using dummy variables to ascertain whether this relationship is affected by the existence of RTAs and global/regional financial crisis, for instance (Jugurnath *et al.*, 2007). However, there is a lack of literature in order to find out the empirical results of recent financial crisis on trade relations. The authors use a gravity model with a time dummy for financial crisis.

Eichengreen and Rose (1999) conducted a binary-probit model analysis for industrial economies in 1959-1993 to see whether bilateral trade linkages transmitted crisis. They concluded that trade was an important factor, since the probability of a financial crisis occurring in a country increased significantly if the country had high bilateral trade linkages with countries in crisis. The authors estimate a binary probit model, linking our dependent variable (an indicator variable that takes on a value of unity for a speculative attack and zero otherwise) to our controls with maximum likelihood, including additional regressors to capture the effects of macroeconomic and political influences that affect crisis incidence. They cast our net as widely as possible, including (1) presence of capital controls; (2) electoral victory or defeat of the government; (3) growth of domestic credit; (4) inflation; (5) output growth; (6) employment growth; (7) unemployment rate; (8) central government budget surplus or deficit, expressed as a per cent of GDP; and (9) current account surplus or deficit, again, as a per cent of GDP.

Krugman (1998), the IMF (1998), Summers (1999), and Corsetti *et al.* (1998) argue that the crisis which originated in Thailand was transmitted to other countries due to fundamental linkages and channels (trade or financial). According to these authors, the East Asian countries financed unproductive investments because of implicit government guarantees and “crony capitalism.” Such unproductive investment generated vulnerabilities

both in the real and financial sectors of the economies. The strong trade linkages among these economies led to the spread of the crisis throughout the region.

The above reviewed studies of the literature focus on the transmission of crisis through trade. In other words, the studies display the way in which trade linkages can cause transmission of crisis. On the other hand, according to few studies in the literature, trade could be affected by financial crisis (including currency crisis, banking crisis or both).

Ma and Cheng (2003) study a small sample of 52 countries over the period 1981-1998, and focus on short-term effects (up to two years) after a crisis. They find that banking crisis has a negative impact on imports and a positive effect on exports in the short run.

Berman and Martin (2010) use a bilateral gravity framework to investigate the effects of financial crisis on trade. The authors focus on the effect of financial crisis on the exports of trading partners and specifically on the vulnerability of Sub-Saharan African economies to financial crisis in advanced economies. They find that a financial crisis in a trading partner has a moderate but long lasting effect on exports, and that the effect is larger for African exporters.

Abiad *et al.* (2011) analyze trade dynamics following past episodes of financial crises. The study uses augmented gravity model and 179 crisis episodes from 1970-2009. The results indicate that there is a sharp decline in a country's imports in the year following a crisis -19 per cent, on average - and this decline is persistent, with imports recovering to their gravity-predicted levels only after 10 years. In contrast, exports of the crisis country are not adversely affected and remain close to the predicted level in both the short- and medium-term.

The two strands of literature provide an understanding on the relation between trade and economic crisis. It can be inferred that trade linkages serve to be an important source of transmission of economic crisis between the trading partners leading to the contagion effect. Further, it is learnt that trade is one of the factors that is adversely affected due to economic crisis. Combining these two sets of theories, it can be said that economic crisis in one economy can impact its own trade as well the trade levels in its trading partners through contagion effect.

2.2 Economic Crisis and Regional Trade Agreements

As we mentioned, literature on economic crisis and Regional Trade Agreements is sparse. As RTAs involve opening up of the economies among a group of countries in a

region, there are possibilities of contagion effect as discussed above. However, the available literature linking RTAs and economic crisis discusses the ability of RTA setup to provide a safeguard to the member countries from the adverse effects of crisis.

According to UNCTAD Secretariat (2009), RTAs are not immune to the effects of global crisis. It analyses intra-regional and extra-regional flows in cases of different RTAs that include the European Union (EU), North America Free Trade Agreement (NAFTA) and South America Common Market (MERCOSUR). The analysis provides the evidence that intra-regional trade faces larger declines as compared to extra-regional trade with the onset of global crisis. Therefore, the member countries of the RTAs are not protected from the adverse impacts of the crisis.

Elliott and Ikemoto (2004) have used gravity modelling to assess the impact of Asian crisis on the intra-regional trade among the AFTA members. It finds that Asian crisis was not a hindrance to the objective of AFTA. On the contrary, the crisis may have worked as a trigger for the intensification of the regional integration among the member states of ASEAN. The Asian crisis led to the increased sourcing of imports from within the region.

According to Hellmann (2007), the most visible outcome of the crisis in Asia was the encouragement to create new multilateral institutions and bilateral free trade agreements (FTAs). Also, the regionalism in Asia has in part been stimulated to avoid the dependence on the IMF. According to the author, the resistance to change in global economic institutions, the return of growth trends that once again portend an imminent “Asian Century,” and the survival and success of hybrid “Asian Development Model(s)” are notable products of the decade in Asia after the crisis.

Tayebi and Ramezani (2011) evaluate the effect of financial crisis on trade flows of steel industries in the major Asian-Pacific steel producing countries. The analysis is conducted using a static and dynamic panel data analysis, and it is tested whether the global financial crisis has a negative effect on Asia-Pacific bilateral steel trade flows. It further examines the role of regional trade integration in bilateral steel trade in Asia and Pacific. The underlying assumption is that such integration contributes to increase trade relations and possibly adjust the imposed costs of financial crisis on the sector. The gravity model analysis includes cross-sectional data on steel trade flows of the selected Asian-Pacific countries over a specific period (2002-2006). The study is based on an extended gravitational model, in order to incorporate the main gravity variables and qualitative factors. The variable for the global crisis is a time dummy variable that takes a value 1 for the crisis year i.e. 2005 and

2006; and 0 otherwise. The results revealed that the recent financial crisis negatively affected the bilateral steel trade between Asian-Pacific trading partners. Furthermore, it concludes that there is significant and expected role of regional trade integration in promoting steel trade relations in East Asia and the Pacific. It also contributes to policy making by recommending that the implementation of a larger regional steel trade market in the region would possibly reduce the global or regional crisis.

According to Kumar (2011), deeper and broader regional economic integration in Asia within Comprehensive Economic Partnership of East Asia (CEPEA) framework could be a source of growth for not only the participating countries but also has the potential to enhance the welfare of the rest of the world by unleashing the synergies of Asian countries for trade creation especially in the context of global financial crisis. Further, the author points out that the growth rate of demand for the goods and services of Asia-Pacific region in western countries may not recover to pre-crisis levels. Therefore, this encourages Asia-Pacific countries to explore new sources of aggregate demand. This lays the foundation for strengthening the regional co-operation among the countries. It suggests a broader and more comprehensive co-operation in terms of coverage.

According to Heymann (2001), being alert to the possibility of crisis would require an active work in interpreting data and analyzing potential future scenarios. In a regional framework, this implies a routine of joint monitoring of the economic evolution wherein the opinions of the partners may gain increasing importance for each of the policy makers, and eventually lead to actions decided by consensus. Furthermore, crisis can be prevented by regional co-operation activities such as coordinating bank regulations and “Mutual Insurance” schemes.

ESCAP (2009) proposes that increased south-south intraregional trade not only provides an effective instrument for dealing with the impact of the current economic crisis, but also reduces the dependence of regional exports on developed country markets in the long-run and thereby, making the region insulated from future external shocks.

Henning (2011) examines the extent to which economic crisis facilitates the development of more effective regional institutions and whether such institutions can shield regions from crisis. Therefore, it addresses the two-way relationship: first, the extent to which economic crisis helps or hinders the development of more effective regional institutions; second, the extent to which regional institutions can be designed to help guard against or mitigate future economic crisis. The author compares six regional economic

crises over the last four decades and the institution building - or decay- that followed. It sums up by stating that regional institutions can provide collective defence against economic and financial crisis. However, the success depends upon their scope and design. Further, the analysis concludes that five conditions are especially important in generating a constructive regional response: (i) a significant degree of regional economic interdependence; (ii) an independent secretariat or intergovernmental body charged with cooperation; (iii) webs of interlocking economic agreements; and, as elements of the multilateral context; (iv) conflict with the relevant international organization (such as the International Monetary Fund); and (v) the support of the United States.

From the literature linking the regional trade agreements and economic crisis, it can be observed that RTAs can provide a shield against the negative impact of economic crisis to its members. However, there is a paucity of empirical literature that evaluates the possible linkage of RTA membership to economic crisis and its net effect for the member countries of an RTA.

The present paper attempts to fill this gap in the literature by establishing framework to understand the possible channels for the response of RTA membership to the economic crisis within the ASEAN region or outside the ASEAN region.

3. Analytical Framework

3.1 Types of Crisis and their Impacts

(i) Banking Crisis

It is believed that banks borrow for short-term (in the form of savings and demand deposits) and lend for long-term (in the form of direct loans to businessmen and longer dated higher-risk securities). In this process, banks create credit that allows the real economy to grow and expand. In normal times, banks hold liquid assets such that they can handle the increased deposit withdrawal. However, this trend of borrowing short and lending long makes the banks vulnerable to bank runs. Bank run can be attributed to the solvency problem due to non-performing loans experienced by one or two banks. During a bank run, the depositors' confidence in the banks fades away. If the depositors are faced by distrust, they withdraw their deposits at the same time. Banks are unable to satisfy the withdrawals as their assets are illiquid. This results in a liquidity crisis. This process affects even the sound banks and paralyses the financial system.

The sound banks that are hit by the withdrawals by the depositors try to sell assets or

liquidate the assets to confront the withdrawals. This “fire sale” of assets leads to decline in the asset prices, thereby reducing the value of banks' assets. This destroys the equity base of the banks and leads to a solvency problem. The cycle again starts solvency problem of these banks initiate a new liquidity crisis and this trend goes on.

According to Reinhart and Rogoff (2009), one of the characteristics of a banking crisis is a surge in capital inflows followed by credit boom and rising asset prices preceding the crisis. Furthermore, the authors mention a few outcomes of a banking crisis. It includes declining housing prices, loss in revenues as well as surge in government debt.

(ii) Currency Crisis

A currency crisis can be defined as a speculative attack on the foreign exchange value of a currency. This can have two responses - either a sharp depreciation or forces the authorities to defend the currency by selling foreign exchange reserves or raising domestic interest rates.

Dramatic episodes of currency crisis include the breakdown of the Bretton Woods system in 1971-73, the crisis of the British pound in 1976, the near-breakdown of the European Exchange Rate Mechanism in 1992-93, the Latin American Tequila Crisis following Mexico's peso devaluation in 1994-95, the financial crisis that swept through Asia in 1997-98 and, more recently, the global financial crisis in 2008-09 that forced sharp depreciation in many advanced as well as developing economies (see IMF, 2008 and IMF, 2009).

Currency crisis has been widely studied in the economic literature, both theoretical and empirical. Theoretical models of currency crisis are categorized as first, second, or third-generation.

The first generation models, for instance, Krugman (1979) focuses on inconsistencies between domestic macroeconomic policies such as an exchange rate commitment and a persistent government budget deficit. Deficit can be financed by depleting the foreign reserves or by borrowing. However, it is not possible to deplete the reserves or to borrow indefinitely. Therefore, the other option with the government to finance the deficit is through creating money supply. Since, excess money creation leads to inflation, it is inconsistent with keeping the exchange rate fixed and the fixed exchange rate regime must collapse.

The second generation of models, for instance, Obstfeld and Rogoff (1986),

stresses on the importance of multiple equilibria. In these models, self-fulfilling behaviour is observed - investors attack the currency because they expect other investors to attack the currency. Therefore, it leads to devaluation of the currency as the other policies, such as raising domestic interest rates implemented to defend a particular exchange rate level may also raise the costs of defence by dampening economic activity and/or raising bank funding costs. The episodes like the European Exchange Rate Mechanism crisis, where countries like the UK came under pressure in 1992 and ended up devaluing, even though other outcomes (that were consistent with macroeconomic fundamentals) were possible too (see Eichengreen, Rose and Wyplosz, 1996; Frankel and Rose, 1996) are explained by second generation models.

The third generation of crisis models relate rapid deterioration of balance sheets with fluctuations in asset prices, including exchange rates that can lead to currency crisis. The Asian crisis of the late 1990s can be explained by these models. In the case of Asian crisis, macroeconomic imbalances were small before the crisis; there were surplus fiscal positions and current account deficits appeared to be manageable. However, vulnerabilities associated with financial and corporate sectors were large. The third generation models depict how balance sheet mismatches in these sectors can give rise to currency crises. If local banks have large debts outstanding denominated in foreign currency, this may lead to banking cum currency crisis (Chang and Velasco (2000). McKinnon and Pill (1995) suggest that financial liberalization combined with deposit insurance may result in increased lending by banks leading to both foreign and domestic credit expansion that eventually leads to a banking and currency crisis.

(iii) Stock Market Crash

The process of sharp increase in asset prices, sometimes called bubbles, is often followed by crashes. The crash occurs when asset prices deviate from fundamentals predicted by standard models with perfect financial markets. A bubble can be defined as “the part of a grossly upward asset price movement that is unexplainable based on fundamentals” (Garber, 2000). Patterns of exuberant increases in asset prices, often followed by crashes, appear prominently in many cases of financial instability, both for advanced and emerging market countries alike, going back millennia (see Evanoff, Kaufman and Malliaris, 2012).

According to Claessens and Kose (2013), there are real adverse effects of asset price busts and credit crunches on the real economy. Asset price busts can affect bank lending and

other financial institutions' investment decisions and in turn the real economy through two channels. First, when borrowing/lending is collateralized and the market price of collateral falls, the ability of firms to rely on assets as collateral for new loans and financial institutions' ability to extend new credit becomes impaired, which in turn adversely affects investment. Second, the prospect of large price dislocations arising from fire sales and related financial turmoil distorts decisions of financial institutions to lend or invest, prompting them *inter alia* to hoard cash. Through these channels, fire sales can trigger a credit crunch and cause a severe contraction in real activity.

3.2 Contagion Effect of Crisis

The causes of Contagion include trade links (competitive devaluations) and financial links.

(i) Trade Links and Competitive Devaluations

Devaluation in a country hit by a crisis reduces the export competitiveness of the country. This pressurizes the trading partners of that country to devalue their currencies to maintain their competitiveness in the world market.

(ii) Financial Links

A financial crisis in one country can lead to direct financial effects, including reductions in trade credits, foreign direct investment, and other capital flows abroad. In case of financial linkages between countries, a crisis in one of the countries leads to co-movements in asset prices and capital flows.

3.3 Analytical Framework

Based on the knowledge of types of crisis and its possible contagion effects, we develop a framework that analyses the possible channels of response of RTA membership to the occurrence of crisis inside the region or outside the region.

As the analysis in section 4 focuses on ASEAN FTA (AFTA), we explain the analytical framework in this section using example of AFTA. As mentioned earlier, AFTA's member countries include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. And the top trading partners of the ASEAN region include US, Australia, Japan, South Korea, China, India, Hong Kong and UAE.

The basic proposition in the following discussion is that the liberalization of trade implies financial liberalization as well.

3.3.1 Crisis in One of the RTA Members

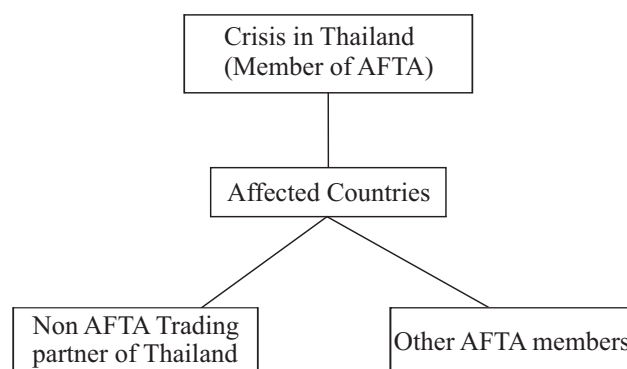
For this subsection, consider an event of crisis in Thailand, a member country of AFTA. Figure 3 explains the possible impacts of a crisis in Thailand. The crisis in Thailand can impact other members of AFTA or non AFTA trading partners of ASEAN countries. The focus areas in this case are the following:

- (i) The crisis affected Thailand, a member of AFTA
- (ii) Other members of AFTA - Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore and Vietnam
- (iii) Non AFTA countries which are the trading partners of the affected country - US, Australia, Japan, South Korea, China, India Hong Kong and UAE

The objective is to show that RTA membership mitigates crisis effect. Therefore, we need to examine whether the crisis in Thailand impacts the other AFTA members less adversely than its non-member trading partners mentioned above.

When an economic crisis strikes a member country of an RTA, then two possibilities emerge. (i) The RTA arrangement can act as a channel of contagion leading to spread of the crisis among the other member countries. (ii) Alternatively, the RTA arrangement can act as a safeguard against the crisis, leading to greater economic cooperation among member countries through trade channels for the region.

Figure 3: Case When Crisis Originates in Member of RTA



(a) Contagion Effect

There can be contagion from Thailand to other AFTA members as well as non AFTA trading partners of Thailand (for all type of crisis currency, debt, stock, and banking).

If Thailand is faced by a currency crisis, the other countries of AFTA and non AFTA trading competitors of Thailand experience loss in competitiveness and they are likely to devalue their currency and face the crisis (Dornbusch *et al.*, 2000). For instance, in case of Asian crisis, devaluation of Baht in Thailand had spread to other South East Asian countries resulting in the devaluation of their currencies.

On the basis of the assumption that trade openness implies financial openness, we explore the contagion related to the financial crisis. As the members of an RTA are financially linked, banking crisis in one RTA member reduces confidence in other members, leading to withdrawal by depositors and the onset of banking crisis in other members as well (Reinhart and Rogoff, 2009). Similarly, Stock market crash in one country's economy affects the other countries' financial system thereby spreading the financial instability (Dornbusch *et al.*, 2009). Furthermore, one more effect of financial liberalization among the RTA members is the contagion of default crisis - If a country in a region defaults on its loans, then the other financially linked members are also likely to default (Park, 2012), as was witnessed in Mexico debt crisis of 1982 and recent Euro zone crisis in 2010. The same contagion operates for the non-member trading partners as well.

Proposition 1: Due to preferential tariff liberalization among RTA members, contagion effect is expected to be more for RTA members as compared to non-AFTA member trading partners.

(b) Safeguard Effect

It is expected that RTA membership proves to be a safeguard for the RTA members. RTA membership is unlikely to play the safeguard role for the rest of the RTA members against the currency crisis in one of the members of the RTA. However, increased revenues from export activities in a region can help resolve the banking crisis, sovereign debt crisis and stock market crashes.

Based on the understanding of the safeguard effect, the following propositions are laid down. It makes a comparison between the degree of safeguard effect for other RTA members and non-member trading partners.

Proposition 2: With financial crisis in an RTA member- banking, debt and stock crisis RTA membership acts as a safeguard for the other members.

Proposition 3 : The safeguard effect in this case for other RTA members is more than non-member trading partners as the extent of liberalization is more in an RTA.

Proposition 4: In case of currency crisis in an RTA member, RTA membership is unlikely to be a safeguard for other RTA members or non-member trading partners.

It is observed that the RTA membership has both, a positive and a negative response to the crisis.

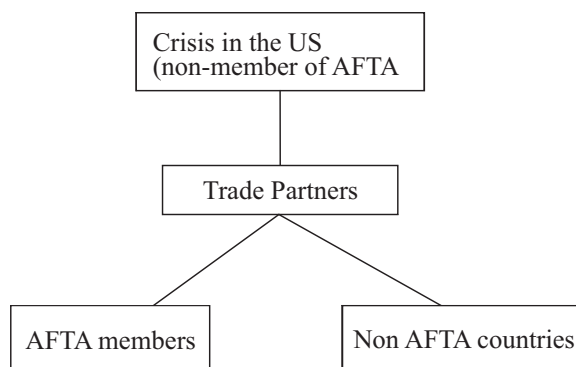
Proposition 5: The net response of RTA membership to the crisis in an RTA member depends on the relative dominance of contagion effect and safeguard effect.

3.3.2 Crisis in Non-RTA Member

For this subsection, we consider an event of crisis in the US, a non AFTA trading partner of the ASEAN countries. In this case, the objective is to observe the effect of crisis in a non-RTA member on the RTA members and compare this effect with the impact of crisis on non-RTA members that are the trading partners of the crisis struck country

In the event of an economic crisis outside the region, the RTA membership for the region can respond in two ways-contagion effect and safeguard effect. Furthermore, the response of RTA membership would depend on the fact whether the crisis struck outside country is a trading partner of the members or not. We focus on the case where non-RTA member crisis struck country is a trading partner of all or some of the RTA members.

Figure 4: Case When Crisis Originates in Non-member RTA



In this case, the trading partners of the crisis struck US can be an AFTA member countries mentioned earlier or can be non AFTA trading partners of the US for instance, UK, France, Germany, and so on.

(a) Contagion Effect

- (i) US is a trading partner of all AFTA members

In this case, all RTA members are affected either because of trade linkages or

financial linkages with the crisis struck non-RTA member. Crisis in non-RTA member leads to crisis in financially or trade linked all AFTA members and non AFTA trading partners

However, the AFTA members fare better than non-AFTA trading partners of the US due to safeguard effect explained later in this section.

(ii) Non-RTA member is a trading partner of some of the RTA members

In this case, some of the AFTA members are associated with the US through trade or financial linkages. Therefore, this association results in the spread of the crisis from the crisis struck US to a few AFTA members. Once these AFTA members are struck with the crisis, the crisis spreads to other AFTA members because of the trade and financial linkages between affected AFTA members and rest of the AFTA members. The process of contagion effect is the same as explained in the first section, currency crisis through trade linkages and financial linkages result in the spread of the effects of banking crisis, default crisis and stock market crashes leading to the financial instabilities in the AFTA members.

Similarly, contagion effect operates for non AFTA trading partner of the US. However, due to strong safeguard effect (explained below), AFTA members fare better than non-members.

(b) Safeguard Effect

(i) Non-RTA member is a trading partner of all RTA members

Safeguard chances are less in this case as all the AFTA members are connected to crisis struck US and are likely to face the ill-effects of the crisis. However, due to insulating and integrating properties of an RTA, AFTA members are better off than non-members. With integration in the region, the member countries can lower their dependence on external finance from the affected country and the required finance can be sourced from within the region. Furthermore, these AFTA members are not expected to be hit by weak external demand from the crisis struck non-member countries and the export demand is generated within the region. This makes the region self-dependent and insulated from the external factors (Kumar, 2011; Foxley, 2010).

(ii) Non-RTA member is an important trading partner of few RTA members

In this case, RTA membership can play a safeguard role for the region in the same manner as discussed above when crisis struck country is a trading partner of all RTA members.

From the above discussion of the framework and considering different scenarios, it

can be inferred that in response to the crisis inside or outside the region, RTA membership can respond through contagion effect or safeguard effect. The final outcome can be judged by the net effect of the two responses.

Proposition 6: Comparing the trade partners of affected country with RTA members - RTA members generally fare better than non-RTA members as the safeguard effect is stronger.

The above framework developed an understanding of the various channels of response of RTA setup to an economic crisis inside or outside the region. To further establish this relation, we attempt to compute probability of contagion and safeguard effects in an event of crisis.

4. Probability of Contagion and Safeguard

A high degree of trade linkages in an RTA is expected to be a source of contagion of crisis. To capture the possibility of contagion effect among the trading partners, we compute unconditional probability and conditional probability of economic crisis - currency, stock and banking crisis- in the major ASEAN economies namely Singapore, Philippines, Malaysia, Indonesia and Thailand for the time period of 20 years, 1991 to 2010. The conditional probability implies the probability of crisis in any ASEAN country given a crisis in one of the other ASEAN countries (Thailand in this case) inside region or crisis in outside the ASEAN region (US, Japan, Korea, India and China) in the last year.

Unconditional probability of crisis for country $i = P(U)_i = N/T$

where, i is an ASEAN member; N is the number of episodes of economic crisis- currency, stock or banking within the period of 20 years; T is the total number of years i.e. 20 years

Conditional probability for country $i = P(C)_i = P(i/j) = P(i \text{ and } j)/P(j)$

where, i is an ASEAN member; j is the crisis struck country - can be an ASEAN member (Thailand) and non ASEAN (US, Japan, Korea, India or China). $P(I/J)$ or $P(C)_i$ is the probability of crisis in i given a crisis in j in the last year; $P(i \text{ and } j)$ denotes probability of crisis episodes in i when there was crisis last year in j ; $P(j)$ is the unconditional probability of crisis in j .

Table 3: Unconditional and Conditional Probability of Currency Crisis in ASEAN countries

	Unconditional Probability	Probability (Crisis in ASEAN Given Crisis in ASEAN or Non-ASEAN in Last Year)				
Probability		Thailand	US	Japan	Korea	China
Indonesia	0.2	0.5	0	-	0.5	0
Malaysia	0.05	0	0	-	0	0
Singapore	.05	0	0	-	0	0
Philippines	0.1	0	0	-	0	0
Thailand	0.1	-	0	-	0	0

Source: Author's estimates based on Reinhart and Rogoff database

Table 4: Unconditional and Conditional Probability of Stock Crisis in ASEAN countries

	Unconditional Probability	Probability (Crisis in ASEAN Given Crisis in ASEAN or Non-ASEAN in Last Year)				
Probability		Thailand	US	Japan	Korea	China
Indonesia	0.45	0.50	1	0.70	0.67	0.63
Malaysia	0.25	0.50	0	0.30	0.33	0.25
Singapore	0.35	0.67	0.40	0.50	0.67	0.25
Philippines	0.4	0.67	0.40	0.50	0.50	0.38
Thailand	0.3	-	0	0.20	0.50	0.38

Source: Author's estimates based on Reinhart and Rogoff database

Table 5: Unconditional and Conditional Probability of Banking Crisis in ASEAN countries

	Unconditional Probability	Probability (Crisis in ASEAN given crisis in ASEAN or Non-ASEAN in Last Year)				
Probability		Thailand	US	Japan	Korea	China
Indonesia	0.4	1	0.20	0.70	0.83	0.63
Malaysia	0.25	0.83	0	0.50	0.67	0.50
Singapore	0	0	0	0	0	0
Philippines	0.25	0.83	0	0.50	0.67	0.50
Thailand	0.3	-	0	0.60	0.67	0.63

Source: Author's estimates based on Reinhart and Rogoff database

It is postulated that if the unconditional probability is less than the conditional probability, there exists a possibility of Contagion (Kaminsky and Reinhart, 2000). From the above analysis (Tables 3 to 5), we find that in most of the cases, conditional probabilities are more than unconditional probabilities, indicating the existence of contagion effects.

Further, we compute the probability of economic crisis being followed by positive growth rate of intra-regional trade for the time period of 1990 to 2010, thereby assessing the possibility of the safeguard role of the regional integration in an event of crisis.

$$\text{Safeguard probability for country } i = P(S)_i = (C_j \& T_{ij} / N_i)$$

where, i is an ASEAN member; j is the crisis struck country - can be an ASEAN member (Thailand) and non ASEAN (US, Japan, Korea, India or China). C_j is the number of crisis episodes in country j ; T_{ij} is the number of episodes of positive growth rate of intra-regional trade for country i ; $C_j \& T_{ij}$ indicate the number of episodes of crisis in country j followed by positive growth rate of intra-regional trade for country i ; N_j is total number of economic crisis for country j

Table 6: Probability of Episode of Currency Crisis Followed by Positive Growth Rate in Intra-regional Trade

	Thailand	US	Korea	China
Indonesia exports	0.50	1	0.50	1
Indonesia Imports	0	1	0	1
Malaysia exports	0	1	0	1
Malaysia imports	0	1	0	1
Thailand exports	0	1	0	1
Thailand imports	0	1	0	1

Source: Author's estimates based on Reinhart and Rogoff database

Table 7: Probability of Episode of Banking Crisis Followed by Positive Growth Rate in Intra-regional Trade

	Thailand	US	Japan	Korea	China
Indonesia exports	0.67	0.80	0.80	0.67	0.88
Indonesia Imports	0.67	0.80	0.80	0.67	0.88
Malaysia exports	0.50	0.80	0.60	0.67	0.75
Malaysia imports	0.67	0.80	0.80	0.67	0.88
Thailand exports	0.67	0.80	0.70	0.67	0.75
Thailand imports	0.50	0.80	0.70	0.67	0.75

Source: Author's estimates based on Reinhart and Rogoff database

Table 8: Probability of Episode of Stock Crisis Followed by Positive Growth Rate in Intra-regional Trade

Stock Crisis					
	Thailand	US	Japan	Korea	China
Indonesia exports	0.67	0.60	0.70	0.67	0.88
Indonesia imports	0.67	0.60	0.70	0.50	0.88
Malaysia exports	0.50	0.60	0.60	0.33	0.88
Malaysia imports	0.67	0.60	0.70	0.50	0.88
Thailand exports	0.50	0.60	0.70	0.33	0.75
Thailand imports	0.50	0.60	0.60	0.33	0.88

Source: Author's estimates based on Reinhart and Rogoff database

An analysis of Tables 6 to 8 indicates non-zero probability of an event of economic crisis followed positive growth rate of intra-regional trade except for the cases of currency crisis in the US and Korea. This showcases possibility of safeguard role of regional integration, reflected most strongly in case of all three types of economic crisis in China.

5. Conclusion

The globalized world is characterised by movement of international capital flows which has made the global financial system more crisis prone. The trade linkages among the economies of the world through liberalization of trade policies are an important source of transmission of crisis from the affected country to the trade partners of that country. This contagion effect of crisis can be expected to exist in an RTA framework where a group of members enters into an agreement to lower tariff levels and promote trade among themselves. However, it is claimed that in such an event of an economic crisis, the member countries of an RTA integrate and are thereby isolated from the adverse effects of the crisis.

In this context, it is important to ask whether RTAs actually lead to faster regional spread of crises or whether such arrangements may act as safeguards for members against such crises. This paper attempts to find an answer to this question by formulating an analytical framework providing possible channels through which an RTA membership can respond to an economic crisis inside the region or outside the region. Further, we compute conditional and unconditional probabilities of crisis for the selected ASEAN countries. Unconditional probability is the probability of occurrence of a particular economic crisis in the time period of 20 years, whereas conditional probability computes the probability of an event of economic crisis in an ASEAN member given there was similar kind of crisis in another ASEAN member or non ASEAN country, providing an indication for the contagion

of crisis.

The observed trend of higher conditional probability as compared to unconditional probability indicates towards the existence of contagion of crisis through regional integration. To assess the safeguard role of regional integration, we compute probability of positive growth rate in regional trade followed by an event of crisis inside or outside the ASEAN region and we obtain non-zero probabilities showcasing the safeguard effect of regional integration in the ASEAN region. The non-zero probabilities in both the cases - contagion and safeguard- indicates the possibility of both the responses to a crisis inside or outside a region and the final outcome depends on the net impact of both the effects.

The important policy implication drawn from the analysis is to strengthen the regional integration and substitute it for trade links with external trading partners to curb the effects of an economic crisis in an outside country, thereby, strengthening the insulation effects of regional integration.

References

- Abiad, A., P. Topalova and P. Mishra (2011), "How Does Trade Evolve in the Aftermath of Financial Crises?", *IMF Working Paper*, No. WP/11/3.
- Altomonte, C. (2007), "Regional Economic Integration and the Location of Multinational Firms", *Review of World Economics / Weltwirtschaftliches Archiv*, Vol. 143, No. 2, pp. 277-305.
- Anderson, J. E. (1979), "A Theoretical Foundation for the Gravity Equation", *American Economic Review*, Vol. 69, pp. 106-16.
- Anderson, J. E. and E. V. Wincoop (2003), "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review*, Vol. 93, No. 1, pp. 170-92.
- Baier, S. L. and H. Bergstrand (2006), "Do Free Trade Agreements Actually Increase Members' International Trade?", *Journal of International Economics*, Vol. 71, No. 1, pp. 72-95.
- Baier, S. and J. Bergstrand (2009), "Bonus Vetus OLS: A Simple Method for Approximating International Trade-Cost Effects Using the Gravity Equation", *Journal of International Economics*, Vol. 77, No. 1, pp. 77-85.
- Berman, N. and P. Martin (2010), "The Vulnerability of Sub-Saharan Africa to the Financial Crisis: The Case of Trade", *CEPR Discussion Paper*, No. 7765, London Centre for Economic Policy Research.
- Bhagwati, J. (1995), "U.S. Trade Policy: The Infatuation with Free Trade Areas", in J. Bhagwati and A. O. Krueger (eds.), *The Dangerous Drift to Preferential Trade Agreements*, American Enterprise Institute, Washington, D.C.

- Chang, R. and A. Velasco (2000), "Liquidity Crises in Emerging Markets: Theory and Policy", *NBER Macroeconomics Annual 1999*, Vol. 14, pp. 11-78.
- Claessens, S. and M. A. Kose (2013), "Financial Crises: Explanations, Types and Implications", IMF Working Paper, No. WP/13/28.
- Corsetti, G., P. Pesenti and N. Roubini (1998), "What Caused the Asian Currency and Financial Crises? A Macroeconomic Overview", Processed (September), New York University.
- Dornbusch, R., Y. C. Park and S. Claessens (2009), "Contagion: Understanding How it Spreads", *World Bank Research Observer*, Vol.15, No. 2, pp.177-97.
- Eichengreen, B., A. K. Rose and C. Wyplosz (1996), "Speculative Attacks on Pegged Exchange Rates: An Empirical Exploration with Special Reference to the European Monetary System", in M.B. Canzoneri, P. R. Masson and V. U. Grilli (eds.), *Transatlantic Economic Issues*, Cambridge University Press, Cambridge, UK.
- Eichengreen, B. and A. Rose (1999), "Contagious Currency Crises: Channels of Conveyance", in Takatoshi Ito and Anne Krueger (eds.), *Changes in Exchange Rates in Rapidly Developing Countries: Theory, Practice, and Policy Issues*, Chicago: University of Chicago Press.
- Elliott, R. J. R and K. Ikemoto (2004), "AFTA and the Asian Crisis: Help or Hindrance to ASEAN Intra-Regional Trade?", *Asian Economic Journal*, Vol. 18, No. 1, pp. 1-23.
- ESCAP (2009), "Regional Trade and Investment: Trends, Issues and ESCAP Responses", Note by the Secretariat, ESCAP, Sixty-fifth session, 2329 April 2009, Bangkok, E/ESCAP/65/2.
- Evanoff, D. D., G. G. Kaufman and A. G. Malliaris (2012), *New Perspectives on Asset Price Bubbles*, Oxford University Press.
- Frankel, J. A. and A. K. Rose (1996), "Currency Crashes in Emerging Markets: An Empirical Treatment", *Journal of International Economics*, Vol. 41, Nos. 3-4, pp. 351-66.
- Garber, P. M. (2000), *Famous First Bubbles: The Fundamentals of Early Manias*, Cambridge, MA: MIT Press.
- Glick, R. and A. K. Rose (1999), "Contagion and Trade: Why are Currency Crises Regional?", *Journal of International Money and Finance*, Vol.18, pp. 603-607.
- Haidar, J. I. (2012), "Currency Crisis Transmission through International Trade", *Economic Modelling*, Vol. 29, pp. 1511-57.
- Hellmann, D. C. (2007), "A Decade after the Asian Financial Crisis: Regionalism and International Architecture in a Globalized World", *Asian Survey*, Vol. 47, No. 6, pp. 834-849.
- Henning, C. R. (2011), "Economic Crises and Institutions for Regional Economic Cooperation", *ADB Working Paper*, Series on Regional Economic Integration, No. 81.
- Heymann, D. (2001), "Regional Interdependencies and Macroeconomic Crises: Notes on Mercosur",

- Serie Estudios y Perspectivas 5, United Nations, CEPAL, ECLAC Buenos Aires Office.
- International Monetary Fund (1998), “*International Capital Markets: Development, Prospects and Key Policy Issues*”, Washington, D.C.
- International Monetary Fund (2008), “Financial Stress and Economic Downturns”, *World Economic Outlook*, Chapter 4, October.
- International Monetary Fund (2009), “How Linkages Fuel the Fire: The Transmission of Financial Stress from Advanced to Emerging Economies?”, *World Economic Outlook*, Chapter 4, April.
- Jugurnath, B., M. Stewart and R. Brooks (2007), “Asia/Pacific Regional Trade Agreements: An Empirical Study”, *Journal of Asian Economics*, Vol. 18, No. 6, pp. 974-987.
- Kaminsky, G. and C. Reinhart (2000), “On Crises, Contagion, and Confusion”, *Journal of International Economics*, Vol. 51, June, pp. 145-68.
- Kepaptsoglou, K., D. Tsamboulas, M. G. Karlaftis and V. Marzano (2009), “Analyzing Free Trade Agreements Effects in the Mediterranean Region: A Sure Gravity Model Based Approach”, *Transportation Research Record*, No. 2097, pp. 88-96.
- Kumar, N. (2011), “Financial Crisis and Regional Economic Cooperation in Asia-Pacific: Towards an Asian Economic Community?”, *MPDD Working Paper*, Number WP/11/16.
- Krugman, P. (1979), “A Model of Balance-of-Payments Crises”, *Journal of Money, Credit and Banking*, Vol. 11, No. 3, pp. 311-25.
- Krugman, P (1998), “What Happened to Asia?”, Massachusetts Institute of Technology, Cambridge, Massachusetts.
- Ma, Z. and L. Cheng (2003), “The Effects of Financial Crises on International Trade”, *NBER Working Paper*, No. 10172, National Bureau of Economic Research, Cambridge, Massachusetts.
- McKinnon, R. and H. Pill (1996), “Credible Liberalizations and International Capital Flows: The Overborrowing Syndrome,” in T. Ito, and A. Krueger (eds.), *Financial Deregulation and Integration in East Asia*, pp. 7-42, University of Chicago Press.
- Obstfeld, M. and K. Rogoff (1986), “Ruling Out Divergent Speculative Bubbles”, *Journal of Monetary Economics*, Vol. 17, No. 3, pp. 349-62.
- Panagariya, A. (2000), “Preferential Trade Liberalization: The Traditional Theory and New Developments”, *Journal of Economic Literature*, Vol. 38, pp. 287-331.
- Reinhart, C. M. and K. Rogoff (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton University Press.
- Summers, L. H. (1999), *Roots of the Asian Crises and the Road to a Stronger Global Financial System*, Remarks made at the Institute of International Finance.
- Tayebi, S. K. and F. Ramezani (2011), “Financial Crisis and Steel Trade Integration in Asia and

Pacific: A Static and Dynamic Analysis”, *International Journal of Business and Development Studies*, Vol. 3, No. 1, pp.5-28.

Zhu, L. and G. Yang (2004), “*The Role of Psychic Distance in Contagion: A Gravity Model for Contagious Financial Crises*”, The George Washington University.