Impact of Asian and Global Crises on Indonesian Exports

Yulia Tri Mardani

Abstract—This paper discusses the Asian and Global Crises impact on Indonesian exports using an augmented gravity model. Estimation built on Fixed Effect Model of Indonesian export by total and sector to thirty main destination countries from 1993-2012. Main gravity variables are consistent with gravity theorem, where Total Gross Domestic Product (GDP) shows a positive relation and distance shows the negative relation with export value. Results show that Asian crisis gives a worse impact to Indonesian export. Agriculture and manufacturing sectors are severely affected by Asian crisis. Since Indonesia weathering the Global crisis better than Asian crisis, Global crisis did not impact Indonesian export.

Keywords—Asian crisis, Global crisis, gravity model, Indonesian export.

I. INTRODUCTION

INDONESIA, since the mid-1960s just started a process of modern industrialization. From 1967 to 1996, the economic growth average is 7.6 percent. For more than ten years prior to the crisis, inflation rate is maintained below 10 percent. However, that glory was collapsed instantaneously when crisis hit on 1997. Like a snowball effect, after Thailand floats the Baht in July 1997 because of speculative attack, in January 1998 the currency of the Philippines, Malaysia, Indonesia, and South Korea are extremely weakened. Although Indonesia has low inflation, plenty trade surplus, huge foreign reserves, and good banking sectors, it happened primarily because of private corporations' debt in US dollar. For Indonesia, this crisis is not just a financial crisis, but also social and political crisis. Around ten years later, another crisis hit Indonesia back. Indonesia encounters Global crisis. The magnitude and scale of this crisis period were larger than Asian crisis. It has occurred against a Global backdrop of the most challenging economic circumstances since the 1930s. Nonetheless, compare to another country in Southeast Asia, the effect of this crisis is not severe as Singapore, Malaysia, and Thailand.

Some of the papers studied the impact of many crisis episodes in many countries. Using the gravity equation, they observed the crises impact on international trade. Others also use them to analyze international trade performance in one specific country during the crisis. In Indonesia, most analysis of export that uses gravity model, analyze how liberalization or various trade agreements can boost up international trade flows. To analyze crisis, they like to use descriptive analysis. They compared the influence of two crises in Indonesia generally on all political economy aspects [1], crises transmission channels and the impacts on economic growth, employment, remittances, and poverty [2]. Other studies examined crises impact on export flows one crisis period only, which is Asian crises impact and found that Indonesia experienced poor export performance in the post-crisis period because of supply-side [3]. Non-oil export performance by focusing on export value and volume during the Asian crisis was also observed [4]. Additional researchers discussed the crisis effect on the manufacturing sector [5] – [7].

Since there has been no previous research specifically discussed about the crises impact on Indonesian export during two massive crises, we would try to find out if there is any different impact from them. These two crises are estimated to have different impact on Indonesian export and specifically it also influence export on the industrial level.

By knowing which crisis origin that caused severe impact on Indonesian export, then the steps that will be taken to address the crisis can be more convergence. To secure national reserve for sustainable development, diversification of sector or subsector and market destination is needed. Further important policy implications are to reduce import dependency and increase domestic product quality. Domestic industry should also notice domestic market as potential market beside export. By product quality increase, both local and global markets can be improved.

II. LITERATURE REVIEW

A. How to Define, Characterizing, and Measure Crises

Previous researches have several ways to determine and measured crises. They were summarized warning indicators of crisis into some indicators and applied them to countries that hit by the Asian crisis. With some boundaries, current account deficit as a percentage of Gross Domestic Product (GDP), total foreign debt as a percentage of GDP, and foreign short-term debt as a percentage of GDP are proved to be significant in the Asian crisis prediction. IMF data depicted stock market falls, foreign exchange market, and interest rate rises of Asian countries in July 1997 to September 1998 [8].

To define Global crisis in 2008-2009, crisis incidence can be measured using [9]:
1. Change of nominal countries' currency (in percent) compares to US $ from 15 September 2008 to 9 March 2009. The phase of Global crisis on 14 September 2008 to 31 March 2009 [10].

Yulia Tri Mardani is a graduate student of Master of Art in International Economics and Finance, Chulalongkorn University, Bangkok, Thailand, 10330 (corresponding author's phone: +66804408485 ; e-mail: yulia.tri.m@gmail.com).

2. Stock market returns in domestic stock market benchmark indices over the same period as above, adjusted to the volatility of returns.
3. Change in GDP real (in percent) by the end of the second quarter of 2008 to the end of the second quarter of 2009, based on the institution of supply management's global purchasing management index.
4. Change in industrial production (in percent) from the end of the second quarter 2008 to the end of second quarter 2009. Since the GDP composition varies across countries, industrial production could be a consistent measure of crisis impact.
5. IMF financing from July 2009 to November 2009.

B. Export Performance during Asian Crisis

Besides Indonesia, other countries that hit severely by Asian crisis are Thailand, Korea, Malaysia, and The Philippines [8], [11]. In 1997, their exchange rate had experienced sharp depreciation. Even though depreciation was considered increase export value, in fact it did not go to happen in Indonesia when the Asian crisis hit. Specifically, depreciation in Rupiah currency did not increase Indonesian non-oil export value growth.

Some factors that allegedly caused non-oil export sluggish performance [4], [12]. First: dependency on imported products as raw materials and intermediate goods in manufacturing process. As we know, manufacturing sector contributes the largest share of Indonesian non-oil export. Rupiah depreciates when crisis hits, then imported goods will be too expensive, meanwhile manufacturing industries have no choice between buy expensive imported products or cease their production. Second: credit contraction in financial institutions that makes a limitation of export supply and unable to finance their imported raw materials and intermediate goods. Third: lack of demand since other countries are also affected by the crisis. Last argument is because of political and social situation caused importers felt unsafe and shift their market orders to other countries.

Export price decreases during the crisis, then export value and volume could go in the opposite direction [4]. When non-oil price dropped sharply, importers need more goods. By volume, non-oil export increased. Nonetheless, export value did not show reliable sign, but even decreased.

C. Export Performance during Global Crisis

The impact of Global crisis on Indonesian economic growth had occurred through the trade channel. The decline in exports, especially of manufactured goods, caused by the drop in world demand was not only experienced in Indonesia, but also in many other developing countries, includes ASEAN. According to the World Bank and the ASEAN Secretariat, in the first seven months of 2009, manufacturing exports declined by almost 40 percent in Indonesia, compared to the same period in 2008. According to UNDP regional study, exports slumped quite sharply in almost all Asian and Pacific developing countries from mid-2008 onwards. However, since January 2009, exports in many of these countries started to recover. In Indonesia, for the first time in March 2009 exports grew faster than the growth rate of import.

Indonesia suffered relatively mild effects from the Global crisis because Indonesian export ratio to GDP is only about 24%. Thailand, Malaysia, and Singapore have a bigger ratio on export [1], [13]. Major commodity exporters from Southeast Asia, such as Indonesia, on the other hand, become less affected owing to their higher degree of diversification. Another reason is Indonesian characteristic of consumption-led growth and consumption-led investment [14]. In general, economic performance during Global crisis is also much better than Asian crisis.

D. The Use of Gravity Model

Gravity model was used to analyze trade flows in the crisis period. By adding dummy variables to show crisis, the effects of banking and currency crises on international trade were conducted [15]. Observed 179 crises periods for 40 years, they find a different impact of crises on trade dynamics. Crises give a negative impact on import, whereas for export, it gives positive impact. Global Financial Crises impact on African countries' exports to US using gravity equation was analyzed and found that African exports are declining more than other countries [16]. Primary commodities exports are hit more than manufacturing commodities. The impact of trade finance and foreign aid to export flows utilizing mixed effect method [17]. They observed 83 developing countries in 1990-2007, and added crises episode during the time period of observation.

III. METHODOLOGY & DATA

A. Methodology

Using quarterly data, period selected for this paper is from 1993 until 2012, which covered two crises period. CRISIS dummy variables will be added into the gravity equation to show the crisis effect on export value. Starting from second the quarter of 1997 until second quarter of 2008, is where we put Asian crisis dummy, and second quarter of 2008 to second quarter of 2009 is for Global crisis dummy.

Panel data regression is about use in this study. Panel data can ensure empirical analysis in a way that is not feasible if we just use a cross-section or time series data. There are three types of panel data estimation model: Pooled OLS, Fixed Effect Least-Squares Dummy Variables (LSDV) or Fixed Effect Model (FEM), and Random Effect Model (REM) or Error Component Model (ECM).

Pooled OLS model is the simplest estimation method and just estimates the usual regression, regardless the space and time dimension of the pooled data. We pool all observations and estimate regression, ignored the time series and nature of the data. With FEM or LSDV, we pool all observations and assume that each country has constant slope coefficients, but let the intercept vary for each country. Using FEM allows us to make interaction effect among dummy and regressor. Unlike FEM, REM permits each country to have its own intercept value. We suppose that intercept values are a random drawing from a bigger population with mean value as a constant.

To choose which estimators are reliable between FEM and REM, Hausman test is applied. The null hypothesis that underlying the Hausman test is that REM is more preferable. The test statistic developed by Hausman has an asymptotic χ^2

distribution. By testing the model, we are able to choose the best estimation model based on the available data set and eventually we will make the proper analysis.

After we run panel data for aggregate export, we need to assess the crises effect across the sectoral level (agriculture, manufacturing, mining, and others).

We expand the basic gravity model into (1):

$$\ln X_{Ijt} = \beta_0 + \beta_1 \ln X_{Ijt-1} + \beta_2 \ln TGDP_{Ijt} + \beta_3 RFE_{Ijt} + \\ \beta_4 \ln RER_{Ijt} + \beta_5 \ln RER_{Ijt} * Crisis_t + \beta_6 RTA_{Ijt} + \\ \beta_7 \ln DIST_{Ij} + + \beta_8 LAN_{Ij} + \beta_9 Crisis_t + \varepsilon_{Ijt}$$ (1)

Where: X_{Ijt} = export Indonesia to country-j at time-t. X_{Ijt-1} = export Indonesia to country-j at time-t-1. $TGDP_{Ijt}$ = Total GDP of Indonesia and country-j at time-t. RFE_{Ijt} = Relative Factor Endowment, measured according to the absolute value of natural log GDP per capita of Indonesia minus natural log GDP per capita of country-j at time-t . RER_{Ijt} = Real Exchange Rate. RTA_{Ijt} = Regional Trade Agreement, dummy variable. $DIST_{Ij}$ = distance from Indonesia to capital city of country-j. LAN_{Ij} = language similarity, dummy variable. $Crisis_t$ = crisis dummy variable, we set the third quarter of 1997 - third quarter of 1997 for the Asian crisis period and the second quarter of 2008 – second quarter of 2009 for Global crisis period.

B. Data and Measurement

We acquired raw monthly export data from Statistics Indonesia. Data gained in four digit Harmonized System (HS2012) classification of Indonesian export value to 30 countries. To convert data from HS commodity classification into four main sectors of International Standard Industrial Classification (ISIC), United Nations Statistics (UNSTAT) provides correspondence table from HS 2002 to Standard International Trade Classification (SITC) rev. 3, Central Product Classification (CPC) ver.1.1, and ISIC rev.3.1.

Quarterly GDP data were obtained from CEIC and Organization for Economic Co-operation and Development (OECD) database, and they are available in current and constant price for different base year. To eliminate price changes, we bring GDP nominal into real value in the 2005 base year.

RFE needs quarterly population data which does not exist in every database. For most countries with no quarterly population, we estimate quarterly data using geometric growth of annual population.

RER is calculated from the nominal exchange rate, multiplied by foreign Consumer Price Index (CPI) and deflated by Indonesian CPI. Nominal Exchange Rate data were obtained from the average of quarterly nominal exchange rate in CEIC and OECD database.

RTA is found in World Trade Organization (WTO), whereas distance and language variables are time-invariant data that obtained from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) database.

IV. FINDINGS

TABLE I
GRAVITY MODEL ESTIMATION USING FIXED EFFECT MODEL

Dependent Variable: ln (Indonesian export)

	TOTAL	AGR	MFC	MINING	OTHER
ln (prev. export)	0.41315 (0.02) ***	0.45563 (0.02) ***	0.34855 (0.02) ***	0.53497 (0.02) ***	0.72071 (0.01) ***
ln (total GDP)	1.66763 (0.07) ***	1.58409 (0.16) ***	1.77328 (0.07) ***	1.63555 (0.33) ***	1.2929 (0.26) ***
RFE	0.07824 (0.03) ***	-0.18052 (0.11)	0.18367 (0.04) ***	0.55631 (0.23) **	-0.07365 (0.18)
ln (RER)	-0.00682 (0.01)	-0.06648 (0.04) *	0.00405 (0.01)	0.19567 (0.08) **	0.0288 (0.06)
ln(RER)* Asian dum	0.01967 (0.01) *	0.15651 (0.05) ***	0.01672 (0.01)	0.04745 (0.09)	-0.13498 (0.07) *
ln(RER)* Global dum	-0.01013 (0.01)	-0.08435 (0.05) *	-0.01327 (0.01)	-0.04075 (0.09)	0.01997 (0.07)
RTA dummy	0.06133 (0.05)	-0.44164 (0.19) **	0.09956 (0.06) *	0.6266 (0.38)	-0.10898 (0.3)
Asian dummy	-0.10349 (0.08)	-1.23351 (0.33) ***	-0.28285 (0.1) ***	-0.91423 (0.67)	3.86053 (0.53) ***
Global dummy	0.02918 (0.09)	0.39055 (0.33)	0.05525 (0.11)	0.55502 (0.68)	-0.29316 (0.53)
C	-12.54558 (0.69) ***	-12.9558 (2.25) ***	-13.36168 (0.8) ***	-20.34029 (4.63) ***	-15.87858 (3.64) ***
R-squared	0.95915	0.87233	0.93302	0.80840	0.80111
Adjusted R-squared	0.95849	0.87027	0.93194	0.80531	0.79790
F-statistic	1,458.84	424.51	865.47	262.14	250.25

All non-dummy variables are in natural log. RFE is already in natural log form. ***/ **/ * significant at 1%, 5%, and 10% level. Standard error of t-statistics is in parentheses. Source: Author's calculation using E-Views8

TABLE II
INDIVIDUAL EFFECT REGRESSED WITH TIME-INVARIANT VARIABLE

Dependent Variable: Fixed Effect

	TOTAL	AGR	MFC	MINING	OTHER
ln (distance)	-0.73199 (0.29) **	0.56099 (0.49)	-0.67551 (0.33) **	-1.5865 (0.8) *	-0.52383 (0.22) **
Language dummy	1.00608 (0.92)	3.89022 (1.55) **	1.48508 (1.04)	0.8436 (2.54)	1.08517 (0.7)
C	6.30808 (2.57) **	-5.14517 (4.3)	5.78424 (2.9) *	13.76112 (7.05) *	4.48986 (1.93) **
R-squared	0.38536	0.19437	0.36214	0.21975	0.42241
Adjusted R-squared	0.33984	0.13470	0.31489	0.16196	0.37962
F-statistic	8.46422	3.25716	7.66453	3.80221	9.87277

***/ **/ * significant at 1%, 5%, and 10% level. Standard error of t-statistics is in parentheses. Source: Author's calculation using E-Views8

All Hausman test results in this paper indicated that we have to reject the null hypothesis, means that FEM or LSDV is the appropriate one. Moreover, usually REM is utilized when destination countries selected randomly from a larger population. However, in this paper, we determine thirty countries as the biggest Indonesia's export destination, so FEM would be best suited [19]. Country lists as Indonesia's export destination provided at Appendix. When number of cross section data is small and time series data is large, FEM may be preferable [20].

Bringing Similarity Index (SI) and RFE together into the model will show the proof of intra-industry trade. However, this result can only be proved if they are supporting each other, or at least one of them is significant. SI captures the relative size of the two countries in terms of GDP. When SI

has a positive sign, it will have the same meaning to negative RFE. Countries with similar economic size and similar factor endowment presumably will trade more. And this similarity built intra-industry trade theorem.

To measure RFE, GDP per capita as capital labor approach was employed. When the distance of two countries in factor endowment term is low, they are similar in factor endowment, and they trade more, then the volume of intra-industry trade is increased. This is to be in conformity with Linder's hypothesis and consistent with [21]. When countries trade more while they are dissimilar, Heckscher-Ohlin-Samuelson (HOS) theorem is a background role. That is why we do not utilize SI on the model as New Trade Theorem (NTT) typically to avoid ambiguity and reduce redundant variable.

As expected, in total export and each sector, previous export determines current export in the same direction. Total GDP also significantly increases the export value in a positive way. RFE is positively significant in total, manufacturing and mining. HOS theorem is more valid in Indonesian export than NTT. Need of trade still based on traditional trade theorem. Indonesia has a tendency to trade more with countries that have dissimilar factor endowment.

RER is only significant on agriculture and mining. On agricultural sector, depreciation did not lead to export demand increase. While mining export value is significantly sensitive with depreciation, as mentioned in the hypothesis that depreciation will increase the export value.

The evidence of correspondence between RER and crisis in export value is somewhat become meaningless, as shown in total and agricultural export. They have a positive sign for interaction effect between RER and Asian crisis dummy. According to Table 1, depreciation during crisis period will always increase export value, proved by the opposite sign between interaction effect and crisis. In fact, total Indonesian non-oil export value and agricultural sector slumped down when the Asian crisis hit. However, the interaction effect on the global crisis showed different results. Depreciation when Global crisis apparently reduced agricultural export value, although in fact, the opposite is the truth.

RTA is significant on agriculture and manufacturing, but it has no significant role on total export, mining, and other. On agriculture, RTA gives the negative sign while RTA gives the sign as expected on manufacturing. RTA proved can improve manufacturing export, but not profitable for agriculture, and it does not provide any impact on total, mining, and other sector export.

The distance variable as a proxy of transportation cost between the two countries, shows that the further distance will imply larger transportation cost. The sign of this variable is matched as expected, negative sign, significant on all sectors except agriculture.

Language as explanatory variable only significant on the agricultural sector. Similarity in culture, showed by language similarity proved increased export only on agriculture.

The chosen model involving all variables seemed a good model, indicated by high R-square result. R-square of all model explains more than 80.1 percent of the variation in Indonesian export across sectors during 1993-2012.

A. Asian Crisis

According to table 1 estimation, not all sectors hit by the Asian crisis. Agriculture, manufacture, and other export are severely affected by the Asian crisis. But the only sector which has positive impact of Asian crisis is other sector. Compare to manufacture, agricultural sector is severely more affected by the Asian crisis. And RER coefficient on agricultural export mutually supports Asian crisis finding.

There are several reasons for this unprecedented export depreciation, especially in non-oil commodities [4], [12]. First reason is because of a collapse in the local banking system. Exporters unable to take advantage of depreciation because trade finance becomes unavailable to them. Second: import demand reduced, especially in East Asia. Third reason still has relation with the first one, that too high dependencies in import material as input, especially in the manufacturing sector. Depreciation make imported goods become too expensive. And the last one is due to political instability in 1998 make imported countries shifted their order to others. Another cause of bad export performance is deterioration in export price commodities occurred in 1997-1999 only boost export volume, not export value. Prices of some commodities in the world market have declined during the onset of the regional crisis period. Rosner has summarized some commodities that experienced price declined from 1997-1999.
1. Agriculture: rubber, shrimp, fish, coffee, cocoa, tea
2. Manufacturing: pal oil, paper, textile fabric, fibre and yarn, wood pulp, fertilizer, and aluminium
3. Mining: coal, copper, tin, gold, nickel

Local prices did not always quickly adjust when Rupiah depreciates. It helps us to explain why depreciation on agricultural sector unable to boost export. This situation was used by traders to buy good stock and sell abroad. When Rupiah bounce back in the third quarter of 1998 and no significant differences between local and international prices, this gap began to close. This is why Asian crisis has positively and significantly increases other sector export.

The problem of the Asian crisis is more on the supply side, not on foreign demand [12]. Because world import demand in exported product was not changed during the Asian crisis period.

B. Global Crisis

As shown in Table 1, neither sector nor aggregate export is affected by Global crisis. The effect of Global crisis is relatively limited, even though in terms of magnitude is greater than Asian crisis. Indonesia is more experienced and put more efforts to restore crisis, especially financial sector. Several factors also make the differences as crisis origin, exchange rate regime, policy responses and national political economic situation [1]. Our findings proved what [1] has found.

During Global crisis, drop in global demand lead to drop in agriculture and mining sectoral, but they only dropped slightly and could be said that they are relatively stable [1]. This is happening because China and India have a large share and they still have strong demand for this sector. However, our finding also in line with [1]. From econometric result, Global

Crisis did not give any significant impact to Indonesian export.

Domestic demand and small share of export to GDP compare to other countries such as Singapore and Malaysia makes Indonesia not too much affected by any crisis. Their export contribution to GDP is above 100%. Even Indonesia was also hit by crisis like other countries, but Indonesia can survive better because of this relatively smaller export. Thanks to China, which has very strong economic growth. Demand from China in Global Financial Crisis was still high.

V. CONCLUSION

The objective of this paper is to compare the effect of Asian and Global crisis on Indonesian export, especially on each sector. Indonesian export pattern basically still relies on HOS theorem, not intra-industry trade. Need of trade is due to the differences in factor endowment, not by their similarity with other countries. Using Fixed Effect Model, interaction effect becomes meaningless, cannot explain depreciation and crisis relationship. Only Asian crisis affects Indonesian export, especially on agricultural and manufacturing sector. Huge Rupiah depreciation in 1997 cannot increase export value because of the huge decline of export commodity price, and local price cannot adjust quickly. Besides that, collapse of local banking system makes manufacture with high import dependencies unable to survive. Reduced in import demand and social political uncertainty were also cause export decline. Global crisis gives mild effect to Indonesian export, and did not explicitly appear in panel result. Indonesia saves from Global crisis because Indonesia more experienced and put more efforts to restore crisis, especially financial sector. In case that crisis hits Indonesia, we have to consider the origin of the crisis and keep social political situation conducive. Learn from past mistakes, strengthen domestic market beside diversification in product and market become a concrete solution to anticipate crisis.

APPENDIX

INDONESIA'S EXPORT DESTINATION COUNTRIES

1. *America*: USA, Canada, Argentina, Brazil, Mexico
2. *Europe*: Netherlands, United Kingdom, Italy, Germany, French, Spain, Russia, Turkey
3. *Asia and Middle East*: Philippines, Cambodia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, Vietnam, Hong Kong, India, Japan, Rep. Korea, Pakistan, China, Saudi Arabia
4. *Australia and Oceania*: Australia, New Zealand

REFERENCES

[1] M. C. Basri, "A tale of two crises: Indonesia's political economy," in *The Second East Asian Miracle?: Political Economy of Asian Responses to the 1997/98 and 2008/09 Crises,* 2013.

[2] T. T. H. Tambunan, "The Indonesian experience with two big economic crises," *Modern Economy* 1.3, 2010.

[3] P. Athukorala, "Post-crisis export performance: the Indonesian experience in regional perspective," *Bulletin of Indonesian Economic Studies*, 42.2, pp. 177-211, 2006.
http://dx.doi.org/10.1080/00074910600873658

[4] L. P. Rosner, "Indonesia's non-oil export performance during the economic crisis: distinguishing price trends from quantity trends," *Bulletin of Indonesian Economic Studies*, 36.2, pp. 61-95, 2000.

http://dx.doi.org/10.1080/00074910012331338893

[5] H. Aswicahyono, Hal Hill, and D. Narjoko, "Industrialisation after a deep economic crisis: Indonesia," *The Journal of Development Studies*, 46.6, pp. 1084-1108, 2010.
http://dx.doi.org/10.1080/00220380903318087

[6] D. Narjoko and R. Atje, "Promoting exports: some lessons from Indonesian manufacturing," *Asia-Pacific Research and Training Network on Trade Working Paper Series*, 32, 2007.

[7] T. H. E. E. Wie, "The impact of the economic crisis on Indonesia's manufacturing sector," *The Developing Economies,* 38.4, pp. 420-453, 2000.
http://dx.doi.org/10.1111/j.1746-1049.2000.tb00886.x

[8] E. Karunatilleka, "The Asian economic crisis Great Britain, " *Parliament, House of Camerons,* Library, 1999.

[9] J. A. Frankel, and G. Saravelos, "Are leading indicators of financial crises useful for assessing country vulnerability? Evidence from the 2008-09 global crisis," *National Bureau of Economic Research*, no. w16047, 2010.

[10] Y. Aït-Sahalia, J. Andritzky, A. Jobst, S. Nowak, and N. Tamirisia, "Market response to policy initiatives during the global financial crisis," *NBER Working Paper*, no. 15809, March 2010.

[11] J. Whitt, "The role of external shocks in the Asian financial crisis," *Economic Review*, pp. 18-31, Q2 1999.

[12] R. Duttagupta, and A. Spilimbergo, "What happened to Asian exports during the crisis?," *IMF Staff Papers*, pp. 72-95, 2004.

[13] M. C. Basri, and S. Rahardja, "The Indonesian economy amidst the global crisis: good policy and good luck," *ASEAN Economic Bulletin,* 27.1, pp. 77-97, 2010.
http://dx.doi.org/10.1355/AE27-1E

[14] M. Meyn and J. Kennan, "The implications of the global financial crisis for developing countries' export volumes and values*,"* Overseas *Development Institute (ODI)*, 2009.

[15] Z. Ma, L. Cheng, "The effects of financial crises on international trade," *International Trade in East Asia, NBER-East Asia Seminar on Economics,* Vol. 14, University of Chicago Press, 2005.

[16] N. Berman, and P. Martin, "The vulnerability of sub-Saharan Africa to financial crises: the case of trade," *IMF Economic Review*, 60.3, pp. 329-364, 2012.
http://dx.doi.org/10.1057/imfer.2012.13

[17] J. Brambila-Macias, I. Massa, and M. J. Salois, "The impact of financial crises on trade flows: a developing country perspective," *84th Annual Conference, March 29-31, 2010, Edinburgh, Scotland*, no. 91831, Agricultural Economics Society, 2010.

[18] M. Y. Kiendrebeogo, "How do banking crises affect bilateral exports?," *International Monetary Fund,* no. 13-150, 2013.

[19] W. Greene, " Export potential for US advanced technology good to India using a gravity model approach," *Office of Economic Working Paper US International Trade Commision,* 2013.

[20] D. N. Gujarati and D. Porter, "Basic econometrics," *Mc Graw-Hill International Edition,* 2009.

[21] E. Helpman and P. R. Krugman, "Market structure and foreign trade: increasing returns, imperfect competition, and the international economy," *MIT Press,* 1985.