Global Financial Crisis impact on Asian Economics

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A thesis submitted in partial fulfillment of the requirement for the degree of Master of Philosophy/ Science in Management with specialization in Finance at the Faculty of Management Sciences International Islamic University, Islamabad.

Supervisor

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-1 Financial Crises

-2 Economic Conditions

FORWARDING SHEET

The thesis entitled "Global Financial Crisis Impact on Asian Economies" submitted by Mr. Muhammad Asghar in partial fulfillment of M. Phil degree in Management with specialization in Finance has been completed under my guidance and supervision. I am satisfied with the quality of student's research work and allow him to submit this thesis for further process as per IIU rules and regulations.

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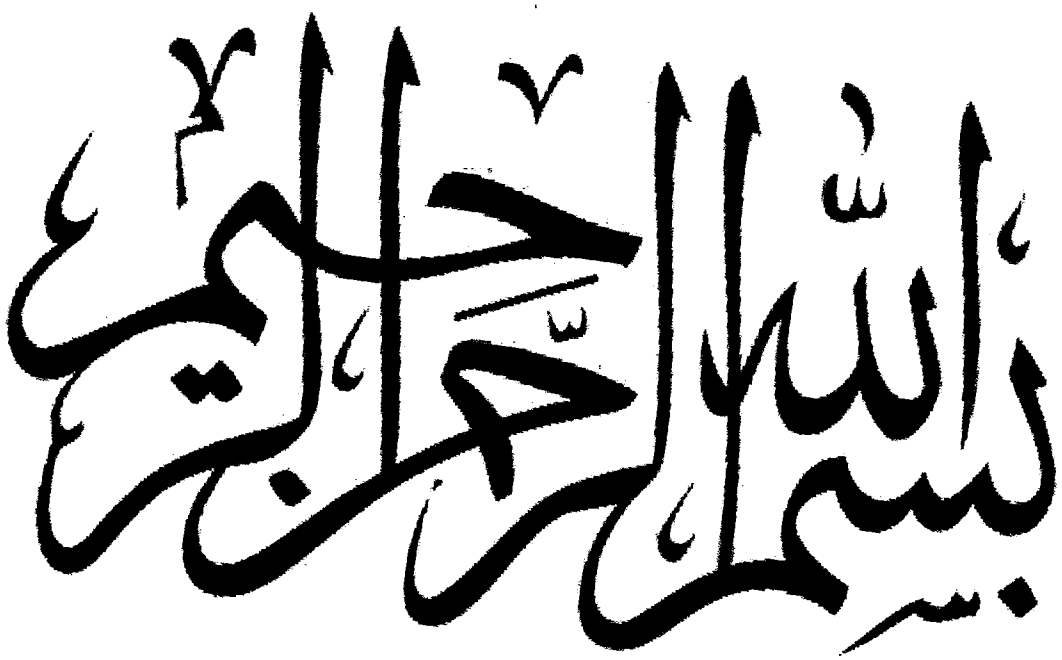
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Dedication

This thesis is dedicated to my parents who have been a great source of motivation, inspiration and believe in the richness of learning.

ABSTRACT

This study was conducted with the objective to investigate the channels through which global financial crisis (2007-2010) was transmitted to Asian economies. The quarterly data (1981-2010) of exchange rate, foreign reserve and exports for 24 countries of Asia was collected from IFS data base of International Monetary fund. Exchange market pressure was used as crisis proxy. Estimation techniques such as Vector auto regression (VAR) and ordinary least square (OLS) estimates revealed that China, India and Thailand showed wake up call effect during global financial crisis. Japan, Bangladesh and Srilanka showed devaluation effect during global financial period. Korea and Nepal showed both competitive devaluation and wake up call effect during the global financial crisis period. Pakistan, Indonesia and Philippines did not depict transmission of crisis through wake up call and competitive devaluation mode.

Key words: Global financial crisis, Competitive devaluation, wake up call, Crisis transmission

DECLARATION

I hereby declare that thesis, neither as a whole nor as a part thereof has been copied out from any source. It is further declared that I have prepared this thesis entirely on the basis of my personnel effort made under the sincere guidance of my supervisor.

No portion of the work presented in this thesis has submitted in support of any application for any degree or qualification of this or any other university or institute of learning.

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M. Asghar

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LIST OF ABBREVIATIONS

Countries	Abbreviations*
Bangladesh	BD
China	CN
India	IN
Indonesia	ID
Israel	IR
Japan	JP
Jordan	JO
Kuwait	KW
Korea	KR
Lebnon	LB
Macao	MO
Malaysia	MY
Maldives	MV
Nepal	NP
Oman	OM
Pakistan	PK
Philippines	PH
Qatar	QA
Saudi Arabia	SA
Srilanka	SK
Singapore	SG
Thailand	TH
Turkey	TR

United Arab Emirates UAE

*. These abbreviations are used in Tables

CHAPTER-1

1. Introduction

The financial crisis of USA that occurred during 2007-2010, has severe impact on the global economy specifically that of Asia, because money transaction, reserve stock, and international trade in many countries is based on dollar economy. Moreover, the world now a day has attained the status of global village and financial crisis in USA or anywhere else in a country will definitely have a strong impact on the economy of other countries, as in modern era no country may develop its economy in isolation. Above all the World Bank and international monetary fund (IMF) are under major influence of USA and as such any financial crisis in USA will have main impact on the policy, functions, implementations and project execution of these world . top financial organizations. There are many causes of financial crisis such as credit booms, assets boom, regulatory problem, financial integration, the role of households and role of leverage. These are some causes of financial crisis, what are effects, that may be accounted as reduction in industrial production, decrease in investment, contraction in employment, credit decline, fall in real estate prices and also decrease in equity prices.

USA financial crisis originated from USA Investment banking system that were not able to maintain their liquidity. High private liabilities increase probability of banking and currency crisis of high magnitude. According to Frankel and Rose (1996) the financial crisis is said to occur if the exchange rate of country depreciates more than 25 percent. The financial crisis in Latin American during (1980) was attributed to debt imbalance and that of Asia was because of corporate sector. In Japan the financial crisis originated from real estate problems, as households debt to income ratio increased rapidly. In Europe the banking sector was responsible for financial crisis, more so in UK where property mortgage was phenomenal factor in financial upset. The financial crisis prevalent in above narrated countries was not an isolated phenomenon, as world economy is integrated because of global nature and moreover financial crisis has no boundary/ border

restrictions. The financial crisis expands violently and instantaneously, however the mode of transmission is not well understood.

Richard and Mervyn (2011) pointed out that recent US financial crisis produced the new world order, as Asian countries shares in the world economy is increasing day by day. Asia s share in the World GDP is now more than 50 percent. Global financial crisis put the economies of world into recession, 29 developed economies entered into recession and 60 million people were out of job.

The econometrician tested various mechanisms of financial crisis transmission such as competitive devaluation effect, wakeup call effect and cash in effect. Many investigators inferred that competitive devaluation effect and wake up effect were main causes of Asian financial crisis. The financial crisis affects all spheres of economy; employment, inflation, investment, trade, private sector liabilities, foreign liabilities, housing sector, debt, capital flow, industrial and domestic financial sector. Although, the financial crisis spreaded widely and rapidly and had dire consequences on the economy of the country, yet the intensity and degree of financial crisis varied to considerable degree and was site specific.

In Europe, Asia and USA financial crises might have certain similarities, but the differences were more pronounced than similarities. The cause and effect of all these financial crises is to be fully understood in order to predict such episode in future. The focal point of present study will be mode and intensity of prevalent US financial crisis and its impact on Asia in general and Pakistan in particular.

1.1 Significance of the study

The financial crisis in USA caused by Investment banking sector has dwindled the world economy and it has far reaching impact on Asian economy, specifically of emerging marketing economies and Pakistan is no exception in this regard. The extent of impact on Asia economy is still to be documented. The ways and means the impact is transmitted and effect it had on economy of a country deserve illustration. How the economy of

industrialized countries is different than agricultural countries. How far are inter and intra country impact of financial crisis in Asia and what will be state of economy post crisis. All these hypotheses are to be tested by employing empirical, vector auto regression and other models. All this justify for a comprehensive study on the subject outlined above.

1.2 Problem Statement

The Current research will focus on the impact of global financial crisis on economy of Asia. As the significance of Asia can never be under estimated in the present global context. In the next two decades Asia will become the world s largest economic region. Keeping emphasis on Asia, economic situation will be the main focus of the current study. The data for study will be collected from the IMF financial statistics. The data will be analyzed By VAR and OLS models. The study result will illustrate the impact of global financial crisis on economy of Asia. The results will be beneficial to all the stakeholders.

1.3 Objectives of the Study

The main objectives of this study were:

1. To find out global financial crisis impact on Asia.
2. To explore the causes of transmission of crisis.
3. To analyze the inter country similarities between Asian countries during crisis.

1.4 Contribution of the study

Asia was itself subjected to financial crisis during 1997-98. The effect of financial crisis on economy was just receding when US financial crisis occurred that affected the world economy severely and Asian economy was no exception in this regard. The investment, employment, inflation and interest rates all were affected to considerable degree. The study will illustrate the ways and means to offset the after effect of recession in economy.

1.5 Organization of study

The manuscript pertaining to study has been organized as follows. Chapter 1 relates to introduction, Chapter 2 describes the literature review in respect of global financial crisis impact on Asian economies, Chapter 3 presents the methodology used to conduct the study, Chapter 4 highlights the results and discussion, while Chapter 5 presents the conclusion and finding of study. The suggestions for future study are also presented in this chapter.

CHAPTER-2

2. Literature Review

The literature pertaining to the subject is reviewed in the following text.

2.1 World financial crises

Komulainen and Lukkaria (2003) studied the financial crisis in 31 emerging countries during 1980-2001. They employed probit model considering 23 macroeconomic and financial sector variables. The currency crisis in these countries was illustrated by variables as inflation, unemployment, indebtedness, foreign liabilities and private sector liabilities. The study revealed that the currency crisis occurred in conjunction with banking crisis. In emerging market countries the financial crisis increased when large liabilities occurred that resulted in instantaneous capital outflow. Increased indebtedness was another important variable in financial crisis in addition to capital outflow and domestic financial sector. They further inferred that the financial crisis of 1995-2001 was more disturbing and painful than the financial crises of 1970 and 80s. They illustrated that cause of financial crises was financial liberation that resulted in capital outflow.

Reagle and Salvatore (2000) employed the World Bank statistics for cross section of 54 countries in 1996. The variable taken into accounts were current account deficit (CAD) (72 % of GDP), foreign debt (72% of GDP), foreign direct investment (not >1 % of CAD), Debt service, more than 36% of exports, foreign reserve (< 6 months of import). They used probit regression and demonstrated that debt was only significant variable. They also narrated that with revision and updating of World Bank data, the probit model application may have certain reservation and modification in this regard ought to be adopted.

Gong, Lee and Chen (2004) studied the Asian financial crisis of 1997. The crisis was transmitted amongst various financial markets in Asia. The vector auto regression (VAR) and OLS models were employed to the data. They observed that during crisis period,

crisis transmission was significant than non crisis period. The crisis transmission among three industrial countries, Taiwan, Korea and Japan was insignificant. The crisis transmissions from emerging countries of Thailand, Malaysia were transmitted to other emerging countries. Singapore served as intermediary transmitting crisis country between industrialized and emerging countries. The transmission through wakeup effect was observed to be more significant than other transmission channels. The cash in effect and trade relationship only occurred in Korea, Thailand and Malaysia. Based on Exchange Market Pressure (EPM) index Japan was not affected by Asia crisis in any way. The EMP's of these countries was almost stable prior to crisis. Indonesia and Singapore were subjected to longest effect till end of 1998, Korea was worst hit of crisis but only for a short while. The VAR estimations revealed that industrialized countries behaved differently than other emerging Asian countries. Philippine had minor and Indonesia had no impact of crisis on other south East Asian countries. The empirical evidences indicate that the financial crisis may be transmitted through trade relationship.

Abdullah et al. (2011) worked on crisis transmission between the Asian countries and collected data of twenty four countries for the period 1981-2010. They observed that during financial crises in Asia the competitive devaluation and wake-up call effect played vital role in the transmission of the crisis among the Asian countries.

Jarko and Likka (2010) illustrated that how the global financial crisis was transmitted to Asian emerging economies of China and India. They found out that the close trade relationship had played a significant role in the transmission of global financial crisis among emerging Asian countries.

He et al. (2007) pointed out that developing countries of Asia were strongly affected by international shock, because of their close trade relationship with the advanced countries of the world.

Machiko Nissanke (2009) examined the impact of global financial crisis on the developing countries and found that crises had badly affected the all sector of the

economies of the developing countries. Currency depreciation resulted in decrease in the stock prices, decrease in the oil prices, decrease in the industrial output and increase in the commodity prices that put the world economy into recession.

Michael & Taylor (2009) computed the impact of global financial crisis on the foreign exchange markets and were of the view that crisis had badly affected the market which ultimately decreased the volume of international trade.

Chudik and Fratzscher (2010) studied U.S. financial crisis of 2007-2009 and its global transmission. They applied global VAR (GVAR) model to describe the financial crisis of USA. They observed that financial crisis of USA impacted all economies of the world, whether these economies were of advanced countries or emerging market countries. The global economic activity was affected all the world over. The hypothesis of liquidity (Adrian and Shin, 2010) and pricing of risks were tested to ascertain the financial crisis. The advanced economies were affected by U.S. liquidity shocks in similar fashion. The emerging economies in Asia have been severely affected by U.S. liquidity shocks even in comparison to other emerging market economies (EME), this is valid because Asia by and large is dependent on the economy of U.S.A. Contrary to this Europe, is more tightly related to development in euro region and UK.

2.2 Models to describe financial crises

Bezemer (2010) conducted a study "understanding of financial crisis through accounting models". He narrated that credit crisis of USA may be attributed to real estate market, financial globalization and financial deregulation. Tobin, a noble laureate economist of 1981 established the accounting approach academically to describe the financial crisis that provided the basis for flow of funds as per accounting model. Godley and Lavoie (2007) applied accounting approach to money stocks and flow therein that satisfy accounting equalities in an economy and enunciate the fundamental law of macroeconomics, analogous to principle of conservation of energy in physics, that states that energy cannot be created nor it can be destroyed but it changes its forms only. The

accounting approach laid emphasis to financial sector specifically to the banks. The banks and their balance sheets had to be integrated in production process and interest dynamicity has to be considered explicitly. The water tight accounting models result in one equation that illustrate accounting or flow of funds in relation to financial crisis, may be credit crisis. Models usually employed by policy makers are more complex, equilibrium models are also applied to describe the economy. The equilibrium models are less sophisticated but more users friendly. These equilibrium models are based on neo-classical theory with the limitation that wealth, debt and flow of funds are absent from these models. The modified version of equilibrium models is used by banks. Bezemer (2010) concluded that accounting models predict better the credit crisis and economic recession than equilibrium model. However that does not meant that equilibrium model may be totally replaced by accounting models. This is challenge to econometrician to centralize and compute best fit econometric model that adequately describe the credit crisis and economic recession in a financial turmoil.

Chudik and Fratscher (2011) reviewed the global transmission of 2007-2009 US financial crises by applying GVAR model. They described that financial crisis originated in USA and it was virtually transmitted to all economies of world, advanced and emerging economies both. The financial crisis affected the financial markets and economic activity worldwide. They conducted the empirical analysis of data based on global vector auto regression model (GVAR) that illustrated the shocks induced by financial crisis and the mode, crisis was transmitted globally. The financial shocks were identified as risk aversion shocks, stock market shocks, interest rate shocks and liquidity shocks. The model was based on that first two shocks occurred first, followed by later two shocks. They concluded from the study that financial shocks played a pivotal role in global transmission of financial crisis.

The liquidity shocks were important for developed economies compared to emerging market economies. Contrary to this risk aversion shocks or risk appetite shocks had more adverse affect on emerging market economies in comparison to developed economies.

Their findings are valid for Asia and elsewhere in world except Euro region. The global transmission of financial crisis was quite complex and may not be attributed to single shock factor. The global financial crisis resulted in economy recession that in turn deteriorated the financial conditions and economic development across the entire world.

Gong et al. (2004) highlighted the crisis transmission in respect of Asian financial crisis. Asian financial crisis was attributed to large foreign liabilities, lack of transparencies in lending process to industry and high debt equity ratio.

To sort out mechanisms of Asian financial crisis transmission, the statistical models viz vector auto regression (VAR) and OLS method were tested. Crisis transmission was based on competitive devaluation, cash in effect and wake-up call effects. The competitive devaluation was of macro nature and is function of international trade. The cash in effect was the international transaction flow from a country during crisis period. The wake-up call effect was regarded as the effect from neighboring countries to the economy of a country. The year prior to 1997 financial crisis, the economy of Asian countries was growing at fast rate, Thailand 5.5 %, Philippines 5.7%, Indonesia 8%, Korea 7% and Malaysia 8.6%. Malaysia economy was growing at impressive rate during Mahateer Muhammad-regime and served as roll model for other Asian countries. The study led to the conclusion that Thailand, Philippines, Malaysia and Indonesia had stable emerging market pressures before crisis. These countries underwent crisis till end of 1997 and early 1998. Indonesia and Singapore had the longest impact till end of 1998. Taiwan was affected temporarily for a short while. Korea was also affected for short while but intensity of crisis was severe. The industrial countries of Taiwan, Korea and Japan were not affected by crisis in economies of South East Asia countries (SEA). Among SEA countries Thailand and Malaysia effect was significant, while Philippines had little impact on economy of other countries. Indonesia had no impact on economies of other Asian countries. Singapore had affected both industrialized and other countries, conversely Singapore was also affected by economies of two groups. In Singapore and Malaysia crisis transmission occurred reciprocally. Philippines crisis was transmitted

from Korea and Indonesia crisis was due to impact from Thailand. The crisis among industrial countries of Taiwan, Korea and Japan was non significant. The crisis between industrial and emerging economies was non significant. Singapore acted as intermediary in crisis transmission between industrial and emerging countries. Malaysia and Thailand were affected by crisis transmitted through trade. Thailand and Korea were subjected to cash in effect. The crisis transmitted via Wake-up call effect was more significant than other transmission channels. The crisis transmission in Asia affected the economic activity considerably. Japan once hub of industrial activity was number one in Asia economy had receded to second biggest Asian economy and now China is number one in Asian economy.

Kunt and Detragiachi (1998) applied multivariate logit model to describe banking crisis that was more prevalent in countries with low GDP, high interest, high inflation and imbalance in payment. Wheelock and Wilson (2000) applied competing risk hazard model with time varying covariates to predict banking crisis. They observed that banks with low capital, high loans to assets ratio and with lower earnings were more susceptible to failure. Cambas et al. (2005) integrated early warning system (IEWS) that comprised of Logit, probit and principal component system to ascertain bank failure. They data of 40 private Turkish bank was computed to determine capability of IEWS to predict bank failure. They concluded that IEWS had better prediction ability than sole prediction models. Demyanyk and Hasan (2010) reviewed the prediction method in relation to financial crisis and bank failure. They inferred that operational research methods in prediction of financial crisis were complex and integrate mathematical model, statistical procedure and algorithms. However, these tools are used to assess the financial crisis and minimize the effect of crisis therein.

Komvlainen and Lukkarila (2003) studied the financial crisis of 31 emerging market countries during 1980-2001. During this period emerging market countries experienced severe financial crisis. The countries taken for the study were middle income countries. Even countries of Latin America, 8 countries of Asia, 10 countries of Europe and 2

countries of Africa were included in the study. Twenty three macroeconomic and financial sector variables were considered. The data was collected from International Finance statistics (IMF). The data for unemployment was taken from International Labor Organization. The government debt data was taken from IFS, World Bank and IMF country reports. The data collected was subjected to panel regression model to sort out main reasons of financial crisis in emerging markets. The results of study revealed that currency crisis increased with increase in public debt, current account deficits, liabilities of banks and private sector, inflation and unemployment. The interest rates also affected the currency crisis specifically in case of emerging economies. Currency crisis was also interrelated to banking crisis that endorsed twin crisis hypothesis postulated by Kamisky and Reinhart (1996). The banking crisis was function of private sector liabilities, public indebtedness and low lending to deposit ratio. The financial liberalization also affected the crisis as liberalization was followed by capital inflow, a logical outcome of liberalization. The indicators of indebtedness were important in prediction of crisis during past liberalization period, as such panel regression model envisaged by Komulainen and Lukkarila may be used for prediction of currency crisis that may act as caution for all economies of world specifically economies of emerging markets.

2.3 US financial crises and its impact on global economy

Nissanke (2009) presented a working paper pertaining to the global financial crisis and developing world transmission channel and industrial development under auspices of United Nations industrial development organization. He narrated that during last three decades world had been subjected to one or other type of financial crisis. The most recent financial crisis occurred in USA that started in the beginning of 21st century and attained high esteem in 2007-08. This financial crisis is attributed to credit crunch in relation to real estate housing sector that was subjected to mortgage and ultimately affected the banking sector that advanced loans for real estate sector. This deteriorated domestic credit condition, squeezed balance sheet of corporate sector and small-medium enterprises with enhanced investment demand. This financial episode instantaneously

spread globally as USA and most countries in the world has transactions in dollar term. By mid 2007 this crisis dwindled the economy of entire world invariably to variable degree on two horizons, first sharp price hike of primary commodities and global macroeconomic imbalance that were detrimental to economic growth and development in substantial number of emerging economies in Asia and also in Latin America. By mid September 2008, the implication of financial institutions of Wall Street, Newyork, USA disturbed the world economy radically and it has global impact in respect of inflation, fuel and food shortage ultimately resulting in worldwide recession and depression, stretching all economies of the developing world and also emerging market economy of Asia, Eastern Europe and Latin America. No country in world was able to sustain its economy by this financial debacle. By the end of 2008, the world economy further slow down and in first quarter 2009 was subjected to global recession with recessive economic activity. By second quarter of 2009, the financial indicators depicted some improvement in the world economy. The transmission of financial crisis was function of currency depreciation, escalating cost of bond and decline in issuance of international bond, collapse of stock market prices and volatile prosperity of assets and currency market, private debt and equity capital flows amongst countries of the world.

According to World Bank (2009), the currencies of developing countries declined by 20 percent from September to November. Brazil and South Africa currencies recorded highest decline against US-dollar and decline was 40 and 60%, respectively. The emerging stock market dropped 76% as revealed by Morgan Stanley composite index in emerging market economies of all regions in the world. Likewise equity prices in China, India and Brazil dropped by more than 60%.Sine G20 summit in London in April 2009. The incidence of depression in likely to recede, but global economy is still confronted with high degree of uncertainty that hamper economic activity in term of economic growth and development in the entire world at large. Nissanke further narrated that industry was not immune to the cascading effect of crisis. All the financial activities were affected irrespective of their nature and mode of operation. The pattern of effect was almost similar in many countries of world. Motor vehicle, chemicals and chemical

products, metal and steel industry, constructive material and rubber product industries were severely affected by the financial crisis. The production decreased and labor was put out of job, unemployed was common phenomenon resulting depression all the world over. Nissanke concluded that financial crisis that originated in USA in first decade of 21st century, was widely and rapidly transmitted to other countries of world. This crisis affected all sectors of economy and economic activity was at its quite low web. Although financial crisis curtailed by the end of 2009, but uncertainty still prevail and ways and means needs to be devised for improvement and development of world economy.

The Overseas Development Institute (ODI) is UK's leading think tank on international development and humanitarian issues. ODI background note provide a summary of ODI work in progress. In ODI background note of October 2008, Dirk Willem te Velde wrote an article captioned, "Global financial crisis and developing countries". They narrated that global financial crisis of first decade of 21st century is not yet over and financial activity is slowed down both in developed and developing countries but to variable degree. Stock market is down by 40%, many investment banks had collapsed and interest rates are under cut around the world. The global economic activity has declined to substantial extent. The financial crisis had significant impact on economy of entire world including Asia continent as well.

2.4 US financial crises and its impact on economy of Asia

According to Asian Development Bank, Asian GDP will decline by 1-2 percent in 2009, China 0.5 percent and India 1.1 percent down, while GDP of Pakistan also depicted downward trend. The channels through which the financial crisis is transmitted include Stock market impact, international trade, and remittance among countries, foreign direct investment (FDI), equity investment and aid to developing countries. Stock market of both developed and developing world dropped drastically since May 2008 and emerging market index fell almost 23 percent. The Stock market of South Africa, Brazil, China and India were affected adversely. As regards trade effect the countries with enhanced import in Asia and elsewhere in world will depict slow economic growth. The remittance

number and amount both will decline because of financial recession in USA, UK, Europe and other developed countries in the world. Foreign aid investment, equity investment and aid all will be under pressure and developing countries may be in Asia or Africa will be affected adversely. The impact will include less export revenues, pressure on balance of payment, lower investment and declined economic growth rate, unemployment. In addition to financial implications there will be social impact as well. Lower economic growth meant increase in poverty and unemployment that resulted in more crime, weak health and poor security system ultimately resulting in hard to achieve Millennium Development. Goals-Te-Velde (2008) narrated that variables aforementioned had to be monitored to offset the impact on growth and development, but how, has no easy answer. The financial implication had affected economies of all countries of world, but to variable degree and Asia is one of most affected region by and large by financial crisis, as socio economic environment of different countries differ significantly.

Fidrmuc and Korhonen (2010) described the impact of global financial crisis on business cycle in Asia emerging economies. They narrated that globalization of world economy has occurred during last two decades. During the recent years China economy has developed vigorously because of its export expansion and foreign investment. During 1980 and 2007 period, the share of China GDP in world economy increased from 1.7 to 5.9 percent. This revealed the significance of growing China economy in world economy. In fact China has revolutionized the global economic activity. China was primarily an agrarian country prior to 1980 that has now transformed it to modern industrial economy. Indian has followed the economic development pattern of China, although Indian economy is service based conversely to manufacturing oriented economy of China. China and India both together are referred as Asia economic giants. The economies of the South Asia and South East Asia are also emerging and are certainly affected by global financial crisis to variable degree.

He et al. (2007) narrated that emerging Asian economies with export orientation may be strongly susceptible to foreign financial shock, may be recent financial shock of USA.

International Monitory Fund (IMF) in 2008 postulated the financial crisis of USA may have more impact on economy of Asia than earlier financial crisis.

2.5 Financial crisis and new world order

Lley and Lewis (2011) described the global financial crisis in context of new world order. They narrated that since onset of 21st century US had deficit account and was recorded $811 billion or 6.1% of GDP in 2006. In USA 2007-2009 recession was most severe because of its duration and intensity. For centuries East Asia was centre of world economy, then the centre of economy shifted westward during sixteen centuries ultimately to France and Netherlands and eventually to Britain. Britain economy development was sustained for quite long period but did not remain world economy leader from 1900 onward because of industrial development was shifted to Japan. At present China economy is developing at accelerated rate. Since 1980 China economy doubled in size every 7-8 years. China economy is now second to USA in the world in size and dividend, with GDP growth rate of 10 % per annum. By next decade China economy may overtake USA economy. This may reorder the world economy setting up new world order.

CHAPTER-3

3. Research Methodology

Financial crisis is the pressure of weighted variations in foreign exchange rates, interest rates and foreign reserves (Girton and Roper, 1997). If the weighted average of exchange rate change, interest rate change and change in reserves is more than 2 standard deviations (3 standard deviations also used by some analysts), then there exists a financial crisis (value taken as 1).

Considering no involvement of the authorities, the change in exchange rate is mentioned as Exchange Market Pressure (EMP). There are no accurate ways of finding EMP. Therefore, researchers have devised various means of measuring Exchange Market Pressure. These methods include the structural approach (Girton and Roper, 1997), the ad-hoc approach (Eichengreen, Rose and Wyplosz, 1996) and model-free EMP measurement approach (Weymark, 1995).

All the EMP approaches have some shortcomings and there is no one perfect model available. Therefore, researchers from across the world employ various approaches in finding EMP. The measure used by Komulainen and Lukkarila (2003) has been used in this study. The measure is given by:

$$EMP = Change\ in\ Exchange\ rate - \left(\frac{Std.dev.of\ Exchange\ rate\ change}{Std.Dev.of\ Rserves\ change}\right) \times Change\ in\ Resrves$$

The same specification has been used by Kaminsky, Lizondo and Reinhart (1998), using the variations in exchange rates and foreign reserves to calculate the foreign market pressure.

3.1 Sample and data collection

Data for foreign reserve, exchange rate and exports of USA and Asian countries is collected from the IMF financial Statistics (IFS) database. Data for GDP growth rate, goods exports, foreign direct investment inflow rate, gross national income rate and

import growth rate is collected from World Bank financial statistics. The 24 countries of Asia are divided into following regions:

Regions	Name of Countries	Population	% of Asia Population
East Asia	China	1,338,299,512	32.32
	Macao	543,656	0.013
	Japan	127,450,459	3.078
	South Korea	48,875,000	1.18
West Asia	Israel	7,624,600	0.180
	Jordon	6,047,000	0.146
	Kuwait	2,736,732	0.066
	Lebanon	4,227,597	0.102
	Oman	2,782,435	0.067
	Qatar	1,758,793	0.042
	Turkey	72,752,325	1.76
	United Arab Emirates	7,511,690	0.18
Southeast Asia	Indonesia	239,870,937	5.79
	Malaysia	28,401,017	0.686
	Philippines	93,260,798	2.25
	Thailand	69,122,234	1.67
South Asia	Bangladesh	148,692,131	3.59
	India	1,210,193,422	29.22
	Maldives	315,885	0.0076
	Nepal	29,959,364	0.724
	Pakistan	173,593,383	4.19

3.2 Estimation model and Technique

3.2.1 Estimation Model

The VAR analysis will be carried out by employing following equation

$$EMP_t = A_0 + A_1(L)EMP_{t-1} + \alpha_t$$

where

$EMP_t(24\times1)$= Foreign exchange market pressure index vector of the twenty four countries

$A_0(24\times1)$ = Vector of constant for the twenty four countries

$A_1(24\times24)$ = Matrix of interactive EMP coefficient and $\alpha_t(24\times24)$ = *random shock*

Also

$$A(L)=\begin{pmatrix} A11(L) & A12(L) & A13(L) & A14(L) & A15(L) & \cdots & A124(L) \\ A21(L) & A22(L) & A23(L) & A24(L) & A25(L) & \cdots & A224(L) \\ A31(L) & A32(L) & A33(L) & A34(L) & A35(L) & \cdots & A324(L) \\ A41(L) & A42(L) & A53(L) & A44(L) & A45(L) & \cdots & A424(L) \\ A51(L) & A52(L) & A63(L) & A54(L) & A55(L) & \cdots & A524(L) \\ \vdots & \vdots & \vdots & \vdots & \vdots & \cdots & \vdots \\ \vdots & \vdots & \vdots & \vdots & \vdots & \cdots & \vdots \\ \vdots & \vdots & \vdots & \vdots & \vdots & \cdots & \vdots \\ A241(L) & A242(L) & A243(L) & A244(L) & A245(L) & \cdots & A2424(L) \end{pmatrix}$$

or

$A(L) = A_{ij}(L)$

Here i, j=1, 2, 3,...24.

Here, $A_{ij}(L)$ = lag operator of matrix. Here all coefficients represent EMP lag effects on ith country's current period EMP.

The order of variables will be rotated in the repetitive estimations to see the difference produced. In order to look into the goodness of fit and parsimony problems, Akaike Information Criterion (AIK) or Schwartz Bayesian Criterion (SBC) procedure was used for the number of lags to be used.

3.2.2 Estimation Model of Crisis Transmission

For devaluation effect the following equation will be estimated

$$EMP_{x,t} = (A_{01} + A_{02}D) + (A_{11} + A_{12}D)EXP_{tx,t-n} + \sum (A_{21,y} + A_{22,y}D)EMP_{y,t} + \mu_t$$

where

$EMP_{x,t}$ and $EMP_{y,t}$ are the foreign exchange pressures of xth and yth countries at time t

$EXP_{x,t-n}$ is the lagged export growth rate of the xth country at time t-n

The equation uses two channels of transmission, the competitive devaluations effect and the transmission effect (Wake-up call effect). Asian countries due to trade interconnectedness and competitiveness, strongly impact each other. Therefore, currency devaluation by one of the countries is supplemented by the other connected countries, in order to keep the exports intact (prevent from dropping). This is termed as the devaluation effect. For the transmission effect of the crisis, we do not use the EMPs of all the other countries.

CHAPTER-4

4. Results and Analysis

4.1 General impact of global financial crisis on Asian economies

4.1.1 GDP Growth

TABLE 1. GDP growth (percent) of different countries for 2000-2010.

Countries\ years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BD	6	5	4	5	6	6	7	6	6	6	6
MO	6	3	10	14	27	10	16	25	14	1	-
CN	8	8	9	10	10	11	13	14	10	9	10
IN	4	5	4	8	8	9	9	10	5	9	10
ID	5	4	4	5	5	6	6	6	6	5	6
IR	9	0	-1	2	5	5	6	5	4	1	5
JP	3	0	0	1	3	2	2	2	-1	-6	5
JO	4	5	6	4	9	8	8	8	8	2	3
KR	8	4	7	3	5	4	5	5	2	0	6
KW	5	1	3	17	10	11	5	4	-	-	-
LB	1	4	3	3	7	1	1	7	9	9	7
MY	9	1	5	6	7	5	6	6	5	-2	7
MV	5	3	7	9	10	-5	18	7	6	-2	5
NP	6	5	0	4	5	3	3	3	6	4	5
OM	5	7	3	0	3	4	6	7	13	1	-
PK	4	2	3	5	7	8	6	6	2	4	4
PH	4	3	4	5	7	5	5	7	4	1	8
QA	-	3	7	3	21	8	19	27	25	9	0
SA	5	1	0	8	5	6	3	2	4	0	4
SG	9	-1	4	5	9	7	9	9	1	-1	14
SK	6	-2	4	6	5	6	8	7	6	4	8
TH	5	2	5	7	6	5	5	5	2	-2	8
TR	7	-6	6	5	9	8	7	5	1	-5	9
UAE	5	2	3	12	10	8	9	6	5	-1	-
US	4	1	2	3	4	3	3	2	0	-3	3
World	4	2	2	3	4	4	4	4	1	-2	4

Source: World Bank

The GDP growth of different countries for 2000-2010 is presented in Table 1. The countries under investigations were mostly from Asia that was compared with GDP of USA where the financial crisis occurred because of real estate mortgage. The GDP of world was also taken into account. The data in the table revealed that GDP in USA during the decade was not remarkable and it was zero in year 2008, the peak year of financial crisis, however the lowest GDP was recovered in 2009, because of after effect of 2008 financial crisis. Interestingly almost similar trend was recorded for World GDP. The GDP growth of Pakistan was also affected by global financial crisis and it was only 2 percent during 2008.

In general, this may be concluded from the results of the study that GDP growth rate decline during financial period of 2007-2008 and declined continued in 2009 and 2010 as well. The overall lowest GDP growth was recorded in the global financial period (2007-2010) depicting the financial recession period.

4.1.2 Goods Exports

TABLE 2. Goods exports US$ (000000) of different countries from 2000-2010.

Countries\yrs	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BD	6,399	6,084	6,102	7,050	8,150	9,302	11,553	12,474	15,501	15,072	19,238
MO	-	-	2,357	2,584	2,815 ,555	2,478	2,559	2,544	2,003	972	-
CN	249,1 30	266,0 75	325,6 50	438,2 69	593,3 92	762,4 83	969,68 2	1,219	1,434, 601	1,203	1,581
IN	43,24 6	44,79 3	51,14 1	60,89 3	77,93 8	102,1 74	123,76 7	153,78 3	198,59 7	168,21 8	225,50 1
ID	65,40 7	57,36 4	59,16 5	64,10 9	70,76 7	86,99 5	103,52 7	118,01 3	139,60 6	119,64 5	158,07 4
IR	30,89 0	27,68 5	27,26 6	29,93 9	36,35 6	39,76 7	43,318	50,285	57,161	45,897	55,673
JP	459,5 12	383,5 91	395,5 80	449,1 18	538,9 99	567,5 71	615,81 2	678,08 9	746,47 3	545,27 7	730,07 6
JO	1,899	2,294	2,769	3,081	3,882	4,301	5,204	5,731	7,937	6,375	7,028
KR	178,1 51	151,2 09	164,2 14	199,7 08	260,2 41	289	336,57 6	389,64	434,69 8	358,21 6	464,30 0
KW	19,47 8	16,23 7	15,36 6	21,79 4	29,00 0	45,30 2	56,453	62,526	86,943	51,674	66,972
LB	-	-	1,419	1,998	2,396	2,651	3,229	4,046	5,250	4,716	5,465
MY	98,42 9	87,98 0	93,38 2	104,9 99	126,8 16	141,8 08	160	176	199,73 2	157	-
MV	108	110	132	151	180	161	225	227	331	169	180
NP	776	720	632	703	773	902	848	924	986	837	901
OM	11,31 8	11,07 4	11,17 0	11,66 9	11,66 9	18,69 1	21,586	24,691	37,719	27,651	36,600
PK	8,739	9,131	9,832	11,86 9	13,29 7	15,43 3	17,049	18,188	21,213	18,347	21,463
PH	37,34 7	31,31 3	34,40 3	35,33 9	38,79 4	40,26 3	46,526	49,512	48,253	37,610	50,684
QA	-	-	-	-	-	-	-	-	-	-	-
SA	77,48 0	67,97 2	72,46 4	93,24 4	125,9 97	180,7 12	211,30 5	233,31 0	313,47 9	192,30 7	251,14 9
SG	152,8 06	136,4 73	140,5 85	161,3 86	199,0 89	232,5 50	274,49 6	303,40 8	343	273,99 7	358,48 5
SK	5,439	4,816	4,699	5,133	5,757	6,346	6,882	7,639	8,110	7,084	8,307
TH	67,89 3	63,08 2	66,05 2	78,08 3	94,97 8	109,3 68	127,92 8	151,24 0	175,21 3	150,71 2	193,61 0
TR	30,82 5	34,72 9	40,71 9	52,39 4	68,53 5	78,36 8	93,613	115,36 1	140,80 0	109,64 7	120,90 2
UAE	-	-	-	-	-	-	-	-	-	-	-
US	787,4 17	734,3 20	700,9 48	733,1 05	825,4 77	915,5 11	1,043, 149	1,168, 047	1,311, 513	1,073, 922	1,293, 219
World	6,409	6,171 ,873	6,440 ,796	7,503 ,079	9,092 ,588	10,34 5,208	11,959 ,445	13,833	15,923 ,926	12,332 ,333	14,982 ,071

Source: World Bank

The good exports of different countries from 2000-2010 is presented in Table 2. The data in Table 2 indicate that good export in USA decreased from 2000-2002 and thereafter it depicted the increased trend till 2008, however it again decreased in 2009, that revealed the after effect of prime financial crisis. The good exports from China were affected by financial crisis and exports were minimum during financial crisis peak period of 2007-2010 except year 2008. On set of financial crisis in 2007 the world good export decreased drastically, but revived again in 2008. The good export during crisis period 2007-2010 depicted a decreased trend that revealed that export sector was also affected by financial crisis.

4.1.3 Foreign diect investment (FDI) Inflow Rate

TABLE 3. Foreign direct investment (FDI) inflow rate (percent) of different countries from 2000-2010.

Countries\years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BD	1	0	0	1	1	1	1	1	1	1	1
MO	0	3	6	7	7	15	19	27	14	8	-
CN	3	3	3	3	3	5	5	5	4	2	3
IN	1	1	1	1	1	1	2	2	4	3	1
ID	-3	-2	0	0	1	3	1	2	2	1	2
IR	6	1	1	3	2	4	10	5	5	2	2
JP	0	0	0	0	0	0	0	1	1	0	0
JO	11	3	2	5	8	16	23	15	12	10	6
KR	2	1	0	1	1	1	0	0	0	0	0
KW	0	0	0	0	0	0	0	0	0	1	-
LB	..	..	7	14	9	12	12	13	14	14	13
MY	4	1	3	2	4	3	4	5	3	1	4
MV	4	3	4	5	7	7	7	9	11	9	11
NP	0	0	0	0	0	0	0	0	0	0	1
OM	0	0	1	0	0	5	4	8	5	3	-
PK	0	1	1	1	1	2	3	4	3	1	1
PH	3	0	2	1	1	2	2	2	1	1	1
QA	1	2	3	3	4	6	6	6	3	8	-
SA	-1	0	0	0	0	4	5	6	8	10	5
SG	18	18	7	13	19	12	20	21	5	8	17
SK	1	1	1	1	1	1	2	2	2	1	1
TH	3	4	3	4	4	5	5	5	3	2	2
TR	0	2	0	1	1	2	4	3	3	1	1
UAE	-1	2	0	5	10	8	8	7	5	2	-
US	3	2	1	1	1	1	2	2	2	1	2
World	5	3	2	2	2	3	3	4	3	2	2

Source: World Bank

The data pertaining to foreign direct investment inflow rate of different countries from 2000-2010 is presented in Table 3. The foreign direct invest flow was low in Bangladesh, Indonesia, Japan, Korea, Kuwait, Nepal, India, Pakistan, Philippines, Srilanka, Turkey and USA. That indicated foreign direct investment inflow decreased in many Asian

countries because of US financial crisis. The foreign direct invest flow in world was high in 2000 and was low in year 2010. The result of the study revealed that the foreign direct invest flow decreased during 2000-2010 due to the financial crisis. The foreign direct invest flow during financial crisis is decreased due to insecurity and economic uncertainty prevailing in the world.

4.1.4 Gross National Income (GNI) Growth Rate

TABLE 4. Gross National Income (GNI) Growth Rate (%) of different countries from 2000-2010.

Countries \yrs	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BD	6	6	3	4	7	6	5	5	5	5	6
MO	-	-	-	16	32	8	21	15	19	0	..
CN	8	9	9	9	10	11	13	14	10	9	11
IN	4	5	4	8	8	9	9	9	5	9	10
ID	4	1	4	6	6	6	5	6	5	5	5
IR	8	-3	-2	2	3	4	5	5	7	1	-
JP	3	0	0	1	3	2	2	2	-1	-6	-
JO	1	5	7	4	8	8	8	8	8	3	4
KR	8	4	7	3	4	4	5	5	2	1	-
KW	-1	9	11	19	6	-	-	-	-	-	-
LB	1	6	8	16	-5	-2	-1	5	11	12	2
MY	10	0	5	5	7	5	4	6	6	-3	-
MV	4	4	6	8	9	-	-	-	-	-	-
NP	-	-	0	4	5	3	3	3	6	4	-
OM	6	7	4	-2	2	-	-	-	-	-	-
PK	5	2	1	2	8	8	6	6	1	3	3
PH	3	3	4	5	6	5	6	6	3	1	7
QA	-	-	-	-	-	-	-	-	-	-	-
SA	6	1	0	8	4	3	2	3	-	-	-
SG	11	-1	6	5	13	7	5	8	3	-3	16
SK	6	-2	4	-	-	-	-	-	-	-	-
TH	4	3	6	8	7	5	4	5	2	-2	8
TR	7	-5	6	5	9	8	7	5	1	-5	9
UAE	2	3	7	14	9	-	-	-	-	-	-

US	3	1	3	3	3	2	2	3	0	-2	-
Wrld	4	2	2	3	4	3	4	4	2	-2	-

Source: World Bank

The data pertaining to gross national income growth rate of different countries is presented in Table 4. The data in table revealed that USA where the financial crisis origination was worst affected country with GNI growth rate of zero in 2008, it further deteriorated from 2008 onward, that depict that aftershocks of financial crisis in USA still prevailed. That demonstrated that financial crisis although has receded but not culminated to entire extent. US financial crisis spread globally and economy of Asian countries was also not isolated from global financial crisis. Hence GNI growth rate also decreased in most Asian countries except China and to some extent India. China previously an agricultural country has transformed it into industrial one and economy is developing at remarkable rate.

4.1.5 Imports Growth Rate

TABLE 5. Imports growth rate (percent) of different countries from 2000-2010.

Countries\yrs	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BD	10	11	11	7	11	19	18	16	-2	-3	-1
MO	5	5	11	13	19	11	19	22	0	-15	-
CN	25	13	16	31	30	13	16	14	4	4	17
IN	3	3	10	17	16	32	22	10	23	-7	14
ID	26	4	-4	2	27	18	9	9	10	-15	17
IR	12	-5	-1	-1	12	4	3	12	2	-14	12
JP	9	1	1	4	8	6	4	2	1	-17	-
JO	14	1	3	0	21	17	3	6	3	-8	7
KR	20	-5	14	11	12	8	11	12	4	-8	-
KW	-4	7	7	13	10	-	-	-	-	-	-
LB	-5	21	-2	6	13	-6	-3	17	17	6	8
MY	24	-8	6	5	20	9	8	6	2	-12	-
MV	-5	1	1	15	25	-	-	-	-	-	-
NP	-	-	-15	0	8	7	6	1	8	20	-
OM	5	14	5	12	27	-	-	-	-	-	-
PK	-2	2	3	11	-9	40	19	-3	4	-15	11
PH	12	1	10	3	6	3	3	2	2	-8	23
QA	-	-	-	-	-	-	-	-	-	-	-
SA	23	-5	1	15	20	33	25	22	-	-	-
SG	20	-6	6	10	23	11	11	8	9	-11	17
SK	15	-10	11	-	-	-	-	-	-	-	-
TH	27	-5	14	8	13	9	3	4	9	-21	21
TR	22	-25	21	24	21	12	7	11	-4	-14	15
UAE	3	37	11	7	7	-	-	-	-	-	-
US	13	-3	3	4	11	6	6	3	-3	-14	-
World	13	1	3	6	12	8	9	7	2	-12	-

Source: World Bank

The import growth rate of different countries from 2000-2010 is presented in Table 5. The highest import growth was observed in China specifically prior to financial crisis period. The import growth rate in China during 2008-2009 was quite low that meant

China was also affected by US financial crisis, however it improved substantially in 2010, that indicate China is again on path of growth of economy. In respect of import growth rate USA was severely affected and it import growth rate declined to remarkable extent in 2008 and further declined in 2009. The situation of import growth rate in the world during financial crisis was also unsatisfactory. This may be inferred from the results that whenever financial crisis anywhere in the world may be USA occur, the economy of whole world is affected adversely.

4.2 Foreign exchange market pressure (EMP)

In study under investigations foreign exchange market pressure (EMP) index during 1981-2010 in respect of Asian countries was determined. During this period the world was subjected to various financial crisis viz. Latin America debt crisis (1983), Israel Bank crisis (1983), Japanese Assets pricing collapse (1990), Maxico economic crisis (1994-95), financial crisis in Asia (1997-98), financial crisis in Russia (1998), Dot-com decline (2001) and US financial crisis (2007-2010). During the entire period the world was confronted to one type or other type of crisis and its effects were far reaching on economy of world as at present no country in the world can sustain its economy in isolation. The results of study in respect of EMP of various Asian countries are presented in the following text.

TABLE 6 (a). Exchange market pressure (EMP) of East Asia (1981Q1-2000Q4)

Period\Countries	MO	CN	JP	KR	Period\Countries	MO	CN	JP	KR
1981Q1	-	-	-	-	1991Q1	-	-	-	-
1981Q2	-	-	-	-	1991Q2	-	-	1.08	-
1981Q3	-	-	-	-	1991Q3	-	-	1.62	1.21
1981Q4	0.52	-	-	-	1991Q4	-	-	1.72	1.30
1982Q1	-	-	-	-	1992Q1	-	-	1.43	1.70
1982Q2	-	-	0.32	0.26	1992Q2	-	-	-	-
1982Q3	-	-	0.61	0.61	1992Q3	-	-	-	-
1982Q4	-	-	0.71	0.60	1992Q4	-	-	-	-
1983Q1	-	-	0.98	0.72	1993Q1	-	-	-	-
1983Q2	0.50	-	-	0.75	1993Q2	-	-	-	-
1983Q3	1.20	-	0.54	0.84	1993Q3	-	-	-	-
1983Q4	0.64	-	0.72	0.48	1993Q4	-	-	-	-
1984Q1	0.05	-	0.81	0.77	1994Q1	-	-	-	-
1984Q2	-	-	-	-	1994Q2	-	-	-	-
1984Q3	-	-	-	-	1994Q3	-	-	-	-
1984Q4	-	-	-	-	1994Q4	-	-	-	-
1985Q1	-	-	-	-	1995Q1	-	-	-	-
1985Q2	-	-	-	-	1995Q2	-	-	-	-
1985Q3	-	-	-	-	1995Q3	-	-	-	-
1985Q4	-	-	-	-	1995Q4	-	-	-	-
1986Q1	-	-	-	-	1996Q1	-	-	-	-
1986Q2	-	-	-	-	1996Q2	-	-	-	-
1986Q3	-	0.51	1.07	2.32	1996Q3	-	-	-	-
1986Q4	-	-	-	-	1996Q4	-	-	1.64	1.02
1987Q1	-	-	-	1.0	1997Q1	-	-	1.30	1.07
1987Q2	-	-	-	5.0	1997Q2	-	-	1.09	1.24
1987Q3	-	-	1.99	5.48	1997Q3	-	-	1.99	1.38
1987Q4	-	-	-	-	1997Q4	-	-	1.27	1.74
1988Q1	-	-	-	-	1998Q1	-	-	0.725	0.58
1988Q2	-	-	-	4.0	1998Q2	-	-	1.46	0.49
1988Q3	-	-	-	-	1998Q3	-	-	1.73	0.73
1988Q4	-	-	-	-	1998Q4	-	-	1.70	0.96
1989Q1	-	-	0.48	-	1999Q1	-	-	1.91	0.85
1989Q2	-	-	0.45	-	1999Q2	-	-	0.97	0.93
1989Q3	-	-	0.48	-	1999Q3	-	-	0.93	-
1989Q4	-	-	1.15	-	1999Q4	-	-	0.33	-
1990Q1	-	-	0.48	-	2000Q1	-	-	0.88	-
1990Q2	-	-	2.18	-	2000Q2	-	-	0.82	-
1990Q3	-	-	1.12	-	2000Q3	-	-	-	-
1990Q4	-	-	2.26	-	2000Q4	-	-	-	-

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TABLE 6 (b). Exchange market pressure (EMP) of East Asia (2001Q1-2010Q4).

Period\Countries	MO	CN	JP	KR
2001Q1	-	-	-	-
2001Q2	-	-	-	-
2001Q3	-	-	-	-
2001Q4	-	-	-	-
2002Q1	3.10	-	-	-
2002Q2	-	-	-	-
2002Q3	-	-	-	-
2002Q4	-	-	-	-
2003Q1	-	-	-	-
2003Q2	-	-	-	-
2003Q3	-	-	-	-
2003Q4	-	-	-	-
2004Q1	-	-	-	-
2004Q2	-	-	-	-
2004Q3	-	-	-	-
2004Q4	-	-	-	-
2005Q1	-	-	-	-
2005Q2	-	-	-	1.03
2005Q3	-	0.56	-	-
2005Q4	-	-	-	-
2006Q1	-	0.42	-	-
2006Q2	-	0.45	-	-
2006Q3	-	-	-	0.46
2006Q4	-	0.61	-	0.56
2007Q1	-	0.97	0.42	0.47
2007Q2	-	0.98	0.56	0.87
2007Q3	-	0.77	0.72	0.50
2007Q4	-	0.83	0.92	0.57
2008Q1	-	1.30	0.73	0.69
2008Q2	-	1.00	0.31	0.72
2008Q3	-	0.68	-	0.69
2008Q4	-	0.25	0.77	0.62
2009Q1	-	0.04	1.59	1.54
2009Q2	-	1.18	1.62	1.51
2009Q3	-	1.01	1.53	0.81
2009Q4	-	0.84	0.45	-
2010Q1	-	-	-	-
2010Q2	-	-	-	-
2010Q3	-	1.38	-	-
2010Q4	-	1.39	-	-

The exchange market pressure of East Asia from 1981 to 2010 is presented in Table 6 (a and b). The countries of East Asia comprised of Macao, China, Japan and South Korea. The threshold crisis level was regarded 0.5 and value higher to this indicates that country was under financial crisis. Macao was under high financial crisis during 1983Q3, may be impacted from Israel Bank Crisis of 1983. Macao was again under severe financial crisis 2002Q1. This may be attributed to Asia financial crisis of 1997-98 and financial crisis of Russia in 1998. China was not much affected by world financial crisis prior to 2006Q4, however after that it was affected by US financial crisis. Japan and Korea were affected invariably by all the financial crisis that occurred in the world, that indicate vulnerability of economies of Japan and Korea to world financial crisis.

TABLE 7 (a). Exchange market pressure (EMP) of South Asia (1981Q1-2000Q4).

Period\ Countries	BD	IN	MV	NP	PK	SK	Period \Countries	BD	IN	MV	NP	PK	SK
1981Q1							1991Q1						
1981Q2	-	-	-	-	-	-	1991Q2	-	-	-	-	-	-
1981Q3							1991Q3						
1981Q4	-	-	-	-	-	-	1991Q4	-	-	-	-	-	-
1982Q1							1992Q1			0.58			0.51
1982Q2	-	-	-	-	-	-	1992Q2	-	-	0.83	-	0.55	-
1982Q3							1992Q3			0.98			
1982Q4	-	-	-	-	-	-	1992Q4	-	-	1.13	1.26	0.99	-
1983Q1					0.81	-	1993Q1	0.51	4.87			1.05	
1983Q2	-	-	-	-	0.65	-	1993Q2	0.84	-	1.0	-	1.36	-
1983Q3				0.63			1993Q3				0.63	2.93	3.34
1983Q4	-	-	-	-	-	-	1993Q4	-	-	-	-	1.59	1.82
1984Q1				0.52			1994Q1		0.83		0.52	1.03	3.69
1984Q2	-	-	-	-	-	-	1994Q2	-	-	0.58	0.73	0.59	0.95
1984Q3							1994Q3				1.061	1.52	
1984Q4	-	-	-	-	-	-	1994Q4	-	-	-	0.86	0.53	-
1985Q1							1995Q1						
1985Q2	-	-	-	-	-	-	1995Q2	-	-	-	-	-	-
1985Q3							1995Q3						
1985Q4	-	-	-	-	-	-	1995Q4	-	-	-	-	-	-
1986Q1							1996Q1						
1986Q2	-	-	-	-	-	-	1996Q2	-	-	-	-	-	-
1986Q3							1996Q3						
1986Q4	-	-	-	-	-	-	1996Q4	-	-	-	-	-	-
1987Q1							1997Q1						
1987Q2	-	-	-	-	-	-	1997Q2	-	-	-	-	-	-
1987Q3							1997Q3						
1987Q4	-	-	-	-	-	-	1997Q4	0.87	3.30	-	0.58	3.52	2.32
1988Q1			1.04				1998Q1	0.61					2.57
1988Q2	-	-	-	-	-	-	1998Q2	-	3.27	-	1.40	2.76	6.56
1988Q3							1998Q3	0.85			1.15		3.88
1988Q4	-	-	-	-	-	-	1998Q4	1.02	-	-	0.60	-	0.65
1989Q1							1999Q1	0.65					
1989Q2	-	-	-	-	-	-	1999Q2	-	0.76	-	-	-	-
1989Q3							1999Q3						
1989Q4	-	-	-	-	-	-	1999Q4	-	-	-	-	-	-
1990Q1	1.73						2000Q1						
1990Q2	0.89	-	-	-	-	-	2000Q2	-	-	-	-	-	-
1990Q3	0.69	0.74		0.86			2000Q3						
1990Q4	-	-	-	-	0.73	0.92	2000Q4	-	-	-	-	-	-

TABLE 7 (b). Exchange market pressure (EMP) of South Asia (2001Q1-2010Q4).

Period\Countries	BD	IN	MV	NP	PK	SK
2001Q1						
2001Q2	-	-	-	-	-	-
2001Q3						
2001Q4	-	-	-	-	-	-
2002Q1	-	-	-	-	-	-
2002Q2	-	-	-	-	-	-
2002Q3						-
2002Q4	-	-	-	-	-	-
2003Q1						
2003Q2	-	-	-	-	-	-
2003Q3	-	-	-	-	-	-
2003Q4	-	-	-	-	-	-
2004Q1	-		-			-
2004Q2	-	-	-	-	-	-
2004Q3				-		
2004Q4	-	-	-	-	-	-
2005Q1						-
2005Q2	-	-	-	-	-	-
2005Q3	-	-	-	-	-	-
2005Q4	-	-	-	-	-	-
2006Q1	-	-		-		-
2006Q2	-	-	-	-	-	-
2006Q3	-					3.62
2006Q4	-	-	-	-	-	1.02
2007Q1			-		-	-
2007Q2	-	5.06	-	4.71	4.21	0.82
2007Q3	-	6.33		1.71	0.72	6.83
2007Q4	-	4.50	1.44	2.38	1.81	12.88
2008Q1	-	-	-	-	6.04	2.40
2008Q2	1.47	2.46	-	5.36	10.20	2.18
2008Q3		7.93	0.54	5.28	16.69	4.33
2008Q4	0.53	6.29	0.46	0.61	1.98	15.96
2009Q1	0.16	3.28	0.65	3.13	0.85	16.92
2009Q2	2.53	5.09	0.98	5.51	3.00	4.57
2009Q3	3.19	2.29	0.18	0.96	2.66	31.32
2009Q4	1.42	0.46	1.25	1.57	2.10	6.41
2010Q1	0.31	0.94	1.25	2.89	1.57	0.38
2010Q2	0.74	2.26	-	1.72	1.02	6.22
2010Q3	1.32	4.22	0.88	3.37	0.83	10.03
2010Q4	0	0.54	1.83	19.55	0.90	13.50

Exchange market pressure (EMP) of south Asia for 1980-2010 is presented in Table 7 (a and b). The countries in south Asia are Bangladesh, India, Maldives, Nepal, Pakistan and Srilanka. During the period under investigation Bangladesh was severely affected during last three quarters of 2009. This revealed that Bangladesh was also affected by US financial crisis. India's EMP was quite high during 2007-2008 and highest EMP value of 7.93 was recorded during 2008Q3. This indicated that India was severely affected by US financial crisis. Similarly Maldives, Nepal, Pakistan and Srilanka were adversely affected by US financial crisis. Almost all financial crisis that encountered the world, also affected the South Asia region. Israel Bank crisis (1983) affected Pakistan and Nepal. Japanese Assets pricing collapse (1990) affected Bangladesh, India, Pakistan, Nepal and Srilanka. Black Wednesday crisis (1992-93), Maxico economic crisis (1991-95) and financial crisis in Asia (1997-98) affected all the countries of South Asia, however worst effect was observed because of US financial crisis, as exchange market pressure index recorded during 2007-2010 was quite high in almost all countries of the South Asia.

TABLE 8 (a). Exchange market pressure (EMP) of West Asia (1981Q1-2000Q4).

Period \Countries	IR	JO	KW	LB	OM	QA	TR	UAE	SA	Period\Countries	IR	JO	KW	LB	OM	QA	TR	UAE	SA
1981Q1	-	-	-	-	-	-	-	-	-	1991Q1	-	-	-	-	-	-	-	-	-
1981Q2	-	-	-	-	-	-	-	-	-	1991Q2	-	-	-	-	-	-	-	-	-
1981Q3	-	-	-	-	-	-	-	-	-	1991Q3	-	-	-	-	-	-	-	-	-
1981Q4	-	-	-	-	-	-	-	-	-	1991Q4	-	-	-	-	-	-	-	-	-
1982Q1	-	-	-	-	-	-	-	-	-	1992Q1	-	-	-	-	-	-	-	-	-
1982Q2	-	-	-	-	-	-	-	-	-	1992Q2	-	-	-	-	-	-	-	-	-
1982Q3	-	-	-	-	-	-	-	-	-	1992Q3	-	-	-	0.72	-	-	-	-	-
1982Q4	0.35	-	-	-	-	-	-	-	-	1992Q4	-	-	-	0.70	-	-	-	-	-
1983Q1	-0.4	-	-	-	-	-	-	-	-	1993Q1	-	-	-	-	-	-	-	-	-
1983Q2	0.9	-	-	-	-	-	-	-	-	1993Q2	-	-	-	-	-	-	-	-	-
1983Q3	1.3	-	-	-	-	-	-	-	-	1993Q3	-	-	-	-	-	-	-	-	-
1983Q4	1.5	-	-	-	-	-	-	-	-	1993Q4	-	-	-	-	-	-	-	-	-
1984Q1	1.61	-	-	-	-	-	-	-	-	1994Q1	-	-	-	-	-	-	-	-	-
1984Q2	-0.8	-	-	-	-	-	-	-	-	1994Q2	-	-	-	-	-	-	-	-	-
1984Q3	-	-	-	-	-	-	-	-	-	1994Q3	-	-	-	1.20	-	-	-	-	-
1984Q4	-	-	-	-	-	-	-	-	-	1994Q4	-	-	-	0.65	-	-	-	-	-
1985Q1	-	-	-	-	-	-	-	-	-	1995Q1	-	-	-	0.64	-	-	-	-	-
1985Q2	-	-	-	-	-	-	-	-	-	1995Q2	-	-	-	0.62	-	-	-	-	-
1985Q3	-	-	-	-	-	-	-	-	-	1995Q3	-	-	-	0.84	-	-	-	-	-
1985Q4	-	-	-	-	-	-	-	-	-	1995Q4	-	-	-	0.97	-	-	-	-	-
1986Q1	-	-	-	-	-	-	-	-	-	1996Q1	-	-	-	-	-	-	-	-	-
1986Q2	-	-	-	-	-	-	-	-	-	1996Q2	-	-	-	1.50	-	-	-	-	-
1986Q3	-	-	-	-	-	-	-	-	-	1996Q3	-	-	-	0.65	-	-	-	-	-
1986Q4	-	-	-	-	-	-	-	-	-	1996Q4	-	-	-	1.01	-	-	-	-	-
1987Q1	-	-	-	-	-	-	-	-	-	1997Q1	-	-	-	1.00	-	-	-	-	-
1987Q2	-	-	-	-	-	-	-	-	-	1997Q2	-	-	-	-	-	-	-	-	-
1987Q3	-	-	-	-	-	-	-	-	-	1997Q3	-	-	-	0.66	-	-	-	-	-
1987Q4	-	-	-	-	-	-	-	-	-	1997Q4	-	-	-	1.09	-	-	-	-	-
1988Q1	-	-	-	-	-	-	-	-	-	1998Q1	-	-	-	-	-	-	-	-	-
1988Q2	-	-	-	-	-	-	-	-	-	1998Q2	-	-	-	0.71	-	-	-	-	-
1988Q3	-	-	-	-	-	-	-	-	-	1998Q3	-	-	-	-	-	-	-	-	-
1988Q4	-	-	-	-	-	-	-	-	-	1998Q4	-	-	-	-	-	-	-	-	-
1989Q1	-	-	-	-	-	-	-	-	-	1999Q1	-	-	-	1.50	-	-	-	-	-
1989Q2	-	-	-	-	-	-	-	-	-	1999Q2	-	-	-	-	-	-	-	-	-
1989Q3	-	-	-	-	-	-	-	-	-	1999Q3	-	-	-	0.61	-	-	-	-	-
1989Q4	-	-	-	-	-	-	-	-	-	1999Q4	-	-	-	1.10	-	-	-	-	-
1990Q1	-	-	-	-	-	-	-	-	-	2000Q1	-	-	-	-	-	-	-	-	-
1990Q2	-	-	-	-	-	-	-	-	-	2000Q2	-	-	-	-	-	-	-	-	-
1990Q3	-	-	-	-	-	-	-	-	-	2000Q3	-	-	-	-	-	-	-	-	-
1990Q4	-	-	-	-	-	-	-	-	-	2000Q4	-	-	-	-	-	-	-	-	-

TABLE 8 (b). Exchange market pressure (EMP) of West Asia (2001Q1-2010Q4)

Period\Countries	IR	JO	KW	LB	OM	QA	TR	UAE	SA
2001Q1									
2001Q2									
2001Q3									
2001Q4				0.97					
2002Q1									
2002Q2				0.63					
2002Q3									
2002Q4									
2003Q1									
2003Q2									
2003Q3									
2003Q4									
2004Q1				0.84					
2004Q2				0.78					
2004Q3									
2004Q4				0.70					
2005Q1				0.25					
2005Q2				0.96					
2005Q3				0.72					
2005Q4				0.17					
2006Q1									
2006Q2									
2006Q3									
2006Q4				0.54					
2007Q1									
2007Q2				1.17					
2007Q3				0.51					
2007Q4				0.64					
2008Q1				1.32					
2008Q2				1.93					
2008Q3									
2008Q4									
2009Q1									
2009Q2									
2009Q3									
2009Q4									
2010Q1									
2010Q2									
2010Q3				1.57					
2010Q4				1.06					

The data pertaining to exchange market pressure of west Asia from 1981-2010 is presented in Table 8 (a and b). The countries in West Asia region are Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Turkey, UAE and Saudi Arabia. Exchange market pressure of all these countries is below threshold level of 0.5 except that of Israel and Lebanon. Israel only witness EMP above threshold level in 1983-84, may be induced because of Israel Bank crisis, 1983. Contrary to this Lebanon depicted high value of EMP in 1982, 1984 to 1989, 2001, 2002, 2004 to 2008 and again in 2010. That revealed that Lebanon was affected by Israel Bank financial Crisis, Asian financial crisis, dot Com financial crisis and again by US financial crisis. The data in the table evidently indicate that countries of West Asia have stable and sustainable economy mostly not affected by financial crises that occurred in the world. The sound economy of countries of West Asia may be attributed to mostly these countries are oil (black gold) producing and exporting countries.

TABLE 9(a). Exchange market pressure(EMP) of Southeast Asia (1981Q1-2000Q4).

Period\ Countries	ID	MY	PH	SG	TH	Period\Countries	ID	MY	PH	SG	TH
1981Q1	-	-	0.61	-	-	1991Q1	-	-	-	-	-
1981Q2	-	-	0.52	-	-	1991Q2	-	-	-	-	-
1981Q3	-	-	-	-	2.01	1991Q3	-	-	-	-	-
1981Q4	-	-	-	-	-	1991Q4	-	-	-	-	-
1982Q1	-	-	0.96	-	-	1992Q1	-	-	-	-	-
1982Q2	16.32	-	-	-	-	1992Q2	8.21	-	1.84	-	1.33
1982Q3	17.08	-	-	-	-	1992Q3	4.93	-	1.31	-	0.50
1982Q4	22.20	-	1.18	-	-	1992Q4	25.95	-	0.84	-	-
1983Q1	19.34	-	0.92	-	-	1993Q1	4.74	-	1.47	-	0.78
1983Q2	26.52	-	1.37	-	-	1993Q2	16.87	-	2.97	-	1.14
1983Q3	2.28	-	-	-	-	1993Q3	18.77	-	3.59	-	0.78
1983Q4	10.49	-	2.34	-	-	1993Q4	1.81	-	2.85	-	-
1984Q1	-	-	-	-	-	1994Q1	30.31	-	1.47	-	1.04
1984Q2	-	-	4.39	-	-	1994Q2	22.15	-	1.87	-	1.22
1984Q3	-	-	-	-	-	1994Q3	17.93	-	0.99	-	0.97
1984Q4	-	-	-	-	-	1994Q4	13.40	-	0.79	-	-
1985Q1	-	-	-	-	-	1995Q1	17.89	-	2.18	-	-
1985Q2	-	-	-	-	-	1995Q2	23.03	-	1.24	-	2.94
1985Q3	-	-	-	-	-	1995Q3	26.12	-	-	-	-
1985Q4	-	-	-	-	-	1995Q4	-	-	0.57	-	0.55
1986Q1	-	-	-	-	-	1996Q1	-	-	0.88	-	1.11
1986Q2	-	-	-	-	-	1996Q2	-	-	1.96	-	-
1986Q3	-	-	-	-	-	1996Q3	-	-	1.77	-	-
1986Q4	-	-	-	-	-	1996Q4	-	-	-	-	0.64
1987Q1	-	-	-	-	-	1997Q1	30.58	-	-	-	0.74
1987Q2	-	-	-	-	-	1997Q2	21.57	-	0.87	0.45	3.20
1987Q3	-	-	-	-	-	1997Q3	81.5	0.80	7.98	0.54	12.35
1987Q4	-	-	-	-	-	1997Q4	1.01	0.74	9.05	0.97	12.17
1988Q1	-	-	-	-	-	1998Q1	6.80	-	3.66	1.23	8.86
1988Q2	-	-	-	-	-	1998Q2	9.59	0.52	3.37	6.2	4.16
1988Q3	-	-	-	-	-	1998Q3	41.12	-	1.74	-	3.47
1988Q4	-	-	-	-	-	1998Q4	21.96	-	5.07	-	3.94
1989Q1	-	-	-	-	-	1999Q1	61.20	-	3.23	-	0.71
1989Q2	-	-	-	-	-	1999Q2	11.64	-	2.00	-	1.68
1989Q3	-	-	-	-	0.78	1999Q3	11.62	-	2.48	-	3.58
1989Q4	-	-	0.62	-	0.54	1999Q4	-	-	1.47	-	4.93
1990Q1	27.52	-	1.17	-	0.62	2000Q1	-	-	0.58	-	1.79
1990Q2	24.88	-	-	-	0.67	2000Q2	-	-	3.18	-	1.40
1990Q3	14.79	-	2.40	-	0.90	2000Q3	-	-	3.71	-	3.00

1990Q4	22.52	-	2.35	-	-	2000Q4	-	-	3.61	-	0.80

TABLE 9 (b). Exchange market pressure (EMP) of Southeast Asia (2001Q1-2010Q4).

Period\Countries	Indonesia	Malaysia	Philippines	Singapore	Thailand
2001Q1	-	-	-	-	-
2001Q2	-	-	-	-	-
2001Q3	-	-	-	-	-
2001Q4	-	-	-	-	-
2002Q1	-	-	-	-	-
2002Q2	-	-	-	-	-
2002Q3	-	-	-	-	-
2002Q4	-	-	-	-	-
2003Q1	-	-	-	-	-
2003Q2	-	-	-		-
2003Q3	-	-	-	-	-
2003Q4	-	-	-	-	-
2004Q1	-	-	-	-	-
2004Q2	-	-	-	-	-
2004Q3	-	-	-	-	-
2004Q4	-	-	-	-	-
2005Q1	-	-	-	-	-
2005Q2	-	-	-	-	-
2005Q3	-	-	-	-	-
2005Q4	-	-	-	-	-
2006Q1	-	-	-	-	-
2006Q2	-	-	-	-	-
2006Q3	-	-	-	-	-
2006Q4	-	-	-	-	-
2007Q1	-	-	-	-	-
2007Q2	9.57	-	4.37	-	1.75
2007Q3	7.53	-	7.31	-	4.51
2007Q4	5.83	-	6.87	-	4.53
2008Q1	5.17	0.71	3.08	-	15.4
2008Q2	4.67	-	2.96	-	4.5
2008Q3	1.69	0.69	-	-	2.37
2008Q4	6.10.	0.58	1.77	-	4.21
2009Q1	6.18	-	0.84	-	2.42
2009Q2	9.33	-	0.50	-	4.19
2009Q3	7.70	-	4.67	-	6.85
2009Q4	6.50	-	2.76	-	3.99
2010Q1	5.25	-	1.91	-	4.31
2010Q2	6.93	-	2.33	-	1.29

2010Q3	3.54		8.60	-	0.76
2010Q4	0	-	-	-	-

The exchange market pressure of Southeast Asia from 1981-2010 is presented in Table 9 (a and b). The countries in this region are Indonesia, Malaysia, Philippines, Singapore and Thailand. The severely affected by world financial crisis was Indonesia. It was adversely affected in early 80's through 90's and also from 2001-2010. Philippines and Thailand was intermediate affected countries while Malaysia and Singapore were least affected countries. Malaysia and Singapore were slightly affected during 1997-1998, may be because of financial crisis of Asia in 1997-1998. Malaysia was also slightly affected during global financial crisis. The results of the study indicate that Indonesia and Philippines responded to Israel Bank Crisis (1983). Indonesia, Philippines and Thailand were also affected by Japan pricing collapse (1990) and later by Black Wednesday crisis 1992-1993. Asian financial crisis 1997-1998 affected all Southeast countries, but severely affected were Indonesia, Philippines and Thailand.

4.3 Impulse Function Analysis

Impulse function analysis results are presented in Table 10 to Table 15.

TABLE 10. Impulse function test results for Bangladesh and China

Shock Countries	Reaction of affected countries					Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term		Country	1st Term	2nd Term	3rd Term	4th Term
Bangladesh	BD	0.034	0.034	0.037	0.057	China, P,R.Mainland	BD	-	-	-	-
	MO	0.024	-	0.026	-		MO	-	-	-	-
	CN	0.029	0.038	0.031	0.059		CN	-	0.023	-	0.032
	IN	0.032	0.042	0.035	0.060		IN	-	-	-	0.023
	ID	0.025	-	0.027	-		ID	-	-	-	-
	IR	0.030	0.037	0.032	-		IR	-	-	-	-
	JP	0.033	0.054	0.036	0.023		JP	-	-	-	-
	JO	0.030	-	0.034	-		JO	-	-	0.020	-
	KR	0.035	-	0.038	0.025		KR	-	-	-	0.020
	KW	0.033	0.036	0.036	0.026		KW	-	-	-	-
	LB	0.031	-	0.035	0.027		LB	-	-	-	-
	MY	0.037	-	0.041	-		MY	-	-	-	-
	MV	0.031	0.038	0.034	-		MV	-	-	-	-
	NP	0.026	0.023	0.028	0.046		NP	-	-	-	-
	OM	0.027	-	0.030	-		OM	-	-	-	-
	PK	0.025	-	0.028	-		PK	-	-	-	-
	PH	0.032	0.047	0.036	0.067		PH	-	-	-	-
	QA	0.036	0.073	0.040	0.009		QA	-	0.027	-	0.022
	SA	0.026	-	0.027	0.029		SA	-	-	-	-
	SG	0.026	-	0.029	0.050		SG	-	-	-	-
	SK	0.025	-	0.029	-		SK	-	-	-	-
	TH	0.024	-	0.026	-		TH	-	-	-	-
	TR	0.026	0.035	0.029	-		TR	-	-	-	-
	UAE	-	-	-	-		UAE	-	-	-	-

Impulse function test results for Bangladesh and China are presented in Table 10. The results of impulse function study revealed that Bangladesh is impacted by China, India, Japan, Kuwait, Nepal and Philippines, the strongest impact being that of India. However the impact of India on China's economy was meager and same statement is valid for Jordan, Korea and Qatar. China is economic giant and its economy is little impacted by other countries.

TABLE 11 . Impulse function test results for India and Indonesia

Shock Countries	Reaction of affected countries					Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term		Country	1st Term	2nd Term	3rd Term	4th Term
India	BD	0.061	-	0.071	-	Indonesia	BD	33.03	4.12	36.92	38.89
	MO	0.032	0.023	0.047	0.058		MO	19.91	11.25	22.61	6.104
	CN	0.053	0.030	0.062	0.068		CN	27.42	10.62	28.82	4.041
	IN	0.067	-	0.076	-		IN	32.44	12.04	35.24	33.34
	ID	0.043	-	0.054	-		ID	25.10	14.90	28.15	8.124
	IR	0.047	-	0.06	0.066		IR	31.16	3.32	33.72	23.12
	JP	0.05	0.055	0.06	0.069		JP	32.91	55.89	36.54	9.305
	JO	0.053	-	0.064	-		JO	25.63	10.93	28.63	10.80
	KR	0.072	0.040	0.083	0.093		KR	39.32	82.90	43.70	25.73
	KW	0.068	-	0.077	0.060		KW	30.29	9.78	34.43	41.89
	LB	0.057	0.030	0.069	-		LB	28.95	17.17	34.38	20.19
	MY	0.070	0.024	0.081	0.090		MY	42.10	70.71	46.68	9.329
	MV	0.053	0.033	0.063	0.063		MV	30.91	26.32	33.99	7.410
	NP	0.045	0.024	0.053	0.044		NP	23.87	4.44	29.05	53.70
	OM	0.043	-	0.051	-		OM	25.02	13.79	29.78	39.91
	PK	0.047	-	0.055	-		PK	25.97	11.10	29.61	5.28
	PH	0.067	0.032	0.076	0.069		PH	32.07	9.84	36.83	20.59
	QA	0.068	-	0.075	0.020		QA	40.97	39.32	44.65	34.18
	SA	0.049	-	0.056	0.032		SA	22.93	12.20	26.58	3.133
	SG	0.054	0.053	0.060	-		SG	25.93	15.25	29.31	13.00
	SK	0.048	-	0.058	-		SK	25.34	13.46	29.68	8.17
	TH	0.051	0.065	0.059	0.059		TH	23.61	22.57	27.47	32.26

	TR	0.048	0.035	0.057	0.026		TR	25.54	31.76	30.69	35.87
	UAE	-	-	-	-		UAE	-	-	-	

The impulse function test results of India and Indonesia are given in Table 11. The data in table indicate that India's economy is strongly impacted by Japan, Korea and Malaysia economy. The economic growth in Asian countries is quite high and India's economy is also growing at remarkable rate. Indonesia's economy is strongly impacted by Nepal and Kuwait and not much impacted by economy of other Asian countries.

TABLE 12. Impulse function test results for Japan and Korea

Shock Countries	Reaction of affected countries					Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term		Country	1st Term	2nd Term	3rd Term	4th Term
Japan	BD	0.41	0.39	0.48	0.11	Korea	BD	4.67	0.78	5.51	0.04
	MO	0.26	.	0.31	0.12		MO	3.06	0.04	3.83	2.29
	CN	0.35	0.43	0.42	0.49		CN	3.92	4.463	4.62	4.63
	IN	0.41	0.038	0.48	0.31		IN	4.76	5.208	5.57	1.66
	ID	0.30	.	0.37	0.20		ID	3.43	0.551	4.29	0.65
	IR	0.36	0.32	0.43	0.15		IR	4.04	1.399	5.0	0.44
	JP	0.41	0.46	0.49	0.088		JP	4.49	1.8	5.46	6.91
	JO	0.41	0.36	0.49	0.30		JO	3.94	0.405	4.7	4.55
	KR	0.48	0.13	0.55	0.62		KR	5.76	1.67	6.57	6.71
	KW	0.43	0.23	0.47	0.63		KW	4.82	0.879	5.41	4.88
	LB	0.39	0.25	0.47	0.048		LB	4.30	1.874	5.14	1.21
	MY	0.47	0.24	0.55	0.38		MY	5.72	1.39	6.63	-6.26
	MV	0.37	0.075	0.43	0.045		MV	4.18	2.60	4.73	3.01
	NP	0.30	0.012	0.35	0.095		NP	3.52	3.14	4.14	3.09
	OM	0.32	0.18	0.38	0.22		OM	3.54	1.11	4.30	0.23
	PK	0.33	0.21	0.39	0.20		PK	3.80	3.109	4.32	1.36
	PH	0.42	0.32	0.50	0.50		PH	4.88	3.93	5.50	4.36
	QA	0.49	0.29	0.57	0.50		QA	5.40	1.65	6.17	4.87
	SA	0.32	0.38	0.37	0.43		SA	3.67	4.29	4.25	4.82
	SG	0.34	0.31	0.40	0.47		SG	3.97	0.044	4.54	0.61
	SK	0.33	-	0.39	0.42		SK	3.75	1.399	4.49	1.14
	TH	0.29	0.089	0.34	0.30		TH	3.77	3.53	4.43	5.99
	TR	0.34	0.19	0.39	0.10		TR	3.72	0.123	4.43	1.57
	UAE	-	-	-	-		UAE	-	-	-	-

The impulse function test results of Japan and Korea are presented in Table 12. The data in table revealed that Japan's economy is strongly impacted by Korea and Kuwait. Korea's economy is mainly impacted by Thailand, Kuwait, Japan and Qatar. Korea is

rapidly transforming its economy to vibrant entity, this deem logical as labor and other essentials of industry development are accessible.

TABLE 13. Impulse function test results for Nepal and Pakistan

Shock Countries	Reaction of affected countries					Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term		Country	1st Term	2nd Term	3rd Term	4th Term
Nepal	BD	0.048	0.038	0.058	-	Pakistan	BD	0.089	0.094	0.10	0.10
	MO	0.026	-	0.034	0.022		MO	0.061	0.021	0.08	-
	CN	0.043	-	0.047	0.021		CN	0.075	0.04	0.09	-
	IN	0.050	-	0.059	-		IN	0.094	0.057	0.10	0.033
	ID	0.031	-	0.039	-		ID	0.067	0.032	0.083	0.066
	IR	0.041	-	0.051	-		IR	0.078	0.03	0.096	0.045
	JP	0.046	-	0.055	0.039		JP	0.086	0.025	0.10	0.073
	JO	0.040	-	0.048	0.021		JO	0.082	0.05	0.096	0.102
	KR	0.058	0.035	0.068	0.024		KR	0.17	0.109	0.122	0.022
	KW	0.052	-	0.060	-		KW	0.093	0.080	0.107	0.054
	LB	0.043	0.041	0.055	0.003		LB	0.082	0.037	0.100	0.020
	MY	0.057	-	0.068	0.021		MY	0.100	0.045	0.117	0.094
	MV	0.043	-	0.052	-		MV	0.075		0.092	0.087
	NP	0.035	0.032	0.043	0.033		NP	0.067	0.024	0.083	0.013
	OM	0.034	-	-	-		OM	0.066	0.010	0.084	0.04
	PK	0.041	-	0.050	0.050		PK	0.071	0.011	0.084	.
	PH	0.051	0.041	0.061	0.037		PH	0.092	0.050	0.106	0.06
	QA	0.061	-	0.070	0.075		QA	0.097	0.026	0.11	0.13
	SA	0.036	-	0.044	0.025		SA	0.071	.	0.087	0.10
	SG	0.041	-	0.048	-		SG	0.078	0.056	0.09	0.062
	SK	0.037	-	0.046	-		SK	0.070	0.048	0.084	0.077
	TH	0.037	0.039	0.044	0.066		TH	0.073	0.084	0.086	0.131

	TR	0.037	0.032	0.046	-		TR	0.073	.	0.082	0.045
	UAE	-	-	-	-		UAE	0.020	.	0.025	.

The impulse function test results for Nepal and Pakistan are presented in Table 13. The data in table revealed that Nepal's economy is mainly impacted by the economy of Philippines and economy that of Thailand. Thailand has also highly impacted the economy of Pakistan, second strong impact being that of economy of Malaysia. In Pakistan the economic growth rate is quite stagnant rather lowered during US financial crisis and it deem essential to follow Malaysian economic model if it has to accelerate growth rate.

TABLE 14. Impulse function test results for Philippines and Srilanka

Shock Countries	Reaction of affected countries					Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term		Country	1st Term	2nd Term	3rd Term	4th Term
Philippines	BD	0.066	0.023	0.075	-	Srilanka	BD	0.20	0.15	0.23	0.14
	MO	0.039	-	0.046	-		MO	0.139	0.05	0.17	0.18
	CN	0.059	0.075	0.066	-		CN	0.16	0.20	0.18	0.24
	IN	0.069	0.097	0.079	0.092		IN	0.19	0.07	0.21	-
	ID	0.046	0.003	0.055	0.0058		ID	0.15	0.12	0.17	0.09
	IR	0.051	-	0.060	-		IR	0.19	0.07	0.22	0.03
	JP	0.063	0.025	0.075	0.010		JP	0.20	0.23	0.23	0.18
	JO	0.066	-	0.079	-		JO	0.06	0.10	0.18	-
	KR	0.073	-	0.085	-		KR	0.23	0.31	0.26	0.12
	KW	0.071	0.037	0.079	0.022		KW	0.19	0.22	0.21	0.22
	LB	0.062	-	0.073	0.032		LB	0.19	0.23	0.22	0.03
	MY	0.070	-	0.083	-		MY	0.24	0.25	0.27	0.25
	MV	0.059	-	0.069	-		MV	0.18	0.36	0.21	0.14
	NP	-	0.051	0.052	-		NP	0.15	0.20	0.18	0.05
	OM	0.049	-	0.056	0.065		OM	0.16	0.068	0.20	0.09
	PK	0.051	0.051	-	0.041		PK	0.16	0.029	0.18	0.10
	PH	0.068	0.072	0.079			PH	0.19	0.15	0.22	0.36
	QA	0.076	0.096	0.086	-		QA	0.23	0.14	0.26	0.15
	SA	0.050	0.002	0.058	-		SA	0.14	0.14	0.17	0.12
	SG	0.054	-	0.062	-		SG	0.15	0.046	0.18	0.17

	SK	0.050	-	0.061	0.026		SK	0.15	0.034	0.18	0.24
	TH	0.046	-	0.054	0.023		TH	0.15	0.098	0.18	0.006
	TR	0.049	-	0.059	-		TR	0.16	0.075	0.19	0.076
	UAE	-	-	-	-		UAE	0.038	0.020	0.04	0.012

The impulse function test results for Philippines and Srilanka are presented in Table 14. The data in the table depicted that the main impact on economy of Philippine is that of economies of India and Indonesia. On the other hand Philippine had main impact on the economy of Srilanka. This evidently revealed that impact phenomenon among various countries specifically countries of Asia is integrated phenomenon and economy of not a single country in world can flourish in isolation.

TABLE 15. Impulse function test results for Thailand

Shock Countries	Reaction of affected countries				
	Country	1st Term	2nd Term	3rd Term	4th Term
Thailand	BD	0.087	0.097	0.097	0.018
	MO	0.056	0.020	0.059	0.012
	CN	0.076	0.132	0.082	0.088
	IN	0.083	0.112	0.093	0.171
	ID	0.058	0.030	0.066	0.011
	IR	0.072	0.031	0.083	0.070
	JP	0.084	0.012	0.093	0.011
	JO	0.084	0.043	0.091	0.015
	KR	0.096	0.039	0.109	0.134
	KW	0.083	0.113	0.092	0.126
	LB	0.078	0.025	0.089	0.064
	MY	0.095	0.054	0.107	0.038
	MV	0.074	0.027	0.082	0.025
	NP	0.058	0.059	0.059	0.055
	OM	0.067	0.023	0.073	0.017
	PK	0.068	0.082	0.077	0.057
	PH	0.083	0.138	0.095	0.178
	QA	0.101	0.115	0.113	0.025
	SA	0.064	-	0.070	-
	SG	0.068	0.071	0.075	0.044
	SK	0.064	0.029	0.074	0.069

	TH	0.058	0.026	0.064	0.025
	TR	0.063	-	0.072	0.072
	UAE	0.018	-	0.020	-

The impulse function test results for Thailand are presented in Table 15. Thailand's economy is strongly impacted by Philippines followed by South Korea, a neighboring country. This impact deem logical because of similarity in socio-economic environments of two countries.

4.4 Variance Decomposition test results for different Asian countries

Variance decomposition test in fact illustrate the variance of exchange market pressure. The results for variance decomposition test for different Asian countries are presented in Table 16 (a and b). The countries with high variance are less affected by economies of other countries and vice versa. The results of variance decomposition test are discussed in the following text.

TABLE 16 (a). Variance decomposition test results for Asian countries

	BD	MO	CN	IN	ID	IR	JP	JO	KR	KW	LB	MY
BD	54	0	2	3	3	3	1	1	2	1	2	4
MO	2	85	1	1	0	0	1	0	0	1	0	0
CN	2	1	44	3	1	2	1	3	1	7	2	2
IN	3	3	3	39	1	1	3	2	2	10	4	1
ID	2	0	0	4	17	4	3	1	20	3	1	1
IR	3	0	5	4	1	33	2	2	4	3	8	3
JP	1	0	1	8	2	2	0	3	3	3	2	3
JO	1	0	0	1	2	1	5	0	0	5	2	0
KR	4	0	2	13	1	1	6	1	27	3	1	13
KW	5	0	1	5	4	1	3	4	5	40	1	2
LB	4	0	2	2	2	1	2	1	2	3	0	1
MY	4	0	4	16	1	1	4	2	7	3	2	25
MV	2	1	4	2	1	2	3	2	3	9	8	4
NP	2	1	1	36	1	2	3	1	2	6	9	3
OM	2	3	0	7	2	1	#	1	2	5	1	1
PK	4	0	2	12	2	2	2	1	4	6	2	5
PH	6	0	2	8	3	1	5	1	8	8	2	8

QA	5	1	7	4	1	2	3	1	5	3	1	7
SA	6	3	4	6	2	5	3	1	1	4	2	2
SG	6	1	2	11	1	2	#	1	8	4	0	11
SR	4	1	3	6	1	5	7	1	17	2	1	7
TH	7	0	3	7	6	3	3	1	12	5	0	17
TR	5	1	3	4	1	2	2	1	4	5	1	5
UAE	0	1	9	1	0	1	0	4	1	1	0	0

TABLE 16 (b). Variance decomposition test results for Asian countries

	MY	MV	NP	OM	PK	PH	QA	SA	SG	SR	TH	TR	UAE
BD	4	4	1	0	1	2	4	1	3	2	1	4	0
MO	0	0	0	0	1	2	0	1	1	0	1	0	1
CN	2	3	1	2	3	7	7	1	0	4	2	1	0
IN	1	2	2	0	5	3	11	2	1	2	2	2	0
ID	1	2	2	0	0	4	2	2	1	1	2	0	0
IR	3	5	1	3	3	4	7	1	3	2	3	2	0
JP	3	1	0	1	1	2	5	1	3	3	1	3	0
JO	0	2	0	0	1	1	0	5	1	1	1	0	0
KR	13	3	2	2	3	5	7	0	3	0	2	0	0
KW	2	1	5	1	2	2	7	2	1	4	1	3	0
LB	1	3	1	2	1	3	3	3	1	1	3	1	0
MY	25	2	1	1	3	6	7	1	2	1	4	1	0
MV	4	35	3	1	2	4	3	1	2	3	1	5	0
NP	3	2	13	1	4	1	7	2	2	0	2	1	0
OM	1	2	1	1	0	0	0	0	0	0	0	0	0
PK	5	2	3	0	20	8	12	1	1	5	2	1	0
PH	8	4	1	1	2	29	4	1	0	1	4	1	0
QA	7	7	1	2	5	8	30	1	3	2	1	1	0
SA	2	1	3	13	3	5	8	20	2	3	2	0	0
SG	11	2	2	2	5	6	6	2	10	2	2	2	0
SR	7	4	3	2	2	2	11	3	3	11	3	2	0
TH	17	4	1	1	1	5	5	1	2	2	12	1	0
TR	5	4	2	2	6	2	6	3	1	3	4	34	0
UAE	0	3	2	1	1	1	3	0	2	1	0	3	0

Bangladesh variance decomposition result revealed that EMP was 54 percent itself. Bangladesh was not much affected by financial turmoil of other Asian countries, however it was slightly affected by Malaysia, Maldives, Qatar and Turkey because of trade relationship. The variance decomposition result also indicates that EMP variance of Macao and Lebanon was 85 percent and 55 percent, respectively. This may be concluded

from these results that economy of Macao and Lebanon is not much impacted by financial situation in other Asian countries. China variance decomposition result show that EMP itself is 44 percent and Qatar, Philippines and Kuwait are main contributors each contributes 7 percent respectively. India's EMP is contributed by 39 percent by itself, 11 percent by Qatar and 10 percent by Kuwait. Indonesia's EMP is contributed by itself 17 percent, Korea 20 percent and Philippines 4 percent. Indonesia is mainly affected by Korea. Israel's EMP is contributed by 35 percent itself and by Qatar 7 percent and by Lebanon 8 percent. Japan's EMP is contributed by India 8 percent and Qatar 5 percent. Jordan's EMP is contributed 5 percent by Kuwait and Saudi Arabia. It has very little contribution from other Asian countries. Korea's EMP contributes 27 percent itself, 13 percent by India and 13 percent by Malaysia. Kuwait's EMP contributes 40 percent by itself, 7 percent by Qatar and 5 percent by Korea. Lebanon's EMP contributes 58 percent by itself, 3 percent by Maldives and Qatar, respectively. Malaysia's EMP contributes 20 percent by itself, 16 percent by India and 7 percent by Qatar. Maldives's EMP contributes 35 percent by itself, 9 percent by Kuwait and 8 percent by Lebanon. Nepal's EMP contributes 13 percent by itself, 36 percent by India and 7 percent by Qatar. Pakistan's EMP contributes 20 percent by itself, 12 percent by India and Qatar each. Qatar's EMP contributes 30 percent by itself, 7 percent by Malaysia and India, respectively. Saudi Arabia's EMP contributes 20 percent by itself, 13 percent by Oman and 8 percent by Qatar. Singapore's EMP contributes 10 percent by itself, 11 percent by India and Malaysia each. Srilanka's EMP contributes 11 percent by itself, Qatar and Singapore, respectively. Thailand's EMP contributes 12 percent by itself, 17 percent by Malaysia and 12 percent by Korea. Turkey's EMP contributes 34 percent by itself, 6 percent by Qatar and Pakistan, each. This revealed that the economy of most Asian countries is impacted by economies of other Asian countries.

4.5 Transmission of crisis

TABLE 17. Transmission estimation results of various Asian countries

The transmission estimation analysis was conducted to visualize the EMP impact on economy of a country under reference, and two countries that strongly impacted a country were taken into account. The results of studies are discussed in the following text.

EMP in each country contagion	CN	JP	KR	BD	IN	NP	PK	SK	ID	PH	TH
Inception	0.43	0.99	0.68	0.29	0.10	0.79	0.46	0.36	0.92	0.25	0.98
	0.21	0.82	0.62	0.21	0.25	0.66	0.25	0.049	0.62	0.35	-0.60
Inception – D	-1.32	0.88	0.52	0.76	0.25	1.05	2.11	-0.16	-0.35	-0.40	-0.84
	-1.05	0.60	0.19	-0.97	-1.81	0.60	-0.61	0.35	0.34	-0.39	-1.00
Export Growth Rate	-2.78	-0.58	2.28	1.36	-0.61	-1.84	-0.77	1.22	0.96	-2.91	-2.09
	1.86	2.18	-2.37	0.03	0.087	-0.98	-0.95	1.11	0.73	0.61	-0.33
Export Growth Rate – D	-0.83	-0.92	1.82	0.14	0.13	0.21	0.56	0.88	1.44	-1.39	-0.08
	-0.75	0.75	-1.56	-0.12	1.47	0.37	-0.49	0.33	0.09	0.31	0.22
EMP_{PH}	1.85								-1.80		
	-0.70								-1.56		
EMP_{PH} – D	0.69								-2.10		
	1.104								-1.49		
EMP_{QT}	-0.39	-0.34			0.43	1.64	4.16	1.51			
	-2.92	-0.02			-0.28	-0.74	-0.86	-2.21			
EMP_{QT} – D	-0.37	-0.67			0.15	0.15	0.58	0.31			
	0.20	-1.58			-0.37	-0.57	-0.36	0.13			
EMP_{IN}		-0.10	0.35			1.64	0.48				
		0.24	0.22			1.00	0.97				
EMP_{IN} – D		0.40	0.67			0.91	0.039				
		-0.06	-0.09			-0.22	0.14				
EMP_{MY}			-0.10	-1.52						2.81	0.79
			0.77	2.17						1.14	0.63
EMP_{MY} – D			0.56							0.74	-0.50
			0.16	-0.08						-0.55	-0.60
				0.34							
EMPMV				-0.87							
				1.28							
EMP_{MV} – D				0.04							
				0.19							
EMP_{KW}					-1.09						
					-1.28						
EMP_{KW} – D					-0.84						
					0.38						

EMP_{SG}							0.10				
							-1.46				
EMP_{SG} –							-0.42				
D							0.34				
EMP_{LB}											
EMP_{LB} –											
D											
EMP_{KR}									-0.55	0.56	0.55
									-1.45	-0.36	
EMP_{KR} –									-0.45	0.10	-0.67
D									-1.17	-0.57	-0.59
R^2	0.73	0.42	0.87	0.40	0.73	0.57	0.77	0.77	0.69	0.72	0.61

In Table 17 results are given for the transmission estimation analysis. From this table, it is found that China's EMP is affected by Philippines and Qatar, China's EMP show Wake-up call effect but not affected by devaluation effect during the crisis period. Japan's EMP is affected by Qatar and India, not showing wake-up call effect but show small competitive devaluation impact during the crisis period. Korea's economy is affected by India and Malaysia and Korea shows both wake-up call effect and competitive devaluation effect during the crisis period. Bangladesh's economy is affected by Malaysia and Maldives, not showing wake-up call effect during the crisis period but showing the competitive devaluation effect. India's economy is affected by Qatar and Kuwait, showing the wake-up call effect but not showing the competitive devaluation effect during the crisis period. Nepal's economy is affected by Qatar and India, both competitive devaluation and wake-up call effects are shown. Pakistan's economy is impacted by India's and Qatar's economy and is not showing both competitive devaluation and wake-up call effects. Srilanka's economy is affected by Qatar and Singapore's economy and show small effect of devaluation and no effect of wake-up call. Indonesia's EMP is affected by Philippines and Korea, showing no effect of wake-up call and devaluation effect during the crisis period. Philippines EMP is affected by Malaysia and South Korea and shows no impact of wake-up call and devaluation effect during the crisis period. Thailand's EMP is impacted by Malaysia and Korea and show a sign of wake-up call effect but no sign of competitive devaluation effect. This study was supported finding of Gong Lee and Chen (2004) and Goldstein (1998).

CHAPTER-5

The study lead to the following conclusions.

5. Conclusions

The study examines the impact of global financial crisis on Asian economies and used exchange market pressure, impulse function, variance decomposition and transmission estimation analysis. Exchange market pressure calculations show that Asian countries of East Asia, South Asia and Southeast Asia are affected by global financial crisis. West Asian countries are not affected by global financial crisis. Global financial crisis show a strong impact on emerging and growing economies of Asia. Impulse function and variance decomposition results show that close trade and geographical relationship play an important role to effect other financial economies.

Wake-up call effect and competitive devaluation effect were studied in the crisis transmission estimation analysis and it is found here that both these channels play a significant role in the transmission of global financial crisis.

Finally it is concluded that global financial crisis impacted severely on the growing and emerging economies of Asia. There is a need to take strong regulatory measures to avoid financial crisis in the future.

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