On the Relationship between Financial Integration, Financial Liberalization and Macroeconomic Volatility

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Abstract

Effects of international financial integration on the volatility of the total output and its main components have been a subject of rigorous academic discussion for decades. Even nowadays recent empirical literature suggests that its long-term benefits on economic growth are associated with spurious and vague side effects in terms of macroeconomic volatility.
This paper examines the relationship between international financial integration and output fluctuation. An analysis was conducted on a large sample of developed and developing countries over the past 40 years. We follow the approach employed by Kose et al. (2003) and use cross-sectional median of financial liberalization to subdivide developing economies into two groups: more financially liberalized (MFL) and less financially liberalized (LFL) economies. Our results indicate that while the volatility of output growth rates experienced a decreasing trend over time, financial integration had a significant contribution to output fluctuations. However, the relationship was stronger in developing countries.

Keywords: financial integration, financial liberalization, output volatility, consumption volatility, capital flows

JEL Classification: F36, E44, F41, G15

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1. Introduction

Growth and productivity benefits, improved allocation efficiency and international risk sharing represent key incentives that initiated the process of capital flows liberalization in industrial countries since the beginning of 1980s. Many empirical studies and international financial institutions have also supported the introduction of liberalization policies by less developed countries. However, as substantial determinants of the overall speed of capital account liberalization associated with softening of capital controls and restrictions in developing countries has been soon recognized its side effects on macroeconomic stability. According to the recent empirical studies (i.e. Kose et al. (2010), Kaminsky and Reinhart (1999), Easterly et al. (2000) and Eozenou (2008)) increased volatility of macroeconomic variables induced by international financial integration is the clear implication of fluctuations in capital flows intensified by financial crises.

The analysis of the economic aspects of international financial integration still represents a leading topic in macroeconomics of open economy. This topic enjoyed increased interest in the recent research, especially due to occurrence of large scale of side effects during the current post-crisis period associated with possible negative impact of international financial integration on macroeconomic stability. Moreover, empirical research still provides contrary conclusions on the impacts of international financial integration on economic variables.

Our study examines the influence of international financial integration on the volatility of macroeconomic output and its components. We suggest that the analysis of the relationship between financial integration/liberalization and macroeconomic indicators is crucial due to rich empirical evidence about the existence of a negative correlation between the volatility of macroeconomic variables and the long-term economic growth (i.e. Kose et al. (2010), Ramey and Ramey (1995), Dabušinskas, Kulikov, Randveer (2012), Easterly et al. (2000), Badinger (2010)) though examined characteristics of this relationship are not clearly argued. However, theory suggests that the negative correlation is based on the increasing uncertainty of future revenues associated with the output and consumption volatility. This is due to the existence of risk aversion, resulting in crowding out investments and a decline in economic growth. Therefore, macroeconomic stability is a strong fundamental pillar for achieving long-term economic growth of a country.

The particular importance of our research is also linked with the indicated long-term decline in the degree of instability of macroeconomic aggregates in both developed and developing economies. This trend is obvious in most of the developed and developing

countries. Kose et al. (2010), Jermann and Quadrini (2006) and Campbel (2004) argue that the main reason for this decline is still a subject of further academic discussions. However, the raising capital mobility induced by the trend of international financial liberalization together with general improvement of the economic and institutional environment still represent the key determinants of the examined decreasing trend in macroeconomic volatility.

This paper is organized as follows. Section 2 summarizes overview of the most crucial studies. Section 3 discusses our data and describes employed methodology. Section 4 presents the empirical results of econometric analysis. Section 5 provides concluding remarks.

2. Overview of the Literature

Theory does not provide clear conclusions about the impact of financial integration on macroeconomic volatility. According to Obstfeld and Rogoff (1994, 1998) the financial integration in the periods of idiosyncratic production shocks should decrease fluctuations of macroeconomic variables. This effect is preserved by intertemporal consumption smoothing. IMF (2007) and Kose et al. (2003) argue that well-developed domestic financial market represents the key assumption of this effect. However, the volatility of macroeconomic variables as a result of the financial integration may be also induced by another transmission channel. According to Baele (2004), IMF (2007), Stavárek, Repková and Gajdošová (2011), Kim (2003), Tytell and Wei (2004) and Pierdzioch (2004) the increase in the international financial assets and liabilities in the country induces an efficient allocation of capital and development of domestic financial markets. It also enhances the quality and responsibility of institutions as well as the efficiency and responsibility of economic policies. All these factors determine the performance of the country. Improved economic performance is associated with a lower economic uncertainty that results in lower fluctuations in output and consumption.

Effects of international capital flows on the volatility of macroeconomic variables are also the subject of academic discussions. Generally, international financial integration is beneficial if the expected benefits from greater international risk-sharing exceed the costs associated with cross-border financial contagion (Fecht, Grüner and Hartmann, 2012). Mirdala (2011a) argues that increasing trend in the financial openness of the country reduces the volatility of output due to lower diversification of the production base of the capital receiving country. However, increased role of comparative advantages and associated structural changes induced by foreign capital inflows increases exposure of the country to the industrial shocks. International financial integration thus reduces the diversification of exports and imports of goods. Low specialization increases vulnerability particularly in middle-

income developing countries to certain industrial shocks (i.e. demand shocks). As a result, the volatility of output increases. Obstfeld (1998) argues that effects of international capital flows on macroeconomic stability are determined by the degree of international risk sharing. Higher diversification and risk sharing significantly reduces the volatility of output and consumption. Kose et al. (2006) identified other determinants and channels of the relationship between international financial integration and macroeconomic volatility, especially the composition of capital flows. Short-term capital flows have a pro-cyclical effect that increases macroeconomic instability of financially integrated countries. Reinhart and Montiel (1999) and Rodrick and Velasco (1999) supported this idea. Kose et al. (2010) further argue that a country´s vulnerability to financial crises depends mainly on the combination of the size of international financial integration and economic policies mix. Inappropriate combinations may result in high fluctuations of economic variables and financial crises. According to Kaminsky and Reinhart (1999), Easterly et al. (2000) and Eozenou (2008) the vulnerability of developing countries to financial crises is higher. They suggest that it is especially due to the insufficient size and degree of advancement of their financial sector or the absence of appropriate financial institutions that would be able to solve the problem of instability in short-term capital flows. Larger and more efficient domestic financial sector in the early stages of capital account liberalization clearly determines the overall benefits of capital inflows by reducing the macroeconomic volatility. Shutherland (1996) emphasized other determinants of the effects of international financial integration on fluctuations of macroeconomic variables, i.e. structural characteristics of the domestic production, patterns of specialization and sources of shocks affecting the country.

Kose (2002) argues that the effects of these shocks are more significant in developing countries. According to the IMF (2007) it may be due to the size of the developing countries. Developing countries are generally smaller than developed economies. As a result, the fluctuations in the output in developing countries are transmitted into the business cycles of small open developing markets. Eichengreen and Leblang (2003) and Prasad, Rogoff, Wei and Kose (2004) argue that macroeconomic volatility in developing countries may be reduced provided a progress in financial deepening, improvements in economic and institutional environment, trade and macroeconomic policy of the country etc. According to Frey and Volz (2011) the lack of an appropriate economic, political and institutional environment in developing countries may result in their inability to reduce the macroeconomic volatility. A study by Klomp and Haan (2009) concludes that the political instability and uncertainty increase macroeconomic volatility. Kose et al. (2006) provides the same conclusions.

We suggest that the overall improvements in financial development, institutional quality and macroeconomic policies determine the key characteristics of the relationship between international financial integration and macroeconomic stability. However, effects of international financial integration on fluctuation of macroeconomic aggregates are still disputable. It seems that the final effect as the sum of partial effects depends on the initial macroeconomic and microeconomic conditions, ability to benefit from the international risk sharing and diversification, as well as the influence of capital inflows on diversification and specialization of the production base in the capital receiving country. The range of the potential benefits of financial integration also depends on the initial level of financial integration of the country.

The results of empirical studies provide ambiguous results. Bekaert, Harvey and Lundblad (2006) analyzed the effect of stock market liberalization and openness of the capital account on the volatility of the real output and consumption growth rate. Their conclusions suggest that countries with a higher degree of financial integration experienced higher reduction in the volatility of consumption growth rates. The authors analyzed developed and developing countries and conclude that the relationship is weaker for less developed countries. Recent research by Herrera and Vincent (2008) shows the same results. IMF (2007) suggests that the impact of financial integration on the fluctuation of macroeconomic aggregates in developing countries depends on the degree of the advancement of the domestic financial market and the quality of domestic institutions. Their results indicate that countries with less developed financial markets and weak institutional quality are not able to benefit from international risk sharing and reduce the fluctuations in private consumption and output. According to Eozenou (2008) while the higher international financial integration in countries with less developed financial markets increased the volatility of consumption, increase in foreign capital inflows was followed by the decline in consumption volatility. Evans and Hnatkovská (2006) revealed a positive impact of initial levels of financial openness on the consumption and output volatility. On the other hand, the additional increase in financial integration caused a gradual reduction or even a complete loss of the relationship between financial integration and the volatility of total output and its components. The final effect of financial integration is positive and causes the decline in fluctuation of macroeconomic aggregates. These conclusions are supported by Kose et al. (2003), who investigated a positive but non-significant effect of financial integration on the volatility of macroeconomic variables when the country crosses a certain level of financial openness. The results of both studies indicate that the certain level of financial openness induces positive effects of financial

integration on the stability of output and its components. As a result, approaching the certain level of financial openness seems to be beneficial for the country in terms of macroeconomic volatility.

Finally, the last group of research studies did not confirm a stable relationship between financial integration and macroeconomic fluctuation, e.g., Easterly et al. (2000), Razin and Rose (1992), Pappas (2010). Studies highlighted the absence of a significant relationship between openness and the volatility of total output, domestic consumption and domestic investment.

3. Methodology

International financial integration ($Finope_t$) is the sum of gross international financial assets and international financial liabilities. Data were collected from the External Wealth of Nations published by Lane and Milesi-Ferretti (2006). We employed the methodology introduced by Kose et al. (2006) and Lane and Milesi-Ferretti (2006) to construct a foreign direct portfolio equity and debt investments indicator. The debt investments indicator aggregates portfolio debt and other debt investments. Financial derivatives and foreign exchange reserves are excluded due to time series inconsistency. However, the above mentioned indicator does not include total output that is why the size of the economy is not considered. To avoid this obstacle we also calculate relative financial integration as a ratio of total financial integration to total output of the country. To compute the cross-sectional international financial integration average, the relative values of financial integration are employed. The measure of financial liberalization is represented by Chinn-Ito indicator. It represents de jure degree of financial integration $\left(Finka_{i,k}\right)$.

Macroeconomic volatility is calculated as a standard deviation of the growth rates of selected macroeconomic variables over a 10 year period. To examine the volatility of total output and its components we calculate the standard deviation of total output $\left(mvgdp_{i,k}\right)$ private consumption $\left(mvcon_{i,k}\right)$ and final consumption $\left(mvfcon_{i,k}\right)$ per capita. Data were collected from UNCTAD. Data are calculated in constant prices of 2005 and averaged exchange rates in 2005. Additional measurements of macroeconomic volatility - consumption smoothing is calculated as the mean of ratios of final consumption volatility to volatility in output of individual countries. A decrease in the indicator represents a successful process of consumption smoothing.

An analysis of the impact of financial integration on macroeconomic volatility is conducted on a large sample of countries over 40 years (1970-2009). Following the classification provided by the International Monetary Fund, we have identified 23 developed and 77 developing countries. In order to examine the effects of international financial integration on macroeconomic volatility more precisely, we have followed the approach employed by Kose et al. (2003). The cross-sectional median of financial liberalization (0.3059) enabled us to subdivide developing economies into two groups: more financially liberalized economies (MFL) and less financially liberalized economies (LFL). We have identified 38 countries as MFL and 39 countries as LFL.

The analysis is based on the Pooling Ordinary Least Square (POLS) model and One-Way Error Component Model (OWEC). Econometric analysis is based on the following regression equations:

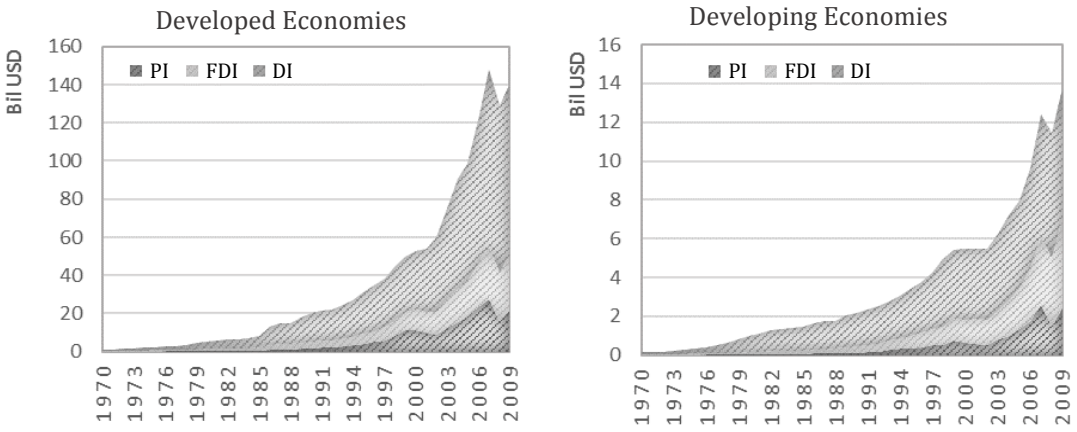
$$\sigma_{i,t} = \alpha_i + \beta X_{i,t} + v_{i,t} \qquad i = 1,...,I \quad \text{a} \quad t = 1,...,T$$

where $\sigma_{i,k}$ is the standard deviation of dependent variable (real output or private consumption per capita growth rates during 10 years period), α_i is group-specific constant term in the regression model, β is a matrix of regression coefficients, X represents the vector of explanatory variables ($Finope_{i,t}$ and $FinKa_{i,t}$ represents two measures of financial integration; see Section 4 for more details) and $v_{i,t}$ is the error term.

4. Empirical Results

The Figure 1 shows the composition foreign capital flows used as a measure of international financial integration divided into foreign direct investments (FDI), portfolio equity investments (PE) and debt investments (DI) for both groups - developed and developing countries. International financial integration is calculated as the sum of gross stock of foreign financial assets and liabilities. We observe an increasing trend in the volume of foreign financial assets and liabilities during the examined period.

Figure 1 Financial Integration of Developed and Developing Countries (1970-2009)



Note: PI - portfolio investments, FDI - foreign direct investments, DI - debt investments
Source: Authors' calculations

Examination of the dynamics in international financial integration revealed a significant increase in the intensity of the foreign capital accumulation. This trend is obvious in both groups of countries especially during the last decade at the end of 1990s. The development of international financial links is more significant in developed economies in absolute value. Industrial countries experience an increase in the volume of foreign capital stock by approximately 140 trillion USD. That represents a 170 time increase compared to the initial period. Despite the dominant position of developed countries, a similar increase was observed in less developed countries as well. The volume of international financial assets and liabilities increased about 128.7 times during the period 1970-2009 that represents 19 trillion USD. As a result, the role of developing countries in the international financial system significantly increased. The sharp deepening in international financial integration represents one of the key implications of globalization. This trend is related to the gradual deregulation or even complete removal of capital restrictions and controls on foreign capital flows. World trade liberalization, the fixed exchange rates easing institutional barriers of international trade and foreign capital flows and financial innovations multiplied by boom in ICT represent other crucial vehicles of the deepening in international financial integration.

Liberalization and deregulation trends are obvious in both developed and developing countries. Economic theory suggests that the capital flows from rich (developed) to poor (developing) countries improves allocation efficiency on the international level. However, Prasad et al. (2006) argue that the current trend is reversed since the beginning of 20th century and the foreign capital flows from developing to developed countries. This idea is also supported by United Nations (2011) and Prasad et al. (2006). According to Kilian (2007) this

trend is the result of the surplus of global savings in oil exporting countries, Asian and South-American developing countries and big financial institutions. Significant accumulation of savings in Persian oil exporting countries, Russia and Venezuela was caused by increasing prices of oil up to 70 USD per barrel. Most of these savings have no real meaning considering their size and low efficiency. Therefore, savings are saved into the financial instruments of developed countries. Another major source of developing capital moved to industrial countries are Asian developing markets. They create a great amount of foreign exchange reserves based on the surplus in foreign trade. Abiad, Leigh and Mody (2009) argue that the capital of developing countries is a significant source of investments into less financially-developed developing countries in the last decade. Gourinchas and Jeanne (2005) also agree with the previous statement. According to Kilian (2007) the reason is deregulation and liberalization of capital and trade accounts balance of payments in developing countries and their development of a domestic financial sector. Other factors include an increase in the quality of institutions, increasing responsibility of macroeconomic policies, etc. that increase the attractiveness of developing countries for foreign investors.

Slowdowns in the volume of financial reserves both in developed and developing countries are linked with financial, banking and economic crises. The first slowdown was caused by the oil price shocks and the banking crisis in the UK (1973-1975) in the 1970s. The decrease in the volume of international financial capital in 1980s resulted from the stock market crisis in 1987 known as “Black Monday”. Another decrease in the volume of international financial assets and liabilities in the 1990s was the result of the economic crisis in Latin America, the dot com crisis and the economic depression in 2008. This synchronous decrease shows increased financial risk potential based on the increasing financial links between countries. An increased level of financial integration can accelerate the transfer of financial and economic crises even into countries with a healthy economy. Therefore, financial integration may support fluctuations in the global economic cycle. Glick, Guo and Hutchison (2004) and Kaminsky and Reinhart (1999) provided a supportive evidence for this conclusions as well. Increased international financial integration may be formed only by financial deepening (Mirdala, 2011b). In this case, increased reserves of international financial assets and liabilities would be higher than the output growth while the share of external financial assets and liabilities held in portfolio equity or FDI remains unchanged. International financial integration would increase mainly due to the growth in the volume of debt investments. According to Kose et al. (2006) and Lane and Milesi-Ferretti (2006) debt capital is a very unstable source of foreign capital inflows. A high increase of debt (especially

short-term) capital would probably induce an increased volatility of macroeconomic aggregates and reduce economic growth.

General trend of increased foreign capital flows was associated with unstable and volatile shares of individual components in both groups of countries during the whole period. Debt investments represents more than a half of the foreign capital stock in developed countries. We have identified two main trends in the development of debt investments. The overall share of debt investments clearly increased during the first half of the analyzed period. The countries experienced more dynamic increase in remaining two components of foreign capital flows resulting in the reduced share of debt investments in the second half of the period. However, this trend was also associated with reduced dynamic in debt investments, particularly during the latest two economic crises of 2000 and 2008.

FDI represents the second most important component of financial integration in developed countries. Despite generally increasing trend in FDI flows during the most of the period its share on the total foreign capital flows decreased over time (18% decline during the whole period). Portfolio equity investments experienced the opposite trend. The share of portfolio equity investments increased by 7% and culminated in 1999.

Following our results we assume that the dynamics of international financial integration is driven by a wide variety of determinants suggested by the theory and the process of financial deepening itself has only limited ability to consistently explain some particular deviations in the general trend, i.e. increasing share of portfolio equity investments associated with decreasing trend in debt investments over time. However, financial integration of developing countries induced their high indebtedness in the 1990s. As a result, 75% of foreign capital inflows consisted of debt investments. At the end of this period we have observed a downward trend of the mean of share of debt investments in this group of countries. This slowdown was caused by the debt crisis in developing countries in the 90s.

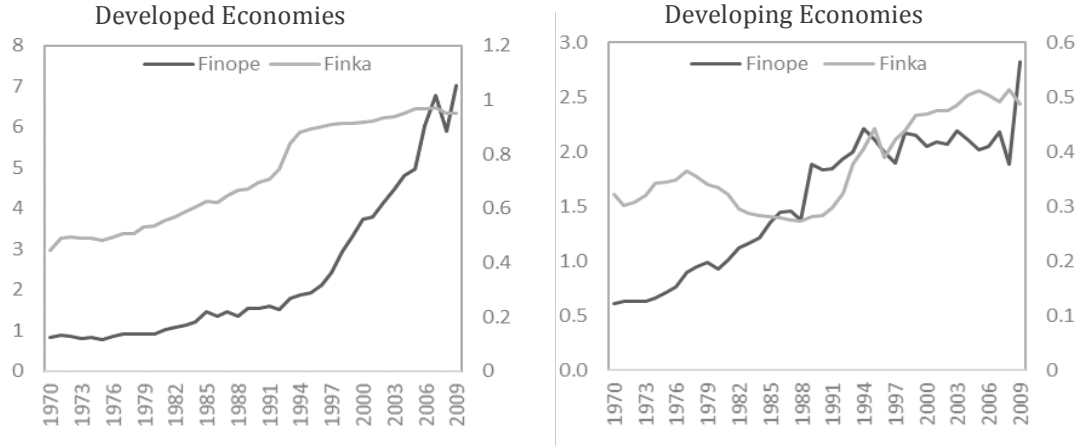
FDI shows two main trends: declining share of FDI until the late 1990s and then, an increasing trend from the late 1990s until 2009. Together with this trend, developing countries enjoyed increased FDI inflows. FDI reached about 29% of total foreign capital stock in developing countries in 2009. At the same time, portfolio investments increased by 14 percentage points. Financial integration of developing countries resulted in increasing contribution of FDI and portfolio equity investments to the total foreign capital inflows while the share of debt investments decreased over time. Declining trend in the share of debt investments in both developed and developing countries should be followed by decreased volatility in macroeconomic variables due to the unstable and mostly short-term nature of the

debt capital. An increase in the share of FDI and portfolio equity investments should be associated with reduction in macroeconomic volatility due to their long-term nature and higher stability. The trend of increasing share of FDI and portfolio equity investments is more dynamic in developing countries. Based on the studies of Kose et al. (2006) and Lane and Milesi-Ferretti (2007) we expect a more significant decrease in macroeconomic volatility in these countries. Despite generally decreasing share on the total foreign capital flows, debt investments still represents the main component of increased international financial integration. We suggest that a high share of debt capital can reduce the effect of financial integration on macroeconomic stability. The resulting effect depends on the summary of particular effects of the individual components of foreign capital flows.

Relationship between Financial Liberalization and Financial Integration

The Figure 2 shows the comparison of the averaged de facto and de jure international financial integration in developed and developing countries. We employ indicators of financial openness $\left(Finope_{i,t}\right)$, de facto indicator calculated as the average volume of gross international financial assets and liabilities to total output and financial liberalization $\left(Finka_{i,t}\right)$, de jure indicator representing the level of financial liberalization (average value of the Chinn-Ito indicator).

Figure 2 De Facto and De Jure Financial Integration



Note: financial openness, finope (left axis in figures), financial liberalization, finka (right axis in figures)

Source: Authors' calculations

Developed countries are more integrated into the global financial market in comparison with developing countries. The average volume of international financial assets and liabilities of developed countries reached the value equal to their total output at the beginning of 1980s. The volume of foreign capital stock to total output increased from 0.8 to 6.2, i.e. an eight-fold increase since the beginning of analyzed period. It is clear that international financial integration followed a sharp upward trend that was interrupted only during the periods of financial, banking or economic crises. Moreover, results for both de facto and de jure financial integration provide quite similar results suggesting the trend of dynamic financial liberalization in developed countries. The most significant liberalization and deregulation of international financial flows occurred in the late 1990s. Deregulation of capital accounts accelerated a dynamics of de facto financial integration during this period. The de facto financial openness increased 4.5 times since the 1990s. However, it increased 1.8 times only during the previous period. A slight slowdown in the process of deregulation occurred during the economic crisis in 2008. The study of United Nations (2011) provides a supportive evidence for this suggestion. Many emerging markets and developing countries reacted to the economic crisis of 2008 by reintroducing capital controls and foreign exchange interventions in order to mitigate the adverse effects of the crisis on their economies. It resulted in a decline in real financial capital stock as indicated by *Finope* measure. These results indicate that financial integration is determined by the process of financial liberalization. Developed countries successfully completed the process of financial liberalization by the end of the analyzed period.

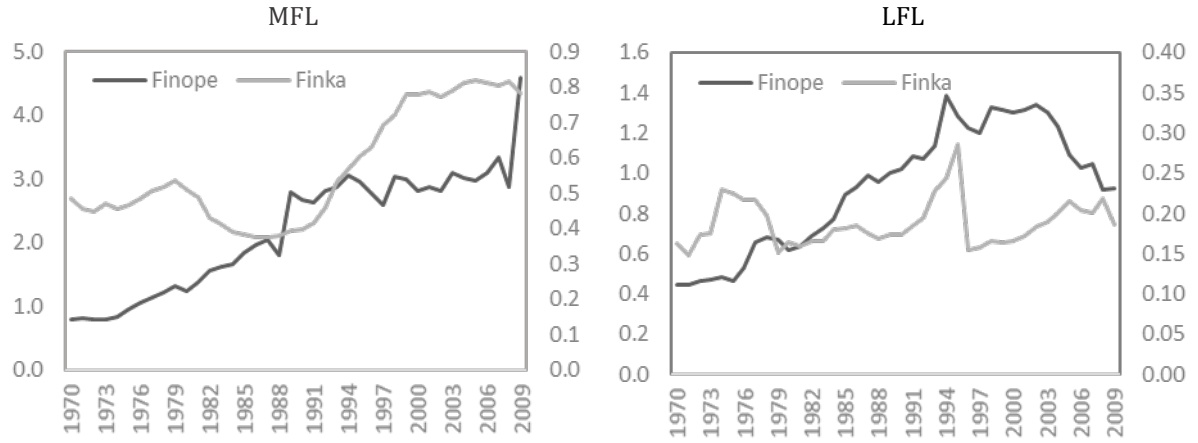
Developing countries experienced similar trend of continuous increase in the degree of international financial integration. The volume of foreign capital stock increased from 0.6-fold of total output to 2.85-fold of total output, i.e. a five-fold increase. The de jure indicator representing the degree of financial liberalization increased from 0.32 to 0.58. The increase in international financial liberalization is not as significant as in the case of developed countries. We have observed a significant slowdown in the dynamics of the process of financial liberalization after 1978 as a direct response of developing countries to the oil price shocks. Further increase in the real capital flows was observed even after the reintroduction of restrictions on international capital. The volume of international financial assets and liabilities increased twice during this period. According to Kilian (2007) this trend was caused by capital inflows used for financing public debt caused by adverse changes in the terms of trade due to unexpected oil price rises. Capital inflows in developing countries during this period helped to reduce macroeconomic volatility via intertemporal consumption and output

smoothing. Rebirth of the restrictions and regulation imposed on international capital flows occurred after 1990. However, the overall dynamics of de facto financial integration followed after this period did not experience any dramatic changes at all.

Classification of Developing Countries Based on the Level of Financial Liberalization

In this section we followed the approach introduced by Kose et al. (2003) to divide developing countries in two groups according to the indicator of de jure financial openness. It seems that financial openness in some developing countries is too low that would skew the average value of the indicator for the entire sample. Considering the values of de facto and de jure indicators we have created three groups of countries. The primary classification is based on the indicator of financial liberalization, i.e. de jure indicator. The first group consists of developed countries. Developing countries are divided according to the cross-sectional median of de jure indicator into more financially liberalized (MFL) and less financially liberalized (LFL).

Figure 3 De Facto and De Jure Financial Integration (1970-2009)



Source: Authors' calculations

International financial integration $\left(Finope_{i,t}\right)$ measured by the average value of the sum of international financial assets and liabilities is higher in MFL countries (Figure 3). Financial openness of MFL countries increased from 0.78 to 4.6 fold of total output, i.e. a 5.75 fold increase. The rate of increase in the financial openness is similar in both developing and developed countries (6.2 fold increase). International financial liberalization of MFL countries $\left(Finka_{i,t}\right)$ increased at 0.3 percentage points, i.e. from 0.5 to 0.8 fold of total

output. According to the degree of financial liberalization, MFL countries were significantly closer to the average values of developed countries. We examined a significant slump in the development of the measures of financial integration at the end of the 1970s. It was caused by the reaction of MFL countries to the economic recession followed by the sharp oil price increase. As mentioned above, according to Kilian (2007), the slowdown or even interruption of the trend of financial liberalization didn't have a significant influence on the volume of international capital flows during this period. However, the results of $Finope_{i,t}$ indicator are affected by international capital flows financing public debts during this period (Mirdala, 2011c). Public debts of developing countries experienced a significant increase due to unexpected changes in oil prices and terms of trade.

The size of international financial assets and liabilities in LFL countries doubled during the period 1970-2011. Nowadays, the sum of foreign capital stock (assets + liabilities) is almost equal to total output in this group of countries. However, both developed and MFL countries have already reached this degree of financial openness at the beginning of 1980s. Low volumes of foreign capital flows are caused mainly by a slow progress in the process of financial deregulation. Measured levels of financial liberalization in LFL countries remained approximately the same during the last 40 years.

Deregulation and liberalization of capital accounts in the 1970s was followed by the strengthening of restrictive measures due to adverse economic development at the end of 20th century. This trend represents a direct response to the oil price shocks and the debt crisis of developing countries in the 1990s. However, LFL countries experienced an increasing trend in the international financial integration until the 1990s. Following our previous suggestions, it was caused by the strong foreign capital inflows to finance public debts of developing countries. Capital controls and restrictions on foreign capital inflows followed by the debt crisis in developing countries has reverted this trend. As a result, LFL countries experienced a sharp decline in the international financial openness since the introduction of restrictive measures.

We suggest that low level of international financial integration of LFL countries was caused by a slow progress in international financial liberalization[4]. Introduction of foreign capital controls by LFL countries reduced benefits generally expected from international financial integration. Underdeveloped domestic financial markets reduced positive effects from effective allocation of capital, more flexible diversification of domestic production

[4] According to the United Nations Economic Commission for Africa (2008), the process of financial liberalization is the key determinant of the process of international financial integration.

based on comparative advantages, international risk diversification and sharing as well as advancement of domestic financial markets. According to IMF (2007), the inability to share risk among economic agents causes growth of macroeconomic volatility in a country. Ramey and Ramey (1995) argue that the macroeconomic volatility results in the slowdown of economic growth that reduces economic performance of LFL countries even more. The key source of foreign capital inflows in developing countries is represented by debt investments due to generally low economic performance, underdeveloped economic environment and fragile financial system. According to Kose et al. (2006) and Lane and Milesi-Ferretti (2006), inflows of debt investments in developing countries may indicate macroeconomic instability. Above mentioned determinants combined with poor economic performance and low quality of institutions forced developing countries into the closed circle that is why insufficient international financial integration reduces growth potential that attracts less foreign investments. However, LFL countries are still exposed to macroeconomic volatility even more than the rest of the world due to more dynamic shifts in financial openness. This is particularly true considering improved general conditions for higher foreign capital inflows in the future.

Estimation of Macroeconomic Volatility

The Table 1 summarizes the changes in the cross-sectional volatility of macroeconomic aggregates[5] in developed and developing countries[6]. Developed countries experienced lower levels of macroeconomic volatility in comparison with developing countries. Differences are more significant especially in the volatility of consumption. According to IMF (2007), and considering the development of financial liberalization and financial integration (Figure 2), we suggest that lower levels of macroeconomic volatility in developed countries are associated with high degree of financial openness. As a result, developed countries enjoyed more benefits resulting from effective capital allocation, high rate of international risk diversification and sharing[7] and financial deepening. Key implications of higher capital mobility in developed countries are well summarized in Narayan and Narayan (2010). Authors recognized the stable economic growth that contributes to reduced macroeconomic volatility as one of the key indirect effects of increasing international financial integration.

[5] Macroeconomic volatility is measured as the standard deviation of total output, private and final consumption growth rates per capita for the 10 year period.
[6] The classification of countries is based on the IMF classification.
[7] The higher rate of international risk sharing in developed countries is one of the key reasons for persisting large gap in the volatility of consumption between developed and developing countries.

Loayza et al. (2007) revealed close relationship between the crucial characteristics of macroeconomic volatility and overall macroeconomic development of countries. We suggest that the low output and consumption volatility of developed countries reveals the key characteristics of individual economies represented by more prudential economic policies, low microeconomic rigidities, stronger institutional environment and more developed domestic financial markets. Hausmann and Gavin (1996) provided more supportive empirical evidence of this idea. They suggest that fluctuations of macroeconomic variables are fueled by poor quality of institutions, instable political regimes and less developed financial markets. According to Campbell (2004), positive characteristics of developed countries reduce macroeconomic uncertainty and contribute to lower macroeconomic volatility.

Table 1 Macroeconomic Volatility in Developed and Developing Countries

Total Output (Y)/ Period	Total	1	2	3	4
Developed Countries	0.0211	0.0245	0.0191	0.0178	0.0231
Developing Countries	0.0424	0.0522	0.0477	0.0400	0.0299
Private Consumption (C) / Period	Total	1	2	3	4
Developed Countries	0.0217	0.0284	0.0218	0.0182	0.0183
Developing Countries	0.0648	0.0787	0.0688	0.0588	0.0529
Final Consumption (C+G) / Period	Total	1	2	3	4
Developed Countries	0.0173	0.0228	0.0167	0.0150	0.0148
Developing Countries	0.0558	0.0676	0.0585	0.0519	0.0454
Consumption Smoothing / Period	Total	1	2	3	4
Developed Countries	0.8386	0.9679	0.8577	0.9149	0.6141
Developing Countries	1.5358	1.3633	1.3925	1.6501	1.7372

Note: Panel Total (1970-2009), panel 1 (1970-1979), panel 2 (1980-1989), panel 3 (1990-1999), panel 4 (2000-2009).

Source: Authors' calculations

Different macroeconomic characteristics increase exposure of developing countries to domestic shocks induced by weak architecture of their economies causing higher fluctuations of macroeconomic variables. Malik and Temple (2009) suggest that low quality of institutions causes higher instability of macroeconomic variables. Increased macroeconomic volatility is also determined by the frequency and intensity of exogenous shocks. Authors suggest that these shocks are caused by sudden interruptions in capital inflows or unexpected changes in terms of trade. Loayza et al. (2007) confirms the high occurrence of terms of trade shocks in developing countries.

We have recognized two key elements for mitigating the fluctuations caused by external disturbances, i.e. risk diversification and sharing and stabilization policies. Kose et al. (2009) argues that developing countries do not fully benefit from international risk sharing. It is

caused by the improper composition of their foreign capital inflows. The main source of foreign capital inflows in developing countries is represented by debt investments that reduce expected benefits of financial integration from international risk sharing. According to Masten et al. (2008) and Norris and Srivisal (2013), financial markets in developing countries are less developed and therefore cannot absorb fluctuations caused by external shocks. Both studies recognized a developed financial market as a convenient vehicle for mitigating the negative effects of real economic shocks. Loayza et al. (2007) argue that stabilization policies in developing countries are less effective and their anticyclical effects are clearly reduced. As a result, developing countries are unable to absorb domestic and external shocks without any discernible increase in the volatility of macroeconomic aggregates. However, significant differences in macroeconomic volatility between developed and developing countries indicate future benefits arising from increased international financial integration in less developed economies.

Developed and developing countries in our sample experienced a consistent decrease in the macroeconomic volatility over time. Despite substantial empirical evidence confirming reduced macroeconomic volatility in both groups of countries, most of authors do not provide clear conclusions about the main causes of this trend. Panel 1 (Table 1) represents our calculations of the real output volatility. Our results confirm a decreasing trend in the volatility on real output during the whole period. The overall macroeconomic volatility decreased in developed and developing countries by 0.0014 and 0.0223 points respectively. We suggest that better results for developing countries indicate their opportunities that allow for benefit more from increasing international financial integration (suggested also by IMF (2007)).

According to Loayza et al. (2007) developing countries experienced more dynamic decrease in macroeconomic volatility due to increased financial integration induced by the general improvement of economic environment, institutional quality, quality of domestic stabilization policies, domestic financial markets and other factors determining the degree of macroeconomic volatility and stability of economic growth. According to Mougani (2012) financial integration positively affects the transfer of technologies, trade openness and the development of domestic financial markets. All these factors stimulate economic growth, intensify poverty reduction and improve the overall economic development of the country.

Therefore, financial integration should support the development of the domestic financial and banking sector. According to Levine and Zervos (1998, 2001), a well-functioning domestic financial and banking sector leads to an increase in liquidity and

efficiency and thus provides a vital incentives for stable economic growth, i.e. reduces output fluctuations. These conclusions are indirectly suggested by the IMF (2007). Countries at the beginning of the integration process, characterized by insufficiency and inefficiency of counter-cyclical policies caused by a lower degree of economic development and lower development of the financial sector, are more likely to reduce macroeconomic volatility. The probability to enjoy reduced macroeconomic volatility and thus benefit from financial integration is considerably smaller in developed countries. We suggest that developed countries have already exhausted most of the benefits arising from international financial integration.

A significant decline in macroeconomic volatility of developing countries (0.0258) can be seen in private consumption (Table 1, Panel 2). Developed countries also experienced a meaningful improvement in the volatility of private consumption (0.0101). Obstfeld and Rogoff (1994) suggest that if the volatility of consumption is much higher than it would be under full financial integration in the global economy, then the potential gains from risk sharing are relatively large and a country should integrate more. Following the results for the volatility of consumption in developing countries (0.0529) and developed countries (0.0183) it seems that despite the significant decline in the volatility of consumption there is still considerable space for improvements in developing countries. We assume that developing countries do not fully exploit the opportunities arising from financial integration especially due to insufficient risk diversification and sharing caused by the absence of developed domestic financial markets. This is indicated by the comparison of volatilities of final consumption (0.0454) and total output (0.0299) (Table 1, Panel 4).

The last analyzed period (Table 1, Panel 5) is characterized by weakening of the progressive decline in macroeconomic volatility of developing countries and stable or even increasing trend in macroeconomic volatility of developed countries. The sign of reversal trend is caused by the effects of financial crisis and following economic recession resulting in increased instability of macroeconomic variables in the global economy. However, here the question arises, to what extent the source of this decline originates in the continuous increase in financial integration, it is caused by the other crisis related effects or the combination of both.

Finally, our results indicated mixed consumption smoothing effects in both groups of countries. Despite recent fluctuations of the indicator during first three decades, developed countries managed to smooth their consumption, which reduces the volatility of consumption and real growth. Significant decrease of the indicator during the last decade indicates that

consumer behaviour in a crisis is characterized by more dynamic reallocation of consumption expenditures. On the other hand, developing countries experienced a persistently increasing trend in the size indicator revealing deterioration in the intertemporal consumption smoothing opportunities especially due to low flexibility of underdeveloped financial markets inducing the existence of thin or missing credit markets.

Classification of Developing Countries Based on the Degree of Financial Liberalization

In the Table 2 we summarize the development of the macroeconomic volatility employing the classification of developing countries into MFL and LFL. Our results indicate higher degree of macroeconomic volatility in MFL countries in comparison with LFL countries that seems to be contrary to the main conclusions revealed by IMF (2007) analysis. We suggest that financial liberalization increases the degree of macroeconomic volatility[8] in developing countries.

Table 2 Macroeconomic Volatility in MFL and LFL Countries

Total Output (Y) / Period	Total	1	2	3	4
MFL	0.0432	0.0513	0.0504	0.0403	0.0309
LFL	0.0415	0.0530	0.0452	0.0390	0.0290
Private Consumption (C)	Total	1	2	3	4
MFL	0.0695	0.0877	0.0747	0.0607	0.0551
LFL	0.0602	0.0670	0.0631	0.0570	0.0507
Final Consumption (C+G)	Total	1	2	3	4
MFL	0.0587	0.0738	0.0625	0.0516	0.0468
LFL	0.0530	0.0615	0.0545	0.0521	0.0440
Consumption Smoothing	Total	1	2	3	4
MFL	1.5351	1.5238	1.4877	1.4299	1.6989
LFL	1.5364	1.2069	1.2996	1.8648	1.7745

Source: Authors' calculations

Evans and Hnatkovska (2006) and Kose et al. (2003) argue that the increasing degree of openness of an economy at the initial stage of financial integration induces increased volatility of consumption and total output. Additional deepening of the financial integration process diminishes influence of financial integration on the volatility of macroeconomic aggregates[9]. Kose et al. (2003) argue that the very low financial openness of most of the developing countries operates as the convenient vehicle to preserve macroeconomic stability. As a result, low degree of financial integration of MFL countries seems to be reasonable as it prevents the

[8] Similar results are also produced from the classification of countries based on the level of financial integration.
[9] Financial openness improves economic environment and stimulates economic growth. As a result, negative effects of financial integration on the fluctuations of output are reduced.

risks of excessive macroeconomic volatility. Here again we suggest that advantages and gains from financial integration are typically conditional on the country's level of development, i.e. meeting country specific threshold levels for the size of financial market[10], quality of main financial institutions, responsibility of economic policies and effective of policy instruments to cope with sudden distortions in capital flows and terms of trade. We argue that lagging behind individual criteria results in increased levels of macroeconomic volatility in MFL countries.

Key Characteristics of the Relationship (all countries)

The Figure 4 summarizes the relationship between financial integration and macroeconomic volatility based on the regression between de jure and de facto levels of financial integration and the volatility of macroeconomic variables $\left(mvgdp_{i,t}\ , mvcon_{i,t}\right)$ for both groups of countries - developed countries $\left(Deved_{i,t}\right)$ and developing countries $\left(Devng_{i,t}\right)$. We have employed two measures as a proxy for financial integration - de jure level of financial integration $\left(Finka_{i,t}\right)$ and de facto level of financial integration $\left(Finope_{i,t}\right)$.

Results for developing countries in both panels indicate that there is a positive relationship between de jure measure of financial integration and macroeconomic volatility. Increasing degree of financial liberalization in developing countries is associated with increased volatility of both output and consumption. The significance of the relationship increases when the volatility of private consumption $\left(mvcon_{i,t}\right)$ in developing countries is considered. We suggest that financial liberalization of developing countries induces increased macroeconomic volatility. Increased inflows of foreign capital, especially at the initial stages of financial liberalization, operate as exogenous shock inducing increased volatility of domestic demand components. However, while our results correspond to the key outcomes of Evans and Hnatkovska (2006) and Kose et al. (2003) who suggest that the initial liberalization of capital flows in developing countries induces increased degree of macroeconomic volatility, they seem to be contrary to the key conclusions of IMF (2007).

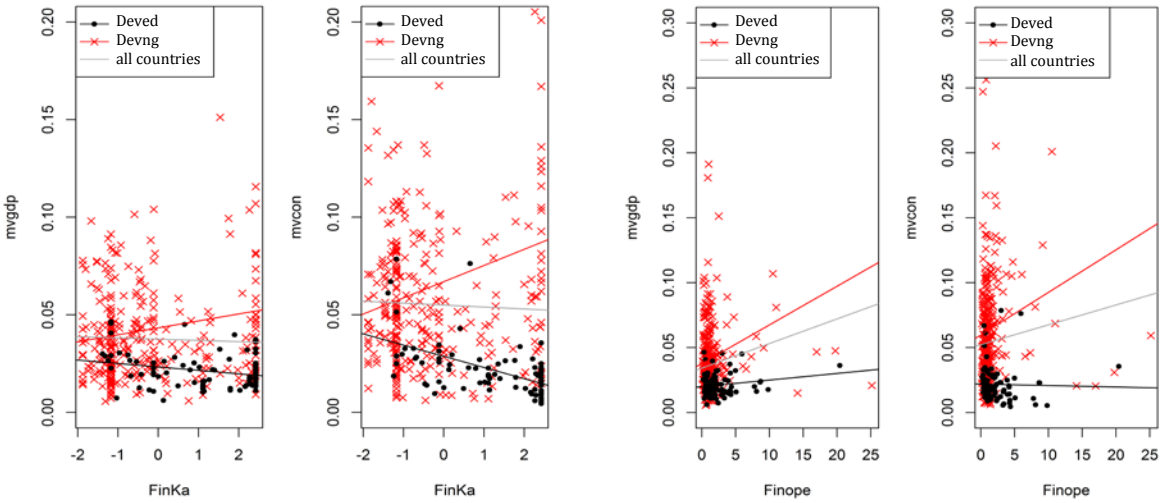
Reduced macroeconomic volatility is usually observed in countries with proper mix of financial liberalization dynamics and the improvements of favorable economic environment in the country. However, insufficient development of domestic financial markets represents

[10] Ineffective financial markets reduce both risk diversification and benefits arising from financial integration.

one of the most frequent origins of adverse effects of financial liberalization reducing its gains and benefits. Eozenou (2008), Loayza et al. (2007), Evans and Hnatkovska (2006) and Kose et al. (2003) provide rich empirical evidence in this area. According to Meyrelles-Filho and Jayme (2010), the liberalization of capital flows in developing countries has negative effect on economic growth due to increasing degree of macroeconomic volatility.

The relationship between de jure level of financial integration ($Finka_{i,t}$ indicator used as a proxy) and macroeconomic volatility in developed countries seems to be negative (Figure 4, Panels 1 and 2). The significance of the relationship is even stronger in case of the volatility of consumption[11]. Our results for developed countries correspond to the key outcomes of IMF (2007), arguing that higher financial liberalization in a country provides more opportunities to reduce its macroeconomic volatility. Therefore, we suggest that developed countries, unlike developing countries, benefit more from financial integration. According to Evans and Hnatkovska (2006) and Kose et al. (2003), it is due to higher degree of financial liberalization in these countries. According to Loayza et al. (2007), the degree of macroeconomic volatility corresponds to economic performance of countries that is why the relationship between financial integration and macroeconomic volatility in developed countries is negative.

Figure 4 Relationship between Financial Liberalization, Financial Integration and Volatility of Macroeconomic Variables (all countries)



Source: Authors' calculations

Finally, following our results we suggest that the key determinants of the relationship between financial integration and macroeconomic volatility can be recognized in two areas. First area is characterized by the degree of financial integration. According to IMF (2007),

[11] especially due to high international risk sharing

Evans and Hnatovska (2006) and Kose et al. (2003), financial integration is more beneficial and less risky if countries have reached certain level of financial liberalization and financial openness. Second area is characterized by the general economic development that can be conventionally characterized by the minimum threshold levels for individual indicators. Despite generally low levels of financial openness (insufficient financial integration), welfare gains from international financial integration are very low or missing at all especially in countries with less-advanced financial markets, poor quality of institutions, irresponsible macroeconomic policies, public sector corruption, political constrains etc.

Examination of the relationship between de facto measure of international financial integration ($Finope_{i,t}$ indicator used as a proxy) and the volatility of total output and private consumption in both groups of countries revealed quite different results (Figure 4, Panels 3 and 4).

Generally, deeper financial integration of developed and developing countries was associated with increased volatility of total output. The slope of the regression curve for developed countries is more flat that is why we suggest that increasing financial openness is associated with less dynamic increase in the volatility of total output. As a result, financial integration of developed countries induces much less distortionary effects on macroeconomic stability than in developing countries.

However, our results of the relationship between financial openness and the volatility of private consumption in developed countries revealed a different picture. Increasing financial openness is associated with reduced volatility of private consumption. Considering that public consumption in developed countries represented less volatile component of the final consumption[12] (Table 2) we suggest that deeper financial integration in developed countries induced higher volatility of investments.

Deeper financial integration of developing countries was associated with more dynamic increase in the volatility of private consumption than indicated by de jure indicator. Here again we highlight reduced ability of less developed countries to reap the benefits arising from deeper financial integration due to economic and institutional constrains.

Although the analysis of the relationship between de jure and de facto measures of financial integration and macroeconomic volatility revealed some differences, our results

[12] Our results indicate lower volatility of final consumption in comparison with private consumption.

indicate that financial integration induced higher macroeconomic volatility in developing countries.

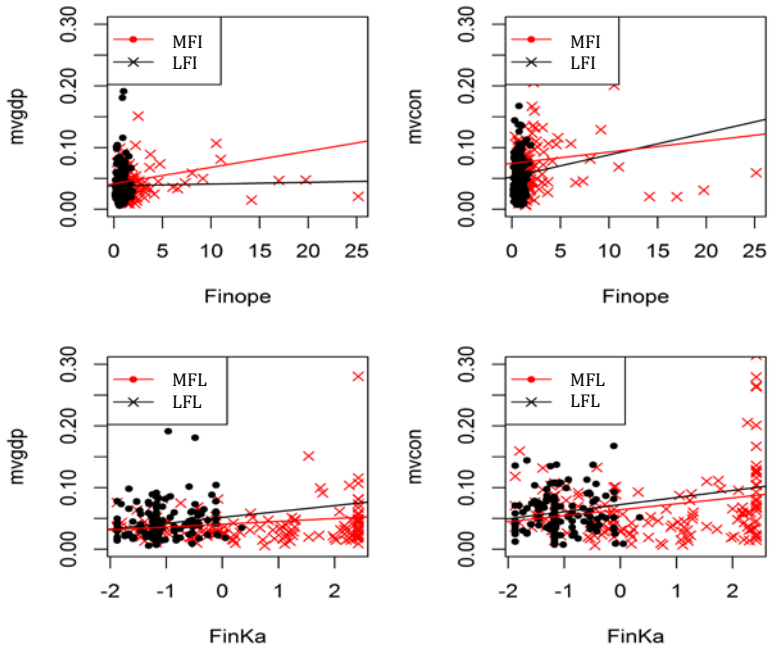
Key Characteristics of the Relationship (developing countries)

In this section we analyze the relationship between financial integration and macroeconomic volatility in developing countries. Influence of financial integration on the volatility of output and consumption will be examined on the sample of developing countries divided into MFL (more financially liberalized), LFL (less financially liberalized), MFI (more financially integrated) and LFI (less financially integrated) countries.

Our results are summarized in Figure 5. Following the key outcomes from the previous section we emphasize that deeper financial integration induces higher volatility of both total output and private consumption in developing countries. However, more flat slope of the regression curve in case of MFL countries indicates weakening of the influence of financial liberalization on macroeconomic volatility. This corresponds to the assumption of IMF (2007) suggesting that the gradual increase in financial liberalization reduces excessive macroeconomic volatility. Due to high level of significance of examined positive relationship we emphasize that developing countries are not sufficiently open financially that is the key obstacle for enjoying full benefits and gains from financial liberalization (Evans and Hnatkovska (2006) and Kose et al. (2003)). Introduction of liberalization policies at the initial stages of financial liberalization more likely increases macroeconomic volatility. However, additional deepening in financial openness reduces negative effects of financial integration provided that the progress of financial liberalization is accompanied with adequate economic and institutional changes in the countries. Too rapid financial liberalization is likely to prone macroeconomic instability. Following the findings of Loayza et al. (2007), we argue that despite the general weakening in the relationship between financial liberalization and macroeconomic volatility, the performance of developing countries still lag behind a global trend. As a result, financial integration process continues to induce the excessive macroeconomic volatility. However, IMF (2007) assumes that financial liberalization improves the efficiency of the functioning of financial markets, improves institutional quality, increases responsibility of macroeconomic policies, reduces corruption and weakens other political restrictions. Decreasing strength of the relationship between financial liberalization and macroeconomic volatility is thus the result of improvements in the overall economic performance and conditions in developing countries although the contribution of financial liberalization to this trend is still more or less disputable. Finally, developing countries seem

to be in a vicious cycle. While foreign capital inflows provide growth incentives, rapid financial liberalization induces excessive macroeconomic volatility. Gradually increasing financial openness corresponding to inevitable economic, institutional and political improvements seems the be the only alternative for reaping benefits from financial integration while eliminating negative side effects and preserving macroeconomic stability.

Figure 5 Relationship between Financial Integration and Volatility of Macroeconomic Variables (developing countries)



Source: Authors' calculations

Deeper financial liberalization allows for improvements in the underlying determinants and induces the weakening of the influence of financial liberalization on macroeconomic volatility. However, different though generally higher volatility of total output and consumption considering low levels of financial openness indicates the differences in preparedness of developing countries for foreign capital inflows. As a result, sudden changes in the volume of foreign capital inflows (deepening in financial integration) are more likely to induce higher macroeconomic volatility and operate as exogenous shock with all its negative effects on macroeconomic stability than a convenient supplementary source of capital.

Our results indicate that financial liberalization and financial openness generally induces an increase in the volatility of output and consumption (Figure 5). The relationship between financial integration and macroeconomic volatility is significantly determined by the degree of financial openness. Higher levels of financial integration allowed developing countries

from our sample to reap the benefits of financial integration while maintaining low levels of macroeconomic volatility. This relationship is observable mostly in MFL countries with decreasing influence of financial liberalization (though still positive) on macroeconomic volatility. However, the slope of the regression curve in MFI countries is clearly steeper indicating more volatile development of total output associated with increasing degree of financial openness. We suggest that de jure indicator of financial integration, as more complex measure of financial integration, examines this relationship more precisely considering a wide variety of determinants. Less distortionary effects of financial integration on macroeconomic volatility in MFL in comparison with LFL economies is thus the result of general economic and institutional improvements. However, higher macroeconomic volatility associated with greater degree of financial openness in MFI countries indicates the risks arising from a rapid financial integration process without adequate strengthening of relevant policy frameworks and institutions, as well as broadly favorable domestic economic and financial conditions. Moreover, stability risks may also arise if the driving forces underlying stronger international financial integration reflect global economic imbalances.

One-Way Error Component Model

In this section we employ one-way error component model using panel data considering fixed effects (see section 3 for more details). Results for fixed effect model (FEM) are based on diagnostic test, F-test, Hausman test and significance tests considering individual and time effects. Following our results we suggest that underlying period had significant (decreasing) influence on the macroeconomic volatility over time. Estimated results are summarized in Table 3.

Table 3 Results of the Fixed Effects Model

Variable	Estimate	Std. Error	t value	Pr(>|t|)
Finope	0.0159	0.0015	10.6389	2.200e-16 ***
Finope*1340	-0.0145	0.0016	-9.0871	2.200e-16 ***
Deved	-0.0236	0.0038	-6.1890	1.527e-09 ***
d1340	0.0192	0.0039	4.9487	1.111e-06 ***
Period 1	0.0353	0.0037	9.5961	2.200e-16 ***
Period 2	0.0277	0.0037	7.3919	1.448e-13 ***
Period 3	0.0160	0.0040	3.9887	6.645e-05 ***
Period 4	0.0094	0.0040	2.3477	0.01889 *

Note: The value 1340.808 USD represents cross-sectional median of total output that enabled us to divide countries in two groups (high and low income countries).

Source: Authors' calculations

Additional diagnostic tests were employed to detect the presence of heteroscedasticity, serial correlation and cross-sectional dependence in time series. Tests revealed the existence of all three characteristics. However, according to Baltagi (2005) tests for serial correlation and cross-sectional dependence are insignificant in models with few time periods. For this reason, we omit these tests. We estimate the robust variance-covariance matrix to remove the heteroskedasticity based on the Arellano estimator (Arellano, 1987). We apply the clustering of various time periods by creating a matrix in order to deal with the cross-sectional dependence among residues. We use the HC1 estimator that is suitable for samples with a small number of observations over time. Regression coefficients of variables and their statistical significance in determining the macroeconomic volatility are summarized in Table 4.

Table 4 Results of Estimators of the Robust Covariance Matrix (Arellano method)

Variable	Estimate	Std. Error	t value	Pr(>|t|)
Finope	0.0159	0.0033	4.7701	2.602e-06 ***
Finope1340	-0.0145	0.0036	-4.0303	6.693e-05 ***
Deved	-0.0236	0.0059	-4.0282	6.752e-05 ***
d1340	0.0192	0.0028	6.9116	1.951e-11 ***

Source: Authors' calculations

Our results confirmed a decreasing trend in macroeconomic volatility over time. This trend is present in both developed and developing countries though it is more obvious in developed countries due to more effective allocation of capital and a higher degree of risk sharing. The degree of macroeconomic volatility is also determined by macroeconomic performance that is clearly higher in developed countries. Higher macroeconomic stability is the result of generally higher responsibility of economic policies, lower microeconomic rigidities and stronger institutional environment. Developed economies have also deeper and more effective financial markets that enable countries to absorb asymmetric shocks caused by the increased volatility of financial flows more effectively. That is why we suggest that the degree of economic development of the country has a significant influence on the relationship between financial integration and macroeconomic volatility. General improvements in the economic and institutional conditions result in the weakening of this relationship. We suggest that positive trends in the economic development are associated with improved efficiency of domestic financial markets and higher quality of institutions that reduce the fluctuations in the total output followed by unexpected exogenous shocks induced by i.e. changes in the dynamics of foreign capital flows.

5. Conclusion

In the paper we have analyzed the relationship between financial integration and macroeconomic volatility. Our results, supported by the rich empirical evidence of many other studies, indicate that macroeconomic volatility followed decreasing trend over the period of last four decades though developed countries experienced lower degree macroeconomic volatility than developing countries. However, the relationship between financial openness and economic development in developed countries seems to be non-significant. As a result, influence of financial integration on the macroeconomic volatility was disappearing over time. Similarly, the impact of financial integration of developing countries on macroeconomic volatility decreased with improved economic and institutional conditions. However, the relationship still remained positive which means that deeper financial integration caused excessive macroeconomic volatility.

Despite decreasing strength of the relationship between financial liberalization and macroeconomic volatility the overall contribution of financial liberalization to this trend is still more or less disputable. Developing countries seem to be in a vicious cycle. While foreign capital inflows provide growth incentives, rapid financial liberalization induces excessive macroeconomic volatility. Gradually increasing financial openness corresponding to inevitable economic, institutional and political improvements seems the be the only alternative for reaping benefits from financial integration while eliminating negative side effects and preserving macroeconomic stability.

Reduced macroeconomic volatility is usually observed in countries with proper mix of financial liberalization dynamics and the improvements of favorable economic environment in the country. However, insufficient degree of economic development represents one of the most frequent origins of adverse effects of financial liberalization reducing its gains and benefits in developing countries. Moreover, despite generally low levels of financial openness (insufficient financial integration), welfare gains from international financial integration are very low or missing at all especially in countries with less-advanced financial markets, poor quality of institutions, irresponsible macroeconomic policies, public sector corruption, political constrains etc.

Finally, increasing financial openness of developed countries was associated with reduced volatility of private consumption. Considering that public consumption in developed countries represented less volatile component of the final consumption we suggest that deeper financial integration in developed countries induced higher volatility of investments. We

suggest that this channel may be considered as the key obstacle for developed countries to benefit more from financial integration.

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Appendix

Table 5 Classification of Countries According to Economic Development

Developed economies
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Island, Ireland, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, USA
Developing economies
Argentina, Bahrain, Benin, Bolivia, Chile, Costa Rica, Ecuador, Egypt, El Salvador, The Gambia, Guatemala, Guyana, Honduras, Indonesia, Israel, Jamaica, Jordan, Kenya, Lebanon, Liberia, Malaysia, Mauritius, Mexico, Nicaragua, Oman, Panama, Paraguay, Peru, Qatar, Saudi Arabia, Singapore, Sri Lanka, Thailand, Trinidad and Tobago, Uganda, Uruguay, Venezuela, Zambia, Algeria, Brazil, Burundi, Cameroon, Central African Republic, Chad, Columbia, Congo, Ivory Coast, Dominican Republic, Ethiopia, Fiji, Gabon, Ghana, Guinea, India, Iran, Madagascar, Malawi, Male, Mauritania, Morocco, Myanmar, Nepal, Niger, Nigeria, Pakistan, Philippines, Republic of Rwanda, Samoa, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Syria, Tunisia, Turkey

Table 6 Classification of Countries According to Financial Liberalization

Developed economies
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Island, Ireland, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, USA
MFL countries
Argentina, Bahrain, Benin, Bolivia, Chile, Costa Rica, Ecuador, Egypt, El Salvador, The Gambia, Guatemala, Guyana, Honduras, Indonesia, Israel, Jamaica, Jordan, Kenya, Lebanon, Liberia, Malaysia, Mauritius, Mexico, Nicaragua, Oman, Panama, Paraguay, Peru, Qatar, Saudi Arabia, Singapore, Sri Lanka, Thailand, Trinidad and Tobago, Uganda, Uruguay, Venezuela, Zambia
LFL countries
Algeria, Brazil, Burundi, Cameroon, Central African Republic, Chad, Columbia, Congo, Ivory Coast, Dominican Republic, Ethiopia, Fiji, Gabon, Ghana, Guinea, India, Iran, Madagascar, Malawi, Male, Mauritania, Morocco, Myanmar, Nepal, Niger, Nigeria, Pakistan, Philippines, Republic of Rwanda, Samoa, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Syria, Tunisia, Turkey

Table 7 Classification of Countries According to Financial Openness

Developed economies
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Island, Ireland, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, USA
MFI countries
Bahrain, Bolivia, Chile, Congo, Ivory Coast, Egypt, El Salvador, Guyana, Israel, Jamaica, Jordan, Lebanon, Liberia, Malaysia, Mauritania, Mauritius, Nicaragua, Panama, Paraguay, Qatar, Saudi Arabia, Singapore, Sudan, Swaziland, Trinidad and Tobago, Togo, Tunisia, Uruguay, Venezuela, Zambia
LFI countries
Algeria, Argentina, Benin, Brazil, Burundi, Cameroon, Central African Republic, Chad, Columbia, Costa Rica, Dominican Republic, Ecuador, Ethiopia, Fiji, Gabon, The Gambia, Ghana, Guatemala, Guinea, Honduras, India, Indonesia, Iran, Kenya, Madagascar, Malawi, Male, Mexico, Morocco, Myanmar, Nepal, Niger, Nigeria, Oman, Pakistan, Peru, Philippines, Republic of Rwanda, Samoa, Senegal, Sierra Leone, South Africa, Sri Lanka, Syria, Thailand, Turkey, Uganda,