THE EFFECT OF FINANCIAL LIBERALIZATION AND CAPITAL FLOWS ON INCOME VOLATILITY IN ASIA-PACIFIC

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ABSTRACT

This paper examines the effect of financial liberalization on income volatility focused on the direction of capital flows in the Asia-Pacific region. By using a dynamic panel model, this study investigates the effect of financial liberalization on income volatility in 19 Asia-Pacific countries over the period 1976-2015. The results show that the financial liberalization in the Asia-Pacific region associated with low income volatility is only perceived by developed countries, while not for developing countries. This paper also investigates the effect of capital flows on different types of directions. The results show that capital outflows will be associated with low income volatility, whereas capital inflows will be associated with high income volatility. The negative effect of financial liberalization on income volatility in developing countries is caused by the majority of those countries holding larger capital inflows, compared to capital outflows. Therefore, the excess capital inflows in developing countries increase the pressure and the vulnerability to the crisis.

Keywords: Asia-Pacific, Capital Flows, Financial Liberalization, Macroeconomic Volatility
JEL Classification: F41, F36

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I. INTRODUCTION

Since 1990, the economic globalization has created a world trade liberalization followed by integrated global financial markets (Rajan, 2001). Financial market transactions freedom is characterized by an increasingly free movement of capital in industrialized countries, especially countries in Europe and America. The increasing degree of financial sector liberalization in the industrialized countries subsequently has spread to various regions in the world, especially countries in the Asia-Pacific. Chinn and Ito (2008) revealed that since 1970, the financial openness of developing countries in the Asia-Pacific region has the greatest level relative to other regions. The high financial market activity in Asia-Pacific according to Borensztein and Loungani (2011) has shown that the integrated capital flows in the Asia-Pacific region and the mobility of capital has moved freely, thus making most of the liabilities of companies and banking countries in Asia-Pacific region began to be dominated by various foreign currency units.

Figure 1 shows de jure and de facto financial liberalization data movements in the Asia-Pacific. De jure level of financial liberalization shows the index of financial liberalization issued by Chinn and Ito (2008). This variable calculates the degree of capital account openness to foreign funding in a country. Meanwhile, the financial openness representing de facto financial liberalization is calculated using the measurement of financial openness of Lane and Milesi-Ferretti (2007). The method of calculating financial openness is by summing the total capital inflows and outflows divided by gross domestic product. The degree of financial openness in the Asia-Pacific has always increased over time. The data show that in 1976 the average degree of financial openness in the Asia-Pacific was only 0.45 index unit, then increased eightfold by the year 2015 to 3.4 index units. Similarly, the degree of

Figure 1.
Average Degree of Financial Liberalization and Openness in Asia-Pacific Countries

Index   **Financial Liberalization (de jure)**
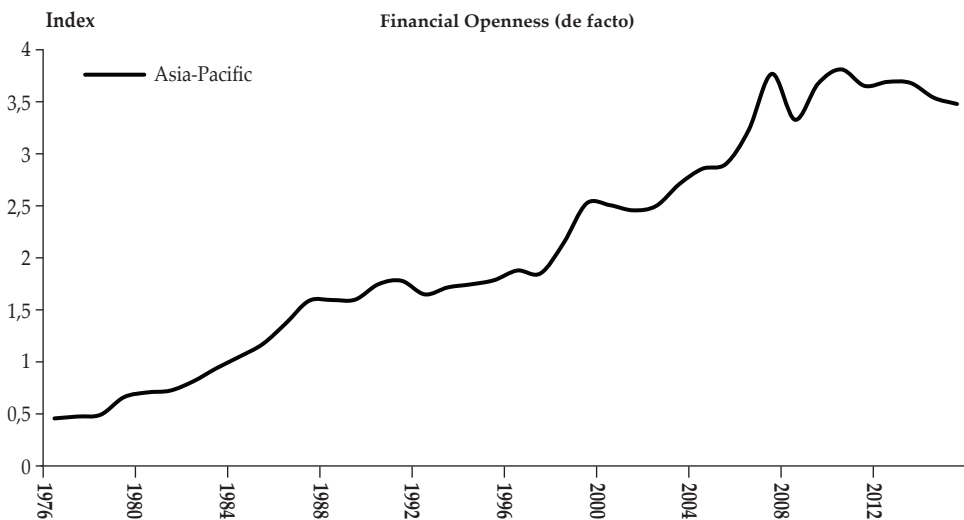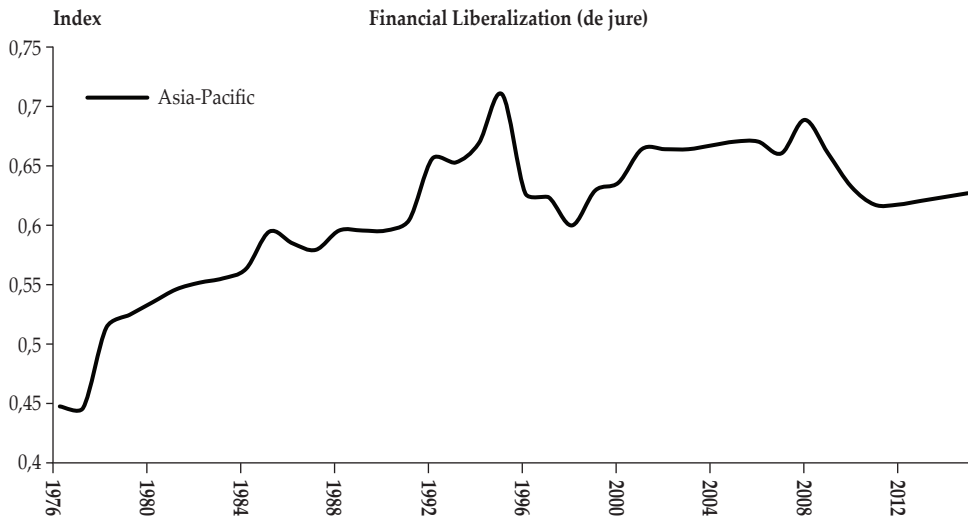
financial liberalization shows an increasing trend over time, except in 1997 which decreased due to the global financial crisis.

Economic globalization that makes the financial sector more integrated in the Asia-Pacific region becomes an interesting phenomenon to be observed. One of the reasons is, financial liberalization can affect the level of economic stability. According to Mirdala et al. (2015), the development of studies and empirical research on financial liberalization in the world began because of the effects of financial liberalization on the economy. These findings concluded that the liberalization process of capital flows led by industrialized countries which have been a stimulus in improving the efficiency of wealth allocation and sharing international financial risks. The allocation efficiency of wealth and the sharing of international risks will then affect the growth and maintain the economic stability. In addition to the benefit from allocation efficiency and risk sharing internationally, the flow of capital across countries will also determine economic outcomes and will further influence the volatility of macroeconomic variables. Ultimately, the risk of such macroeconomic volatility will affect the economic growth and will implicate the level of welfare in an economy indirectly.

Kose, Prasad, and Terrones (2006) have proved that the economic globalization marked by an increasing in the volume of international trade and financial flows has weakened the negative relationship between volatility and economic growth. Similarly, Ahmed and Suardi (2009), Pancaro (2010), Torki (2012) and Mirdala et al. (2015) have found that financial openness has contributed significantly to influencing income and consumption volatility. The integrated economy will contribute by lowering the volatility of output and consumption. The findings are reinforced by Ozcan, Sorensen, and Yosha (2013) who revealed that the integrated flow of cross-border capital will maintain fluctuations in macroeconomic variables.

Therefore the positive benefits of financial liberalization are still debated both in theory and empirical studies. Kose, Prasad, and Terrones (2003) revealed that the relationship between financial liberalization to income and consumption volatility

is still not conclusive and well explained. The lack of clarity on the relationship is due to the two forces in financial openness. These forces may increase or reduce the economic volatility. International financial openness can reduce volatility due to diversification in risk sharing. On the other hand, financial openness can lead to greater specialization and increase volatility levels. According to Mirdala et al. (2015), the advantages of financial liberalization in reducing economic instability are affected by economic conditions within a country. The existence of financial market openness empirically gives more positive effect for developed countries while not for developing countries.

The influence of financial liberalization on the uncertainty of the economic remains unclear. Therefore, an analysis of the impact of financial liberalization on income volatility in the Asia-Pacific region becomes important to be investigated. Since the Asia-Pacific region is still dominated by developing countries, this study will ultimately provide an important conclusion whether the presence of financial liberalization in the Asia-Pacific region will provide benefits or not. Moreover, the influence of the direction of capital flow becomes an important consideration in this study. The behavior of capital inflows and capital outflows in influencing income volatility is expected to explain the possible effect of different financial liberalization on income volatility, especially in developed and developing countries.

II. THEORY

Ramey and Ramey (1995) have proved that the volatility and growth output are negatively correlated. This indicates that countries with high volatility have low economic growth. The relationship concludes that the volatility of output that affects economic growth indirectly plays an important role because it will have implications for the level of welfare in an economy. The existence of these empirical relationships makes Kose et al. (2006) to examine the relationships between outputs volatility and growth in the context of globalization in light of the phenomenon of trade openness and financial integration in many countries by interacting the financial integration and trade openness to output volatility. The results showed that financial integration and trade openness have diluted the negative relationship between output volatility and growth.

In the relationship between financial integration and economic volatility, Kose et al. (2003) argued that international financial integration was having two major potential advantages. Firstly, financial integration may increase global allocation of capital and help countries to have better portfolio. Secondly, a country that has an integrated financial market usually will create a positive sentiment. Economic agents will assume that financial market integration will create stable output volatility. However, from the vast overview of existing literature, it is difficult to conclude that financial integration will actually reduce income volatility. In fact, there are several studies that find an opposite result, that international financial integration can increase income volatility.

Kose et al. (2003) examined the impact of financial integration on the volatility of income and consumption by using samples of industrialized countries in the period of 1960-1999. The results showed that high financial openness will be

associated with a relative increase in consumption and income volatility. Mirdala et al. (2015) studied the relationship between international financial integration and fluctuations in revenues. The results showed that the relationship between financial openness and economic development in developed countries was insignificant. As a result the effect of financial integration on the volatility of income and consumption disappears over time. Similarly, the financial integration impact on the volatility of income and consumption in developing countries decreases with the improvement of economic and institutional conditions. However the relationship between financial integration and volatility is positive which means that financial integration has resulted in greater volatility in income and consumption. Mujahid and Alam (2014) have investigated the relationship of financial transparency with macroeconomic volatility in Pakistan. Financial and trade openness significantly correlated positively to the volatility of output, consumption, and investment. Easterly, Islam, and Stiglitz (2001) probed the factors affecting volatility in 74 countries in the period of 1960-1997. The results found that an increasing financial system, resulting in financial openness could increase the risk of increased volatility in output growth.

This type of financial openness and the presence of other country-specific characteristics may also be meaningful. Kose et al. (2006) provided a conclusion that the existence of financial and trade openness has a positive effect on the economy by weakening the negative effects of volatility on economic growth. The existence of these important findings makes the study of financial and trade openness is growing. Ahmed and Suardi (2009) had developed a research from Kose et al. (2003) who studied the effect of trade and financial liberalization on macroeconomic volatility in Sub-Saharan Africa. By using representatives from 25 countries in the Sub-Saharan Africa region from 1971-2005. The results showed that an increase in financial openness in the Sub-Saharan Africa region leads to lower volatility in output and consumption. In contrast to conventional beliefs, trade openness in Sub-Saharan Africa will result in even greater instability in the economy. Bekaert, Harvey, and Lundblad (2006) examined the impact of market liberalization on equities and the openness of capital accounts to the consumption growth volatility. They found that financial liberalization was associated with low volatility of consumption growth.

The existence of differences in the empirical results of the study on the relationship of financial openness to the volatility of the economy is one of the issues in the academic literature. This suggests that the scope of the research in aggregation can mask important structural details that can potentially explain mixed results. Kose, Prasad, and Terrones (2009) have investigated the possibility that capital inflows and outflows can be important references to observing the potential for different effects on economic volatility. The capital flows used to focus on the level of external assets (capital outflows) and the level of external liabilities (capital inflows). This theory explains that capital outflows driven by the holders of domestic capital by buying offshore assets will create variations in dealing with risks from home countries. In addition, domestic investors may be able to increase profits from a given risk by increasing the number of capital outflows in purchasing external assets. Domestic financial assets kept outside will help domestic capital holders share their wealth risk in the face of a loss of output

shocks in the home country, where each asset holder will still eLibarn income from abroad. It can be concluded that the existence of large external assets (capital outflows) is likely to be associated with low fluctuations in economic variables. Conversely, the external liabilities (capital inflows) are predicted to affect economic volatility in different directions. The recipient country experiences capital inflows, which in turn will increase the specific risks in their own country in the presence of additional risks from the donor country. Additional risk is possible due to capital flight and negative events due to world shocks. Large external obligations will then be associated with massive economic volatility.

III. METHODOLOGY
3.1. Data
The data used in this study are secondary data collected from various sources. The data used are panel data with time series at the annual frequency of the period 1976-2015 and cross-section consisting of 19 countries in the Asia-Pacific region. Data used from World Development Indicators (WDI), Database of Economic Freedom in the World, Chinn-Ito Indicators and External Wealth of Nations. The data used in this study are GDP growth volatility, GNP growth volatility, financial openness (de facto size), financial liberalization (de jure size), total external liabilities, total external assets, trade openness, income per capita, inflation rate, inflation rate volatility, terms of trade volatility, discretionary fiscal policy, fiscal policy procyclicality, financial development, and institutional quality.

The financial liberalization variables in this study, denoted by FL_{it}, are based on de jure and de facto financial liberalization. The de facto financial liberalization data is represented by the financial openness collected from the External Wealth of Nations published by Lane and Milesi-Ferretti (2007). The de facto size of financial openness is the sum of the international financial gross assets and the international financial liabilities relative to GDP.

$$Financial\ openness\ (de\ facto) = \frac{total\ aset_{it} + total\ liabilities_{it}}{GDP_{it}} \qquad (1)$$

Whereas for the size of financial liberalization de jure symbolized by financial liberalization and is illustrated by indicators Chinn and Ito (2008) to examine the potentially different impact of capital inflows and outflows on income volatility, this study divided international investment positions into two categories, total external assets and total external liabilities which measured relative to GDP. Where the total external asset is the proxy of capital inflows and the total external liabilities are the proxy of capital outflows.

Table 1.
Data Sharing Capital Outflows and Capital Inflows

	Capital Outflows	**Capital Inflows**
Total Aset	external assets total: indicate the accumulated value of the stock of capital outflows $$= \frac{external\ asset\ total_{it}}{GDP_{it}}$$	external liabilities total: indicate the accumulation of capital inflows stock value $$= \frac{external\ liabilities\ total_{it}}{GDP_{it}}$$

The control variables are denoted by Z_{it} incorporating trade openness, income per capita, inflation rate, inflation rate volatility, terms of trade volatility, financial development, institutional quality, discretionary fiscal policy, and procyclicality fiscal policy. For discretionary fiscal policy was built using the method proposed by Fatas and Mihov (2003). This study uses annual data for 19 Asia-Pacific countries from the period 1976-2015 and estimates the following regression for each country:

$$\Delta G_t = \alpha_1 + \beta_1 \Delta Y_t + \gamma G_{t-1} + \delta t + \varepsilon_t \tag{2}$$

Where G is the logarithm of real government spending and Y is the logarithm of real GDP. Deterministic time trends are used to capture the observed trends in government spending at all times. The data from the size of the discretionary fiscal policy is ε_t. While for procyclicality fiscal policy data are built using Lane method (2003) which involves running a regression of each country with regression estimate as follows:

$$\Delta CG_t = \alpha_2 + \beta_2 \Delta CGDP_t + e_t \tag{3}$$

By using annual data where CG is the logarithm of the cyclical real government expenditure and CGDP is the logarithm of the real cyclical component of GDP. The logarithm of the cyclical component of a series is obtained by using the deviation log of the Hodrick-Prescott trend. β_2 measures the elasticity of government expenditure on output growth. A positive value indicates a procyclical fiscal state and the above unity value indicates a more comparable response than a fiscal policy to output fluctuations. The coefficient β_2 is a cyclicality that is estimated to measure the procyclicality fiscal policy.

Table 2.
Average of Dependent and Independent Variables per Decade

	1976-1985	1986-1995	1996-2005	2006-2015
Volatility growth of GDP	0.03	0.025	0.027	0.022
Volatility growth of GNP	0.09	0.081	0.091	0.088
Financial openness	0.89	1.66	2.49	3.62
Financial liberalization	0.46	0.53	0.56	0.57
Total external asset/GDP	0.41	0.85	1.38	2.02
Total external liabilities/GDP	0.55	0.65	0.74	0.77
Trade openness	0.77	0.84	1.02	1.02
Income per capita	5735.46	11900.51	18969.82	30699.47
Inflation	15.62	6.66	2.82	3.08
Inflation volatility	7.57	6.76	2.38	1.69
Terms of trade volatility	6.63	3.79	5.1	3.71
Discretionary fiscal policy volatility	0.0221	0.0127	0.0121	0.0128
Financial development	0.56	0.75	0.89	0.97
Institutional quality	5.88	6.18	6.41	6.37

* Procyclical fiscal policy is not reported by the construction. this variable does not vary over time.

To be able to provide more detailed information will be described table showing the average variables used per decade. The data to be explained include dependent and independent variables. In Table 2, the dependent variables used include the growth volatility of GDP and GNP. In every decade the average income volatility overall declined except in the 1996-2005 decade. The GNP variable has the highest volatility value when compared to the volatility of GDP. For independent variables financial openness (de facto) and financial liberalization (de jure) always increase in every decade. That is, for the Asia-Pacific region there has been an increase in the flow of capital increase per decade of time. In addition, the data flow of capital flow consisting of total external assets and total external liabilities on an average always increase per every decade. The increase in capital inflows and outflows is due to the increasing integration of financial markets of Asia Pacific countries to global financial markets.

Table 2 also shows the movement of control variables used in research per decade of time. The movement of trade openness data shows ever-increasing movements every decade. This indicates that the exchange of goods and services activities in Asia-Pacific countries has always increased over decades per decade of time. Similarly for per capita income on a regular basis in the Asia-Pacific region is always increasing every decade. Increased income per capita also showed a very significant increase where in the decade 1976-1985 only amounted to 5735.46 (US $) increased significantly by 30699.47 (US $) in the decade 2006-2015. Data inflation on average declined in the decade 1976-1985 to 1996-2005 and rose again in the decade 2006-2015. The increase in inflation at the end of the decade is due to some of the symptoms of the global financial crisis, such as the subprime

mortgage crisis and the European crisis. As for inflation volatility always decline every decade. The lower inflation volatility indicates that the price level stabilizes over time. Similarly with the data terms of trade volatility which in every decade always decrease. This is shown in the decade 1976-1985 terms of trade volatility is at the number 6.63 and at the end of the decade 2006-2015 dropped significantly about 3.71. Discretionary fiscal policy data declined in the first three decades and rose again in the last decade. Discretionary fiscal policy indicates the volatility of a government's expenditure shocks. The decade of 1976-1985 discretionary fiscal policy fell to the period 1996-2005 from 0.0221 to 0.0121, then climbed back in the last decade to 0.0128.

3.2. Empirical Model

This study will basically look at how financial liberalization affects the volatility of revenue growth in the Asia-Pacific region by considering the effect of different moving capital flow directions. The estimation model analysis method uses dynamic panel data. The dynamic models that are considered for the 15 Asia-Pacific countries from 1976-2015 are as follows:

$$Y_{it} = \alpha + \rho Y_{it\text{-}1} + \beta FL_{it} + \mu D_{it} + \omega\,(FL{\times}D)_{it} + \delta CF_{it} + \gamma Z_{it} + u_i + v_t + \varepsilon_{it} \qquad (4)$$

$\forall\ i = 15;\ t = 1980, 1985, 1990,....2015$

Where i and t identify each state and time period, u_i denotes the influence of the state that cannot be observed, and v_t denotes the influence of time.

The model contains four sets of variables: (1) a collection of dependent variables (Y_{it}), (2) a collection of variables of financial liberalization proxy (FL_{it}) and capital flow direction (CF_{it}), (3) dummy variable (D_{it}) : 1 for developed countries and 0 countries for developing countries, and (4) a set of control variables (Z_{it}). The dependent variables consist of two measures of income volatility, namely the volatility of GDP growth and the volatility of GNP growth. The volatility of the two income variables is calculated by the standard deviation of five years from GDP growth and GNP growth. The empirical results will be estimated separately for the two different volatility measures. There are two problems of endogenous forces in this model. First, dependent lag variables as control variables are correlated with unobserved country fixed effect (u_i). To solve this problem, this study used the GMM estimates proposed by Arelano Bond (1991). Second, for other independent variables $(FI_{it},\ CF_{it},\ Z_{it})$ may be correlated with error term (ε_{it}).

IV. RESULT AND ANALYSIS

4.1. Macroeconomic Volatility in Asia-Pacific

This section explores the dynamics of income growth volatility from 1976 to 2015. Figure 2 shows income growth volatility by dividing the Asia-Pacific into two groups of countries, namely: developed countries and developing countries. The income growth volatility data in this study is divided into two groups, namely the growth volatility of gross domestic product and the growth volatility of gross national product.

Figure 2. Income Volatility Developments in The Asia-Pacific based on
Income Groups from 1976-2015

Gross Domestic Product Volatility

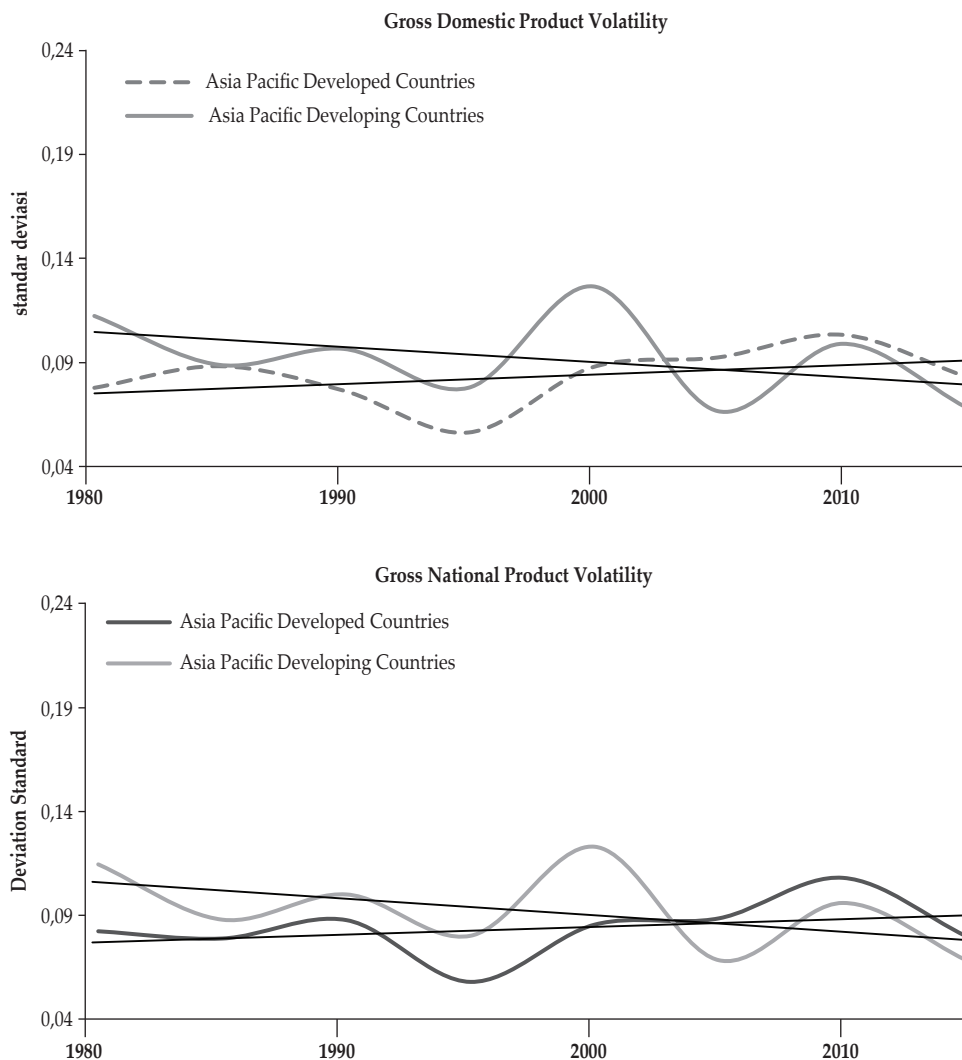**Gross National Product Volatility**

Figure 2 shows general pattern of volatility in both income groups fluctuates over time. The interesting point of Figure 2 is that the income growth volatility in developing countries is always higher than in developed countries from 1976 to 2003, but after 2003 the position of income volatility was in the opposite position. After 2003 developed countries have higher income volatility, compared to developing countries. These conditions occur both on the growth volatility of gross domestic product and gross national product. Another interesting point shown in Figure 2 is income volatility during the period 1998-2000. The increase in

income growth volatility during this period was due to the financial crisis that hit the world. The existence of financial crisis will eventually increase the instability of the economic conditions shown in each income variable.

4.2. Financial Liberalization and Openness in Asia-Pacific

This section explores the movement of financial liberalization and openness from 1976 to 2015. Figure 3 illustrates the development of de jure and de facto financial liberalization in Asia-Pacific over time. The graph showed the level of de jure's financial liberalization, while the graph financial openness shows the level of de facto's financial liberalization. Financial liberalization and openness data were shared by the Asia-Pacific Developed Countries and Asia-Pacific Developing Countries. Figure 3 shows an increasing pattern of financial liberalization, and openness data over time in the Asia-Pacific, Asia-Pacific developed countries and Asia-Pacific developing countries. It is seen that the level of financial liberalization for Asia-Pacific data averaged in 1975 is at the 0.44 level, an increase of 0.64 in the data end of 2015. There are only at some point that decreased due to the global financial crisis that hit the world. Figure 3 also shows that there is a difference in the level of financial liberalization data between Asia-Pacific developed countries and Asia-Pacific developing countries. The data on the level of financial liberalization in the developed countries show higher levels of financial liberalization, when compared to developing countries. This indicates that countries in the Asia-Pacific developed countries are more open and have a very low financial market constraint to global financial markets, when compared with Asia-Pacific developing countries.

Figure 3. The Development of Financial Liberalization and Openness in The Asia-Pacific from 1976-2015
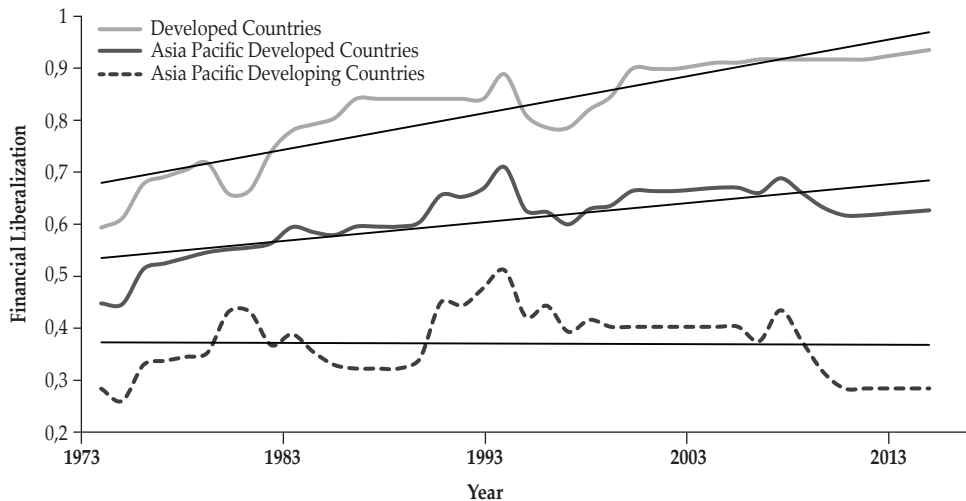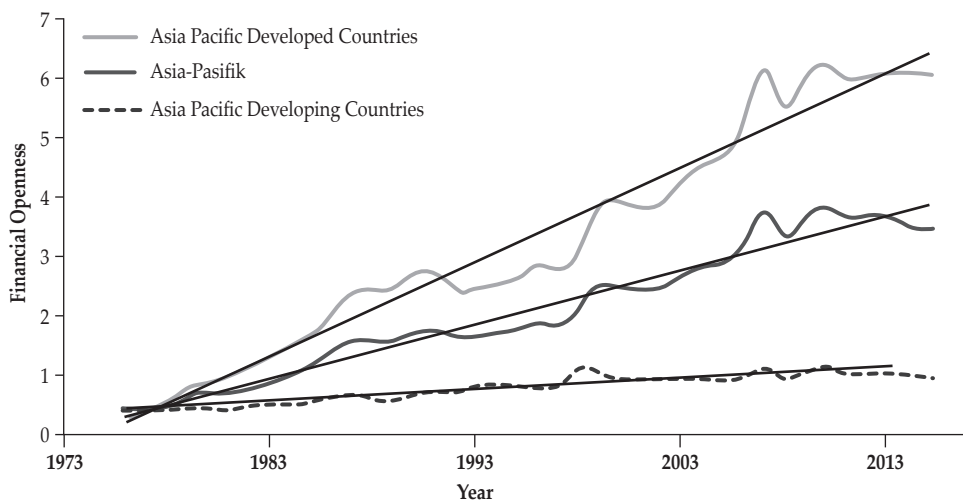
Figure 3 also shows that financial openness has increased overtime in the Asia-Pacific region. Financial openness indicates that financial activities occurring in the Asia-Pacific to global financial markets always increase over time. It also shows that the capital market activity in Asia-Pacific countries is getting more integrated with international capital markets. Financial openness in the Asia-Pacific developed countries is greater, when compared with the Asia-Pacific developing countries. In addition, financial openness activities in the developed countries experienced a very rapid growth when compared to developing countries that only showed the slow growth of financial activity.

Figure 4. The Average Rate of Financial Liberalization is based on Income Levels
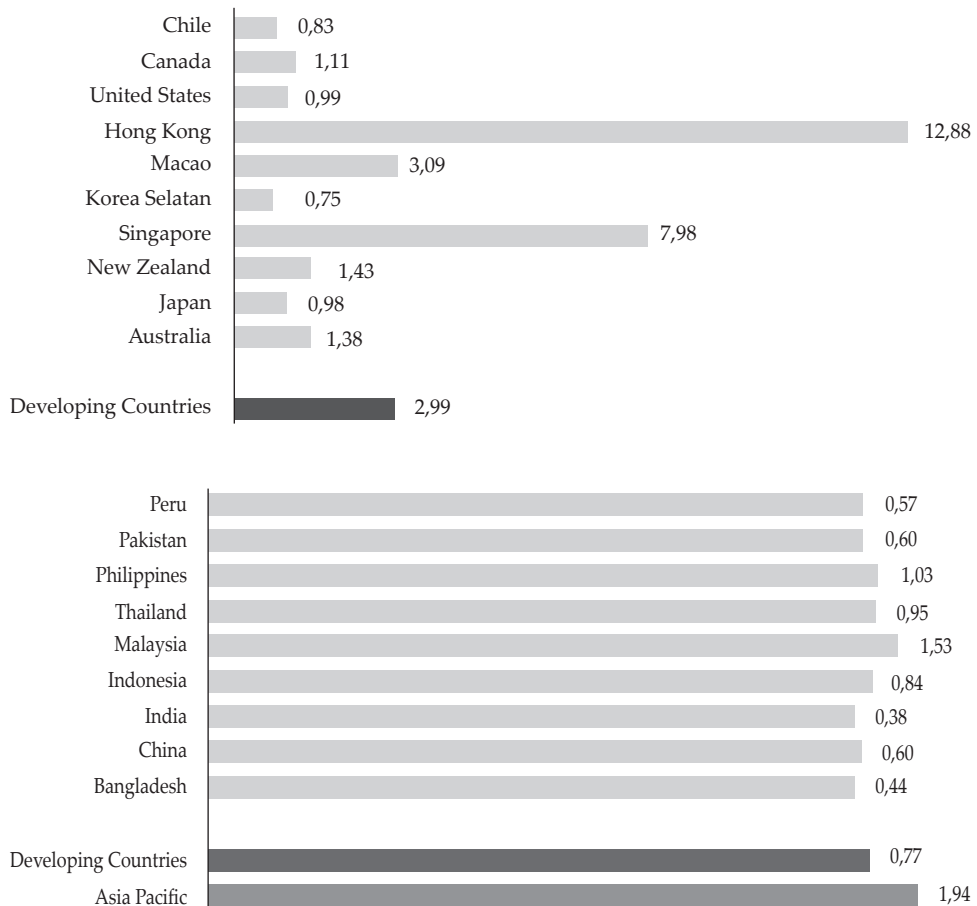in The Asia-Pacific from 1976 to 2015
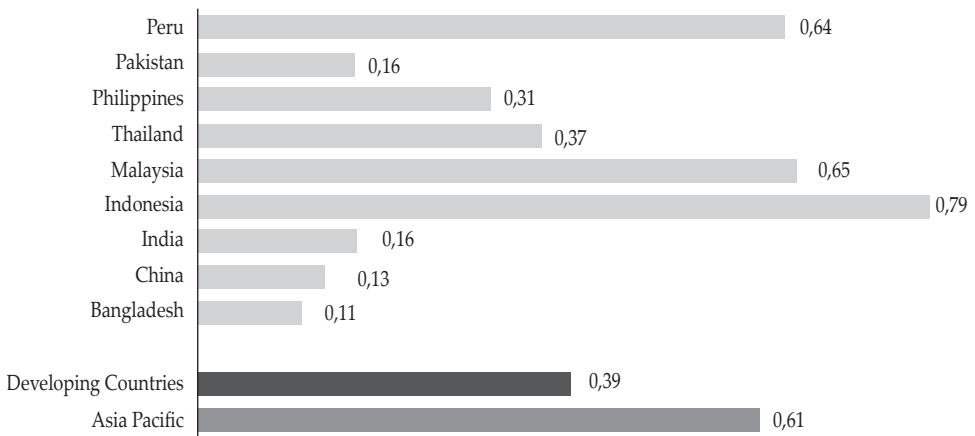
The next section is to show the level of financial liberalization in each country that becomes the object of research. Figure 4 shows the data on the level of financial liberalization divided into developed countries and developing countries. Overall, the average rate of financial liberalization in the Asia-Pacific shows the number of 0.61. Based on the income characteristics of countries belonging to the Asia-Pacific, the developed countries showed a high rate of financial liberalization of 0.82, while in the Asia-Pacific developing countries showed a low rate as much as 0.39. This is consistent with the explanation of Figure 3 which shows that on average the rate of financial liberalization in the developing countries is greater than in the developing countries.

Figure 5 shows the data on the degree of financial openness are data calculated using the measurement of financial openness Lane and Milesi-Ferreti (2006). Overall, the average rate of financial openness in the Asia-Pacific was 1.94. Based on income group that divided of Asia-Pacific developing countries and developed countries. The level of financial openness shows a much different figure. The Asia-Pacific developed countries has an average financial openness level of 2.99, while for the developing countries shows an average rate of financial openness of 0.77. There is a considerable difference in the level of financial liberalization in both groups, with the difference in the degree of financial openness of 2.22. This is also due to the capital flow constraint factor in Figure 4, where Asia-Pacific developing countries tend to have high levels of constraints on financial markets. This is what causes the capital flow activities of the developing countries to global financial market is very low when compared with the group of developed countries.

Figure 5. The Average Rate of Financial Openness is based on Income Levels
in The Asia-Pacific from 1976 to 2015

Country	Value
Chile	0,83
Canada	1,11
United States	0,99
Hong Kong	12,88
Macao	3,09
Korea Selatan	0,75
Singapore	7,98
New Zealand	1,43
Japan	0,98
Australia	1,38
Developing Countries	2,99

Country	Value
Peru	0,57
Pakistan	0,60
Philippines	1,03
Thailand	0,95
Malaysia	1,53
Indonesia	0,84
India	0,38
China	0,60
Bangladesh	0,44
Developing Countries	0,77
Asia Pacific	1,94

An interesting analysis of Figure 5 is an indicator of financial liberalization
that has not yet determined the level of country's financial openness. This is seen
in the condition of financial liberalization and openness in Indonesia. Indonesia
has a high level of financial liberalization in Figure 4, but the level of openness and
financial activity in Indonesia on global financial markets is still low compared to
Malaysia, Philippines, and Thailand. The existence of this important distinction is
one of the reasons why this study uses two measures the level of domestic financial
liberalization on global financial markets. The use of these two indicators is based
on the reasons for complementary weakness of each size (Quinn, Schindler, and
Toyoda, 2011).

4.3. Development of Capital Outflows and Inflows in The Asia Pacific

Figure 6 shows total accumulated capital flows of total assets and liabilities averaged from 1976 to 2015. Total external assets and liabilities data show the US dollar billion. On average, for countries in the Asia-Pacific, total external assets show 675.8, while total external liabilities on average 656.6. This shows that on average, the total capital outflows is still dominant in the Asia-Pacific when compared to the total capital inflows. Figure 6 also shows the average total capital flows based on income groups. The activity of both capital inflows and outflows on average is still dominated by developed countries. On average, total activity of capital inflows and outflows (total external assets + total external liabilities) are 2.250, while developing countries if averaged only 314.79. The dominance of substantial financial activity in developed countries is associated with high liberalization and financial openness in these countries. The developed countries have a high degree of financial openness due to the structure of the industrial economy, so to expand its domestic production pattern requires a high capital flow.

Figure 6. Average Total Capital Inflows and Outflows (Total Assets and External Liabilities) of Asia-Pacific Countries Period 1976-2015
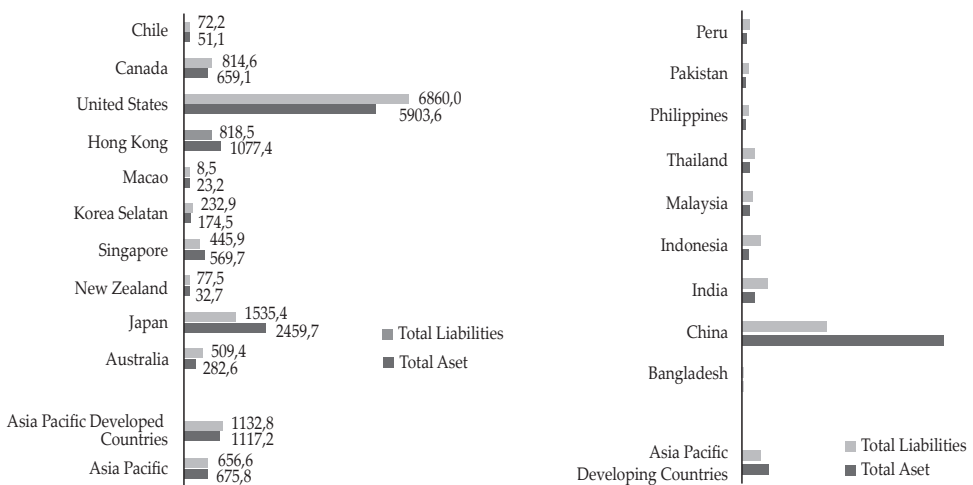

Figure 6 shows that for developed countries, the United States still dominates activity in global financial markets. Then followed by Japan and Hong Kong. The total external liabilities in each country are 6860, 1535.4, and 818.5. Meanwhile, the total external assets of each country are 5903.6, 2459.7, and 1077.4. The interesting points are shown in the figure relate to the state of the state capital flow direction in the United States, where the total external liabilities are on average larger than the total external assets. Similar conditions were also shown by Chile, Canada, South Korea, New Zealand, and Australia. While for Japan and Hong Kong are in the opposite condition, where the total external liability average is smaller than the total external assets. State conditions similar to Japan and Hong Kong are Singapore and Macao. The country with the lowest total inbound and outbound

capital inflows in the developed countries is Macao of 31.7. Figure 6 further reassembles the Asia-Pacific countries by developing countries. In the developing countries, the highest and most significant capital flow activity is China with an average total external liability of 585.69. While the total average external assets in China amounted to 1371.02. High capital inflows and outflows after China are India and Indonesia. An interesting point is shown in conditions in China, where the total external asset is on average much larger than the total external obligation. This is in contrast to other developing countries, where in contrast the total external obligation is much greater than the total external asset. The country with the lowest total capital inflows and outflows in the developing countries is Pakistan at 41.83.

4.4. The Effect of Financial Liberalization and Capital Flows on Income Volatility in the Asia-Pacific

This section examines the effect of financial liberalization on income growth volatility in terms of GDP and GNP. Theoretically, the effect of financial liberalization on income volatility is still debatable because it has two forces. Financial liberalization not only reduces income volatility but also increases volatility. Table 4 provides estimates of the effects of financial liberalization and other factors on income volatility in the Asia-Pacific region using the GMM method. Financial liberalization factors are divided into two, namely financial liberalization factor which shows de jure financial liberalization (Chinn and Ito, 2008) and financial openness factor which shows de facto financial liberalization (Lane and Milesi-Ferretti, 2007). The estimation results also include the dummy variable of Asia-Pacific developed countries (where the value of 1 is for developed countries, while the value of 0 is for developing countries). In addition, dummy Asia-Pacific developed countries interacted with financial openness. This is intended to see the chance of different effect from financial openness among country income groups such as findings from Kose et al. (2003)and Mirdala et al. (2015). Other factors are also included in this estimate: trade openness, income per capita, inflation, inflation volatility, term of trade volatility, discretionary fiscal policy volatility, fiscal policy procyclicality, financial development, and institutional quality.

Estimation results began by showing the impact of financial openness on the volatility of income growth variable in the Asia-Pacific region. Estimation results show that financial openness has a significant negative relationship to income growth volatility. It means that financial openness in the Asia-Pacific region will have a positive effect by reducing income growth volatility. The estimation results show a significant effect on the volatility variable of GDP and GNP growth with coefficient of -0.0062 and -0.0053. This is similar to the findings of Ahmed and Suardi (2009) who have studied in Sub-Saharan Africa and Kose et al. (2003;2006) who have researched using aggregate samples. However a question show based on research facts from Mirdala et al. (2015) which indicates that financial market openness is more profitable for developed countries while it is disadvantageous to developing countries. This study corrects the estimation results of the effect of financial openness in the Asia-Pacific Region as a whole by including dummy variables (developed countries = 1, developing countries = 0) and dummy which

is interacted by financial openness. The results show that developed country has higher intercept value when compared to developing countries for the volatility of GDP and GNP. The average difference in the value of volatility between developed and developing countries if all independent variables equal 0 for the volatility of GDP and GNP growth is 0.0726 and 0.0746.

Another interesting result is the value of slope financial openness developing countries shows a significant positive relationship for all equations of GDP and GNP growth volatility with coefficient value: 0.0525 and 0.0560. This explains that the financial openness in the Asia-Pacific region to the global financial market has not had a positive effect on the group of developing country countries. That is, an increase in financial openness in developing countries will increase income growth volatility. While the results of dummy interaction with financial openness in developed countries showed significant negative relationship for GDP and GNP volatility. Where the estimation results for the slope dummy interaction (FI × Asia developed countries) in GDP and GNP volatility are as follows (slope dummy interaction - slope financial openness): -0.0036 and -0.0025. However, these results are consistent with research from Mirdala et al. (2015), Evans and Hnatkovska (2007), Neaime (2005)and Kose et al. (2003) which explains the existence of financial openness in developing countries has increased the degree of income volatility. On the other hand, the existence of financial openness is only advantageous for developed countries.

Table 3. Estimated Results of The Influence of Financial Liberalization and The Direction of Capital Flows on Macroeconomic Volatility in The Asia Pacific Region

	V_{GDP}			V_{GNP}		
Financial openness	-0.0062*** (0.005)	0.0525** -0.029		-0.0053*** (0.010)	0.0560** -0.016	
Asia-Pasifik developed countries (dummy)		0.0726** -0.018			0.0746*** -0.008	
Financial openness		-0.0561**			-0.0585*** (0.009)	
Asia-Pasifik developed countries		-0.015				
Financial liberalization	-0.0033 (0.840)			-0.0014 (0.934)		
Total Asset / Gross Domestic Product			-0.049*** -0.001			-0.040*** -0.001
Total Liabilities / Gross Domestic Product			0.043** -0.01			0.039*** -0.007
Trade openness	0.0188* (0.068)	0.0075 -0.327	0.025** -0.012	0.0161 (0.100)	0.0041 -0.58	0.225** -0.016
Income per capita	0.0103*** (0.000)	0.0082*** 0	0.012*** 0	0.0097*** (0.000)	0.0076*** 0	0.012*** 0
Inflation	-0.0277 -0.706	-0.0204 -0.755	-0.036 -0.564	-0.0058 -0.933	0.0016 -0.979	-0.014 -0.813

Table 3. Estimated Results of The Influence of Financial Liberalization and The Direction of Capital Flows on Macroeconomic Volatility in The Asia Pacific Region Continued

	V_{GDP}			V_{GNP}		
Inflation volatility	0.4419*	0.4509**	0.479**	0.3692*	0.3757*	0.405
	-0.061	-0.039	-0.016	-0.095	-0.063	-0.028
Terms of trade volatility	0.4679***	0.5313***	0.4759***	0.4310***	0.4969***	0.438***
	-0.003	-0.001	-0.003	-0.006	-0.002	-0.006
Discretionary fiscal policy	0.117	-0.0225	0.002	0.124	0.0241	0.013
	-0.512	-0.919	-0.986	-0.443	-0.907	-0.925
Fiscal policy procyclicality	0.0338*	0.0354**	0.023	0.0263	0.0278*	0.017
	(0.095)	-0.04	-0.126	-0.116	-0.072	-0.25
Financial development	0.0082	-0.0037	0.002	0.0048	-0.0088	0.0002
	-0.605	-0.815	-0.862	-0.723	-0.517	-0.985
Institutional quality	0.0005	-0.0025	-0.002	-0.0004	-0.0031	-0.002
	-0.91	-0.585	-0.575	-0.922	-0.497	-0.472
Observation	133	133	133	133	133	133
Sargan (p-value)	0.304	0.544	0.372	0.275	0.428	0.238
AR (1)	-2.45	-2.76	-2.47	-2.47	-2.79	-2.41
	[0.014]	[0.006]	[0.013]	[0.013]	[0.005]	[0.016]
AR (2)	0.94	0.95	0.12	1.41	1.41	0.97
	[0.345]	[0.345]	[0.903]	[0.160]	[0.159]	[0.331]

Information : value in () is *p-value*

 ***, **, * significant on 1%, 5%, 10%

Furthermore Table 3 describes the effect of capital inflows and outflows on income growth volatility. In theory, the effect of international financial openness has two forces. Where the two forces may reduce or even increase the risk of economic volatility. On the one hand, financial openness can reduce volatility due to international risk sharing which will then maintain the stability of the economy. However on the other hand, financial openness can lead to greater specialization which will be increasing income growth volatility (Kose et al., 2003). In this section, various empirical results of financial openness different effects are examined. Research is aimed by examining the issue through the different effects possibility of capital flows different movements towards income growth volatility. Total assets or GDP show the accumulated stock value of capital outflows. Total liabilities or GDP show the accumulated stock value of capital inflows. Table 4 shows that a higher level of total external assets is associated with significantly lower income growth volatility. That is an increase in capital outflow will maintain the stability of domestic income. This is seen in the growth volatility equation of GDP and GNP with coefficients of -0.049 and -0.040. Meanwhile, Table 4 also shows that a higher level of total external liabilities is associated with the high volatility of income growth. It can be seen in the growth volatility equation of GDP and GNP with coefficients of 0.043 and 0.039. This finding implies that the diversification of international risk sharing which is a key advantage of financial liberalization is determined by the accumulation of external assets (capital outflows). Meanwhile,

the external level of liabilities (capital inflows) has the opposite effect on income growth volatility.

The difference effect of capital inflows and outflows in this section can be a basic for explaining detail why financial openness gives negative effect to the income growth volatility in developing countries, while not for developed countries. The negative effect of financial liberalization on Asia-Pacific developing countries due to the free flow of capital in these countries is still dominated by capital inflows, while very low capital outflow activity. According to Elekdag, Kose, and Cardarelli (2009) capital inflows often create important challenges for policymakers because of their potential to generate excessive pressure, loss of competitiveness due to appreciated exchange rates, and increased vulnerability to crises. Stiglitz (2002) argues that the negative side of capital liberalization may bring about excessive instability in financial markets rather than an increase in the effect of growth inductions, if an economy is still not very mature. Rodrik and Subramanian (2009) also argue that the accumulation of capital from developing countries is not enough not because they are less saving but because they have no chance to invest. The low chances of investing, followed with an increase in incoming capital, will add pressure to developing countries and no profit can be made with increased investment. Thus, the financial liberalization that has been dominated by capital inflows in developing countries has increased the risk of domestic income volatility. So the benefits of financial liberalization are only obtained by the developed countries.

Table 3 also explains other factors affecting income volatility in the Asia-Pacific region. The trade openness of the estimates shows a positive and significant impact on GDP and GNP growth volatility in the Asia-Pacific region. This is consistent with the results of research Kose et al. (2003), Dupasquier and Osakwe (2006), Ahmed and Suardi (2009), and Neaime (2005) that trade openness has a positive effect on the income growth volatility. The existence of trade liberalization has increased the fluctuation level of domestic import and export prices which will then create uncertainty of domestic consumption and production, which in turn will increase income growth volatility. Other results show a significant positive effect in terms of trade volatility on income growth volatility. An increase in trade fluctuations will increases the uncertainty of trade positions on Asia-Pacific countries that ultimately increases economic fluctuations. This result is similar to that of Kose et al. (2003), Ahmed and Suardi (2009), and Neaime (2005), Fiscal policy procyclicality also exerts an influence on GDP and GNP growth volatility. This shows that fiscal indiscipline can also cause fluctuation in income through building inflationary pressure which damage government credibility. This result is similar to that of Ahmed and Suardi (2009).

Furthermore, the estimation results show the effect of income per capita on income growth volatility that has a positive and significant impact. This is consistent with research from Easterly et al. (2001) which showed positive results on economic volatility. This means that the higher of income per capita will increase economic volatility. Variable inflation volatility showed a significant positive effect on volatility of GDP and GNP. This consistent with the research of Ahmed and Suardi (2009) and Neaime (2005), that the existence of these negative effects according to Friedman (1977) due to the adverse effects of inflation uncertainty on

economic growth. Increased inflation uncertainty will distort the effectiveness of price mechanisms in allocating resources efficiently, thereby causing a negative effect on income volatility. Meanwhile, financial development and institutional quality showed that they did not significantly affect the growth volatility of GDP and GNP.

V. CONCLUSION

The impact of financial openness as a measure of de facto's financial liberalization shows a negative relationship and significant to income growth volatility in overall Asia-Pacific. This shows that the existence of financial openness has a positive effect by weakening the instability of economic conditions. Furthermore, the results of this study separate countries in the Asia-Pacific region based on income groups using dummy variables. The results show that the negative relationship between financial openness and income growth volatility in the Asia-Pacific region, is only occurring in high-income countries, whereas not for developing countries. Financial openness related to income growth volatility. This shows that financial openness has a negative effect by increasing GDP and GNP volatility in developing countries. The effect of financial liberalization as a measure of de jure's financial liberalization shows insignificant results on all income growth volatility.

The accumulation of total external assets as a proxy of capital outflows shows a negative relationship to income growth volatility. This indicates that more capital outflows will keep income variables stable. On the other hand, the accumulation of total external liabilities as a proxy of capital inflows indicates a positive relationship to all income growth volatility. This indicates that more capital inflows actually increase the instability of income variable. The positive effect of capital outflows to GDP and GNP volatility is due to international risk sharing, while the negative effect of capital inflows on GDP and GNP volatility is due to the specialization that leads to a risk shift. There is a negative effect of financial liberalization on Asia-Pacific developing countries as the flow of free capital in these countries is still dominated by capital inflows, while very low capital outflows. So that the benefits of financial liberalization with international risk sharing occur only in developed countries, while not for developing countries.

REFERENCES

Ahmed, A. D. and S. Sandi. (2009). Macroeconomic Volatility, Trade, and Financial Liberalization in Africa. World Development, 37 (10): 1623–1636.

Bekaert, G., C. R. Harvey, and C. Lundblad. (2006). Growth volatility and financial liberalization. Journal of International Money and Finance, 25 (3): 370–403.

Borensztein, E., and P. Loungani. (2011). Asian Financial Integration: Trends and Interruptions, Working Paper International Monetary Fund, no. 4.

Chinn, M. D., and H. Ito. (2008). A New Measure of Financial Openness. *J*ournal of Comparative Policy Analysis: Research and Practice, 10 (3): 309–322.

Dupasquier, C., and P. N. Osakwe. (2006). Trade Regimes, Liberalization and Macroeconomic Instability in Africa, Working Paper Singapore Centre for Applied and Policy Economics, no. 4.

Easterly, W., R. Islam, and J. E. Stiglitz. (2001). Shaken and stirred: explaining growth volatility, Annual World Bank Conference on Development Economics, 191–211.

Elekdag, S., M. A. Kose, and R. Cardarelli. (2009). Capital Inflows; Macroeconomic Implications and Policy Responses, Working Paper International Monetary Fund, no. 19.

Evans, M. D. D., and V. V. Hnatkovska. (2007). International Financial Integration and the Real Economy, IMF Staff Papers, 54 (2): 220–269.

Fatas, A., and I. Mihov. (2003). The Case for Restricting Fiscal Policy Discretion. The Quarterly Journal of Economics, 118 (4): 1419–1447.

Friedman, M. (1977). Nobel Lecture: Inflation and Unemployment. Journal of Political Economy, 85 (3): 451–472.

Kose, M. A., E. S. Prasad., and M. E. Terrones. (2003). Financial Integration and Macroeconomic Volatility, SSRN Electronic Journal.

Kose, M. A., E. S. Prasad., and M. E. Terrones. (2006). How do trade and financial integration affect the relationship between growth and volatility? Journal of International Economics, 69 (1): 176–202.

Kose, M. A., E. S. Prasad., and M. E. Terrones. (2009). Does financial globalization promote risk sharing? Journal of Development Economics, 89 (2): 258–270.

Lane, P. R., and G. M. Milesi-Ferretti. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004. Journal of International Economics, 73 (2): 223–250.

Mirdala R., A. Svrcekova and J. Semancikova. 2015. On the Relationship between Financial Integration, Financial Liberalization, and Macroeconomic Volatility, Working Paper Munich Personal Repec Archive, no. 66143.

Mujahid, H., and S. Alam. (2014). The impact of financial openness , trade openness on macroeconomic volatility in Pakistan : ARDL Co Integration approach, 5 (1): 1–8.

Neaime, S. (2005). Financial Market Integration and Macroeconomic Volatility in the MENA Region: An Empirical Investigation1. *Review of Middle East Economics & Finance,* 3(3): 231–255.

Pancaro, C. (2010). Macroeconomic Volatility After Trade and Capital Account Liberalization, SSRN eLibrary, (October).

Quinn, D., M. Schindler., and A. M. Toyoda. (2011). Assessing measures of financial openness and integration, IMF Economic Review, 59 (3) : 488–522.

Rajan, R. S. (2001). Economic globalization and Asia: Trade, finance, and taxation, ASEAN Economic Bulletin, 18 (1): 1–11.

Ramey, G., and V. Ramey. (1995). Cross-Country Evidence on the Link Between Volatility and Growth. American Economic Review, 85 (5): 1138–51.

Rodrik, D., and A. Subramanian. (2009). Why did financial globalization disappoint? *IMF Staff Papers*, 56 (1): 112–138.

Stiglitz, J. E. (2002). Globalization and Its Discontents. New York: W.W Norton & Company.

Torki, L. (2012). Effects of Financial Liberalization on Macroeconomic Volatilities: Applications to Economic Growth, Exchange Rate, and Exchange Rate Pass-Through, 16 (31): 71-84.

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