

Developing Countries and the Global Economic Crisis: Sources of Vulnerability and Recovery

by

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In the era of economic globalization the mainstream view is that countries get into economic crises because of unnecessary regulations and interventions in their economies. Hence, as countries faced economic crises, the proposed policies have been more and more economic liberalization. The 2007-2008 crisis started in the advanced economies but spread to the developing world as well. However, the way the developing countries have been affected by the crisis varied considerably. This study seeks to explore how the global economic crisis caused an output collapse in developing economies and to find out why some were more deeply affected by the crisis compared to the others through a cross-national analysis of middle-income countries. By looking at the domestic factors in trade and finance areas that would transmit the crisis into the developing countries, this study tries to determine the sources of vulnerability in developing countries to this major external shock. The results of the analysis present some evidence that trade dependence, financial openness, level of reserves, level of short-term debt and level of GDP per capita are associated with drop in GDP growth in middle income countries during the crisis, but all of these variables do not have significant impact or impact in the same direction in 2010 compared to 2009. For instance, trade openness seems to be associated with more drop in growth in 2009, but not in 2010; whereas financial openness is associated with more growth in 2009 but less growth in 2010. Also, the change in GDP growth in 2010 is mostly explained with the change in GDP growth in 2009. Overall, the findings suggest that it is important to differentiate between the effects of the crisis during its earlier phases and later phases. Also, it is important to note that it would not be right to assume that developing countries were more resilient during the crisis and that their performance has “de-coupled” from the advanced economies. Output in middle income developing countries suffered considerably during the crisis and both their decline and recovery were related to their trade and financial links to the global markets, although their individual weaknesses/strengths also had an impact.

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Introduction

Today world is in a major economic crisis which started with the 2007 subprime mortgage crisis in the US. It is considered the worst crisis since the Great Depression. Although the crisis initially affected only the advanced countries, it soon began to spread to the developing countries. Now faced with a crisis which actually originated in advanced countries, developing countries are also struggling with the effects of the crisis, such as economic decline and financial stress. However, the way the developing countries have been affected by the crisis varied considerably. This study seeks to explore the channels of transmission of the global economic crisis and to find out why some developing economies were more deeply affected by the crisis compared to the others.

Why does the severity of the crisis differ even across countries of same category? How does a country's economic performance depend on its pre-crisis economic conditions? Do trade and financial openness and certain vulnerabilities in trade and finance areas determine how much a country is affected by the crisis? In order to answer such questions, the paper makes a cross-national analysis of how middle income countries are affected by the global economic crisis (in terms of growth) and which channels were most important in terms of how the crisis affected them.

As some recent studies have tried to do, this study seeks to find out whether the cross-country severity of the global economic crisis is systematically related to some pre-crisis macroeconomic and financial factors. The focus is on two channels of contagion: trade and finance. The relative influence of these channels may depend on the degree of trade and financial

integration of the economies and their vulnerability to shifts in these areas. The focus is on the 2009 and 2010 growth rates of middle-income developing countries. According to the findings of this study, the countries which have a larger share of manufacturing exports, lower reserves as a share of foreign debt, and higher short-term debt as a share of exports are affected more severely by the crisis. There is also some evidence that trade dependence and current account deficits have a negative effect on growth during the crisis.

Besides its potential to contribute to the academic literature in a current phenomenon, this study is important for everybody who is trying to understand which factors decrease or increase developing countries' vulnerability to global crises in general. In that respect, the results of this study may suggest some economic policies to policymakers in order to enhance economic stability and development. The policies that are found helpful can be recommended to developing economies, whereas policies that seem to increase vulnerabilities should better be avoided. In a way, this study critically evaluates the existing economic policies and has the potential to open way for alternative views on economic growth and development. This is a particularly important contribution as today still few or no policy alternatives to neoliberal policies are discussed in policy and academic world.

The channels of contagion in the crisis

The global economic crisis of 2007-2010 is considered to be the first major global crisis since the Great Depression of the 1930s. The stock markets have crashed in both advanced countries and developing countries. Growth rates have gone down. Even the developing countries with current account surpluses and low deficits are considerably hurt (Gallagher 2009).

Didier, Hevia, and Schmukler (forthcoming) challenge the general perception that advanced countries suffered more than the developing countries in the crisis. In fact, they present evidence that developing countries (excluding the low income countries) suffered from output collapses as much as the advanced countries. Even though they seemed to have higher growth rates during the crisis, they also had higher growth rates before the crisis, so the change in growth rates was as huge as among advanced economies. Apparently, GDP growth difference between 2007 and 2009 was -7.7 percentage points for Latin America and the Caribbean and -12.4 percentage points for Eastern Europe and Central Asia, compared to -6 percentage points in advanced countries (Ceballos, Dider et al. 2012). However, it is also a fact that developing countries in general started to recover faster and better than the advanced countries.

An important question is whether liberal policies, which have been dominant since the 1980s, help lower the likelihood of an economic meltdown in a country in the face of a global economic crisis by inducing better economic management. The general liberal argument is that free markets discipline economic actors and thus increase efficiency (Hayek 1944; Friedman 1962). Hence, neoliberal reforms (i.e. “Washington Consensus” policies), are considered to help states dismantle unnecessary controls on markets which have so far caused inefficiencies and instabilities (Fischer 1997; Rogoff 2003). Especially since the 1982 Third World debt crisis, IMF has pushed for these reforms in developing countries and insisted on market based solutions, including free trade, low budget deficits, privatization, and liberalized financial markets, which were supposed to increase growth in these countries thanks to self-correcting mechanisms of markets (Kapur 1998). On the other hand, in the age of neoliberalism, some prominent scholars warn about the instabilities caused by these free market policies, and thus, suggest some state direction in the economy, particularly in areas where markets fail (Ocampo and Stiglitz 1998;

Rodrik 1999; Stiglitz 2006). And some scholars totally dismiss neoliberal policies as a solution (Went 2000; Panitch 2001; Fine, Lapavitsas et al. 2003; Brenner 2006).

Different scholars have evaluated the effect of the neoliberal policies in terms of different aspects of the economy, such as balance of payments, economic growth and economic stability. There is no consensus on whether these policies improve or worsen these aspects of the economy. There is scholarly evidence for both cases. There is more consensus when it comes to criticizing financial liberalization. When we say financial liberalization, it includes capital account liberalization, which implies opening up your economy to foreign capital flows such as foreign direct investment, portfolio investment, and short-term capital flows which are known as “hot money.” Financial liberalization in developing countries is promoted by the multilateral financial institutions as part of their stabilization and structural adjustment plans. Proponents of financial liberalization argue that free capital movements facilitate a more efficient global allocation of money, help channel resources into their most efficient uses, and thus increase economic growth and welfare (Fischer 1997; Klein and Olivei 1999; Henry and Diego 2008). However, today most scholars argue that financial liberalization actually increases the chances of financial crises, because it fuels speculation and increases risk and uncertainty in the economy and expose the receiving countries to shocks and crises (Bhagwati 1998; Calvo 1998; Alba, Hernandez et al. 1999; Demetriades and Fattouh 1999; Arestis 2004). Some scholars also argue that financial liberalization discourages long-term growth (Demirgüç-Kunt and Detragiache 1999; Stiglitz 2002; Rodrik and Subramanian 2009).

In short, there is no consensus among scholars on whether neoliberal policies are beneficial or not in terms of avoiding economic instability. And so far there is not enough investigation on whether neoliberal policies improve or worsen the situation in countries in the

face of a global crisis. This paper suggests that, neoliberal reforms in general open the countries to international markets and encourages inflow and outflow of capital to/from those economies, so they leave them more vulnerable to instabilities, especially in case of a global economic disruption. Vulnerability in developing countries integrated with the global markets occurs through two channels: trade and finance. Trade flows slow down during an economic crisis as the global demand declines. Thus, if an economy is dependent on trade, it suffers especially because its export revenues decline. Also, when a global crisis occurs, usually the financial capital invested in developing countries flees to more secure places, usually to advanced countries, because of increased aversion of risk.

Trade Links

Openness to trade increases the vulnerability of an economy to external demand shocks. Ocampo (2009) believes that the trade shock caused by the global crisis was the main reason that developing countries (at least in Latin America) suffered considerably. The global crisis caused a dramatic decline in the global trade during late 2008 and early 2009. As the economic growth slowed down in advanced economies, their demand for goods and services from developing countries decreased (Loser 2009). Therefore, the more an economy is open to and dependent on international trade, especially with advanced countries, the worse it is expected to be affected.

Berkman, Gelos, Rennhack, & Walsh (2009) argue that more than being open to trade, it was mostly what countries export that determined how much they were affected by the crisis. The situation was especially severe in the trade of durable manufactures due to economic uncertainty and worsened credit market conditions (Blanchard, Das et al. 2010; Lane and Milesi-Feretti 2010). Therefore, the countries might have been affected by the crisis depending on how

much they depend on international trade and also specifically how much of their exports are manufactured goods. Demand for manufacturing goods is cyclical and a dramatic decline in trade in manufactures occurred as the crisis hit mainly advanced economies which bought these kinds of goods from the developing countries. As the international orders of manufactures began to resume, growth in such developing countries also resumed (Blanchard, Das et al. 2010; Didier, Hevia et al. forthcoming).

There was a sharp decline in exports and deteriorating terms of trade for the commodity producers which caused deteriorating current account positions among emerging economies (Blanchard, Das et al. 2010). Total world exports declined by around 25 percent between April 2008 and January 2009. As the stock markets crashed in advanced economies and they entered into recession, the demand declined and thus firms stopped their international orders so as to prevent an accumulation of inventories. Yet, this caused a collapse in global demand, and thus, a collapse in prices of goods and production in several developing economies which produce mainly for the advanced economies (Didier, Hevia et al. forthcoming). Naturally the more trade dependent was an economy, the more it was affected through the trade channel. The countries which already had large current account deficits were also expected to be affected worse from the financial crisis (Cali, Massa et al. 2008). Actually, the countries which had external surpluses before the crisis suffered less as they had more room to apply counter-cyclical credit and monetary policies (Ocampo 2009; Rose and Spiegel 2009). The most affected countries were the ones which heavily relied on external capital flows because of large current account deficits (Lane and Milesi-Ferretti 2011).

Financial Links

In the past decades developing countries have become much more integrated with the global financial system. As mentioned before, the biggest reason is that these countries were pushed by international financial institutions for liberalization of their capital accounts, liberalization of domestic stock markets, and privatization (Cali, Massa et al. 2008). The transmission of the global crisis through financial channel occurs through capital account as it links individual economies to the global financial system.

More financial integration can increase economic growth, but at the same time it may increase vulnerability in the face of a global financial crisis due to the contagion effects and reversal of financial flows. The primary financial problem during a global crisis is that capital becomes less available and more costly (Kaminsky and Reinhart 2000; VanRijckeghem and Weder 2001; Caramazza, Ricci et al. 2004). International investors usually pull their money from relatively more risky markets (this is usually the developing economies) and put them in more secure investments (such as US treasury bonds). Normally under a global financial turmoil developing countries would be adversely affected financially due to decreasing flows of foreign direct investment (FDI), foreign portfolio investment (FPI), and foreign debt (Cali, Massa et al. 2008). Bank lending and portfolio investment are more volatile than FDI. Therefore, economies which are more dependent on bank lending and portfolio investment are expected to be affected worse by the global crisis (Cali, Massa et al. 2008). The countries whose debt is mostly short-term are expected to be affected worse (Cali, Massa et al. 2008; Lane and Milesi-Ferretti 2011).

Indeed, no financially integrated economy was immune to the current crisis. As a result of the global crisis, there were significant shifts in the international capital markets, which decreased access to credit for many countries. With the crisis borrowing became more costly and

for shorter terms (Ocampo 2004), adding further to the deterioration of the recipient economies. Also in this current crisis, it was a combination of three related effects (increased uncertainty in the markets, re-pricing of risk, and flight-to-quality) that caused a huge decline in worldwide capital flows (Didier, Hevia et al. forthcoming).

Stock markets had a substantial fall in emerging economies (Loser 2009). Yet, not all developing countries are affected equally because the effect of the decline in the net capital flows depend on the size and contribution of the external liabilities in each economy (Blanchard, Das et al. 2010). In fact, by early 2008 capital flows to emerging economies began to decline and the fall in capital inflows was extensive (only half of in 2007) in the second half of 2008 (Loser 2009). Some scholars argue that countries that borrowed extensively from international financial markets were effected more negatively and their financial links were probably the main cause of declining growth rates (Berkman, Gelos et al. 2009). There are others scholars who have also argued that countries with more open financial systems had higher capital flight during the global crisis (Blanchard, Das et al. 2010).

This paper examines the transmission channels of the global crisis and whether pre-crisis domestic economic conditions capture the intensity of the impact of the crisis on different countries (correlates of growth collapses). It suggests that dependence on trade and dependence on foreign capital are the two main channels that transmit the effects of the global crisis to the developing countries. However, also individual countries' certain weakness in trade and finance areas would cause them to be affected worse.

Predicting the Severity of the Global Crisis in Middle-income Countries

The literature on the global crisis is very new but growing fast. It shows diversity in terms of methodologies, variables, and samples chosen. Also, some of their findings differ. However, most of the research done in the topic is conducted by the IMF and its economists, so they lack the critical approach that is needed to challenge the existing dominant economic policies.

Rose and Spiegel (2009; 2011) use the whole set of world countries in their analyses. They focus on the variation in output growth (in 2008), but they also use several asset market indicators as dependent variables. They argue that it is difficult to find linkages between domestic economic conditions and the severity of the crisis experienced by each state, but they find some evidence that countries with large run-up in the stock market, low reserves, high current account deficits, high credit growth, high short-term debt, and more leveraged banking sector are more affected by the global crisis. Giannone, Lenza, and Reichlin (2010) seek to explain the variation in output growth across 107 countries during 2008-2009, but they try to relate that variation to some institutional factors, specifically the regulatory regime governing credit markets, and argue that countries with more liberal credit markets were affected more negatively during the crisis. Imbs (2010) also tries to explain the connections between trade and financial openness and the intensity of the crisis but he focuses on co-movement across country pairs. On the other hand, Berkmen et. al. (2009) look at the change in growth projections for 2009 between the period before and after the collapse of Lehman Brothers, and argue that growth projections decreased more sharply for countries with more leveraged financial systems

and rapid credit growth. Lane and Milesi-Feretti (2010) also conduct a cross-national analysis and find evidence that pre-crisis level of development, increases in the ratio of private credit to GDP, current account deficits, and openness to trade are helpful in understanding the intensity of the crisis. In their cross-national study Frankel and Saravelos (2012) look at the period between late 2008 and early 2009 and find evidence that level of reserves and past movements in the real exchange rate are significantly related to how much countries suffer in the crisis.

Some studies limit their sample to specific group of countries. For instance, Didier, Hevia, and Schmukler (forthcoming) compare emerging markets with advanced economies, and present some evidence that economies which are more open to trade, with larger current account deficits, with higher growth of domestic credit, and more financially open suffered greater growth collapses during the global crisis. Blanchard, Faruquee, and Das (2010) focus on output declines between the last quarter of 2008 and first quarter of 2009 and seek to explain them by variables measuring the intensity of decline in external trade and financial flows for a small sample of emerging markets. They find evidence that developing countries with higher short-term debt (as a fraction of GDP) had lower growth during the crisis. International Monetary Fund (2010) focuses on the economic performance of only emerging markets during the crisis, but it also looks at their policy responses to the crisis. Claessens et al. (2010) focus on only 58 advanced countries and emerging markets and find evidence that house-price appreciation, bank credit growth, and current account are linked to crisis incidence. There are also studies which focus exclusively on the low income countries (Berg, Papageorgiou et al. 2010; Berg, Papageorgiou et al. 2011).

This study is both similar to and different from the recent work done regarding the global crisis in terms of the sample, variables, and method chosen. An overwhelming majority of the

literature on the current crisis use cross-national analysis in order to study the links between national economic conditions and the intensity of the crisis across countries. This study also uses a cross-national method and examines a number of potential causes that are thought to be successful indicators of crisis intensity across countries. The goal is not to examine the contagion effect of the crisis but the domestic vulnerabilities in the face of the crisis, i.e. whether the cross-country severity of the crisis is systematically related to some pre-crisis national macroeconomic and financial conditions. Therefore, national rather than the international dimensions of the crisis are emphasized, despite the fact that some scholars conclude that global factors explain the severity of the crisis across countries much better than the domestic factors (Rose and Spiegel 2009).

The sample of this study includes middle-income countries as categorized by the World Bank. There are in total 110 countries in this sample but lack of data in some variables has decreased the number of observations to 77 in the regression analyses. The logic of excluding high income and low income countries is simple. High income countries were not only affected earlier by the crisis (in 2007 and 2008) but also they are more integrated to the world markets and they usually have stronger macroeconomic conditions. On the other hand, low income countries were the ones less affected by the crisis. Although their economies are weaker compared to the rest of the world, they are less integrated with the global markets (Ceballos, Dider et al. 2012). Low income countries also have lower quality of economic data. Including only middle income countries leaves us still a high number of observations since it is the most crowded group of countries and also helps us avoid the biases that could be caused because the

impact of the crisis was particularly harder (and faster) on advanced countries and particularly light on low income countries.¹

I focus only on the cross-country variation in the level of economic output to measure the impact of the crisis rather than decline in asset prices or financial flows as some studies did. Using GDP growth (usually 2008, but also 2009) or a function of it as the dependent variable is actually typical in the literature (Berkman, Gelos et al. 2009; Blanchard, Das et al. 2010; Claessens, Dell’Ariccia et al. 2010; Lane and Milesi-Feretti 2010). The 2009 GDP growth itself is an obvious indicator of the crisis as most developing countries felt worst pain of the global crisis in that year, but it could be misleading as well. Since what we are trying to measure is how much a country was affected by the crisis, and as some countries typically grow faster than some others, a more proper indicator would be the actual change in GDP growth. Thus, I choose to use the difference between the 2003-2007 average GDP growth and the 2009 GDP growth rates as the dependent variable. For most economies the years between 2003 and 2007 represent the boom years and 2009 is the year of an output collapse (Berg, Papageorgiou et al. 2011).² The higher the difference between years 2003-2007 and year 2009 growth rates, the more intensely a country was affected by the crisis. The source of data for growth rates (and all other variables) is the World Development Indicators database of the World Bank.

I also use the difference between years 2003-2007 and year 2010 growth rates in terms of percentage points as a dependent variable in order to analyze the persistence of the effects of the crisis. Many developing countries continued to grow both in 2009 and 2010, although at lower rates. However, some developing countries like Turkey, Botswana, Mexico, Thailand, and

¹ Botswana and Algeria are also excluded from the sample since they are two obvious outliers in terms of reserves to debt ratio.

² According to World Bank data, while the world GDP in total grew 3.7 percent between 2003 and 2007, it shrank 2.3 percent in 2009.

Ukraine had a serious output collapse in 2009, but returned to growth in 2010. Therefore, in order to analyze sources of vulnerability (and recovery), there is a need to explain output differences in 2010 as well.

Figure 1: Scatter plot graph which shows percentage point decline in GDP growth of middle income countries in 2009 as compared to average GDP growth in 2003-07

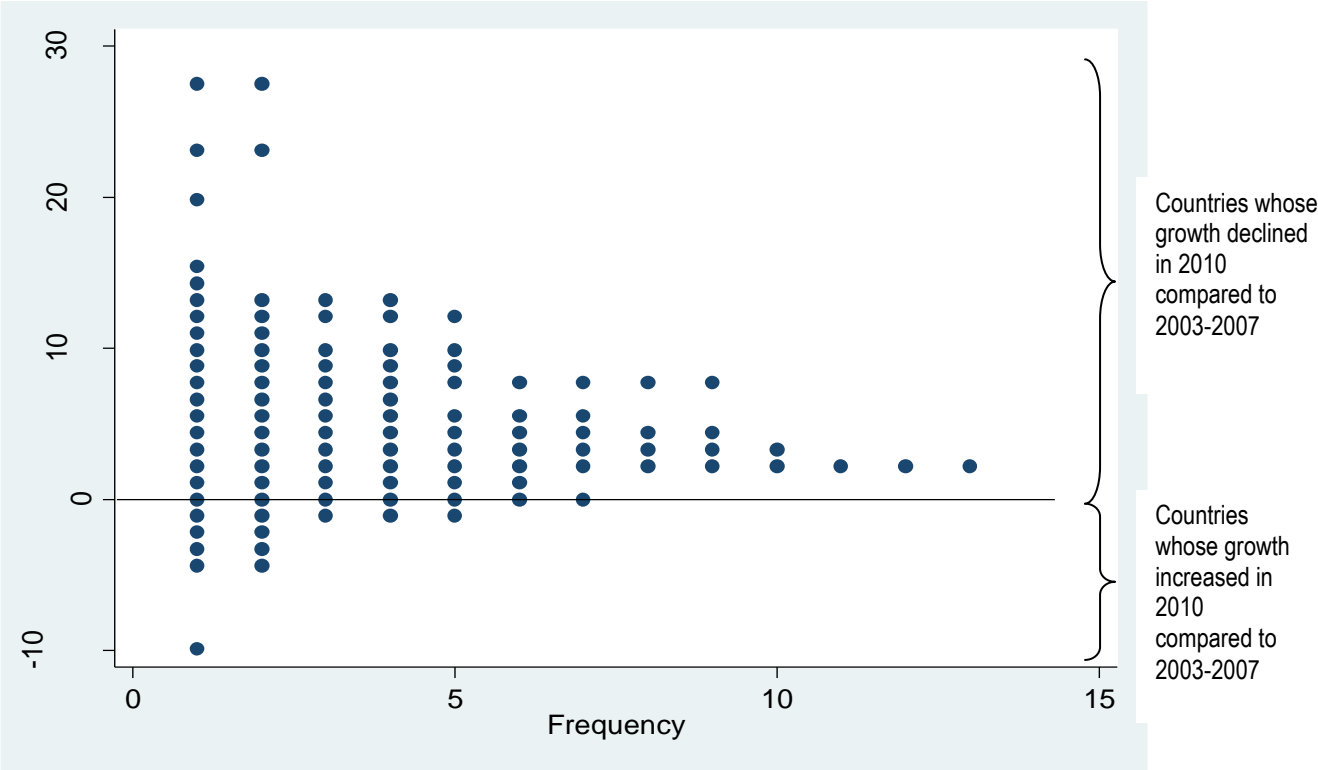
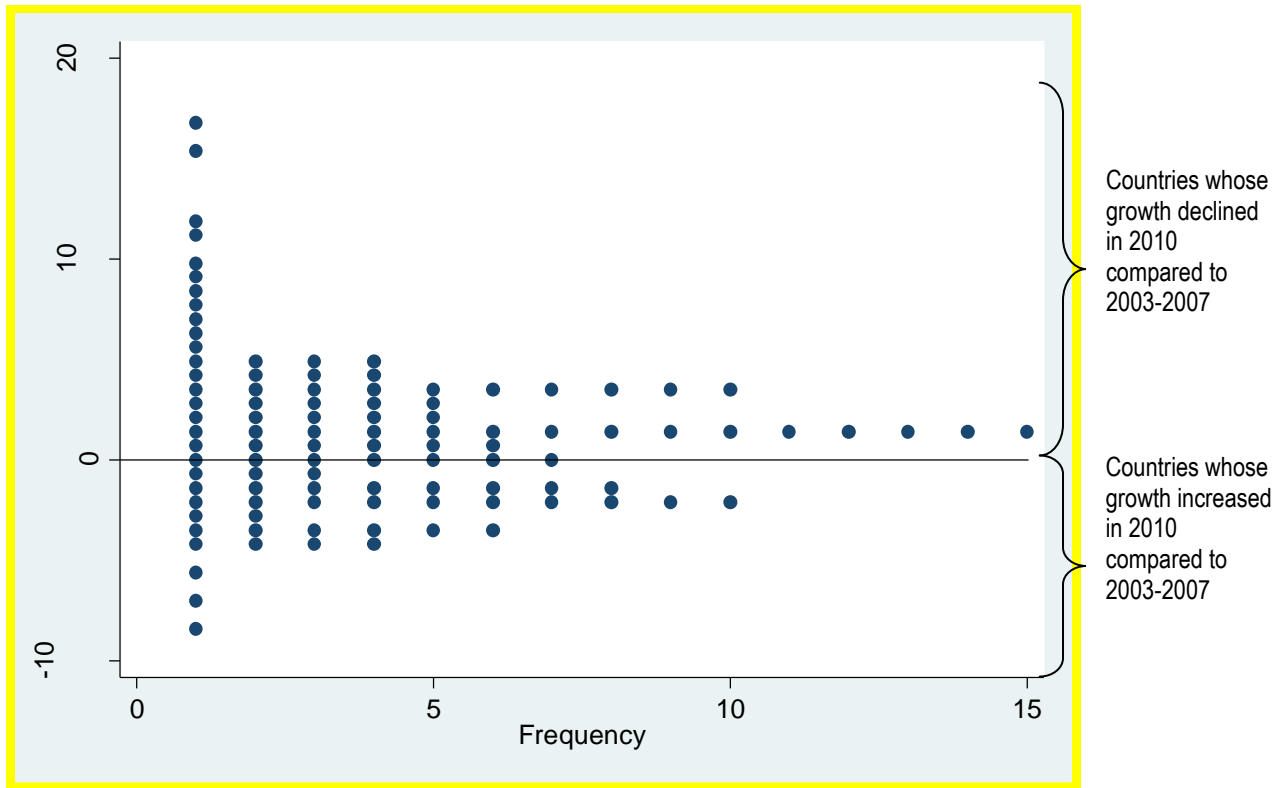


Figure 2: Scatter plot graph which shows percentage point decline in GDP growth of middle income countries in 2010 as compared to average GDP growth in 2003-07



In Figure-1 and Figure-2, zero value on the y axis denotes no change in GDP growth compared to the average growth in the 2003-2007 period. As can be seen in Figure-1, a great majority of the countries in our sample grew less in 2009 than they did during 2003-2007. Yet, as can be seen in Figure-2, in 2010 there were more countries which grew more than they did during 2003-2007, but still the majority had lower growth than in 2003-2007, though not as bad as in 2009. The average growth of the middle income countries was only 0.3 percent in 2009 but 4.5 percent in 2010. From these graphs we can conclude that output of the great majority of middle income countries was definitely adversely affected in 2009. Low growth continued in 2010 but to a lesser extent. In fact, in 2010 at least 36 out of 101 middle-income developing

countries grew even higher than they did during 2003-2007, as opposed to 60 which grew less than they did in 2003-2007.

There are several economic links that cause developing countries to get affected by the global economic crisis although the crisis actually started in advanced countries. As mentioned earlier, the primary links are trade and financial flows. Hence, in terms of pre-crisis conditions that would explain the cross-country variation in the output growth rate, I focus on trade and financial channels. This study hypothesizes that dependency on trade and foreign capital flows determine how much an economy is affected but also country specific strengths or weaknesses (in terms of trade and finance) may determine how vulnerable they are to external disruption.

The hypotheses of the study related to trade channel are follows:

- The countries with higher dependence on international trade are to suffer more during the global crisis.
- Especially the countries which export manufactures are to suffer more in the crisis.

The hypotheses of the study related to finance channel are follows:

- Countries which are more open to flows of foreign capital are to suffer more during the crisis.
- Especially countries with relatively low reserve levels are expected to suffer more.
- Also countries with relatively high level of short-term debt would suffer more.

Also, this study hypothesizes that countries with higher GDP per capita are affected more adversely by the crisis since these countries are more integrated to the global economy and this crisis is mainly the crisis of more advanced economies.

Among different variables this study chooses the below as explanatory variables, because they are thought to capture the impact of trade and financial channels and also vulnerabilities of

countries in these areas. Trade openness is the indicator to measure trade dependence,³ whereas ratio of external assets and liabilities to GDP is the indicator of dependence on foreign capital in this study. Share of manufactures in exports, share of short-term debt in total foreign debt, ratio of reserves to foreign debt, and GDP per capita are the variables to measure relative weaknesses/strengths of the economies. For all these independent variables 2007 data are used as that was the year the global crisis started, thus 2007 data can tell us the situation of the developing countries just when the crisis started. Therefore, the explanatory variables of this study are as follows:

- *Trade openness*: total trade volume as a percentage of GDP (average of 2003-2007) (Source: *World Development Indicators*, World Bank)
 - The more an economy is open to trade, the more it is supposed to be affected by the decline in world trade caused by the crisis.
- *Manufacturing exports*: manufactures as a percentage of total merchandise exports (2007) (Source: *World Development Indicators*, World Bank)
 - Countries which are more dependent on manufacturing exports are to be more affected by the crisis.
- *Financial openness*: This is actually “capital account openness,” as it includes sum of external assets and liabilities in terms of portfolio equity, FDI, debt (portfolio debt + other investment), and financial derivatives as a share of GDP (2007) (Source: Lane and Milesi-Feretti External Wealth of Nations database).
 - The more an economy is open to foreign capital, the more it is supposed to be affected by the global crisis.
- *Reserves*: Total reserves as a percentage of total external debt (2007) (Source: *World Development Indicators*, World Bank)
 - High international reserves, especially in terms of their ability to pay external debt, are a source of strength in resisting the effects of a global economic shock.
- *Short-term debt*: Short-term debt as a percentage of total foreign debt (2007) (Source: *World Development Indicators*, World Bank)
 - Countries with high level of short terms debt (as a share of total foreign debt) are supposed to be more vulnerable to crises as they are considered more risky.
- *GDP per capita*: In this study, GDP per capita is gross domestic product divided by mid-2007 population. (GDP is the sum of gross value added by all resident producers in the

³ Ratio of exports to GDP is another way to measure trade dependence. Using that variable also gave similar results in regression analyses but with less statistical significance. Therefore, I preferred to use ratio of total trade.

economy plus any product taxes and minus any subsidies not included in the value of the products.)

All these explanatory variables are somehow related to each other, i.e. they may suffer from the multicollinearity problem. However, when the explanatory variables are correlated with each other and when their variance inflation factor (VIF) values⁴ are checked, it is seen that they do not show the symptoms of serious multicollinearity. However, unlike many similar studies, I did not include the variable “current account balance” as it is highly correlated to reserve-debt ratio and financial openness variables. Another problem may be regarding endogeneity. To specifically alleviate the endogeneity concerns, I measure explanatory variables at their 2007 levels, when the crisis has not yet affected the developing countries, while our dependent variables are measured by the difference between the 2009 growth rate and 2003-2007 average growth rate and the difference between the 2010 growth rate and 2003-2007 average growth rate. In the equation with the change in GDP for 2010 is the independent variable, change in GDP in 2009 is also used as an explanatory variable as it was thought that the change in GDP in 2010 would have an effect on the GDP of the next year.

Similar to many studies cited above, some robust regression analyses were run in this study with the explanatory variables representative of domestic economic vulnerabilities (or strengths) in order to predict the impact of our trade and finance variables on the change in GDP growth between boom years (2003-2007) and 2009 and 2010 separately. The results of the two regression equations are presented in Table-1.

⁴ VIF statistics calculates the severity of multicollinearity in an ordinary least squares regression analysis.

Table-1: Results of the regression analyses

<u>Dependent variable</u> → Explanatory variables ↓	Change in 2009 GDP (1)	Change in 2010 GDP (2)	Change in 2010 GDP (3)
<i>Change in 2009 GDP</i>	-	-	0.447*** [0.0753]
<i>Trade openness</i>	0.0319** [0.014]	0.00974 [0.0105]	- 0.00455 [0.00763]
<i>Manufacturing exports</i>	0.0179 [0.0205]	0.0176 [0.0194]	0.00957 [0.0167]
<i>Reserves</i>	- 0.0176*** [0.0061]	- 0.0047 [0.00366]	0.00318 [0.00296]
<i>Short-term debt</i>	0.0835* [0.047]	0.0308 [0.0346]	- 0.00658 [0.0249]
<i>Financial openness</i>	- 2.811*** [0.739]	- 0.421 [0.758]	1.216** [0.550]
<i>GDP per capita</i>	0.0010*** [0.000278]	0.000105 [0.000187]	- 0.000344** [0.000154]
Constant	2.022 [2.060]	- 1.053 [1.656]	- 1.958 [1.220]
R²	0.374	0.069	0.394
No. observations	77	77	77

NOTE: Heteroscedasticity robust standard errors are given in the parentheses under the coefficients.
*, **, and *** denote significance at 10%, 5%, and 1% levels respectively.

The first model is able to explain 37.6 percent of the variation in change in GDP growth in 2009 compared to the average GDP growth in 2003-2007. According to the regression results seen in model 1 in Table-1, higher reserves and higher financial openness are associated with less decline in GDP in 2009. The relation between reserves and change in 2009 GDP is as expected, as it was already hypothesized that higher reserves would make economies less

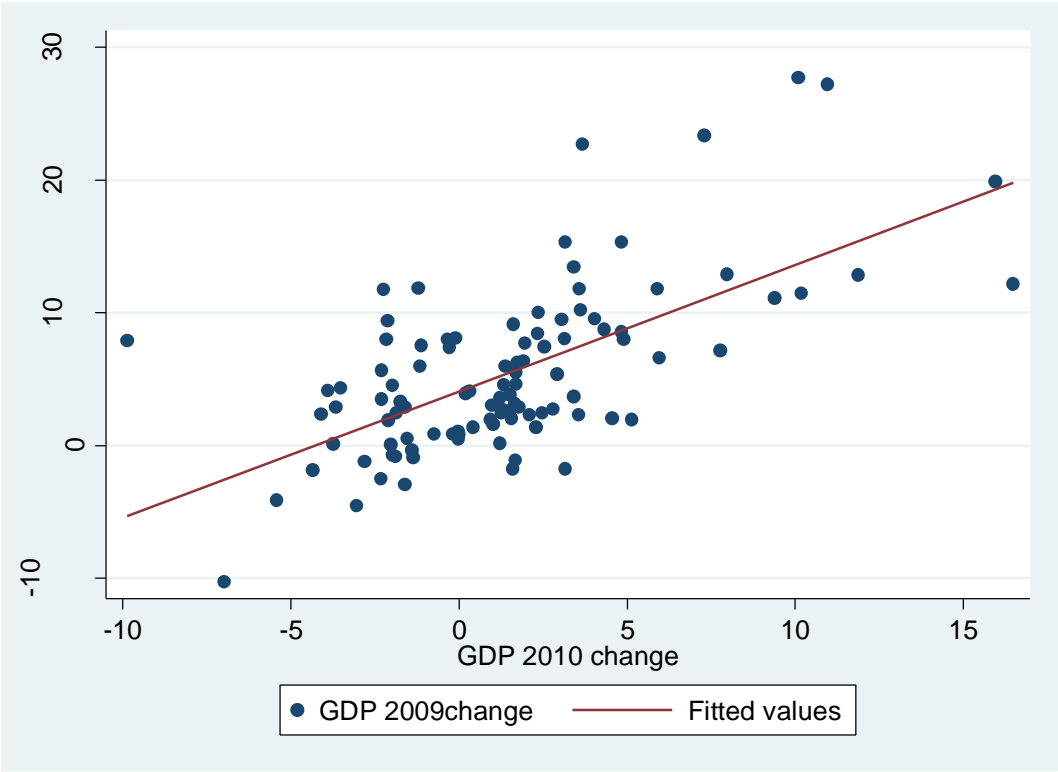
vulnerable to crisis. However, it is puzzling to see that higher financial openness is associated with less decline in GDP growth in 2009. According to our hypothesis, higher dependence on foreign capital was supposed to be associated with more vulnerability to the global crisis. One explanation can be that, since this crisis mainly started in the advanced countries, unlike in earlier crises which started in developing countries, mobile capital no longer had safe markets in advanced countries to flee. Not to mention that interest rates in advanced countries were reduced to stimulate growth. Therefore, hot money flowed to some developing countries, probably the ones which were already financially open, contributing to their GDP growth.

According to the same model, higher trade dependence, higher short-term debt and higher GDP per capita are associated with higher drop in GDP growth in 2009. These results are as expected since all these factors were thought to increase vulnerability to the global crisis. However, as opposed to our hypothesis, in this model there is no statistically significant relationship between share of manufactures in exports and decline in GDP.

Our second model tries to find out whether the factors which are related to the decline in GDP growth in 2009 are also related to the GDP growth in 2010. Surprisingly none of the explanatory variables in the model have a significant relation with change in GDP growth in 2010. Thus, none of the variables that explain the variance in GDP growth rate change in 2009 explain the GDP growth rate change in 2010 in a statistically significant way and the explanatory power of the model drops to 6.9 percent. However, when we add the change in GDP growth in 2009 as an explanatory variable to the model (see the third model in Table 1), the explanatory power of the model increases to 39.4 percent. According to this third model, the more/less the decline in GDP growth in 2009 compared to average GDP growth in 2003-2007 is associated with more/less decline in GDP growth in 2010 as well. Therefore, we can say that the 2010

output growth of developing countries is positively related to growth rate in 2009. This relation can be clearly seen in the scatter graph of Figure-3. This finding contradicts with Ceballos, Didier, Hevia and Schmukler (2012) who claim that the countries which had higher output declines in 2009 bounced back better by 2010.

Figure-3: The scatter graph which shows the relation between change GDP growth in 2009 and change GDP growth in 2010 with respect to 2003-2007



The other two variables which come out as significantly related to the change in GDP growth rate in 2010 in the third model are “financial openness” and “GDP per capita.” Although financial openness has a negative relationship with the change in GDP growth in the first model, this relation turns into a positive one in the third model, which signifies that more dependence on

foreign capital is associated with lower GDP growth in 2010, as hypothesized before. It can be inferred that, in the earlier years of the crisis, developing countries which are relatively financially more open were actually more advantaged as mobile capital which left advanced countries continued to flow to these countries. However, in 2010 financial openness was no longer an advantage but a disadvantage. It may be because by 2010 the crisis had already affected the developing countries, so mobile capital was no longer flowing to these countries, or because especially the US had already started to recover, so the mobile capital started to return to the less risky US markets.

Also, although GDP per capita has a positive relationship with the change in GDP growth in the first model, this relation turns into a negative one in the third model, which signifies that higher GDP per capita is associated with higher GDP growth in 2010 compared to average GDP growth in 2003-2007. In other words, in the earlier years of the crisis, developing countries which have higher GDP capita were actually more adversely affected by the global crisis, but according to the third model, higher GDP per capita is associated with less decrease in 2010 GDP growth. It may be because countries with higher GDP per capita are relatively more advanced economies, so they had higher capacity to counteract the effects of the global crisis. Therefore, even though these relatively well-doing developing countries were more affected by the global crisis in 2009, they recovered faster by 2010. That may explain why countries like Turkey, Mexico and Ukraine which were highly disrupted by the global crisis in 2009 resumed high growth by 2010.

Conclusion

The global crisis has affected and is still affecting many advanced countries, including the US and European Union members. It is also affecting developing countries extensively, but its effects on the developing countries are still less investigated and less talked about. The goal of this paper is to find out the extent to which various pre-crisis economic conditions help explain the variation among the middle income economies in terms of how they were affected by the global crisis.

In similar studies in the literature, there is no real critique of the liberal trade and financial policies which are mostly responsible for the negative impact of the crisis on individual countries. This is despite the known fact that less integrated countries were affected least by the crisis. Since liberal policies have integrated most of the world's economies into the global markets, any collapse in these markets (be it trade markets or financial markets) is inevitably to have a negative impact on these economies. In fact, today most developing countries are quite integrated to the world markets, and as a result of a significant decline in global demand and collapse of financial centers, the crisis got transmitted to all economies that were linked to them, including the developing ones. Economic integration is promoted as it supposedly brings higher growth to developing economies, but it makes them more vulnerable to external economic disruptions. Yet, even among the economies that are integrated to global markets, there are several factors that may make some more (or less) vulnerable in the face of a global crisis.

The paper finds significant links between some trade and financial variables on the one hand and the difference between pre-crisis and after crisis output growth on the other hand. To be more specific, for the year 2009 higher GDP per capita, low level of reserves, and high level

of short-term debt are associated with higher fall in output growth in middle-income countries during the crisis. There is also evidence that high trade openness and, surprisingly, low level of financial openness are associated with sharper drop in output for the year 2009. As mentioned above, the unexpected relationship between high financial openness and low GDP decline in 2009 can be explained by the specific nature of this global crisis. Normally when there is a crisis in developing countries, capital flows to safer markets in the advanced countries but this was not the case this time, because this was mainly the crisis of the advanced world so the money ran away from the advanced world to the relatively open and well-doing developing countries.

The finding that high short-term debt creates vulnerability is consistent with Blanchard, Faruquee, and Das (2010) who find that short-term debt (as a share of GDP or foreign exchange reserves) is significantly related to lower output in 2008-2009. Our finding regarding reserves is consistent with Rose and Spiegel (2009; 2011) who also present evidence that fewer reserves are associated with more vulnerability to the global crisis. The findings do not support the results of previous studies which suggest that countries which depend on manufacturing good exports were affected worse (Blanchard, Das et al. 2010; Lane and Milesi-Feretti 2010).

When it comes to explaining the GDP growth change in 2010, we have different findings. First of all, the variable which explains the variation in GDP growth change in 2010 is the GDP growth change in 2009. This indicates that the countries which were not much affected by the global crisis continued to grow in 2010 and the countries which were affected by the crisis continued to have low growth in 2010 compared to the growth level in the boom years of 2003-2007. The findings also indicate that by 2010 financial openness was no longer associated with better growth. Accordingly, as previously hypothesized financially more open economies are associated with lower growth in 2010. Therefore, in the earlier phases of the crisis, financially

more open economies might have been affected less adversely by the global crisis, but the situation was reserved by 2010. Similarly, lower GDP capita was no longer associated with less decline in GDP by 2010. Therefore, having better growth performance in 2010 is associated with less financial openness and higher GDP per capita.

In conclusion, it is important to differentiate the effects of the crisis according to its different phases. As it was mentioned, it was in 2009 that most of the developing countries were hit hardest by the global crisis. At that time, apparently they were affected mostly through the trade channel. The developing countries which were more dependent on trade experienced higher declines in their GDP growth. Yet, by 2010 trade openness was longer associated with lower output growth,⁵ but financial openness was. According to the findings, relatively richer developing countries were more affected by the global crisis in 2009, but poorer ones were worse affected in 2010. However, overall what explained the change in 2010 GDP growth (as compared to 2003-2007 growth) was more the change in 2009 GDP growth. That shows that, rather than the countries' economic parameters, it was the effects of the crisis in 2009 which affected the growth of developing countries' GDP growth in 2010 and almost all countries performed better in 2010 than in 2009.

It is also important to note that, as this global crisis has shown us once again, economies of most developing countries are still very dependent on advanced countries through trade and financial links. Middle income countries were affected by the crisis not only through slow down in trade but also through reversal of capital flows. Although they seem to have recovered faster than the advanced countries, as Khor (2012) suggests, this probably would not be possible

⁵ According to Ceballos, Didier, Hevia and Schmukler Ceballos, F., T. Dider, et al. (2012). "Policy Responses to the Global Financial Crisis: What Did Emerging Economies Do Differently?"

, as international inventories decreased and global demand stabilized in the later phases of the global crisis, trade channel became less effective on developing countries and their economic growth resumed.

without the anti-recession policies in the advanced countries which helped exports and capital inflows to resume. Therefore, if the crisis continues, developing countries will face further challenges ahead. Therefore, probably the following suggestion by Akyuz (2013) is appropriate:

... Developing countries need to improve their own growth fundamentals, rebalance domestic and external sources of growth and reduce dependence on foreign markets and capital. This requires, inter alia, abandoning the Washington Consensus in practice, not just in rhetoric, and seeking strategic rather than full integration into the global economy. (p. 3)

This is a study which exclusively focuses on the middle-income countries (which provides 77 observations) and uses several indicators in order to explain the transmission channels and domestic vulnerabilities across countries in the face of the global economic crisis. Besides helping to understand how developing countries are affected by the global crisis, channels of transmission of the crisis, and domestic sources of vulnerability to such crises, this study may also be important in terms of identifying some strategies that would help developing countries to remain more stable in the face of external disruptions. For instance, trying to decrease dependence on external markets for trade and finance, keeping sufficient international reserves, and avoiding especially short-term debt are some of the recommendations that can be derived from this study.

This study presents several weaknesses. Since the focus of this study is only middle-income countries, the results cannot be generalized to advanced countries or low-income countries which have different conditions. Besides, this study does not look into interactions between or among states. Of course the current crisis is a global phenomenon and fundamental causes of it are international in nature. It is contagious and spreads as a common shock. It would be helpful to look at and examine these international causes, but since not all countries are

affected in a similar way, it is still appropriate to focus on vulnerabilities which are national in character to explain the cross-country impact of the crisis.

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APPENDIX

List of Middle-Income Economies in the Sample

Albania	India	Peru
American Samoa	Indonesia	Philippines
Angola	Iran, Islamic Rep.	Romania
Antigua and Barbuda	Iraq	Russian Federation
Argentina	Jamaica	Samoa
Armenia	Jordan	Sao Tome and Principe
Azerbaijan	Kazakhstan	Senegal
Belarus	Kiribati	Serbia
Belize	Kosovo	Seychelles
Bhutan	Lao PDR	Solomon Islands
Bolivia	Latvia	South Africa
Bosnia and Herzegovina	Lebanon	Sri Lanka
Brazil	Lesotho	St. Kitts and Nevis
Bulgaria	Libya	St. Lucia
Cameroon	Lithuania	St. Vincent and the Grenadines
Cape Verde	Macedonia, FYR	Sudan
Chile	Malaysia	Suriname
China	Maldives	Swaziland
Colombia	Marshall Islands	Syrian Arab Republic
Congo, Rep.	Mauritania	Thailand
Costa Rica	Mauritius	Timor-Leste
Cote d'Ivoire	Mayotte	Tonga
Cuba	Mexico	Tunisia
Djibouti	Micronesia, Fed. Sts.	Turkey
Dominica	Moldova	Turkmenistan
Dominican Republic	Mongolia	Tuvalu
Ecuador	Montenegro	Ukraine
Egypt, Arab Rep.	Morocco	Uruguay
El Salvador	Namibia	Uzbekistan
Fiji	Nicaragua	Vanuatu
Gabon	Nigeria	Venezuela, RB
Georgia	Pakistan	Vietnam
Ghana	Palau	West Bank and Gaza
Grenada	Panama	Yemen, Rep.
Guatemala	Papua New Guinea	Zambia
Guyana	Paraguay	
Honduras		