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# Financial Integration, Volatility of Financial Flows and Macroeconomic Volatility

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## Abstract

*Macroeconomic instability is usually associated with increased short-term volatility in key fundamental variables. The recent literature that empirically examines implications of the macroeconomic volatility provides strong evidence of its negative growth effects. Stable macroeconomic environment represents a substantial fundamental pillar of a long-term economic growth. International financial integration as one of the phenomenon of last few decades still differentiate economists examining its direct and side effects on macroeconomic performance and volatility. In the paper we examine the relationship between international financial integration, volatility of financial flows and macroeconomic volatility. Examination of the international financial integration and its effects on macroeconomic volatility or stability is particularly important due to existence of generally expected positive relationship between macroeconomic volatility and economic growth, common trends of decreased macroeconomic instability worldwide and occurrence of negative sides of financial integration - financial crises. Following our results we suggest that relationship between financial integration, volatility of financial flows and macroeconomic volatility is positive, however not significant. Moreover the relationship is stronger in case of developing countries.*

**Keywords:** international financial integration, volatility of international financial flows, macroeconomic volatility

**JEL Classification:** F36, F41, F43

## 1. Introduction

Empirical literature provides rich evidence about the effects of international financial integration on economic growth. Moreover, many authors examined the causal relationship between international financial integration and economic growth. Most of the empirical studies suggest that, on average, more financially integrated economies performs better than less financially open economies, in terms of improvements in per capita output as a measure of standards of living. However, many of studies also come to the conclusion that the relationship between financial integration and economic growth is not always strong or robust. There has also been a rigorous debate about the relationship between macroeconomic volatility and financial integration. However, empirical evidence on effects of international financial integration on the macroeconomic volatility is far more limited. While the key features together with the main and side implications of international financial integration represents the crucial topic of economic research for decades, the results of many empirical studies provides different or even biased conclusions.

The main objective of the paper is to investigate effects of international financial integration and the volatility of financial flows on macroeconomic volatility that enables us to highlight some key stylized facts about their mutual relationship.

In the first section we summarize an overview of selected theoretical and empirical literature examining the relationship between international financial integration and macroeconomic volatility. Theoretical literature doesn't provide clear conclusions on key implications of international financial integration on the volatility of main macroeconomic variables. However, empirical studies reveal both positive and negative effects on different samples of countries considering particular time periods. At the same time, results seem to be sensitive to the set of initial conditions that individual studies emphasize as underlying determinants of causal linkages between the quantity of cross-country capital flows and associated direct and indirect effects on the performance of countries. As a result, investigation of the vulnerability of overall output and its main components to the relative changes in external financial openness of countries still attracts many authors.

Further, we examine the volatility of financial flows measured by cross-sectional median or mean of standard deviation in different group of countries. Our sample of countries consists of industrial and developing countries with substantial differences in the size external financial openness. We expect that our results confirm the existence of significant differences between (a) international financial integration and the volatility of financial flows and (2) macroeconomic volatility. We suggest that the volatility of financial flows increases with rising external financial openness.

Volatility of financial flows will be examined at different time periods proving vital information about fundamental features of the dynamics in the process of international financial integration in our sample of countries. We observed that the volatility of financial flows increased over the examined periods in all subgroups of countries. Key features in the examined trend will be highlighted considering the estimated volatility of particular types of international financial flows and in its changes over time. We provide the evidence that contribution of individual capital flows is substantially important in determining overall volatility of financial flows. We also highlight that flows of foreign direct investments (FDI) are less volatile than other types of private capital flows.

In the next section we evaluate the relationship between international financial openness and the volatility of financial flows in individual group of countries. We show that the strongest positive relationship experienced countries from the group of developed economies followed by more and less financially integrated countries. We suggest that increasing financial openness causes higher volatility of international financial flows. We also estimate macroeconomic volatility measured by cross-sectional medians of the standard deviation of total output as well as its main components - final consumption, private consumption and investments. As a result, changes in the macroeconomic volatility can be conventionally decomposed into the volatility of individual components of total output. We suggest that that developed countries maintained substantially lower levels of macroeconomic volatility in comparison with developing countries even though these countries are the most financially integrated. On the other hand, different results are obtained for the group of developing countries. More financially integrated economies tend to experience clearly higher macroeconomic volatility than economies less financially integrated. Moreover, we provide the evidence of the decreasing trend in macroeconomic volatility in all groups of countries over time.

Finally, we emphasize key aspects of the relationship between international financial integration and macroeconomic volatility. We found that there is positive, but not so significant relationship between financial openness and individual components of total output. In the last section we also examine the relationship between the volatility of financial flows and macroeconomic volatility. Our results confirmed generally expected positive relationship between both variables in all groups of countries.

## 2. Overview of the Literature

Our motivation to investigate the relationship between international financial integration (in terms of its size and relative changes) and macroeconomic volatility (or stability) may be summarized as follows. (1) Large number of studies revealed negative relationship between macroeconomic volatility and economic growth. Macroeconomic instability reduces dynamics of economic growth and its sustainability in the long run. As a result, investigation of the relationship between the size of financial openness (considering its generally increasing trend over time in the most countries) and macroeconomic volatility is motivated not only by an intention to examine stability issues in unequally financially integrated countries but also to assess key implications on economic growth and its sustainability. Reasonability of this idea is quite challenging especially during so called “bad times” (i.e. current economic crisis) and related higher volatility of international capital flows as well as macroeconomic variables. (2) Most of the developed and developing countries experienced periods of reduced macroeconomic volatility during the pre-crisis period (Kose et al., 2010). Considering the general trend of increasing financial openness, many studies (i.e. Sutherland (1996), Mendoza (1992), Souza (2004), Razin and Rose (1994)) provided evidence of international financial integration serving as a crucial vehicle for maintaining the macroeconomic stability. (3) Finally, many authors emphasize that highly financially integrated economies are more likely exposed to the turmoil on the financial markets that may turn into financial crisis. As a result, highly financially opened economies may suffer from excessive macroeconomic instability followed by output growth rates reduction or even lagging recession due to easy transmission of external shocks among financially integrated countries (i.e. Friedrich, Schnabela and Zettelmeyer (2010), Kaminsky and Reinhart (1999), Glick, Guo and Hutchison (2004)).

International financial integration, its crucial patterns, trends and effects on macroeconomic volatility, still represents challenging area of economic research. Following the results of many research studies, examination of mutual relationship between international financial integration and macroeconomic volatility, leads to different empirical conclusions. This fact is not surprising, given that economic theory does not provide comprehensive and clear view of how the increasing international financial openness and international financial integration should affect the volatility of macroeconomic outcomes and others macroeconomic variables. The ambiguity of results proposed by large number of empirical studies is caused by a relative variety in methodology and econometric techniques and variability of samples of countries and time horizons included in the most of regression models. Moreover, different threshold effects that determine the growth effects of international financial integration also contributed to the relative diversity of empirical results. Kose et al. (2006) highlights the composition of capital flows, domestic financial development, institutional development and discipline, macroeconomic discipline and trade openness as the main determinant affecting the impact of international financial integration on macroeconomic volatility. Composition of international capital flows is probably the most crucial determinant affecting macroeconomic volatility. Taylor and Sarno (1999) revealed that FDI flows are more stable and persistent than other groups of international capital flows. These results are confirmed by Hausmann and Fernandez-Arias (2000), who confirmed that although the volatility of FDI flows followed increasing trend in last few decades, it still remains much lower than the volatility of other types of capital flows.

Fischer and Reisen (1992), Bekaert, Harvey and Lundblad (2006), IMF (2007) and Herrera and Vincent (2008) revealed significantly negative relationship between financial openness and macroeconomic volatility. Bekaert et al. (2004) analyzed effects of stock market liberalization and capital account openness on the volatility of real consumption growth rate over the 20 years period. Their results show a strong negative correlation between

international financial liberalization and the volatility of consumption. Bekaert et al. (2002) show, that overall capital account openness has weaker influence on output and consumption volatility. Therefore, the authors suggest that it is the integration of stock markets worth reducing the volatility of output. Herrera and Vincent (2008) show similar results. According to their research, higher integration of domestic financial markets to international capital markets is associated with lower macroeconomic volatility.

On the other hand, Kose et al. (2003) provides a comprehensive analysis of changes in macroeconomic volatility in the large group of industrial and developing countries over 50 years (76 countries, period 1960-1999). Authors divided developing countries into two groups (more (MFI) and less (LFI) financially integrated countries). Their results show a positive though insignificant impact of international financial integration on the volatility of domestic output and domestic consumption. In case of the relative volatility of consumption, expressed as the ratio of the consumption and volatility of output, they confirmed that international financial integration has a positive and significant impact.

Mendoza (1992) suggested that the volatility of output increases with increasing degree of international financial integration when countries experience large and long-term shocks. However, the relationship is insignificant too. Baxter and Crucini (1995) partially confirm the Mendoza's findings about the volatility of output though they rejected results about the volatility of consumption. Volatility of real and relative consumption is decreasing by growing international financial integration. Study of Gavin and Hausmann (1996) shows that capital account openness is a significant potential channel of macroeconomic volatility causing domestic output fluctuations in Latin America. Study is focused on the period 1970-1992.

Islam and Stiglitz (2000) confirmed that financial openness significantly contributes to the volatility of GDP growth per capita in developed and developing OECD countries. Evans and Hnatovska (2006) suggest that there exist a nonlinear relationship between macroeconomic volatility and international financial integration. International financial integration causes an increase in the volatility of output and consumption initially, but this relationship is gradually replaced by a much larger decrease in the volatility of macroeconomic variables. The final effect of changes in the macroeconomic volatility is positive for the country.

On the other hand, the lack of empirical evidence about the existence of the relationship between international financial integration and macroeconomic volatility is presented by Razin and Rose (1994), Butch, Döpke and Pierdzioch (2002) and others.

Razin and Rose (1994) investigated effects of the current account and capital account openness on the fluctuation of total output, consumption and investments on the sample of 138 countries during the period 1950-1988. Their study employed a cross-sectional analysis based on the following regression model:

$$\sigma_{j,i} = \alpha + \beta_{j,C} FC_i + \beta_{j,K} FK_i + \varepsilon_{j,i} \quad (1)$$

where  $j = Y, C, I$  are dependent variables (output, consumption and investments) measured by the standard deviation of variables ( $\sigma$ ), and  $FC_i$  and  $FK_i$  are the degree of current account and capital account openness. Authors suggest that there is no significant relationship between external financial openness and relative volatility of output, consumption and investment.

Buch, Döpke and Pierdzioch (2002) focused on OECD countries for the period 1960-2000. Authors employed the following regression model:

$$\sigma_{i,t} = \alpha_{0,i} + \alpha_{1,t} + \beta_1 \sigma_{i,t}^{controls} + \beta_2 FO_{i,t} + u_{i,t} \quad (2)$$

where  $\sigma_{i,t}$  represents a standard deviation of the cyclical component of real GDP calculated in 5 year time periods and  $FO_{i,t}$  represents the size of financial openness.

Effects of international capital mobility on the macroeconomic stability investigated Pappas (2010). The results of his study did not reveal the existence of a strong and stable relationship between indicators of financial openness and macroeconomic stability (measured by the stability of output and consumption). Kose et al. (2003) indicate that O'Donnell (2001) examines changes in the volatility of output growth over the period 1971-1994 in 93 countries. He concludes that greater degree of financial integration is associated with lower (higher) rate of output fluctuations in OECD (non-OECD) countries. His research also informs that countries with more developed financial markets are capable reducing volatility of output through their international financial integration. Aghion, Benerjee a Piketty (1999) developed a theoretical link between financial integration and volatility of output, measured by standard deviation of real GDP growth rates. They argue that countries with less advanced level of financial market development can experience more volatile real GDP growth rates due to increasing international financial integration. Same notion can be found in the paper published by Eozenou (2008). They used a generalized method of moments for estimating panel of 90 countries over a 40 years period. On the contrary Beck et al. (2011) show that domestic financial market doesn't play a significant role in determining the influence of financial integration on macroeconomic volatility. Using a panel consisting of 63 countries over the period 1960-1997 they cannot find a robust relationship between the volatility of economic growth and domestic financial development.

### 3. Data and Methodology

In our study we employ data from the database of Lane and Milesi-Ferretti (2007) which consist of comprehensive data on foreign financial assets and liabilities for a large sample of countries for the period 1970-2011. For measure of financial integration (openness) we employ modified conventional indicator of the external trade openness and calculate financial integration as sum of capital inflows and outflows divided by GDP. We also calculate international financial integration using financial flows subcategories - foreign direct investments, portfolio investments and debt investments. Following methodology employed by Kose et al. (2003), median of standard deviation was calculated for particular variables to measure their cross-sectional volatility. Additionally, standard deviation was calculated for the whole period observed as well as particular sub-periods on a ten year basis (1970-1979, 1980-1989, 1990-1999, and 2000-2009) to review changes in the volatility over the time. Summary of data sources employed in the paper provides Appendix A.

We define a measure of overall and decomposed macroeconomic volatility in few ways. First, we use the volatility of real GDP per capita growth for evaluating the overall macroeconomic volatility. Then we calculate decomposed volatility as the real private consumption per capita growth. Because the cyclical components of government consumption may affect households' consumption, we also use the constant final consumption expenditure per capita growth to measure the volatility of consumption. This could be particularly important for less developed economies as well as more open economies that tend to have higher ratios of government consumption to output. Then we calculate ratio of the volatility of final consumption to the volatility of output to evaluate patterns of consumption smoothing. We expect that this ratio should be significantly lower in industrial countries in comparison with developing countries. Finally we calculate the volatility of real total investment growth

per-capita. Investments are measured by gross fixed capital formation as the portion of total output. Suggested decomposition enables us to reveal different effects of international financial integration on households and business sector.

Evaluation of effects of international financial integration on macroeconomic volatility it is convenient to split the group of developing countries into two sub-groups according to the average measures of the financial openness over the last four decades. Full sample of our countries is divided in two groups (developed and developing countries) following the classification provided by International Monetary Fund. In order to examine the effects of international financial integration we follow the approach employed by Kose et al. (2003) and subdivide developing economies into two groups: more financially integrated (MFI) and less financially integrated (LFI). The key criterion employed to organize countries into these two groups is cross-sectional median of financial openness representing the value 1.028 for the whole sample of developing countries over the period 1970-2011. Following this procedure we have obtained 23 developed countries, 32 MFI countries and 48 LFI countries.

Appendix B provides a list of countries decomposed into four groups in our sample. Countries were decomposed into four groups for analytical purposes only and it has no additional interpretation.

#### 4. Trends in Financial and Macroeconomic Volatility

##### 4.1 Evaluation of Volatility of Financial Flows

Financial openness increased in the most countries all over the world during the period of the last four decades. Intensified international financial integration followed by higher financial openness caused an increase in the volatility of international financial flows. Due to existing differences in the dynamics of international financial integration and associated volatility of international financial flows, many authors focused on examination of the relationship among financial integration, the volatility of financial flows and macroeconomic volatility. In Table 1 we summarize the evolution of the volatility of international financial flows over time.

Our results confirm that the volatility of international financial flows is generally higher in the group of developed countries in comparison with developing countries. In addition, the volatility of international financial flows rises with higher international financial openness. Volatility of financial flows of LFI economies is clearly smaller than of those from the group of MFI economies.

**Table 1 Cross-sectional Volatility of Capital Flows Measured by Median of Standard Deviation**

Volatility of financial flows (median)					
Standard deviation <sup>1</sup>	1970-2011	1970-1979	1980-1989	1990-1999	2000-2009
Developed economies	1.501	0.092	0.201	0.407	0.646
MFI	0.607	0.196	0.396	0.248	0.311
LFI	0.320	0.077	0.137	0.158	0.164

*Source:* Authors calculations

Table 2 summarizes estimated results for the volatility of financial flows measured by cross-sectional mean of standard deviation. While the volatility of LFI economies remained at the same levels despite the changed measurement, we observed a substantial increase in the volatility of financial flows in the group of developed and MFI economies. Our results also indicate that the volatility of financial flows in MFI economies is even higher than the

<sup>1</sup> Median of standard deviation for each group of countries

volatility in developed countries revealing higher diversity of calculated results in the countries from this group. Moreover, coefficients of the volatility of financial flows significantly drop to from 2.136 to 0.875 (for the whole period) if the outliers are excluded from the analysis. After this adjustment, the results are more consistent with previous table.

Tables 1 and 2 also summarize estimated volatilities of international financial flows decomposed into individual decades (columns 2-5) within the whole period to examine the evolution of main trends. It seems that median volatility rises over the observed period in all three groups of countries. As we expected, the most dynamic changes in terms of a relative increase in the median of standard deviation experienced developed economies. We suggest that this trend was caused by the rapid growth of the financial openness in developed economies over the examined period. Quite similar results are reported by the Table 2. In general, increasing financial openness is obviously accompanied by the excessive growth of the volatility of financial flows. This relation is observable mainly in developed countries and MFI economies. The overall dynamics in the volatility of financial flows is thus positively affected by financial openness.

**Table 2 Cross-sectional Volatility of Capital Flows Measured by Mean of Standard Deviation**

Volatility of financial flows (mean)					
Standard deviation <sup>2</sup>	1970-2011	1970-1979	1980-1989	1990-1999	2000-2009
Developed economies	2.091	0.125	0.246	0.591	1.192
MFI	2.136	0.387	0.944	0.745	1.162
LFI	0.331	0.089	0.174	0.164	0.191
Developed economies <sup>3</sup>	1.743	0.120	0.250	0.481	1.005
MFI <sup>4</sup>	0.875	0.409	0.640	0.363	0.377

*Source:* Authors calculations

Examination of the volatility of international financial flows revealed interesting implications of international financial integration according to the relative differences in the overall performance of the countries. Subsequent decomposition of international capital flows into key components provides additional information about the sources of the volatility of international financial flows according to the typology of capital movements (foreign direct investment (FDI) and debt investments (portfolio debt investment included)<sup>5</sup> are concerned). In Table 3 we investigate cross-sectional differences in the volatility of particular financial flows. This approach will be helpful in the next section of the paper to examine the relative importance of individual financial flows in determining the overall volatility of financial flows.

Following our results we suggest that the contribution of debt investment flows is clearly more important in determining the overall volatility of financial flows. Table 3 shows the volatility of FDI and debt investment as ratio to GDP. It seems that FDI flows represents less volatile component of private financial flows given their long-term character and relatively stable nature. This is consistent with the paper Taylor and Sarno (1999). Authors conclude that FDI flows are more stable and persistent than other groups of financial flows. These results are also confirmed by Hausmann and Fernandez-Arias (2000), who conclude that even the volatility of FDI flows has been continuously increasing over the last few

<sup>2</sup> Mean of standard deviation for each country group

<sup>3</sup> Ireland excluded as outlier

<sup>4</sup> Bahrain, Liberia, Mauritius and Singapore excluded as outliers (the group of four the most financially opened and volatile countries)

<sup>5</sup> Portfolio equity investment are excluded from analysis due to lack of data available



decades, it still remains generally much lower than the volatility of other types of international financial flows. Authors highlight that the most volatile flows of FDI can be found in MFI economies. However, the difference from developed countries is relatively small. Debt financial flows tend to be far more volatile and sensitive to sudden reversals than FDI. This conclusion also results from our analysis. In addition, according to Table 3 we suggest that the volatility of FDI and debt flows remains relatively stable in each group of the countries. However, increments between individual periods have risen slightly in most cases.

**Table 3 Cross-sectional Volatility of Different Capital Flows Measured by Standard Deviation<sup>6</sup>**

<b>Volatility of financial flows</b>					
<b>FDI/GDP</b>					
<b>Median of Standard deviation</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	0.148	0.008	0.014	0.035	0.066
MFI	0.186	0.040	0.029	0.054	0.095
LFI	0.086	0.011	0.009	0.027	0.052
<b>Mean of Standard deviation</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	0.192	0.015	0.023	0.052	0.108
MFI	0.464	0.072	0.056	0.177	0.333
LFI	0.089	0.022	0.014	0.035	0.055
<b>Debt investments/GDP</b>					
<b>Median of Standard deviation</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	0.451	0.052	0.093	0.099	0.242
MFI	0.470	0.136	0.205	0.188	0.180
LFI	0.223	0.062	0.103	0.106	0.163
<b>Mean of Standard deviation</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	0.681	0.074	0.102	0.153	0.460
MFI	0.851	0.238	0.475	0.449	0.357
LFI	0.227	0.068	0.129	0.116	0.169

*Source:* Authors calculations

As we already suggested, the volatility of financial flows is affected by increasing financial openness. We provide some stylized facts concerning the volatility of financial flows. Figure 1 outlines the volatility of financial flows according to the measure of international financial integration for the full sample of countries as well as individual subsamples of countries. It is clear that countries with higher financial openness obviously experience higher volatility of financial flows. Figure 1 confirms the results from previous sections. Positive relationship is presented in all countries group. However, the contribution of international financial integration in determining the volatility of financial differs for each group of countries.

**Table 4 Correlation between Financial Integration and Volatility of Financial Flows**

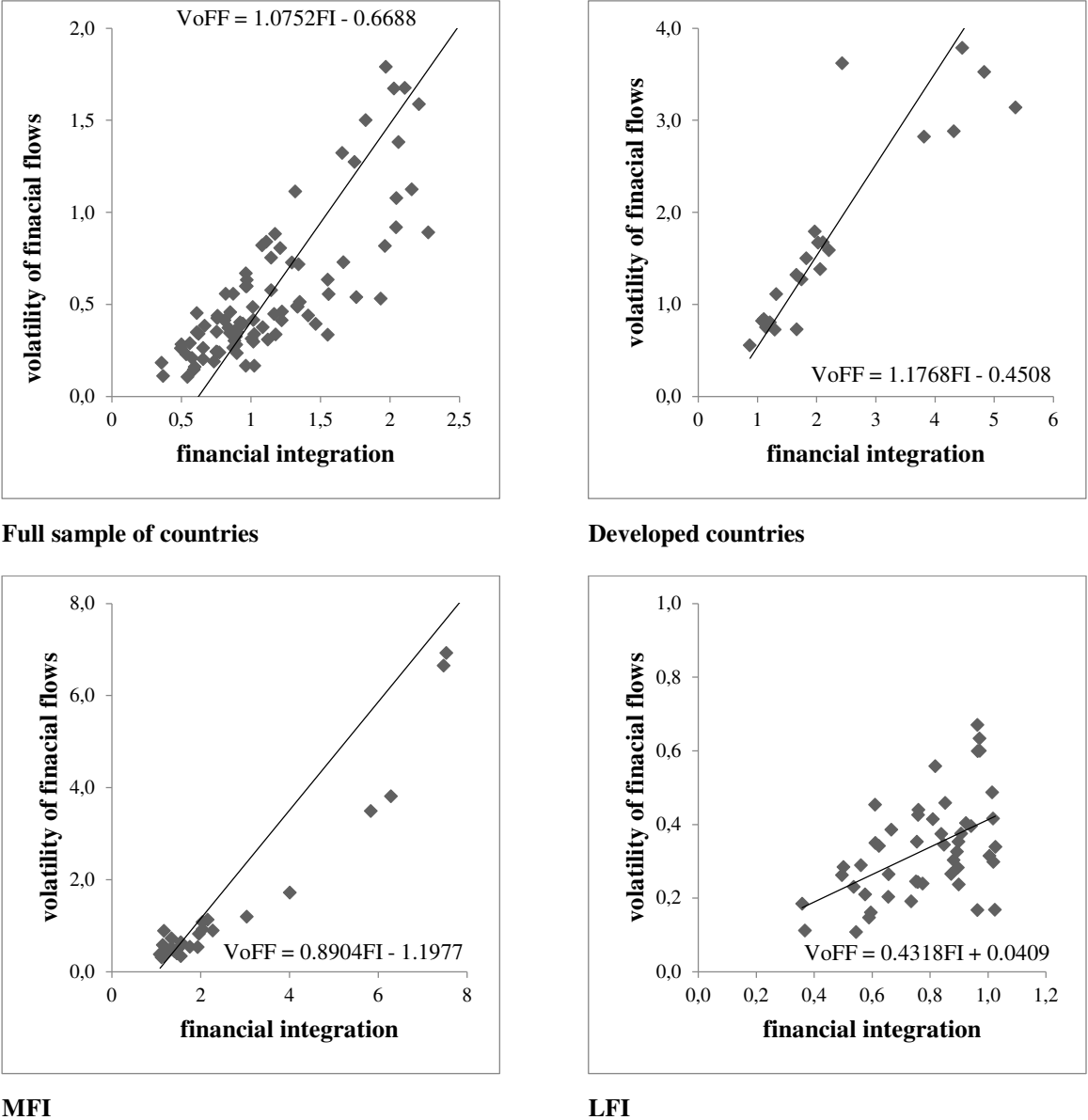
<b>Group of countries</b>	<b>Correlation coefficient</b>
All countries	0.851
Developed economies	0.930
MFI	0.816
LFI	0.503

*Source:* Authors calculations

<sup>6</sup> FDI and debt investments measured as total FDI inflows and total debt inflows respectively

In Table 4 we provide results of a simple correlation analysis between international financial integration and the volatility of financial flows. It seems that financial integration has the highest influence on the volatility of financial flows in the group of developed countries (the coefficient of correlation is 0.930). Slightly reduced effect of international financial integration we observed in the group of MFI countries (the coefficient of correlation is 0.816). LFI group of countries experienced lower interconnection between both variables (the coefficient of correlation is 0.503). We suggest that the relative importance of financial openness in determining the volatility financial flows in LFI economies is clearly marginal and doesn't affect the volatility of financial flows as the primary factor.

**Figure 1 Financial Integration and Volatility of Financial Flows**



**Note:** VoFF - volatility of financial flows, FI - financial integration  
**Source:** Authors calculations

We may summarize that higher volatility of international financial flows induced by increasing international financial openness is followed by higher macroeconomic volatility. If this assumption is correct then macroeconomic volatility in developed countries should be the

highest from all groups of countries. However, empirical validity of this assumption needs to be tested.

#### 4.2 Macroeconomic Volatility

In this part of the paper we investigate macroeconomic volatility in all three groups of countries. Table 5 (column 1) shows the cross-sectional medians of the volatility of output, consumption and investment growth over the whole period of four decades. Developed countries maintained substantially lower macroeconomic volatility than other two groups of countries. Despite higher volatility of international financial flows and higher financial openness it seems that developed countries were able to maintain generally low levels of the overall macroeconomic volatility. It seems that international financial integration and increasing volatility of international financial flows was not associated with corresponding increase in the macroeconomic volatility in developed countries.

On the other hand, our results revealed different results for the group of developing countries (both MIF and LFI). In general, developing countries tend to experience more intensive fluctuations in macroeconomic variables in comparison with developed countries. Following the results from Table 5 (column 1) we suggest that MFI economies experienced substantially higher rates of the volatility in macroeconomic variables than LFI countries. Moreover, in case of the volatility of investments, the gap is even much higher. As a result, increasing financial openness seems to be associated with undesirable effects on the macroeconomic stability in developing economies. Therefore, it is important to investigate more details about trends in macroeconomic volatility during the subsequent periods.

**Table 5 Macroeconomic Volatility**

<b>Macroeconomic volatility of growth rates for selected variables<sup>7</sup></b>					
<b>Output</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	2.200	2.486	1.771	3.360	2.167
MFI	5.017	4.669	4.416	4.062	2.354
LFI	4.173	3.499	4.109	4.081	2.437
<b>Final consumption</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	1.725	1.948	1.368	1.279	1.010
MFI	6.778	6.735	6.483	4.836	4.127
LFI	5.182	4.558	4.549	4.050	3.142
<b>Ratio of total consumption to output</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	0.167	0.235	0.742	0.879	0.783
MFI	0.468	0.593	0.859	0.867	0.856
LFI	0.385	0.545	0.915	0.925	0.883
<b>Private consumption</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	2.085	2.444	1.978	1.730	1.499
MFI	8.542	8.517	7.920	5.972	4.463
LFI	5.867	4.966	5.059	4.377	3.607
<b>Investments</b>	<b>1970-2011</b>	<b>1970-1979</b>	<b>1980-1989</b>	<b>1990-1999</b>	<b>2000-2009</b>
Developed economies	6.326	6.158	6.149	5.403	5.986
MFI	20.996	16.577	16.219	16.541	11.116
LFI	14.670	12.560	13.733	12.968	8.825

*Source:* Authors calculations

Table 5 (columns 2-5) highlights changes in macroeconomic volatility of growth rates of selected variables during all four decades. In general, developing countries experienced decreasing trend in macroeconomic volatility over time. Moreover, this trend was obvious in

<sup>7</sup> Median of standard deviation for each group of countries

both MFI and LFI economies. However, the decrease is more dynamic in the group of MFI countries. We suggest that increasing financial openness associated with higher volatility of international financial flows was associated with higher macroeconomic stability in developing countries, especially MFI countries. This conclusion is obvious even though the overall macroeconomic volatility in MFI countries exceeded macroeconomic volatility in LFI countries in each individual decade.

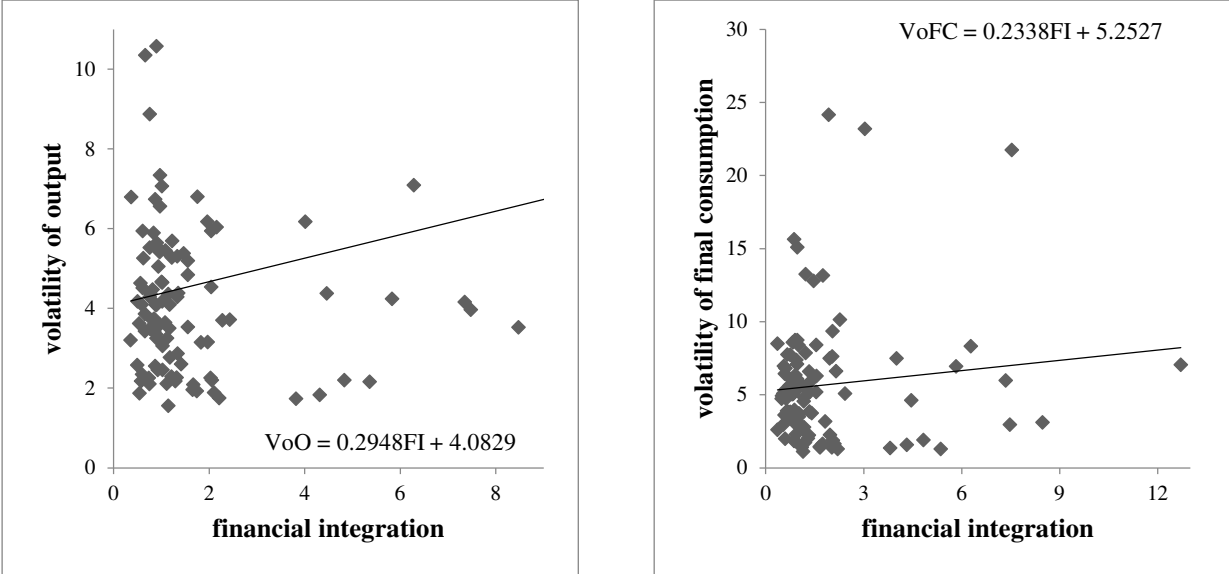
Intensive international financial integration initially causes macroeconomic instability in developing countries. However, increasing openness to global financial markets causes significant economic improvement over time due to associated positive implications. We suggest that increasing financial openness affects macroeconomic volatility in the positive way. In other words the relationship between examined variables is negative.

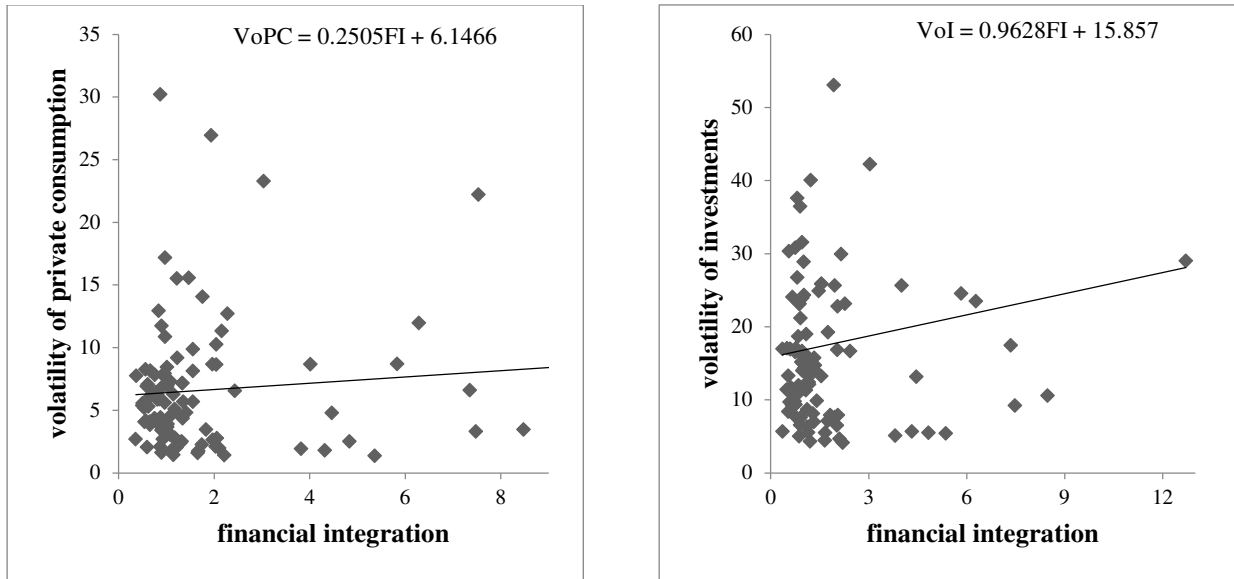
**A. Financial Integration and Macroeconomic Volatility**

In the next section we observe mutual relationship between financial openness (financial integration) and macroeconomic volatility. We employed following measurements of macroeconomic volatility - the volatility of real GDP per capita growth, the volatility of real private consumption per capita growth, the volatility of real final consumption per capita growth, the volatility of real gross fixed capital formation per capita growth and as ratio of the volatility of total consumption to the volatility of output. We expect that financial integration has positive effect on macroeconomic volatility. As a result, an increase in financial integration is followed by the drop in macroeconomic volatility.

In Figure 2 we summarize the relationship between financial integration and the volatility of total output and its selected components for the full sample of countries. Our results revealed generally positive relationship in all four cases. Participation of countries in the process of financial integration is thus associated with increased macroeconomic volatility. It seems that intensified cross-border capital movements operate as a vehicle for weakening the macroeconomic stability, though this relationship does not seem to be significant. At the same time, our expectation about the existence of negative relationship was not confirmed.

**Figure 2 Financial Integration and Macroeconomic Volatility**





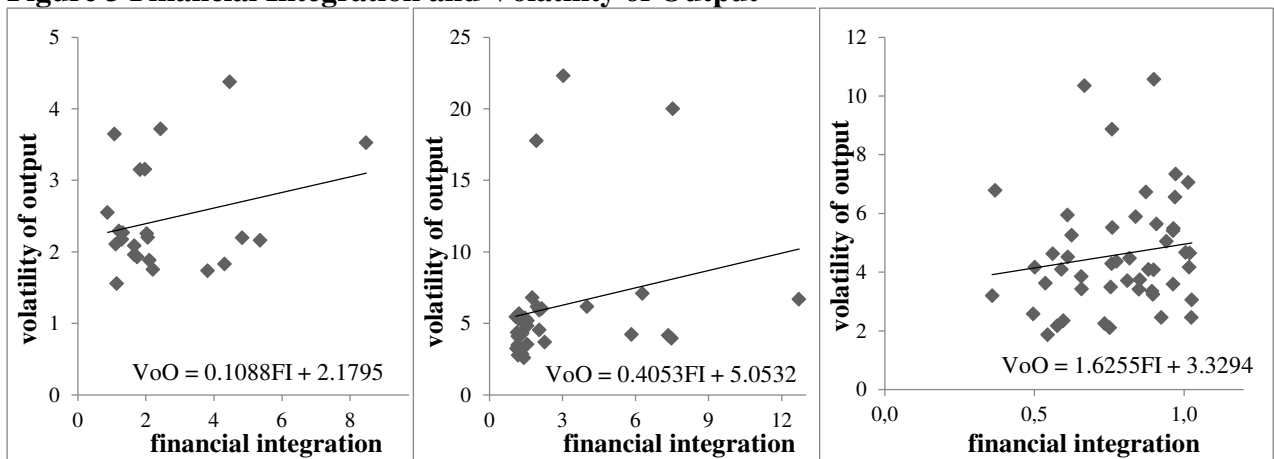
**Note:** VoO - volatility of output, VoPC - volatility of private consumption, VoFC - volatility of final consumption, VoI - volatility of investments, FI - financial integration

**Source:** Authors calculations

Our results are consistent with empirical results of other authors (i.e. Kose at al., 2003). The strongest relationship was observed between financial integration and overall output. Investments seem to be the most sensitive component of the output in terms of its exposure to the relative changes in financial integration.

Figure 4 provides brief overview of identified relationship between financial integration and the volatility of output in countries decomposed into three groups. Our estimations confirmed expected positive relationship between both indicators in all three groups of countries.

**Figure 3 Financial Integration and Volatility of Output**



**Developed countries**

**MFI**

**LFI**

**Note:** VoO - volatility of output, FI - financial integration

**Source:** Authors calculations

Despite generally low levels of correlation between financial openness and overall output in all three groups of countries we observed decreasing trend in this causal relationship considering the level of financial integration (Table 7). As a result, total output in LFI

countries seems to be least vulnerable to relative changes in the financial openness from the whole group of countries.

**Table 6 Correlation between Financial Integration and Volatility of Output**

Group of countries	Correlation coefficient
All countries	0.181
Developed economies	0.265
MFI	0.234
LFI	0.151

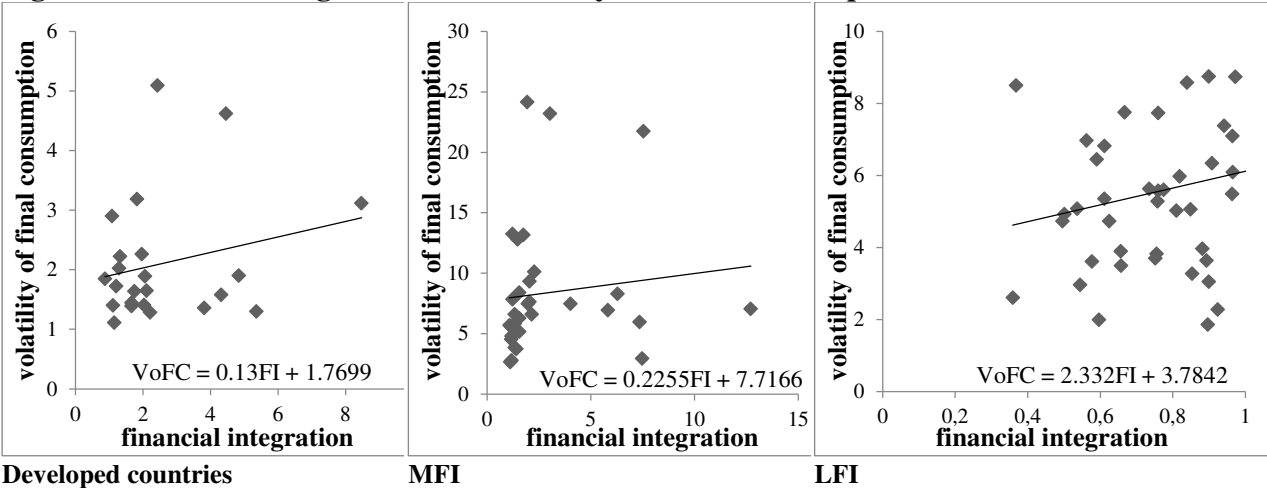
*Source:* Authors calculations

Lagging involvement of less developed countries in the process of international financial integration is obviously decelerated by low intention of financial markets and individual investors to internationally share high risk with underdeveloped market economies. Low degree of financial openness reduces transmissions of external shocks (i.e. banking and financial crisis) to low financially integrated economies and thus anchors macroeconomic stability by reducing the dynamics of macroeconomic volatility. At the same time, low participation of such economies in the international risk sharing and cross-country portfolio holdings clearly reduces wide range of growth benefits resulting from foreign capital inflows considering low domestic savings, technology gap and low productivity.

In the following part of the paper we investigate the relationship between international financial integration and selected components of total output in all three groups of countries. Results are particularly important for identification of the sources of macroeconomic instability determined by relative changes in the size of the cross-country capital flows exchanging in the individual groups of countries.

The relationship between international financial integration and the volatility of final consumption for all three groups of countries is summarized in the Figure 3. As we expected, there is a positive relationship between both variables in each group. However, significance of this relationship seems to quite low especially in both groups of developing countries.

**Figure 5 Financial Integration and Volatility of Final Consumption**



*Note:* VoFC - volatility of final consumption, FI - financial integration  
*Source:* Authors calculations

Positive relationship between both variables corresponds with generally expected positive welfare effect of financial integration on domestic consumption. Results presented in Table 5 indicate similar trends in both total output and final consumption (especially due to private consumption) in developing countries from 1970s till 1990s. Consumption smoothing over time helped to reduce the overall macroeconomic volatility in this group of countries during this period operating as a stabilizing factor of effects associated with rapidly growing financial integration. As a result, wealth effects of financial integration are associated especially with developed countries (Table 8). At the same time, the volatility of final consumption is least correlated with financial integration in MFI revealing its lower dependence on the dynamics of financial openness especially during the period from 1970s till 1990s.

**Table 8 Correlation between Financial Integration and Volatility of Final Consumption**

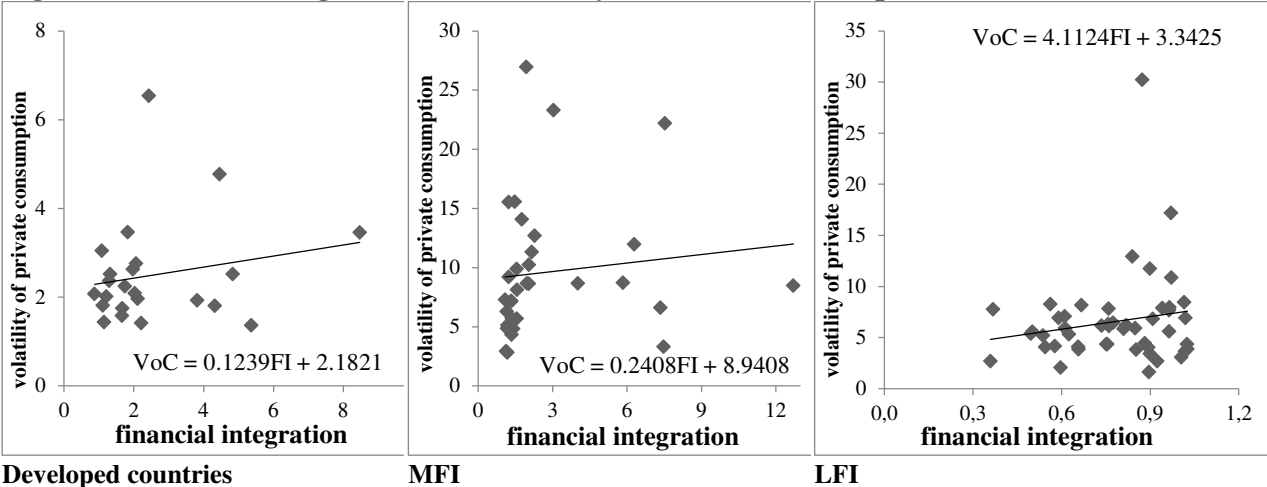
Group of countries	Correlation coefficient
All countries	0.109
Developed economies	0.229
MFI	0.111
LFI	0.153

*Source:* Authors calculations

We suggest that final consumption operated as a destabilizing factor (especially due quite volatile private consumption) of the overall macroeconomic stability in the group of MFI (in comparison with both developed and LFI countries) during the most of the selected period. While the volatility of final consumption in MFI was much less dependent on the dynamics of financial integration, we assume that this trend was associated with growth effects of generally higher stocks of accumulated foreign assets (in comparison with LFI countries) and corresponding higher dynamics of total output.

In Figure 6 we summarize the relationship between financial integration and the volatility of private consumption in the individual groups of countries. Following the conclusions from the previous section Figure 6 similarly confirmed the existence of a positive relationship between financial integration and the volatility of private consumption in all three groups of countries.

**Figure 6 Financial Integration and Volatility of Private Consumption**



*Note:* VoPC - volatility of consumption, FI - financial integration

*Source:* Authors calculations

However, our results indicate some differences in the intensity of the relationship between financial openness and private consumption (in comparison with final consumption). While the volatility of private consumption seems to be less correlated with financial integration in developed countries (especially during first three decades), the relationship in MFI countries remained unchanged and slightly increased in LFI countries (though still lagging behind developed countries).

**Table 9 Correlation between Financial Integration and Volatility of Private Consumption**

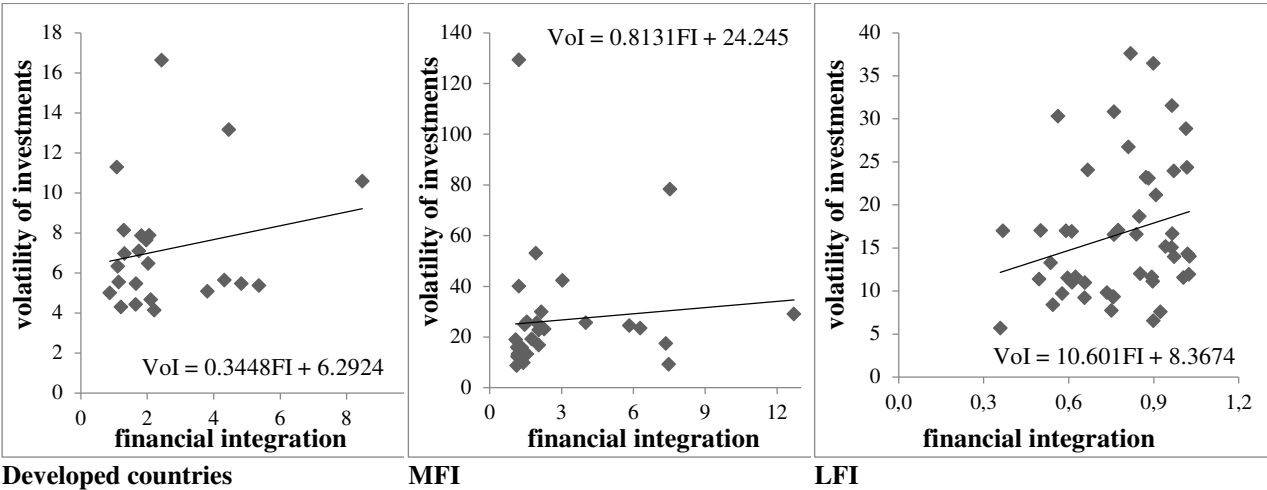
Group of countries	Correlation coefficient
All countries	0.096
Developed economies	0.192
MFI	0.112
LFI	0.167

Source: Authors calculations

Low levels of financial integration in LFI countries induced higher exposure of private consumption to the relative changes in capital inflows from abroad, while private consumption MFI countries is more vulnerable to the changes in the stock of capital from abroad (this conclusion is also confirmed at the following section of the paper examining effects of the volatility of financial flows).

Finally, Figure 7 examines mutual relationship between financial integration and domestic investments. Similarly, we observed a positive relationship between both variables. While generally of a low significance, the strongest relationship was identified in LFI countries confirming our assumption about relatively high importance of foreign capital inflows for investment activities particularly in low financially integrated underdeveloped economies with insufficient accumulation of domestic savings.

**Figure 4 Financial Integration and Volatility of Gross Fixed Capital Formation**



Note: VoI - volatility of investments, FI - financial integration  
 Source: Authors calculations

Our conclusions are even more interesting provided that the relationship between the level of financial openness and the volatility of domestic gross investments is the weakest from all components of total output for the whole sample of countries. This suggestion is also



valid for both developed (except for private consumption) and MFI countries. At the same time, the weakest correlation between financial integration and gross domestic investments in MFI countries, provided significant volatility of this variable (see Table 5 for details), addresses opened questions to the examination of possible sources of a substantial volatility of investments in this group of countries during the most of the analyzed period. In the next section of the paper we indicate that provided the lowest level of financial openness, gross domestic investments in LFI are quite sensitive to the volatility of foreign capital inflows highlighting the reliance of real output growth rates in the countries from this group on the confidence and concern of the foreign investors.

**Table 7 Correlation between Financial Integration and Volatility of Investments**

Group of countries	Correlation coefficient
All countries	0.121
Developed economies	0.204
MFI	0.094
LFI	0.243

*Source:* Authors calculations

Examination of the relationship between financial integration and the volatility of total output and its main components may be summarized as follows. The strongest relationship was identified between financial integration and the volatility of total output. We suggest that increasing international financial integration has positive though less significant effect. Moreover, positive effect is increasing with rising financial integration of a country. On the other hand, different implications revealed investigation of the relationship between financial integration and the volatility of consumption and investments. While results for the group of developed countries still indicate higher exposure of later two variables to the financial integration, the situation changed in both groups of developing countries. Our results indicate that low levels of financial integration of countries from the group of developing economies induce higher vulnerability of particular economies to the volatility of consumption and investments than in MFI countries. We suggest that growth rates of domestic consumption and especially investments in LFI are more sensitive to the relative changes in the financial openness than MFI countries revealing (1) limited internal sources of growth and (2) higher dependence of economic convergence on external sources in LFI countries. As a result, while financial integration operates as a traditional vehicle of higher macroeconomic volatility, our results indicate that the general trend of decreasing macroeconomic volatility during the period before the crisis was not primarily driven by financial integration. Considering that there is no clear empirical evidence about direct interconnection between decreasing macroeconomic volatility and rising financial integration, we suggest that decreasing trend in macroeconomic volatility during the period of last four decades was caused by other determinants affecting the dynamics of real output and its main components.

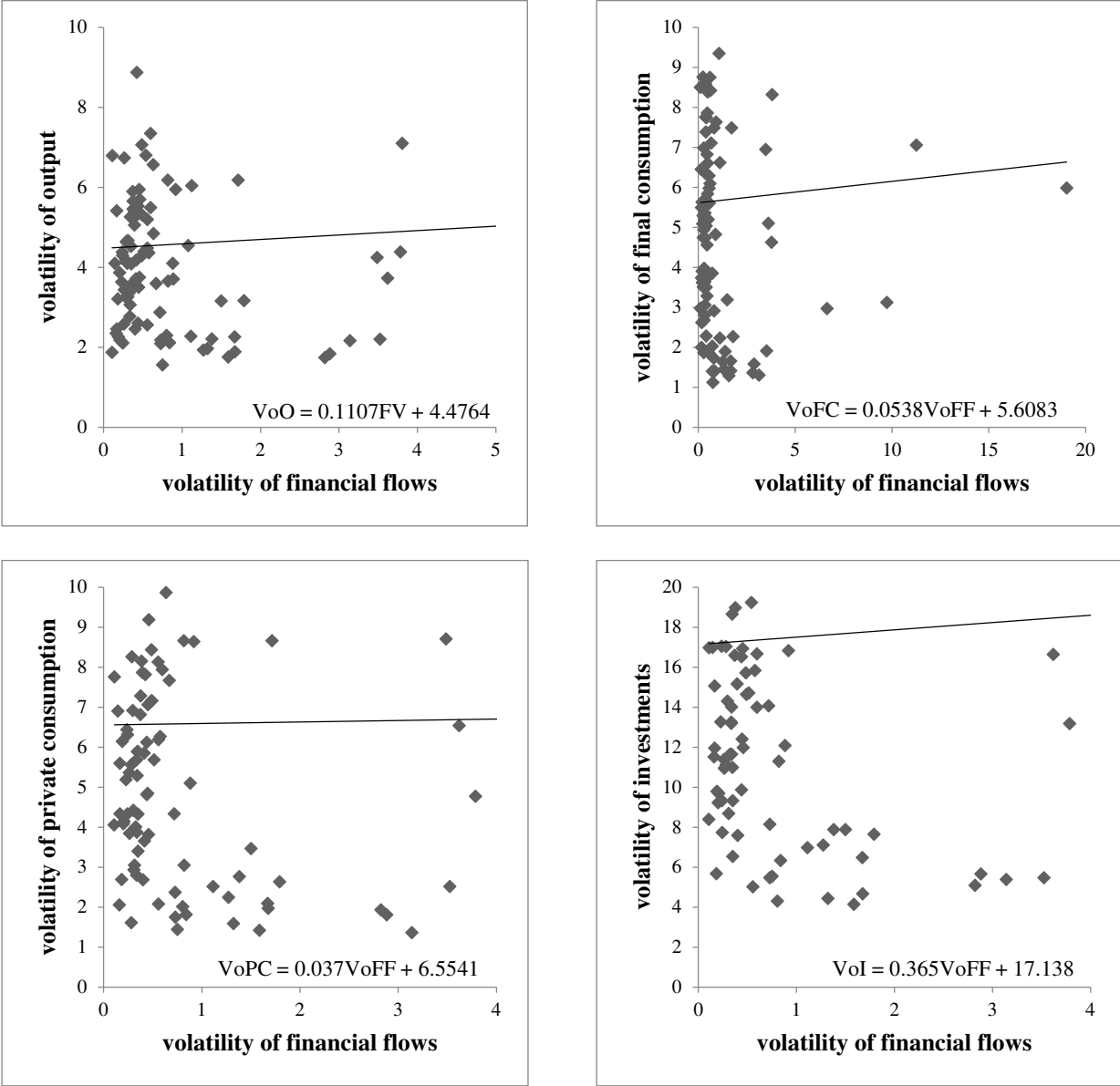
### **B. Volatility of Financial Flows and Macroeconomic Volatility**

In the last section of the paper we analyze the relationship between the volatility of financial flows and macroeconomic volatility. Following our previous results revealing a positive relationship between financial integration and macroeconomic volatility we expect that there exist a positive relationship between the volatility of financial flows and macroeconomic volatility too.

In Figure 8 we summarize the relationship between the volatility of financial flows and the volatility of total output and its selected components for the full sample of countries. Our investigation indicates generally positive relationship in all four cases. The intensity of

the relationship seems to be less dynamic when examining the volatility of financial flows (Figure 8) in comparison with stocks of capital (financial integration) (Figure 2) for all variables and all countries in one group. However, decomposition of countries into individual groups revealed distortions in aggregated results that have to be explained in details. Except for MFI, our results indicate stronger relationship between the volatility of financial flows and the volatility of key variables in both remaining groups of countries (developed and LFI economies). It seems that the volatility of financial flows is associated with higher volatility of macroeconomic variables revealing negative implications of dynamic changes in the cross-country capital allocation.

**Figure 8 Volatility of Financial Flows and Macroeconomic Volatility**

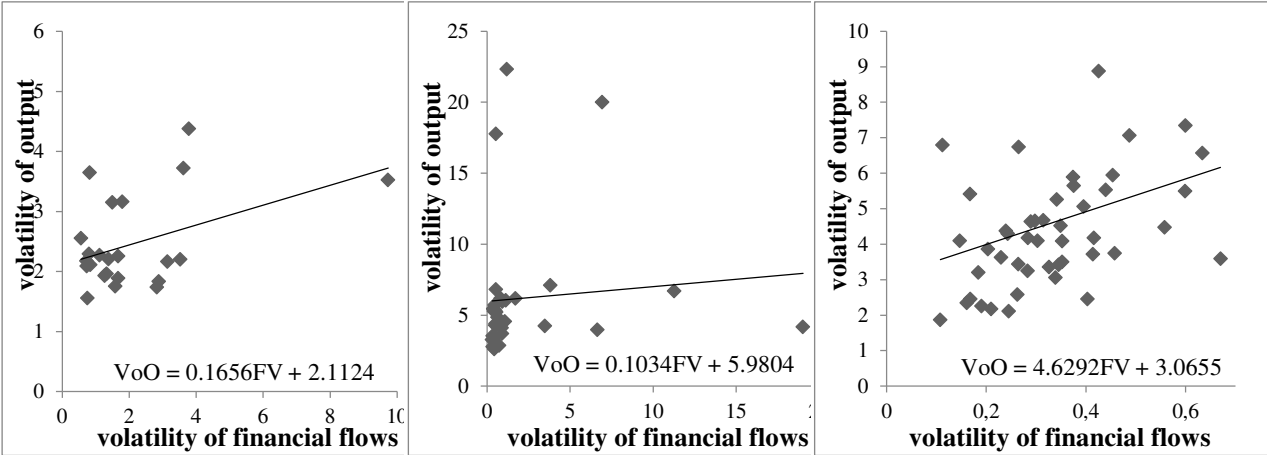


*Note:* VoFF - volatility of financial flows, VoPC - volatility of private consumption, VoFC - volatility of final consumption, VoI - volatility of investments  
*Source:* Authors calculations

While our analysis did not examine the particular contribution of capital inflows and outflows to the volatility of main macroeconomic variables, we suggest that macroeconomic volatility of less developed countries (and LFI at the same time) is more sensitive to the foreign capital inflows considering generally negative international investment position (net balance of foreign assets-liabilities balance sheet). We assume that inflow of foreign capital and its dynamics determines growth rates of employed variables more significantly than the overall stock of foreign capital indicating limitations of growth incentives associated with financial integration of less developed countries over time. Relative differences resulted from stocks and flows approaches in LFI countries correspond with least strong relationship between financial integration and the volatility of financial flows (Table 4).

At the same time, different results for the group of MFI countries (vulnerability to flows) confirm key outcomes of the previous section (vulnerability to stocks) about reduced exposure of key macroeconomic variables in MFI but less developed countries.

**Figure 9 Volatility of Financial Flows and Volatility of Output**



Developed countries

MFI

LFI

*Note:* VoFF - volatility of financial flows, VoO - volatility of output  
*Source:* Authors calculations

Figure 9 examines the relationship between the volatility of financial flows and the volatility of output in all three groups of countries. As we expected, total output seems to be more vulnerable to the relative changes in the external capital flows in developed and LFI countries. These results correspond to our key findings resulted from the previous section of the paper emphasizing the least vulnerability of MFI economies. Our findings also indicate that the volatility of total output in both groups of countries is higher when examining its exposure to the flows (Table 11) as when examining its exposure to stocks (Table 7).

**Table 11 Correlation between Volatility of Financial Flows and Volatility of Output**

Group of countries	Correlation coefficient
All countries	0.086
Developed economies	0.429
MFI	0.086
LFI	0.319

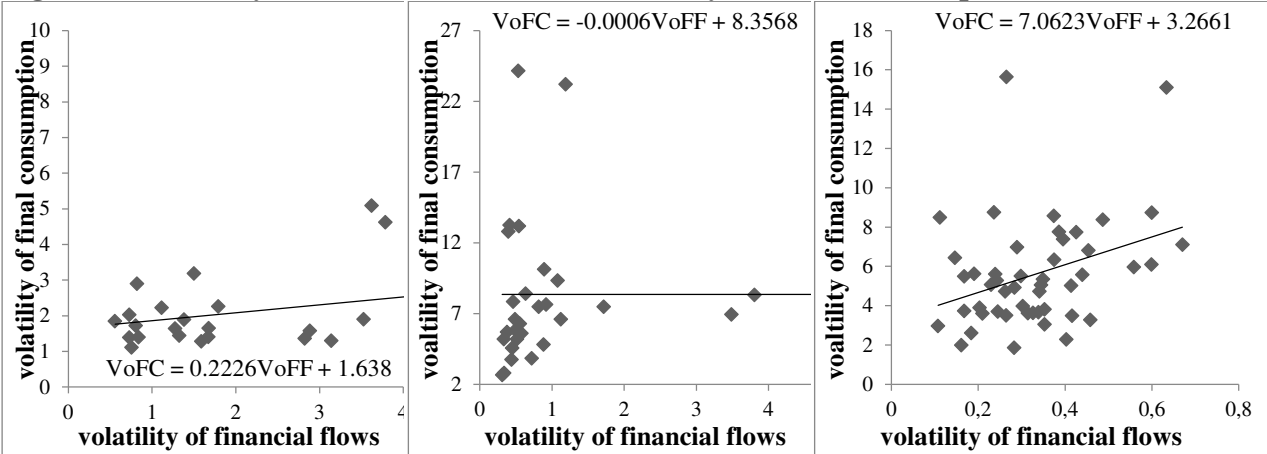
*Source:* Authors calculations

It seems that changes in the direction as well as the dynamics of foreign capital flows are followed by sharp changes in the total output in LFI economies considering generally low

levels of financial depth in these countries that make them hard to cope with highly volatile foreign capital flows as suggested by Kose et al. (2003) (foreign capital flows thus operates as sudden external shock with negative impact on macroeconomic stability). However, it doesn't seem to be the case of MFI economies with deeper and higher developed financial sector that is associated with lower volatility of macroeconomic variables (Easterly, Islam and Stiglitz, 2001) regardless of the dynamics in the volatility of international financial flows. Finally, strong evidence of the positive relationship between the volatility of financial flows and the volatility of output in developed countries confirms theoretical assumptions about linkage between instability of financial flows and associated macroeconomic volatility in highly financially opened economies that increase their vulnerability to external shocks. However, our results indicate that theory does not provide sufficient fundamental background for clear explanation of the effects of the volatility of financial flows on the volatility of output for our sample of developed and developing economies. It seems that despite rich empirical evidence of possible implications associated with the volatility of international financial flows, there is still a crucial need for a further investigation examining possible channels of the financial volatility transmission into domestic economy under wide variety of country specific circumstances and associated effects on macroeconomic volatility.

In Figure 10 we investigate the relationship between the volatility of financial flows and the volatility of final consumption in each group of countries from our sample. Our results correspond with to our previous conclusions resulting from Figure 9. We observed strong positive relationship between both variables in developed and LFI countries. We suggest that high volatility of consumption in developed countries caused by the volatility of financial flows is caused by wealth effects associated with improved international risk sharing opportunities through high volatility of cross-border capital flows (as indicated by Table 1). However, despite relatively strong relationship between the volatility of financial flows and the volatility final consumption it seems that highly financially integrated countries (developed economies) are able to smooth their consumption over time provided its generally lower volatility in comparison with the volatility of total output (as indicated by Table 5).

**Figure 10 Volatility of Financial Flows and Volatility of Final Consumption**



**Note:** VoFF - volatility of financial flows, VoFC - volatility of final consumption  
**Source:** Authors calculations

Results for the group of MFI economies revealed insignificant relationship between the volatility of financial flows and the volatility of final consumption. It seems that despite relatively high levels of financial integration, the final consumption in countries from this

group is not affected by the volatility in financial flows. Similarly to our previous results we suggest that the volatility of output is more vulnerable (though with less significance) to stocks of assets than to flows of capital. At the same time, high volatility of consumption in MFI economies (see Table 5 for more details) indicate their reduced ability to smooth their consumption over time that is caused especially by their reduced ability to absorb structural shocks.

**Table 8 Correlation between Volatility of Financial Flows and Volatility of Final Consumption**

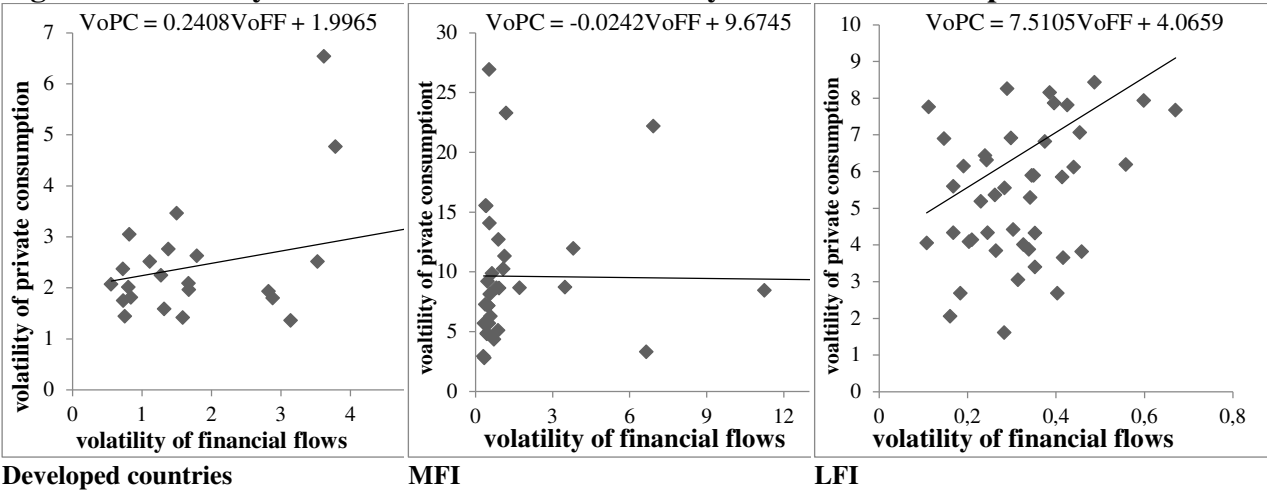
Group of countries	Correlation coefficient
All countries	0.032
Developed economies	0.418
MFI	0.022
LFI	0.446

Source: Authors calculations

Finally, we observed strong relationship between the volatility of financial flows and the volatility of final consumption in LFI economies. In line with our previous results it seems that consumption in countries from this group is clearly more vulnerable to flows than to stocks of foreign capital. While the wealth effect associated with foreign capital flows seems to be significant, reduced consumption smoothing is present during the most of the analyzed period.

Figure 11 summarizes the relationship between the volatility of financial flows and the volatility of private consumption. Our results indicate that there are no significant differences between effects on final consumption and private consumption in case of developed countries. Volatility of both variables is positively affected by the volatility of financial flows. At the same time, the intensity of the relationship is the strongest in this group of countries relatively to the full sample of countries.

**Figure 11 Volatility of Financial Flows and Volatility of Private Consumption**



Note: VoFF - volatility of financial flows, VoPC - volatility of private consumption

Source: Authors calculations

Similar results provide overview of the relationship between the volatility of financial flows and the volatility of private consumption in LFI economies. While the identified relationship is still positive, its significance slightly decreased (in comparison with the volatility of final consumption). It seems that reduced wealth effect on private consumption in

LFI countries induced by budgetary constraints is associated with limited international risk sharing provided generally low levels of financial integration (and corresponding low volatility of financial flows). However, private consumption in LFI countries is still more vulnerable to the relative changes in the international financial flows than to stocks of foreign capital (financial integration).

**Table 9 Correlation between Volatility of Financial Flows and Volatility of Private Consumption**

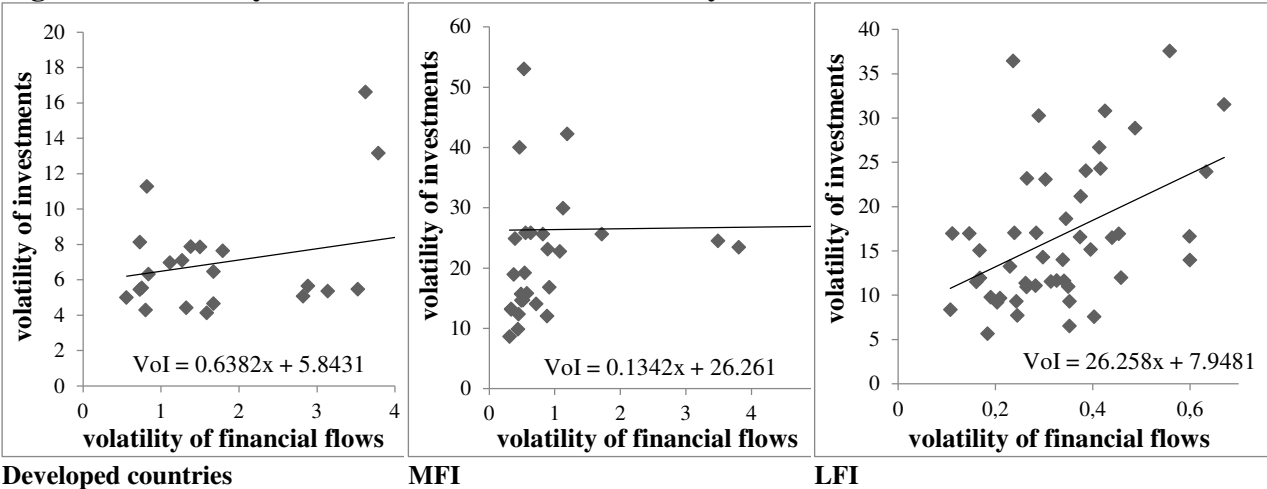
Group of countries	Correlation coefficient
All countries	0.018
Developed economies	0.398
MFI	-0.016
LFI	0.225

Source: Authors calculations

Examination of the volatility of financial flows and the volatility of private consumption revealed the negative though clearly insignificant relationship between both variables in MFI economies. This investigation together with results for the volatility of final consumption provides spurious information about stabilizing effects of foreign capital inflows in MFI countries. At the same time, insignificant relationship between both variables (flows and consumption) indicates an absence of the wide range of growth benefits resulting from foreign capital inflows. As we already mentioned, MFI countries benefits more from stock of accumulated capital (higher level of financial integration in comparison with LFI economies) than from inflows of foreign capital within particular period.

Figure 12 provides brief overview of the relationship between the volatility of financial flows and the volatility of investments in all three groups of countries. While the results for the whole sample of countries revealed significant influence of the flows on the volatility of investments, estimates for individual groups of countries indicate some differences. Rigorous interpretation of key findings of this section is particularly important due to significant volatility of investments in all three groups of countries during the whole observed period that make them the most volatility component of the total output.

**Figure 12 Volatility of Financial Flows and Volatility of Investments**



Note: VoFF - volatility of financial flows, VoI - volatility of investments  
 Source: Authors calculations

We suggest that assessment of the relationship between the volatility of financial flows and the volatility of investments may reveal substantial implications of the international risk sharing and associated changes in the cross-country portfolio holdings on the macroeconomic volatility across the countries from our sample.

**Table 10 Correlation between Volatility of Financial Flows and Volatility of Investments**

Group of countries	Correlation coefficient
All countries	0.058
Developed economies	0.403
MFI	0.022
LFI	0.446

*Source:* Authors calculations

Our results indicate relatively strong positive relationship between the volatility of financial flows and the volatility of investments in developed and LFI economies. Developed countries experienced periods of increased volatility of financial flows since the beginning of the 1980s. At the same time, the volatility of investments remained relatively low in comparison with developing countries. High depth of the domestic financial sector together with intensive international risk sharing enabled developed countries to maintain increasing trend in the gross investments to output ratio over time. This positive implication is even more valuable considering that many countries from the group, operating as net creditors in the intertemporal trade, were able to reduce the overall macroeconomic volatility in the recent years especially due to stabilization of the domestic investments growth rates.

LFI countries, despite relatively high positive relationship between the volatility of financial flows and the volatility of investments, experienced periods of imbalanced growth and relative macroeconomic instability during the most of the observed period. It seems that despite high inflows of foreign capital clearly supplementing the lack of domestic savings, volatile external sources of investments induced economic growth though at the cost of high volatility in gross fixed capital at the same time. As a result, real output dynamics was associated with increased volatility of real output components (especially investments) undermining sustainable path of the high real output growth rates.

Finally, we investigated relatively intensive relationship between the volatility of financial flows and the volatility of investments in MFI economies. Reduced vulnerability of real output components to the volatility of international financial flows was already highlighted at the previous sections of the paper. As a result, inflows of foreign capital do not originate distortionary effects on the gross fixed capital in MFI economies in comparison with the rest of countries from the whole group. While flows do not accelerate investments volatility, insignificant relationship between both variables also highlights limitations of the speed of convergence of MFI economies toward developed countries. We suggest, it is due to limited sustainable growth incentives on domestic investments that are clearly the most volatile in this sub-group from the whole sample of countries. This suggestion seem to be the key argument of reduced contribution of foreign capital inflows to the real output growth rates in MFI economies.

## Conclusion

In the paper we have analyzed the relationship between financial integration, volatility of financial flows and macroeconomic volatility during the period of last four decades on the sample of developed and developing countries. While theory does not provide clear evidence on key implications of international financial integration on the volatility of macroeconomic variables, empirical literature reveals both positive and negative effects on different samples

of countries considering particular time periods. Moreover, we provided the evidence of the decreasing trend in macroeconomic volatility in all groups of countries over time.

Examination of sources of the volatility of financial flows revealed increased contribution of debt flows to the dynamics in financial integration and thus becoming the key element in determining macroeconomic volatility. Following our results we suggest that higher volatility of international financial flows induced by increasing international financial openness was followed by higher macroeconomic volatility. These findings were confirmed by examined positive relationship between financial integration and main components of the total output. As we expected investments seem to be the most sensitive component of the total output to relative changes in the financial openness. In line with empirical literature we found low significant though positive relationship between financial integration and the total output and its components in all three groups of countries (highest in developed countries).

Our results also indicate that macroeconomic volatility in both developed and LFI countries is more vulnerable to the financial volatility (volatility of flows) than to the size of financial openness (volatility of stocks). This implication is more crucial when comparing LFI and MFI economies. Inflows of foreign capital and its dynamics determines macroeconomic volatility in LFI economies more significantly than the overall stock of foreign capital indicating limitations of growth incentives associated with financial integration of less developed countries over time. Volatility in foreign capital flows is followed by more dynamic changes in the total output in LFI economies due to low levels of financial depth in these countries that make them hard to cope with highly volatile foreign capital (foreign capital flows thus operates as sudden external shock with negative impact on macroeconomic stability). However, it doesn't seem to be the case of MFI economies with deeper and higher developed financial sector that is associated with reduced volatility of macroeconomic variables.

Finally, despite examined positive relationship between the volatility of financial flows and macroeconomic volatility it seems that highly financially integrated countries (developed economies) are able to smooth their consumption over time more effectively. As a result, effects of volatility of financial flows on economic growth are less significant. At the same time their intensive involvement in the cross-border capital exchanging enables them to benefit from the international risk sharing and cross-country portfolio holdings more effectively than developing countries especially due to developed financial sector.

Our further research will be focused on more in-depth examination of the volatility-growth patterns across countries classified into more specific sub-groups. At the same time, we employ conventional econometric methods to examine the relationship between variables more precisely. We also expect that investigation of the shock absorption capabilities of the different samples of countries would be contributive for exploration of the volatility-growth relationship during the particular sub-periods. Finally, effects of the fiscal and monetary policies will be examined to highlight policy implications to the financial integration.

### **Acknowledgement**

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## Appendix

### A Sources of Data in the Paper

Data Type	Source
Total assets, Total liabilities	LMF database
GDP current per capita growth	LMF database
GDP constant per capita growth	UNCTAD
Real household consumption expenditure per capita growth	UNCTAD
Final consumption expenditure (constant) per capita	UNCTAD
Gross fixed capital formation (constant) per capita GROWTH	UNCTAD
Country classification – developed, developing	IMF
FDI liabilities per GDP	LMF database
Debt investment per GDP	LMF database

### B List of Countries Decomposed into Individual Groups

The sample of countries contains 23 developed countries, 32 more financially integrated countries and 48 less financially integrated countries

<b>industrial countries</b>
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States
<b>developing countries</b>
Algeria, Argentina, Bahrain, Benin, Bolivia, Brazil, Burundi, Cameroon, Central African Rep., Chad, Chile, Colombia, Congo, Dem. Rep. of, Congo, Republic of, Costa Rica, Côte d'Ivoire, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Ethiopia, Fiji, Gabon, Gambia, The, Ghana, Guatemala, Guinea, Guyana, Haiti, Honduras, India, Indonesia, Iran, Islamic Republic of, Israel, Jamaica, Jordan, Kenya, Lebanon, Liberia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Morocco, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Qatar, Rwanda, Samoa, Saudi Arabia, Senegal, Sierra Leone, Singapore, South Africa, Sri Lanka, Sudan, Swaziland, Syrian Arab Republic, Thailand, Trinidad and Tobago, Togo, Tunisia, Turkey, Uganda, Uruguay, Venezuela, Rep. Bol., Zambia
<b>more financially integrated economies</b>
Bahrain, Bolivia, Chile, Congo, Dem. Rep. of, Congo, Republic of, Côte d'Ivoire, Egypt, El Salvador, Equatorial Guinea, 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, Rep. Bol., Zambia
<b>less financially integrated economies</b>
Algeria, Argentina, Benin, Brazil, Burundi, Cameroon, Central African Rep., Chad, Colombia, Costa Rica, Dominican Republic, Ecuador, Ethiopia, Fiji, Gabon, Gambia, The, Ghana, Guatemala, Guinea, Haiti, Honduras, India, Indonesia, Iran, Islamic Republic of, Kenya, Madagascar, Malawi, Mali, Mexico, Morocco, Myanmar, Nepal, Niger, Nigeria, Oman, Pakistan, Peru, Philippines, Rwanda, Samoa, Senegal, Sierra Leone, South Africa, Sri Lanka, Syrian Arab Republic, Thailand, Turkey, Uganda