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The Global Financial Crisis: Explaining Cross-Country Differences in the Output Impact

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We provide one of the first attempts at explaining the differences in the crisis impact across developing countries and emerging markets. Using cross-country regressions to explain the factors driving growth forecast revisions after the eruption of the global crisis, we find that a small set of variables explain a large share of the variation in growth revisions. Countries with more leveraged domestic financial systems and more rapid credit growth tended to suffer larger downward revisions to their growth outlooks. For emerging markets, this financial channel trumps the trade channel. For a broader set of developing countries, however, the trade channel seems to have mattered, with countries exporting more advanced manufacturing goods more affected than those exporting food. Exchange-rate flexibility clearly helped in buffering the impact of the shock. There is also some —weaker—evidence that countries with a stronger fiscal position prior to the crisis were hit less severely. We find little evidence for the importance of other policy variables.

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I. INTRODUCTION[1]

The global financial crisis, which originated in the advanced economies, has hit the rest of the world strongly, with some developing countries being particularly affected. However, the impact on economic activity has varied widely across countries. A priori, this may reflect differences in exposure and vulnerability to the real and financial jitters emanating from the financial centers, but also heterogeneity in the macroeconomic and institutional frameworks as well as in the policy responses. For example, some previously crisis-prone regions, such Latin America, have avoided big collapses, suggesting that the region's efforts to reduce macroeconomic and financial vulnerabilities after previous crises may have paid off. It seems, however, important to understand these issues in more detail, both for formulating the current policy response and for guiding forecasts and policy advice looking forward.

This study is one of the first attempts at explaining the differences in the crisis impact across developing countries and emerging markets. We focus on revisions in GDP growth forecasts before and after the crisis. Using forecast changes allows us to bypass many otherwise difficult issues—for example, to control for differences in growth rates that are due to differences in levels of development or cyclical positions, or other factors unrelated to the impact of the crisis. In addition, it allows us to incorporate the expected short-term effects of policies. We use both descriptive evidence and cross-country regressions, exploring a broad range of explanatory variables, to gain a comprehensive picture of the key factors shaping differences in the growth impact.

Based on cross-country regressions, we find that financial vulnerabilities evidently contributed to the severity of the growth impact. Countries with more leveraged domestic financial systems and more rapid growth in lending to the private sector tended to suffer larger downward revisions to their growth outlooks. For emerging markets, this financial channel trumps the trade channel. For a broader set of developing countries, the trade channel also seems to be important, with countries exporting advanced manufacturing goods more affected than those exporting food.

Exchange-rate flexibility clearly helped to buffer the impact of the shock, and countries with pegged exchange-rate regimes fared significantly worse. There is also weaker evidence that a stronger fiscal position prior to the crisis were hit less severely, possibly because they were able to conduct countercyclical fiscal policies more effectively. We find little evidence for the importance of other policy variables.

Other studies have also looked at this issue. The closest study to the present one was conducted by the World Bank (2009), examining the structural factors that could help explain the change in actual growth in 2007 and projected growth in 2009. Given that many countries were expected to experience a sharp slowdown even prior to the crisis, this approach does not provide a clean picture of the distribution of growth collapses attributable to the global shock. Still, some conclusions of that study—in particular regarding the role of financial vulnerabilities as well as the role of trade—are in line with ours. Berglöf, Korniyenko, and Zettelmeyer (2009) analyze the effects of the global financial crisis on growth in emerging Europe. Using actual growth rates (instead of forecast revisions) for a limited set of countries, they find that external debt liabilities, a decline in export volumes in 2008Q4, real effective exchange rate appreciation relative to 2002, FDI liabilities as a share of GDP, and political instability tended to add to the depth of the output declines in Q4 2008 and Q1 2009. Rose and Spiegel (2009) find no evidence that international linkages have an impact on the incidence of the crisis.

II. DATA

While modeling the channels of transmission of the global financial crisis to emerging market countries would be beyond the scope of this paper, conceptually we envisage a small open economy framework broadly similar to the ones used in the sudden-stop literature. Specifically, an economy in the "periphery" is being hit by the crisis through a variety of real and financial channels. In such a framework, the short run dynamics depend on countries' structural characteristics, their initial position and vulnerabilities, and macroeconomic policies. While the existing financial and trade linkages shape the transmission of the shock from the advanced economies, the extent to which it gets amplified in turn depends on existing domestic financial vulnerability and the response of monetary and fiscal policies.

Growth Revisions

To measure the impact of the global crisis on an economy's output, we focus on revisions of projections for GDP growth in 2009, comparing forecasts prior to and after the intensification of the crisis in September 2008. This approach entails several advantages. In contrast to actual growth outcomes, revisions in growth projections are not affected by differences in the cyclical position of countries or other anticipated adjustments in growth. They allow for a more flexible lag in the transmission of the global shock to each country as they cover a whole year and take into account expectations of the likely success of policy responses. Moreover, actual quarterly growth data were only available for a relatively limited sample of countries at the time the study was conducted.

We use two datasets of projections: *Consensus Forecasts* (an international compilation of analysts' forecasts) and the IMF's *World Economic Outlook forecasts (WEO). Consensus Forecasts* are available monthly, while WEO forecasts are revised twice a year, in April and October. For the baseline analysis, we use *Consensus* growth forecast changes, which has the

advantage of pooling across various forecasters and potentially suffering from less bias than the WEO.[2] We focus on the changes in the average forecast for 2009 made in January—June 2008 and January–June 2009.[3] This comparison captures the information set prior to the collapse of Lehman Brothers in September 2008. The WEO database has the advantage of covering a much broader range of countries, including those with limited access to international capital markets.

Explanatory Variables

We employ a wide range of variables to capture alternative transmission mechanisms. We mainly explore four broad channels: (i) trade linkages; (ii) financial linkages; (iii) underlying vulnerabilities and financial structure; and (iv) and overall policy framework. We use 2007 values for all explanatory variables in the regressions to avoid problems of endogeneity.

The first channel is the trade channel. As the global recession caused a sharp decline in advanced economies' demand, the spillover effects are expected to be greater for developing countries with strong trade links with advanced economies. Moreover, countries exporting advanced goods appear to have suffered a sharper immediate drop in the demand for their exports than exporters of primary products. To capture various trade channels, we used: (i) trade openness—such as exports to GDP or exports plus imports to GDP—; (ii) trade composition—such as the share of commodities and manufactured products in total exports; and (iii) the direction of trade—the share of trade with advanced economies. For each set, we employed slightly different alternatives. The whole list of variables, their expected signs, and data sources are listed in Appendix Table A.1.

The second channel comprises financial linkages. As the global crisis originated in the financial sector in advanced economies, emerging market economies that have close financial ties with advance economies are expected to be affected severely. We explored various measures of financial openness, capital account restrictions, the stock of bank lending from advanced economies (relative to GDP), and the share of remittances from abroad in the economy.

The third set of variables includes various measures of underlying vulnerabilities and financial structure. Prior to the crisis, many developing countries were benefiting from favorable conditions in world markets and building up buffers against external shocks, while another group of countries entered the crisis in a riskier position. The compression of yields prior to the global financial crisis, coupled with easier access to cross-country borrowing, had fueled rapid credit growth—in emerging markets, often based on foreign borrowing—around

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[2] The correlation between consensus and WEO forecasts is very high.

[3] We also use the *Consensus* revisions between April 2008 and April 2009 and between August 2008 and August 2009 to test the robustness of the results.

the world. When the crisis hit, capital flows reversed, and currencies depreciated. In many cases this translated into financial constraints and a collapse in credit, and in some cases into severe balance sheet problems. One would therefore presume to find that countries with high current account deficits, low reserves, high indebtedness, and strong credit growth, experienced larger output collapses with the global recession. Similarly, spillovers from financial channels are expected to be bigger for countries with complex financial structures.

The final set of variables seeks to capture the strength of the policy and institutional framework. Countries entered into the crisis with significant heterogeneity in fiscal and monetary policy setups, and we try to capture these differences by covering a broad range of variables measuring aspects of exchange-rate and monetary policy, fiscal policy, and the general quality of institutions. For example, countries with more flexible exchange rates are expected to handle external shocks more easily. We also explore inflation levels, the volatility of reserves and exchanges rates, and a dummy for inflation targeting as measures of macroeconomic stability and a rules-based macroeconomic policy. Moreover, to measure a country's room for countercyclical fiscal policies, we focus on the primary fiscal gap (the difference between the actual primary balance and the balance consistent with a constant ratio of debt to GDP). Finally, we explore various other variables measuring the credibility of the macroeconomic framework and the strength of institutions. The appendix provides a detailed list of variables and sources.

III. DESCRIPTIVE EVIDENCE

As a preliminary way of exploring the data, this section provides some descriptive, graphical evidence on growth revisions. We first focus on a core sample of 43 emerging markets for which we have complete data, and examine revisions in *Consensus Forecasts*.

In this sample, the growth forecast revisions range from - 18 percent to - 1.5 percent. We divide the sample into two groups, according to the severity of the output impact, and also plot differences across regions. The average difference in impact between the more and the less affected countries is sizable—about 5 percentage points. However, the standard deviation of the growth revisions for the most affected countries is large, with the growth collapse in Eastern European and Central Asian countries standing out in particular. In contrast, the growth impact in Latin America (LA) is on average much more contained.

Growth Revisions
(In percent)
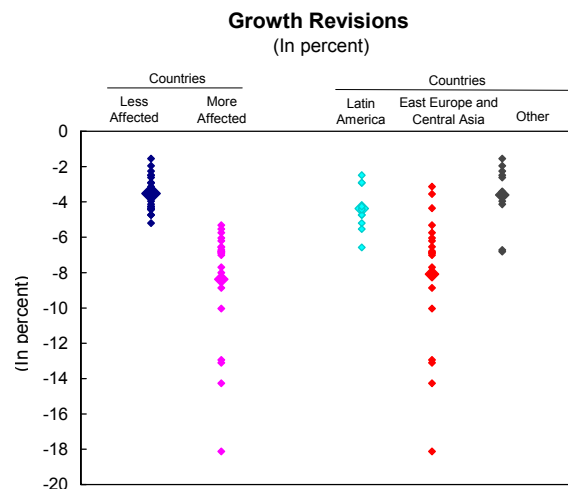
Trade Linkages

Within this sample, there is little correlation between the share of food commodities or manufacturing products in total exports and the growth impact. However, among emerging market economies, those of Latin America clearly feature higher food commodity shares in their exports, which at least is in line with the region's relative resilience given that the soft commodity prices held up relatively well.

Financial Linkages

Countries that borrowed more from advanced economies were indeed hit harder. While the most affected countries had liabilities to banks in advanced countries on average of about 66 percent of GDP, the less affected countries had liabilities to advanced countries of only 19 percent of GDP. Reliance on foreign credit was particularly high in the EECA countries, which borrowed double the amount of the other regions in 2007.

Vulnerabilities

Both leverage (as measured by the credit-to-deposit ratio) and the cumulative growth in bank credit in the period 2005–07 are clearly positively correlated with the severity of the growth impact. Among regions, EECA countries exhibited higher vulnerabilities in both regards. The average cumulative growth rate in credit in EECA countries was about four times the growth rate in other regions, and Latin America had the lowest rate.

Soft Commodities Exports
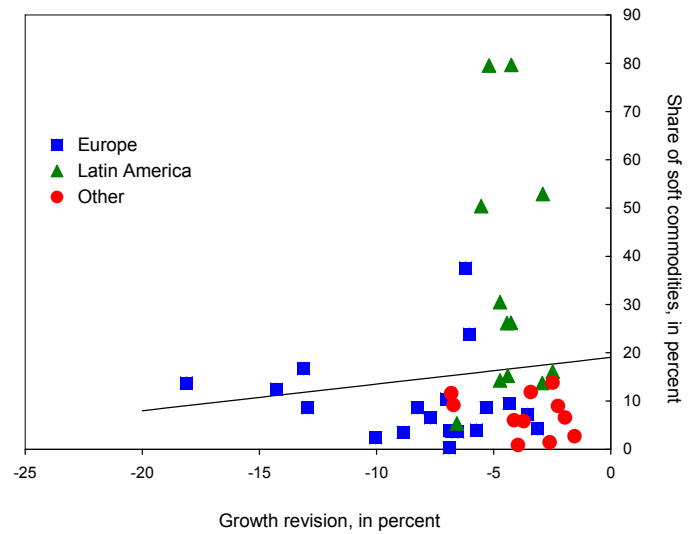
Lending from Advanced Economies
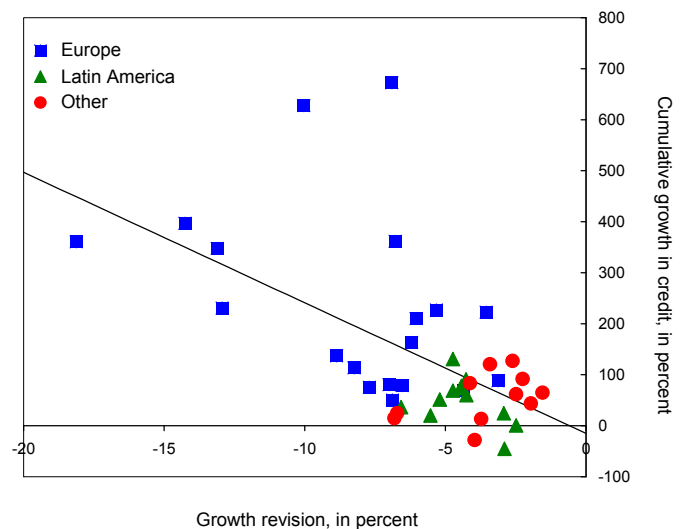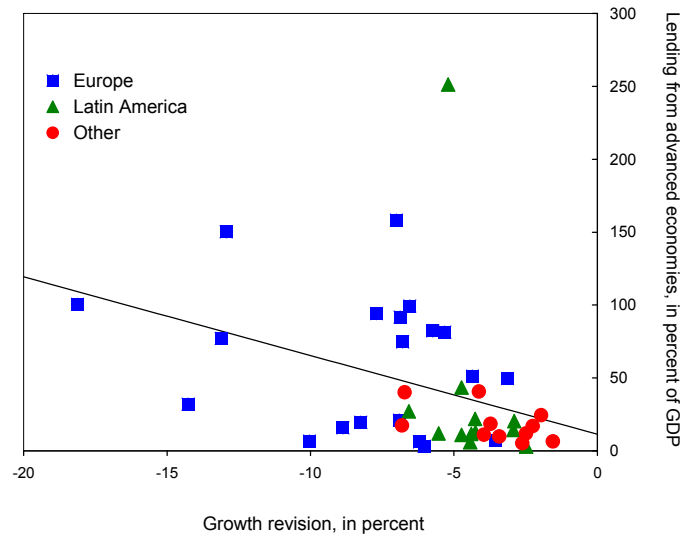
On the external side, there is also some evidence that lower current account deficits prior to the crisis are associated with a better growth outcome. In particular, the group of less affected countries on average had surpluses. EECA region recorded larger deficit in comparison with the other regions. The data also suggest that countries with higher international reserves tended to experience smaller growth revisions, although this relationship appears weak.

Current Account Balance

International Reserves
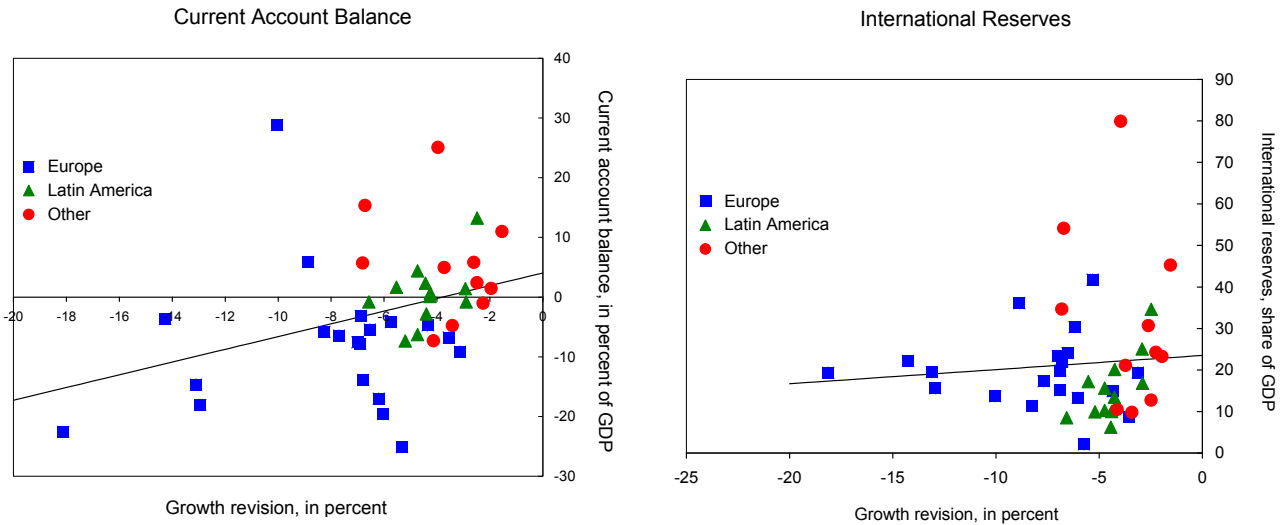
Policy Frameworks

Our scatter plots strongly support the notion that more flexible exchange rates helped to buffer the shock. Countries with pegs were hit particularly strongly; on average, EECA countries had the least flexible exchange-rate regimes.

Countries with significant downward revisions tended to feature weaker fiscal positions, as measured by the primary fiscal gap (the difference between the actual primary balance and the one consistent with constant public debt as a share of GDP). On average, Latin America exhibited the most favorable position, according to this measure. We find little correlation between institutional variables and the size of the output impact.[4]

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[4] There is a significant correlation between indices measuring institutional transparency and the extent to which financial markets were hit in the months of most pronounced global financial turbulence.

De Facto Exchange Rate Regime

Growth revision, in percent

Primary Fiscal Gap

Growth revision, in percent
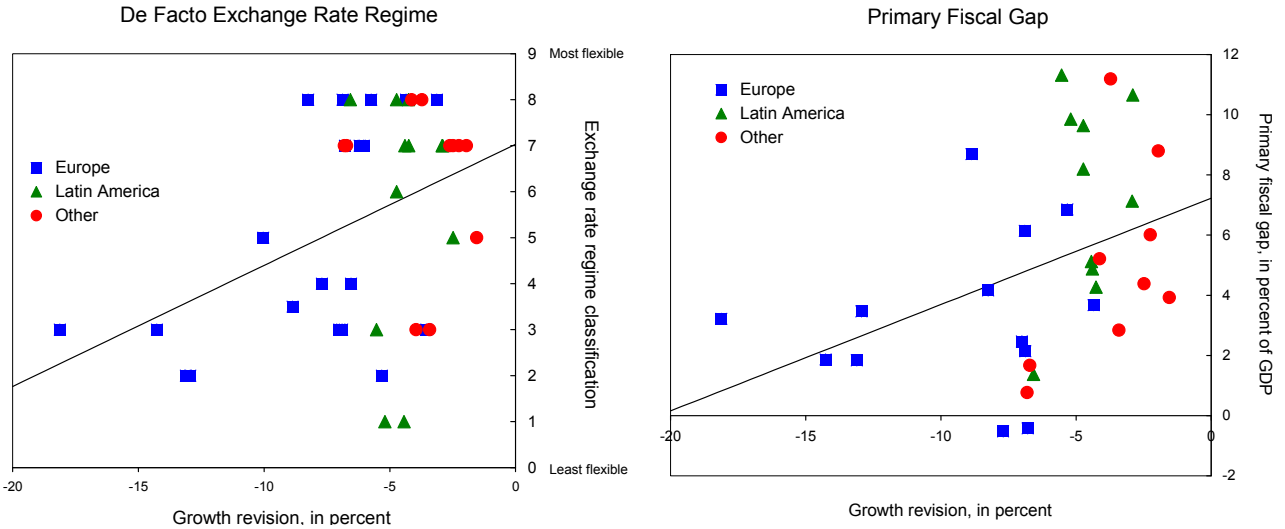
IV. REGRESSION RESULTS

A. Baseline Regressions for Emerging Markets

In this section, we present our assessment of the relevance of the different factors discussed so far more formally, using cross country regressions. For the baseline regressions we use as the dependent variable the changes in the *Consensus Forecast* for 2009 between the averages of January–June 2009 and January–June 2008 for 40 emerging market countries.[5] In summary, we find that financial vulnerabilities—specifically the degree of leverage and cumulative credit growth—and exchange rate policy explain a large share of the variation in the growth forecast revisions across these countries. Also the effect of leverage appears to have been stronger in the EU accession countries, and there is weak evidence suggesting that a strong fiscal position helped shield countries from the effect of the global financial crisis. We tested all the other variables listed in Table A.1, but none of them turned out to be statistically significant on a consistent basis for this sample. Interestingly, institutional variables, including institutional frameworks and many quality of policy measures, did not provide any significant explanatory power.

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[5] See Table A.2 for a list of the countries in the consensus sample.

Table 1. Baseline Regression Results

Specification	(1)	(2)	(3)
Dependent variable: Change in consensus forecast			
Leverage	-0.04***	-0.04***	
	(0.01)	(0.01)	
Leverage * EU accession dummy			
Exchange rate peg dummy	-1.94**	-1.82**	-4.27***
	(0.87)	(0.81)	(1.05)
Cumulative credit growth	-0.01*	-0.00*	
	(0.00)	(0.00)	
EU accession dummy		-2.29**	
		(0.88)	
Primary gap			0.48***
			(0.15)
Constant	0.72	0.44	-7.06***
	(1.30)	(1.21)	(0.98)
Observations	40	40	32
R-squared	0.574	0.643	0.462

Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.

Financial Linkages and Vulnerabilities

The regressions confirm that for emerging markets, financial factors appear to have been key in determining the size of the growth revision. In particular, leverage, measured as the credit to deposit ratio, and cumulative credit growth turn out to be significant explanatory variables across various specifications. Broadly speaking, an increase in leverage of ten percentage points is associated with a reduction in growth forecasts of 0.4 percentage points, while a ten-percentage-point-higher credit growth during the 2004–2007 predicts a growth cut of around 0.1 percentage points (Equation 1). Put another way, if the countries in the most-levered quartile of the sample (with average leverage of 185 percent of GDP) had had the same leverage ratios as the countries in the least-levered quartile (83 percent), their growth revisions would have been, on average, 4.1 percentage points smaller. The effect is only slightly smaller with credit growth: if the quartile of countries with the fastest cumulative credit growth (with average growth of almost 350 percent) had had the same credit growth as the countries in the slowest credit growth quartile (with average growth of only 14 percent), their growth revisions would have been 3.3 percentage points smaller. EU accession countries appear to have been hit particularly hard, possibly because of their stronger trade and financial linkages with the EU member countries, which were situated at the core of the crisis (Equation 2).[6]

In some specifications a currency mismatch measure, proxied by foreign assets minus foreign liabilities over GDP, enters significantly and with the correct sign (a larger currency mismatch is associated with a sharper growth revision), but once leverage is controlled for,

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[6] 10 European Accession countries.

its statistical significance disappears. Similarly, the share of foreign currency deposits among total deposits is significant in some specifications and with the expected negative sign, but the effect is weaker than for the variables above. Finally, our measure for lending from advanced economies did not enter significantly in this sample, once we control for other factors.

Many of the countries with credit booms tended to run sizable external current account deficits, and this could explain why the regression analysis did not find evidence of a significant relationship between growth revisions and the current account balance.[7] Also the current account balance may be heavily influenced by cyclical factors that would drop out of analysis of revisions to growth forecasts.

Monetary and Fiscal Policy Frameworks

There is stronger evidence for the importance of exchange rate and monetary policy than for fiscal policy in dampening the impact of the crisis. Among alternative monetary policy measures, such as a dummy for inflation targeters, inflation levels, and inflation volatility, only exchange rate flexibility seems to matter.

Countries with more flexible exchange rates as measured under the Fund's classification system tended to experience smaller growth revisions.[8] However, the benefits of exchange rate flexibility appear limited to moving from a peg toward a more flexible regime; distinguishing between crawls and floats does not improve the fit. For this reason, the baseline specification uses a dummy variable for pegged exchange rates. In most regressions, countries with pegged exchange rates experienced, on average, larger downward growth revisions (in excess of two percentage points) compared to countries with more flexible exchange rates.[9]

Interestingly, the stock of international reserves—measured in numerous ways, such as a share of GDP, exports, or short-term debt—did not have a statistically significant effect on the growth revisions, contrary to the pattern suggested by the scatter plot. This result is similar to that found by Blanchard (2009). This result may reflect a nonlinear relationship between international reserves and reduced vulnerabilities. The value of international reserves may diminish sharply once they move above a threshold considered sufficient to guard against risks. In fact, several of the countries that had the largest growth revisions, particularly in Central and Eastern Europe, had levels of international reserve that similar to those prevailing in some of the less-affected countries in Europe or Latin America.

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[7] In fact, excluding two outliers experiencing oil-fueled credit booms, the correlation between credit growth and the current account balance is -67.

[8] See International Monetary Fund *Annual Report on Exchange Arrangements and Exchange Restrictions*.

[9] Exchange rate pegs were defined as AREAER classifications under which the currency is pegged to a specific value rather allowed to fluctuate within a band or floating either under management or freely.

On fiscal policy, in certain specifications (Equation 3), the primary fiscal gap is positively associated with better growth performances, in line with the notion that countries with sufficient fiscal space before the crisis were able to adopt more effective countercyclical fiscal policies during the crisis. In fact, the quartile of countries with the largest primary gaps had on average growth revisions that were 4.2 percentage points less negative than the quartile with the smallest primary gaps. Other fiscal variables, such as various measures of the fiscal balance or the size of the government do not appear to matter once other factors are controlled for. Although the level of public debt enters significantly in certain specifications, it has a counterintuitive sign, associating higher debt with better growth performances. In several of the countries hit hardest by the crisis, the effect often came from imbalances in the private sector—not fiscal imbalances and high public debt. Also, some of the countries that fared relatively well during the crisis had relatively high levels of public debt—in some cases combined with credible fiscal frameworks and in others with high domestic savings.

Summary

In summary for the emerging market countries, the main avenue of transmission of the shock appears to have been financial channels, particularly through rapid credit growth and high leverage, with the damage aggravated by pegged exchange rates. Leverage explains virtually all of the growth revision for the least affected countries in the sample, roughly two thirds of the revision for the average country, and slightly more than half of the revision for those countries most affected by the crisis. Credit growth explains a significant share of the growth revision for the average country as well as those most affected. None of the least affected countries in the sample had a pegged exchange rate, while limited exchange rate flexibility explains a significant share of the growth revision of the most affected countries.

Growth Revisions under Baseline Specification
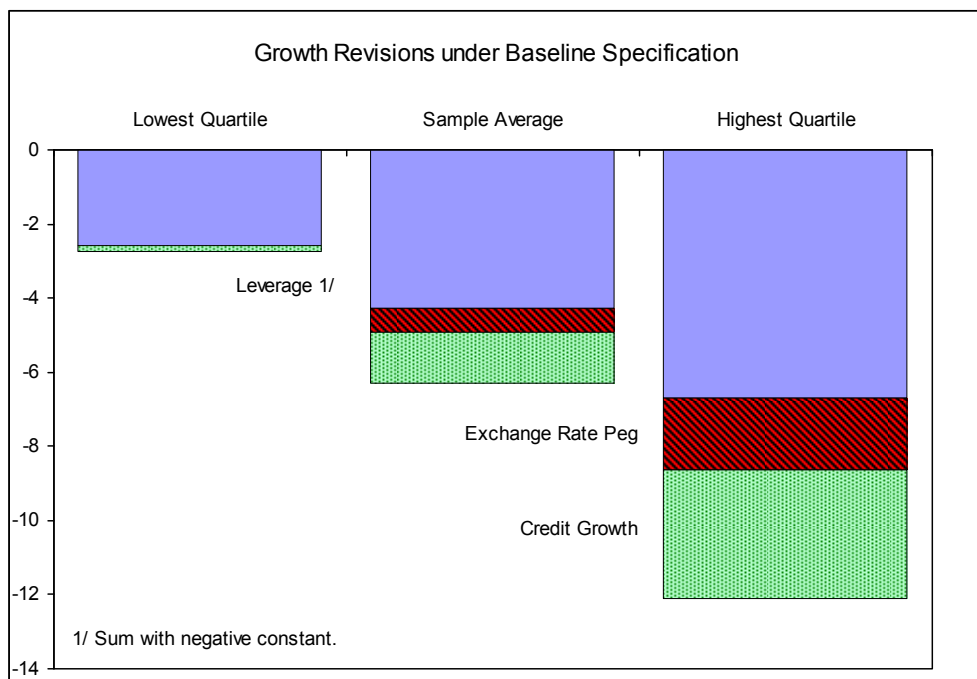
B. Did Trade Linkages Play a Role?

We also estimate regressions with the WEO forecast dataset to examine growth revisions for 126 countries, including low-income as well as emerging market countries, and to explore whether other channels, such as trade linkages, mattered for a broader set of countries.

Interestingly, the trade channel appears to matter in this sample. Although the degree of trade openness is not statistically significant, the composition of trade makes a significant difference. In particular, the share of commodities (both food and overall) in total exports is associated with smaller downward growth revisions. The share of manufacturing products in total exports is correlated with worse growth performance both for advanced as well as developing countries. This is consistent with the notion that countries exporting manufacturing goods to advanced countries seem to have been hit hard by the decline in demand from these markets, while countries exporting food appear to have fared better. However, in line with the results using the *Consensus* forecasts, the trade channel does not seem to be important for emerging markets. When including interaction variables of the trade measures and a dummy for emerging markets, these interaction terms enter with a coefficient of similar magnitude but opposite sign, implying an overall effect of zero for emerging market countries.

Financial vulnerabilities also have a statistically significant effect on the growth revisions in this sample, and we now find that a larger stock of lending from advanced countries contributed to a more severe downward revision of the growth forecast.

Table 2. Regression Results: All Developing Countries

Dependent variable: WEO forecast changes for full sample of developing countries

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of food commodities in exports	0.080***					0.075***	0.058***	0.057***
	(0.019)					(0.019)	(0.018)	(0.018)
Lending from advanced economies	-0.004***	-0.004***	-0.004***	-0.013***	-0.003***	-0.004***	-0.005***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)
Share of food, fuels,and mining in exports		0.045***						
		(0.013)						
Share of manufacturing in exports			0.001		0.003			
			(0.013)		(0.014)			
Share of advanced manufacturing in GDP				0.467*				
				(0.260)				
Leverage (credit/deposits)					-0.022**	-0.033***		-0.023***
					(0.009)	(0.009)		(0.008)
Credit Growth							-0.011***	-0.009***
							(0.002)	(0.002)
Share of food commodities in exp X EM	-0.075***					-0.060**	-0.073***	-0.062***
	(0.025)					(0.025)	(0.023)	(0.023)
Share of food, fuels, and mining in exports X EM		-0.048***						
		(0.012)						
Share of manufacturing in exports X EM			-0.048***		-0.045***			
			(0.013)		(0.013)			
Share of adv. manufacturing in GDP X EM				-0.655***				
				(0.226)				
Constant	-5.930***	-6.142***	-3.909***	-4.099***	-1.726	-2.447**	-4.179***	-1.994**
	(0.467)	(0.656)	(0.600)	(0.596)	(1.056)	(1.019)	(0.559)	(0.947)
Observations	93	93	93	75	86	86	91	86
R-squared	0.240	0.255	0.258	0.264	0.338	0.345	0.391	0.450

Standard errors in parentheses   EM=emerging market dummy
*** p<0.01, ** p<0.05, * p<0.1

C. Robustness Tests

The results are largely robust to changes in periods of *Consensus Forecasts* changes. Moving from changes in averages to April or to August does not make much difference. Although cumulative credit growth using revisions from April 2008 to 2009 loses its statistical significance, its economic significance is the same.

Table 3. Robustness Tests: Changing Dates

Specification	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable: Change in consensus forecast (April 2008 April 2009)				Change in consensus forecast (Aug. 2008 Aug. 2009)		
Leverage	-0.05***	-0.05***		-0.04**	-0.04**	
	(0.01)	(0.01)		(0.02)	(0.02)	
Leverage * EU accession dummy						
Exchange rate peg dummy	-2.09*	-1.97*	-4.75***	-2.41*	-2.23*	-5.59***
	(1.12)	(1.09)	(1.30)	(1.28)	(1.20)	(1.40)
Cumulative credit growth	-0.01	-0.01		-0.01*	-0.01*	
	(0.00)	(0.00)		(0.00)	(0.00)	
EU accession dummy		-2.15*			-3.34**	
		(1.18)			(1.30)	
Current account balance						
Primary gap			0.58***			0.65***
			(0.19)			(0.20)
Constant	1.44	1.18	-7.66***	-0.64	-1.05	-9.03***
	(1.67)	(1.62)	(1.22)	(1.91)	(1.78)	(1.30)
Observations	40	40	32	40	40	32
R-squared	0.508	0.550	0.423	0.474	0.558	0.462

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We also ran regressions with WEO forecast changes using the same set of countries that we used for the *Consensus Forecasts* sample. The only substantial change in the results is that leverage is no longer significant. As mentioned in the data section, the main difference between *Consensus* and WEO forecast changes concerns Eastern European countries: the forecast revisions are much larger for these countries in the *Consensus* dataset than in the WEO data. Given the importance of leverage for this region, the correlation is weaker with more moderate growth revisions in the WEO sample.

Table 4. Robustness Tests: WEO Forecasts

Specification	(11)	(12)	(13)
Dependent variable: Change in WEO forecast (April 2008 - April 2009)			
Leverage	-0.01	-0.01	
	(0.01)	(0.01)	
Leverage * EU accession dummy			
Exchange rate peg dummy	-1.73*	-1.64*	-4.01***
	(0.94)	(0.91)	(0.94)
Cumulative credit growth	-0.01***	-0.01***	
	(0.00)	(0.00)	
EU accession dummy		-1.69*	
		(0.99)	
Primary gap			0.45***
			(0.14)
Constant	-3.37**	-3.57**	-7.54***
	(1.39)	(1.36)	(0.88)
Observations	40	40	32
R-squared	0.489	0.529	0.482

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

V. CONCLUSION

The results of this paper show that a relatively small set of variables can explain much of the difference in countries' prospects after the financial crisis intensified in September 2008. A simple specification of leverage, cumulative growth in credit, and controlling for exchange-rate pegs alone explains more than half the variation in the growth revisions, an explanatory power which no other policy variable we analyzed was able to match. Despite the inherent limitations of the exercise, these results were robust across a wide variety of specifications and country samples. There is also some evidence that trade linkages played a role in the transmission of the crisis, especially for non-emerging market developing countries.

This early attempt to explain why some developing countries and emerging markets fared better than others suggests drawing some—preliminary—policy lessons:

- Exchange-rate flexibility is crucial to dampen the impact of large shocks;

- Prudential regulation and supervision needs to aim at preventing the types of build up of vulnerabilities which are particularly associated with credit booms;

- A solid fiscal position during 'good times' creates some buffers to conduct countercyclical fiscal policies during shocks.

However, as more data become available and the global economy enters a recovery, more research will be needed to understand in more detail the effect of policy responses and other institutional and structural factors on the duration of recessions in each country and the speed and size of the recovery in growth.

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APPENDIX TABLE A.1. LIST OF EXPLANATORY VARIABLES

Category	Exp. Sign	Source
Trade linkages		
Trade openness	-	IMF - Direction of Trade and WEO
Share of total exports in GDP	-	World Economic Outlook
Share of exports to advanced economies in GDP	-	IMF - Direction of Trade and WEO
Share of exports to US in GDP	-	IMF - Direction of Trade and WEO
Share of manufacturing products in total exports	-	World Trade Organization
Share of food commodities in total exports	+	World Trade Organization
Share of non-fuel commodities in total exports	+	World Trade Organization
Share of non-fuel commodities in GDP	+	World Trade Organization
Share of advanced manufacturing in GDP	-	World Trade Organization and World Economic Outlook
Change in export volumes in 2008	-	World Economic Outlook
Change in growth forecasts for trading partners	+	World Economic Outlook
Financial linkages		
Stock of bank lending from advanced economies as a share of GDP	-	Bank for International Settlements and World Economic Outlook
Stock of bank lending from U.S. as a share of GDP	-	Bank for International Settlements and World Economic Outlook
Financial integration measures (capital account restriction indices for both inflows and outflows)	-	Schindler, M. (2009), "Measuring Financial Integration: A New Data Set" IMF Staff Papers, Vol. 56, No. 1, pp. 222–238. Available at http://www.palgrave-journals.com/imfsp/journal/v56/n1/abs/imfsp2009 828a.html
Received remittances as a share of GDP	-	BOPS/IIP Balance of Payments and International Investment Position Statistics - WEO
Net remittances as a share of GDP	-	BOPS/IIP Balance of Payments and International Investment Position Statistics - WEO
Foreign assets and liabilities as a share of GDP	-	Balance of Payments Statistics and World Economic Outlook
Vulnerabilities/financial structure		
Stock of international reserve assets as a share of GDP, as share of external debt, as share of exports of goods and services	+	World Economic Outlook
Domestic credit/domestic deposits (leverage)	-	International Financial Statistics- Monetary Survey
Cumulative credit growth 2003–2007	-	International Financial Statistics- Monetary Survey

Category	Exp. Sign	Source
Public debt as share of GDP	-	World Economic Outlook
Overall balance to GDP	+	World Economic Outlook
Current account balance as a share of GDP	+	World Economic Outlook
National savings to GDP	+	World Economic Outlook
Investment to GDP	-	World Economic Outlook
Inflation	-	World Economic Outlook
Degree of financial sophistication	-	The Global Competitiveness Report 2007–08 (page 468)
General government overall balance as percent of GDP	-	World Economic Outlook
ICRG risk indices for political, financial, economic, and overall country risk	-	International Country Risk Guide, The PRS Group
Opacity Index	-	Milken Institute
CDS and EMBI spreads	-	Datastream
Institutional investors credit rating	+	Institutional Investors
Foreign assets minus foreign liabilities as a share of GDP	-	Balance of Payments Statistics and World Economic Outlook
Policy framework		
Degree of exchange-rate flexibility	+	International Monetary Fund staff estimates.
Inflation targeting dummy	+	IMF - MCM
Primary gap	+	The Vulnerability Exercise for Emerging Markets, IMF.
Structural balance	+	World Economic Outlook
Transparency International corruption perceptions	+	Transparency International
Transparency of economic policymaking	+	The Global Competitiveness Report 2007–08 (page 385)
Opacity Index	-	Milken Institute
Country Policy and Institutional Assessment Rate	-	World Bank

APPENDIX TABLE A.2. COUNTRIES CONSIDERED FOR FORECAST

Table A.2.1. Countries Considered from Consensus Forecast

Albania	Croatia	Lithuania	Romania
Argentina	Czech Republic	Malaysia	Russia
Azerbaijan, Rep. of	Ecuador	Mexico	Saudi Arabia
Belarus	Egypt	Moldova	Slovak Republic
Bolivia	Estonia	Nigeria	Slovenia
Brazil	Georgia	Pakistan	South Africa
Bulgaria	Hungary	Panama	Thailand
Chile	India	Paraguay	Turkey
China,P.R.: Mainland	Indonesia	Peru	Ukraine
Colombia	Kazakhstan	Philippines	Uruguay
Costa Rica	Latvia	Poland	

Table A.2.2. Countries Considered from WEO database

Afghanistan, I.R. of	Czech Republic	Lebanon	Senegal
Albania	Djibouti	Libya	Seychelles
Algeria	Dominica	Lithuania	Sierra Leone
Angola	Dominican Republic	Macedonia, FYR	Slovak Republic
Antigua and Barbuda	Ecuador	Madagascar	Slovenia
Argentina	Egypt	Malawi	Solomon Islands
Armenia	El Salvador	Malaysia	South Africa
Azerbaijan, Rep. of	Equatorial Guinea	Maldives	Sri Lanka
Bahamas, The	Estonia	Mali	St. Kitts and Nevis
Bahrain, Kingdom of	Ethiopia	Mauritania	St. Lucia
Bangladesh	Fiji	Mauritius	St. Vincent & Grens.
Barbados	French Polynesia	Mexico	Sudan
Belarus	Gabon	Moldova	Suriname
Belize	Gambia, The	Mongolia	Syrian Arab Republic
Benin	Georgia	Morocco	Tajikistan
Bolivia	Ghana	Mozambique	Tanzania
Bosnia & Herzegovina	Grenada	Myanmar	Thailand
Brazil	Guatemala	Nepal	Togo
Brunei Darussalam	Guinea	Nicaragua	Tonga
Bulgaria	Guinea-Bissau	Niger	Trinidad and Tobago
Burkina Faso	Guyana	Nigeria	Tunisia
Burundi	Haiti	Oman	Turkey
Cambodia	Honduras	Pakistan	Turkmenistan
Cameroon	Hungary	Panama	Uganda
Cape Verde	India	Papua New Guinea	Ukraine
Central African Rep.	Indonesia	Paraguay	United Arab Emirates
Chad	Iraq	Peru	Uruguay
Chile	Jamaica	Philippines	Uzbekistan
China,P.R.: Mainland	Jordan	Poland	Vanuatu
Colombia	Kazakhstan	Qatar	Venezuela, Rep. Bol.
Comoros	Kenya	Romania	Vietnam
Congo, Dem. Rep. of	Kiribati	Russia	Yemen, Republic of
Congo, Republic of	Kuwait	Rwanda	Zambia
Costa Rica	Kyrgyz Republic	Samoa	
Côte d'Ivoire	Lao People's Dem.Rep	São Tomé & Príncipe	
Croatia	Latvia	Saudi Arabia	