Understanding the Crisis in Emerging Europe

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Abstract

Emerging Europe experienced larger output declines during the 2008-09 crisis than any other region in the world. However, some countries suffered much smaller declines than others; major balance-of-payments crises and banking collapses were avoided; and economic policy reactions stayed well clear of populist and confiscatory measures experienced in previous crises. The paper argues that this can be attributed to European economic and political integration. It shows that foreign bank ownership was a mitigating factor in the output decline, and that more than half of the cross-country variation in output decline can be explained by a small group of macroeconomic vulnerabilities.

Keywords: Growth, Financial integration, Capital flows, Emerging Europe

Introduction

This paper undertakes a preliminary assessment of the crisis in Emerging Europe, which is now in its fifth quarter.[2] Measured by the size of output declines in the last quarter of 2008 and the first two quarters of 2009, the global financial crisis has hit Emerging Europe harder than any other region of the world. Given the high degree of integration of the region with advanced countries at the

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[2] We use the term "Emerging Europe" broadly to denote Turkey and the transition economies of Central, South-eastern and Eastern Europe including the Caucasus region. In addition, a few Central Asian economies are part of our analysis, constrained by data availability; bringing our total number of countries to about 25.

centre of the crisis, and large pre-crisis macroeconomic vulnerabilities and financing needs, this is not surprising. Rather more surprising are two facts.

- On several dimensions, the region has been surprisingly resilient. First, the crisis arrived late—only in the fourth quarter of 2008, with signs of stress in a few countries emerging toward the end of the third quarter. Until then, most countries in the region enjoyed an extraordinary period of "decoupling", with output and credit growth continuing unabated, notwithstanding the fact that financial crisis had already engulfed the advanced economies for over a year. Second, the crisis is missing some of the defining attributes of emerging market crises in the past. No country has suffered an uncontrolled currency collapse coupled with a systemic banking crisis, although some have come perilously close.
- Although the region has been hard hit on average, there is an extraordinary degree of variation in the extent to which countries within the region have been affected. Year on year output growth in the first quarter of 2009 was in the negative double digit range in several countries, but still in the low positive single digits in others. This variation roughly corresponds to EBRD and IMF projections for the whole year, so it is unlikely to be just a reflection of differences in the timing of the crisis impact.

The purpose of this paper is to document, and take a first step towards understanding these two facts.[3] Its main thesis is that the resilience of the region can be linked to a particular model of integration: namely, financial integration through international banking groups, and political and institutional integration with Western Europe. The former softened the blow of the capital flow reversal, while the latter helps to explain why the region, unlike emerging market regions in the past, did not descend into a spiral of destructive and populist policy reactions and twin crises.

As far as the cross-country variation in growth declines is concerned, a preliminary analysis suggests that this is most robustly related to pre-existing debt levels, and to a lesser extent to structure of foreign liabilities. Since the accumulation of foreign debt is clearly a by-product of financial integration, this leads to the overall conclusion that financial integration has been a mixed blessing in this crisis. The question, which we leave for future research, is why some countries, but not others, managed to benefit from the stabilizing aspects of integration while avoiding its risks.

In the next section below, we briefly summarize the background to the crisis and the main course of the crisis so far, document the region's initial resilience, and the large cross-country variation in crisis impact. We next examine the possible causes of these two phenomena in turn. A concluding section summarizes our views on the outlook and risks for the region in the immediate future.

[3] For a related analysis focused on the role of capital flows, written in parallel with this paper and with largely consistent conclusions, see Mihaljek (2009).

Background: A Capital Inflow and Credit Boom, 2001-2007

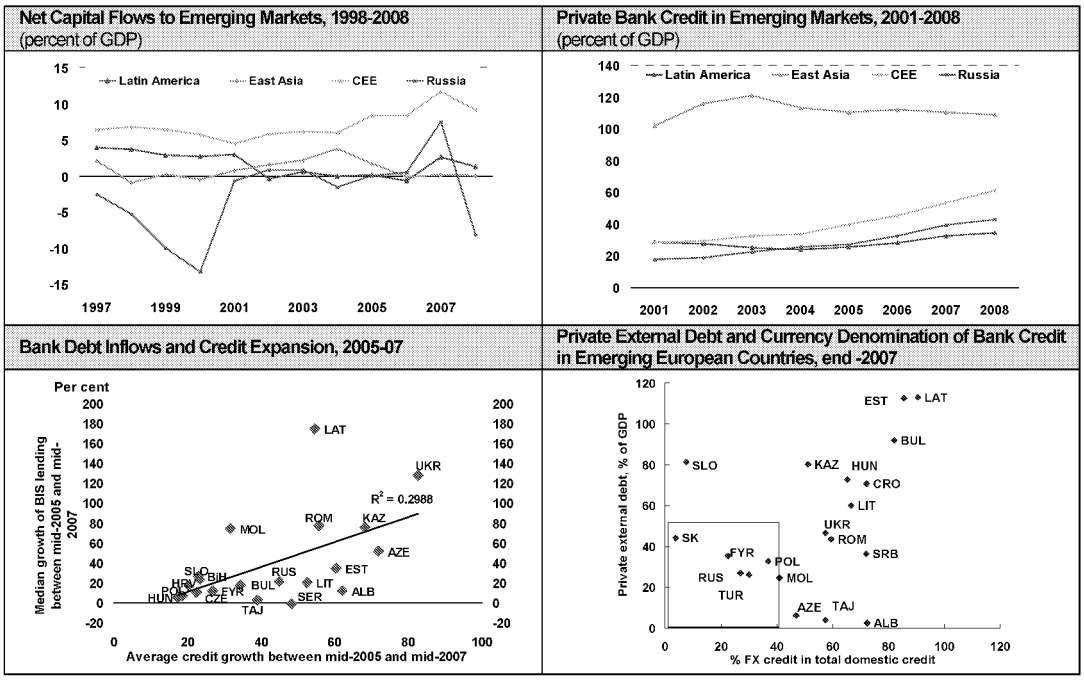
From the beginning of this decade until the first half of 2008, Central and Eastern European (CEE) economies experienced large capital inflows from the West, a credit boom, and rapid expansions in both consumption and investment. The counterpart of this boom was a sharp increase in private sector external indebtedness. In most countries, debt was denominated primarily in foreign currency, making corporate and household borrowers – and hence creditor banks – vulnerable to a depreciation of the exchange rate.

Figure 1 documents these developments and compares them to those in other emerging market regions. The top left chart shows that Emerging Europe (excluding Russia, which initially suffered a crisis and later benefited from an oil boom, leading to capital account surpluses) received much higher capital inflows, compared to both Latin America and Emerging Asia. Private net capital inflows consistently exceeded 5 per cent of regional GDP, and rose to over 10 per cent of GDP by 2007. This rise coincided with a sharp rise in credit (top left): beginning from relatively low levels – about 30 percent of GDP on average, in line with Latin America, and much below emerging Asia – the ratio of credit to GDP doubled over the course of 6 years.[4] The lower left chart documents the correlation between the size of bank debt inflows and credit booms during the 2005-07 boom period. Finally, the lower right chart shows that private external indebtedness was correlated, across countries, with a high share of foreign currency lending; with most (but not all) countries in the region exposed in both dimensions.

Hence, by the time that the financial crisis erupted in advanced countries in the summer of 2007, emerging Europe experienced many of the classic macro-financial vulnerabilities that formed the basis of past emerging market crises – in particular, the Asian Crisis of 1997-98, in which currency mismatches and private indebtedness had played a critical role.

[4] Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela; Emerging Asia includes China, Indonesia, Malaysia, Philippines, Thailand, Korea, Taiwan.

Figure 1. Pre-Crisis Capital Inflow and Credit Boom



The Crisis: A Synopsis

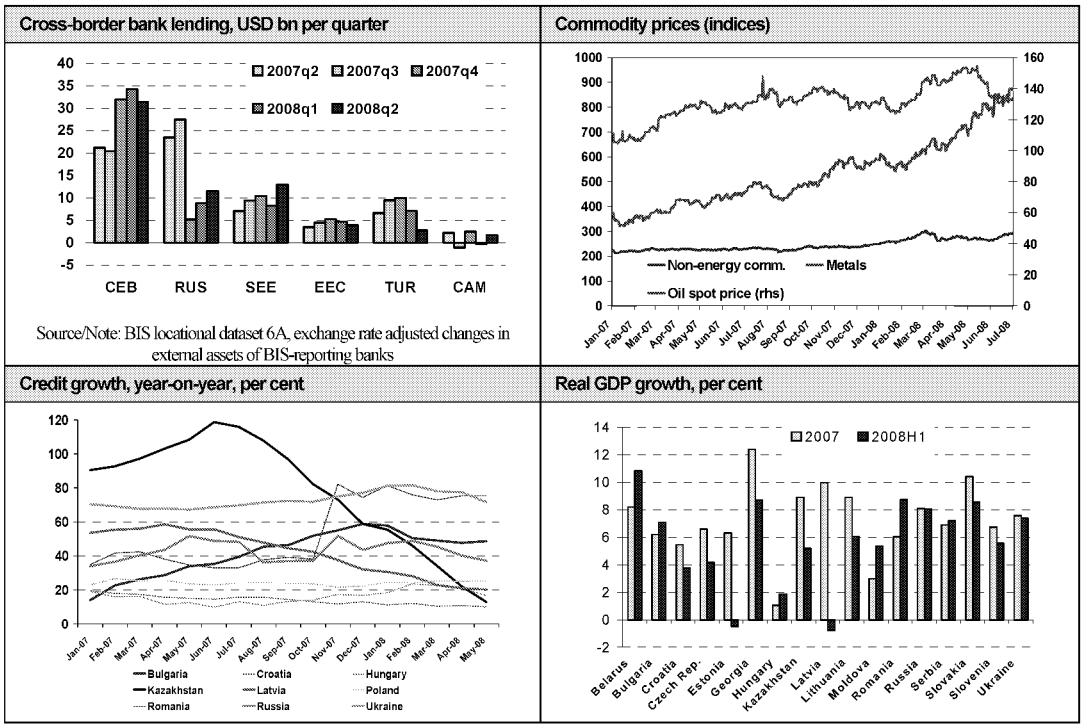
In July and August of 2007, the crisis in the U.S. sub prime mortgage sector erupted and quickly spilled over to securitized assets more generally, both in the United States and in Europe. With confidence in the balance sheets of financial institutions holding such assets shaken, money markets dried up. Risk premia rose sharply, affecting corporate borrowing. The U.S. high yield bond spread, traditionally a bellwether for global risk aversion and a solid predictor of financing conditions in emerging markets, quickly doubled, from around 250 to about 500 basis points by September.

Given the large macro financial vulnerabilities in most Emerging European countries, a shock of this size at the centre of the international financial system might have been expected to trigger a "sudden stop" in capital flows, followed by a credit contraction, depreciations, insolvencies of borrowers indebted in foreign currency, and output declines. Yet, this did not occur. Instead, the crisis unfolded in three phases.

- ***Decoupling (July 2007 to September 2008)***. With the exception of four countries, the crisis left Emerging Europe largely unaffected during its first four quarters, as capital inflows generally held up, credit growth continued unabated, domestic demand remained buoyant, and high commodity prices supported growth in Russia and other resource-rich countries

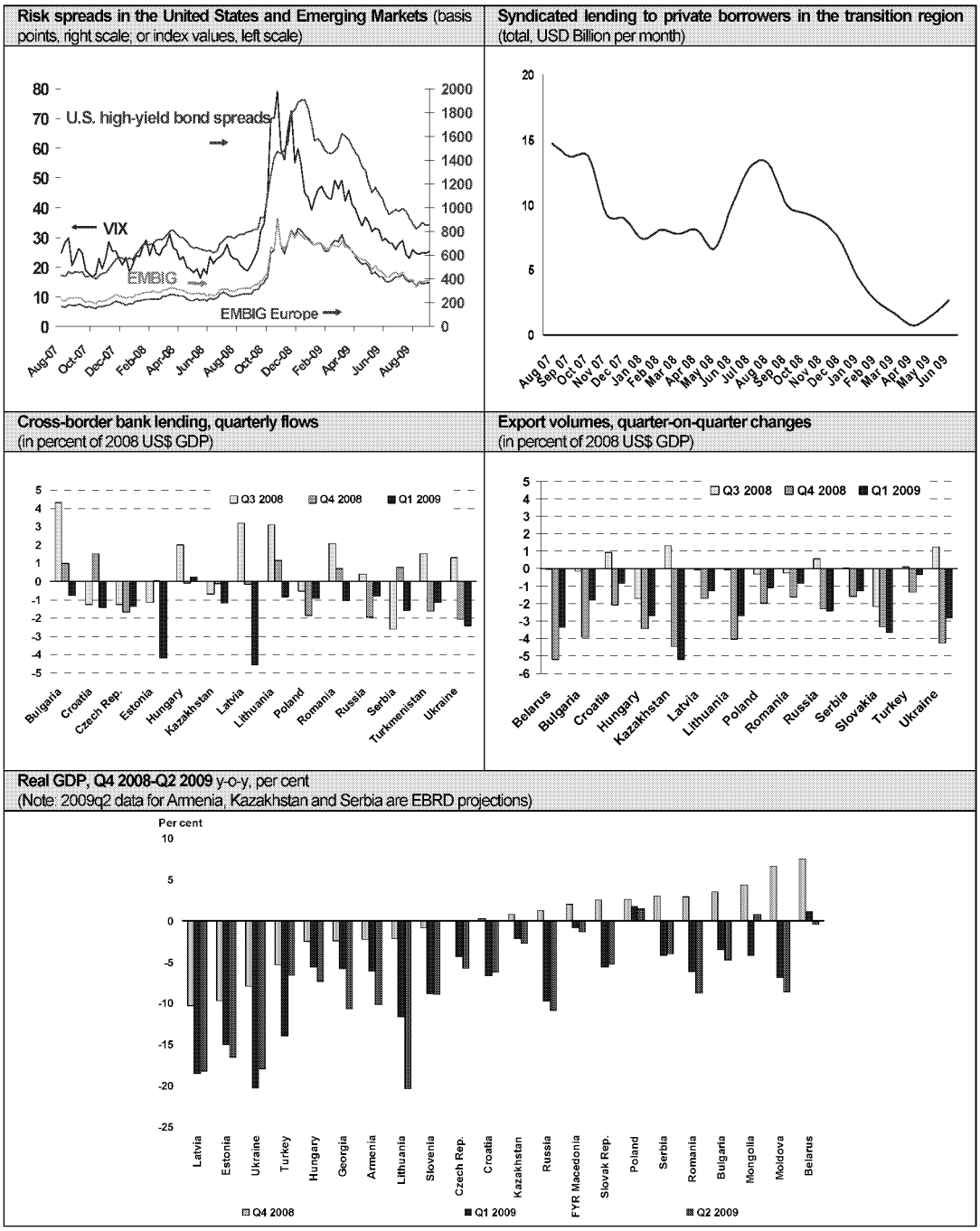
(Figure 2). The exceptions include Kazakhstan, whose largely domestically owned banking system was reliant on funding in international financial markets, and the three Baltic countries, where credit booms had peaked and begun to reverse even before the onset of the global crisis.

Figure 2. The First Year of the Crisis, Mid 2007-Mid 2008: Boom As Usual



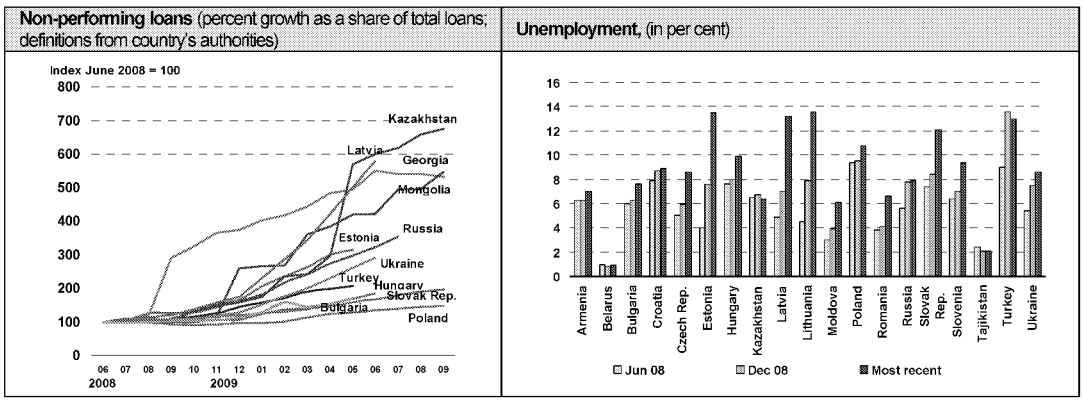
- ***The crisis hits (October 2008 to March 2009).*** The crisis finally hit in the fourth quarter, after the turmoil that followed the collapses of Lehman Brothers and Washington Mutual. Emerging market risk premiums shot up, and bank lending flows, FDI flows, and export volumes all turned negative (Figure 3). Economic activity contracted rapidly, with almost no lag. By November, many countries were experiencing large declines in industrial production, and domestic credit growth began to weaken for the first time in years. By the second half of February, the crisis was spilling back from the real into the financial sector, as fears of bank credit losses triggered a new wave of currency pressures. January and February 2009 industrial production data revealed sharp contractions in countries that had previously been resilient (for example, some south-eastern European countries), albeit with large cross-country differences.

Figure 3. The Crisis Hits



- ***Tentative stabilization with rising crisis costs (April 2009-present)***. In line with the general recovery in international financial markets, regional financial indicators began to point upward beginning in March 2009. Industrial output declines either slowed or reversed in a number of countries, and confidence indicators stabilized. At the same time, ripple effects of the financial and real shocks began to be felt in the corporate, household, and banking sectors, with gradual rises in unemployment, corporate insolvencies and non-performing loans (Figure 4).

Figure 4. The rising costs of the crisis: non-performing loans and unemployment



Going forward, the most likely path for the region is one of gradual stabilization and eventual recovery in 2010. This said, the situation in some countries – most acutely, Ukraine and Latvia – remains precarious (for different reasons). In addition, non-performing loans in the banking system are still significantly below their expected peaks in most countries in the region. The question is whether financial systems will be able to withstand the expected stress without a new breakdown in confidence, which could lead to bank runs and a new round of output collapses. We return to the challenges that this poses for policy in the concluding section of this paper.

Resilience: Facts and Tentative Explanations

Emerging Europe has been surprisingly resilient to the crisis in two respects. First, as documented above, the shocks at the centre were not felt in the region for over a year after the U.S. and West European crises erupted. Second, and less obviously, the region exhibited resilience along some important dimensions even after the crisis hit. This claim rests on two facts, one qualitative, and one quantitative.

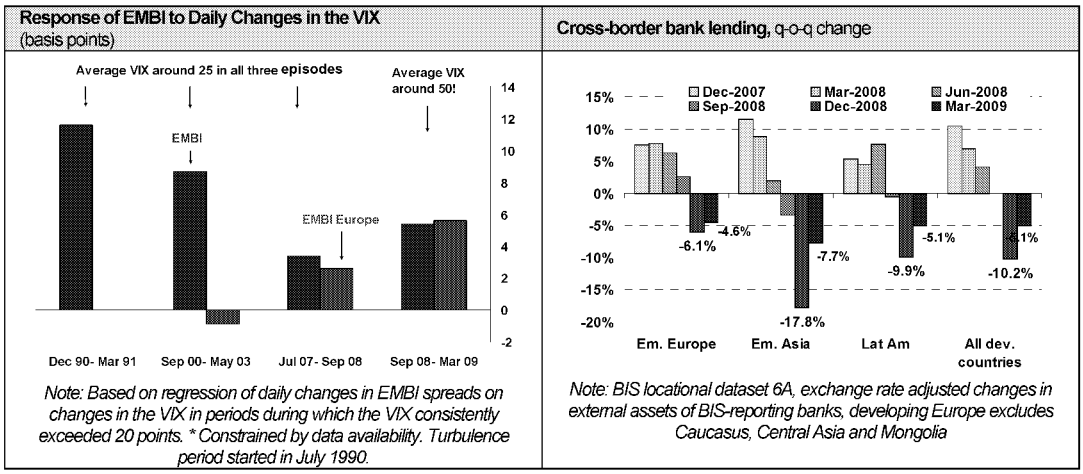
First, notwithstanding the large output costs of the crisis – and the expected large costs in terms of insolvencies, unemployment, and bank recapitalization – there are some thresholds that this crisis has not crossed:

- Most emerging market crisis were "twin crises" that involved temporary loss of macroeconomic control: currency crises with large overshooting of exchange rates, runs on the banking system, and the collapse of systemic banks.
- Policy reactions in these crises often involved coercive measures that overturned the rules of financial relationships, and sometimes private contracts, at least temporarily: capital controls, standstills, bank holidays, deposit withdrawal restrictions, and forced currency conversions.
- Finally, emerging market crises have often been accompanied by political turmoil and reactions against incumbent regimes and ideologies. Argentina's 2001 crisis led to the resignation of two Presidents in the space of a few weeks. The Asian crisis triggered the end of the Suharto regime in Indonesia.

To be sure, there have been instances of collapses and nationalizations of large banks in Emerging Europe (most prominently, Parex in Latvia and BTA in Kazakhstan); currency controls in Ukraine and a few other countries; several government changes; and political unrest in Moldova and Georgia. But bank nationalizations have also occurred in Western Europe over the same period; currency controls seem to have been largely consistent with the normal conduct of business; and political changes affected governments that were already weak before the crisis and where executed in the course of the normal political process. Furthermore, these changes have not, so far, benefited populist, nationalist, or anti-reform governments (see EBRD, 2009, Chapter 6).

Second, while the financial shock to emerging Europe in the fourth quarter and at the beginning of this year was large and damaging, it was nonetheless moderate compared both to shocks suffered by other emerging market regions and in advanced financial markets. Figure 5 (right chart) shows that emerging Europe suffered smaller bank lending outflows, as a share of existing bank assets, than other developing and emerging market regions. The fact that the shocks to advanced country risk premia in September of 2008 had a smaller than one-for-one effect on emerging market risk – with no noticeable difference between emerging Europe and the emerging market average – is apparent from the upper left chart in Figure 3.

Figure 5. Emerging Europe capital outflows and risk premia



The left chart of Figure 5 confirms that the response of emerging market risk premia – including in Emerging Europe – to financial shocks in advanced countries has indeed been muted in the present crisis compared to previous episodes. The idea is to compute correlations of emerging market risks spreads with a widely used indicator of risk in advanced countries, the implied volatility index of S&P 500 stocks, *during periods of financial market stress in the United States*. These are identified as periods in which the VIX consistently averaged 25 (it normally fluctuates between 10 and 15). Because emerging markets are small compared to U.S. financial markets, correlations between the VIX and emerging market risk can be assumed to reflect the effect of the latter on the former, rather than vice versa. The main insight is that this effect was much smaller than usual during the period between July 2007 and August 2008, when the financial crisis was already underway in the U.S. After the widening of the crisis in September 2008, the correlation rose but it remained below its typical level in previous crises. Furthermore, the level of financial stress in advanced countries in this period, as measured by the VIX, was much higher than in any of the previous crisis periods.

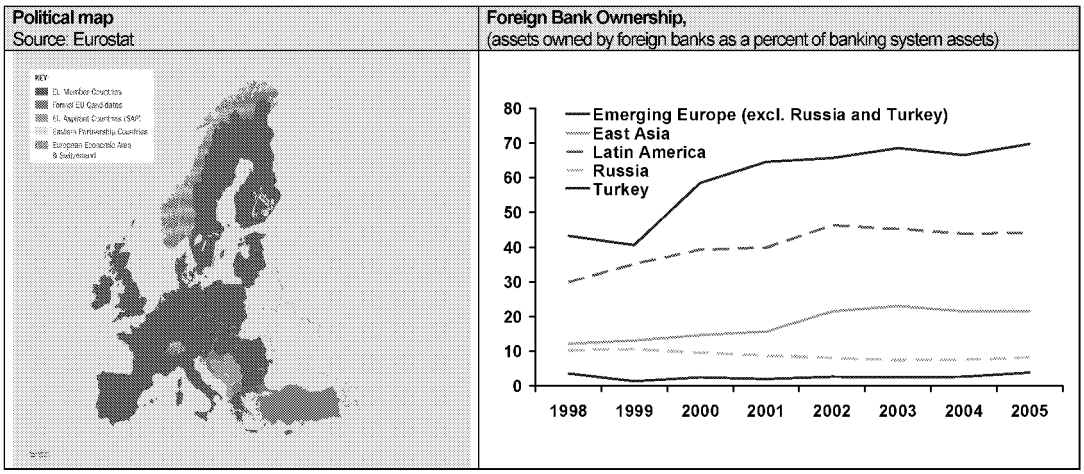
What explains emerging Europe's resilience, both compared to earlier emerging market crises, and compared to other emerging markets during the present crisis? Since Emerging Europe suffered *greater* pre-crisis macro-financial vulnerabilities than other regions in some dimensions (namely higher external debt and higher shares of foreign currency borrowing), the answer must be that these were partly or wholly offset by comparative strengths. One candidate might be relatively sound public balance sheets, but this feature was shared by other emerging market countries. However, the region also benefited from two additional structural characteristics that are unique to emerging Europe.

First, political and economic proximity, including in some cases membership in, the European

Union. As Figure 6 illustrates virtually all emerging European countries, with the sole exception of Russia, have by now developed political ties of various strengths with the European Union. These ties are likely to have benefited them in two ways.

- Through financial support provided or coordinated through European institutions. Three countries, Hungary, Latvia, and Romania, received large loan packages co-financed by the EU and the IMF. Under the "Joint IFI Initiative", the EBRD, the European Investment Bank (EIB) and the World Bank committed to the provision of up to €25 billion of financing to financial institutions operating in the transition region. Under the broader "Vienna Initiative", key public and private sector stakeholders attempted to coordinate public and private sector responses to the crisis, including by obtaining commitments from international banking groups to maintain exposures to Central and Eastern European countries (see EBRD 2009, Box 1.4)
- Through a political commitment effect, which may have had salutary implications on the handling of the crisis. Along with institutional development as a consequence of the transition process since the collapse of central planning, this may help explain why the domestic policy response has generally been mature and populism has been muted, in spite of the large output collapses and associated social costs that the region has suffered.

Figure 6. Political and Financial Integration[5]

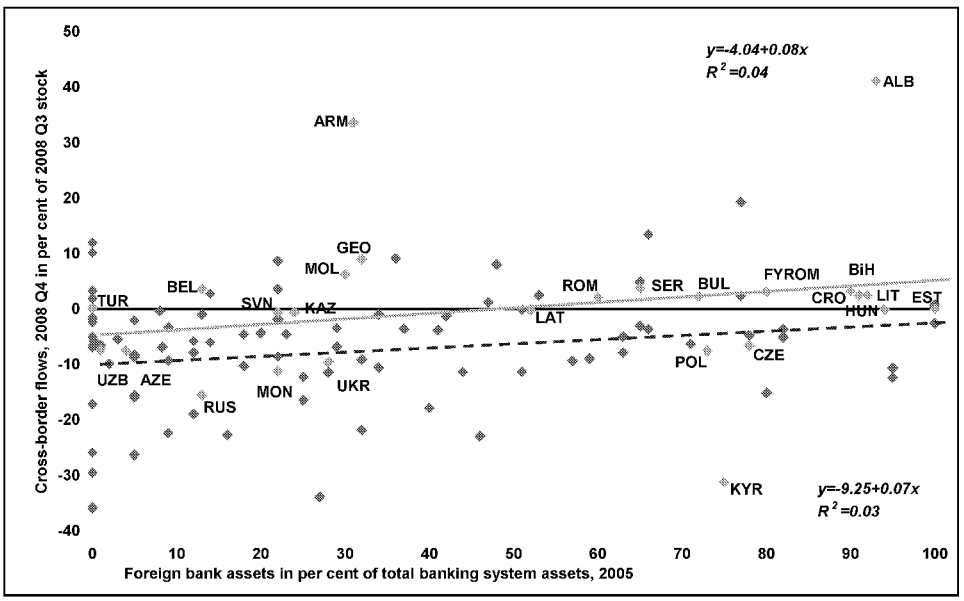


[5] Data for Emerging Europe, excluding Turkey are EBRD database, data for Latin America and East Asia are taken from Claessens, et al (2008). Emerging Europe include : Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia. Lithuania. Macedonia. Poland, Romania, Slovakia, Slovenia, Ukraine. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela; East Asia includes China, Indonesia, Hong Kong, Korea, Malaysia, Philippines, and Thailand.

Second, the role of international banking groups in emerging European financial sectors, which have a significantly higher degree of foreign ownership than other emerging market regions (Figure 6, right chart). A recent empirical literature concludes that international bank lending through a local network of branches and subsidiaries is much more stable than direct cross-border lending, and shows that foreign bank subsidiaries reduce their lending less during a financial crisis than domestic bank lending.[6] This could help explain why bank lending outflows from emerging Europe were generally more moderate than from other regions.

In the remainder of this section we test the proposition that foreign bank ownership attenuate bank lending outflows at the height of the financial crisis. We examine two samples: a large sample comprising 64 emerging markets, developing countries and transition economies; and a smaller sample of 25 transition economies only (emerging Europe, plus some central Asian countries). Figure 7 shows the correlation between cross-border bank lending and foreign ownership in both samples in the fourth quarter 2008, when the "sudden stop" of capital flows to emerging markets occurred. Data points corresponding to transition economies are in orange and labeled with their country codes. The figure shows two simple regression lines: one associated with the whole sample, and the other with the transition sample only. The coefficient is positive in both cases, indicating that flows were indeed more resilient in countries with higher foreign bank ownership.

Figure 7. Cross Border Bank Lending Flows, Q4 2008, and Bank Ownership (BIS)



[6] See Peek and Rosengren (2000), De Haas and Van Lelyveld (2006), García Herrero and Martinez Peria (2007), and de Haas and van Lelyveld (forthcoming).

The question is whether this correlation can be interpreted as causal. In general, the answer is clearly no, as the correlation might pick up the influence of other variables that are correlated with both foreign ownership and outflows. For example, foreign banks may decide to invest in countries that have better fundamentals, and it may be differences across these fundamentals, as opposed to the presence of international bank groups per se, that explain the smaller outflows in the crisis.

To disentangle the effects of economic fundamentals which may be correlated with high foreign ownership from those of foreign ownership per se, we regress net cross-border flows after the "Lehman shock" on the (pre-crisis) share of foreign bank ownership, the country sovereign credit rating as a summary measure of fundamentals, and purchasing power adjusted per capita GDP. The latter two are included as basic controls for the quality of fundamentals and the level of development; but there may of course be many more variables that are related both the decision of international banking groups to acquire banks in a country, and outflows in the crisis. Because our sample is limited (particularly the transition-only sample, which comprises only 25 observations), we cannot control for all these variables at the same time, but we can include them individually in the baseline regression, to see how this affects the coefficients of the remaining variables (particularly our main variable of interest, foreign bank ownership).

Table 1 shows the results of this exercise. The dependent variable is Q4 2008 cross-border lending flows (expressed as percent of Q3 2008 bank asset stocks). Regressions were performed both on a broad sample of emerging market and developing countries (columns 1 and 2) and a subsample of transition countries. Columns (1) and (3) show the baseline regressions, while columns (2) and (4) summarize the results from all other regressions. The main results are as follows.

Table 1. Bank Lending Flows, Q4 2008, and Foreign Bank Ownership
(coefficient estimates, p-values in parenthesis)

	Dependent Variable: Percent Change in Cross-Border Lending, Q4 2008 1/			
	Broad sample		Transition countries	
	(1)	(2) 2/	(3)	(4) 2/
Foreign Bank Ownership	0.14 *(0.008)*	[0.06, 0.17] *[0.295, 0.000]*	0.14 *(0.053)*	[0.04, 0.20] *[0.602, 0.002]*
Rating	-1.52 *(0.038)*	[-2.88, -0.84] *[0.001,0.284]*	-1.87 *(0.158)*	[-3.86, 0.21] *[0.000,0.759]*
GDP per capita PPP, log	-6.76 *(0.082)*	[-12.96, -5.13] *[0.003, 0.206]*	-15.62 *(0.061)*	[-35.16, -6.14] *[0.000, 0.31]*
Number of countries	64	[42,64]	25	[18,25]
R-squared	0.20	[0.20,0.42]	0.38	[0.31,0.77]

1/ In per cent of 2008 Q3 stock

2/ Ranges refer to coefficients from a total of 98 regressions in which 98 potential covariates (see list of variables below) were "rotated through" the baseline specification presented in columns 1 and 3. These included variables from three groups:

(i) macroeconomic indicators were taken from the IMF's IFS and World Economic Outlook (current account, GDP per capita PPP-adjusted, openness, fiscal sector measures, inflation, domestic and external total and private debt); the World Bank Development Indicators 2008 (reserves to GDP, external debt and (in month of imports), M2 or M3 in per cent of GDP and reserves, real interest rates, and real effective exchange rates); and CEIC for transition countries;

(ii) financial variables were sourced from Beck et al (2009) (variables relating to financial development and liquidity); Claessens and Van Horen, (2007) (foreign bank ownership); Lane and Milesi-Ferretti, (2006) and Abiad et al (2009) (external financial assets and liabilities); the BIS (cross-border flows and stocks); the IMF's Global Financial Stability Report (bank capital to assets, non-performing loans); the World Bank Development Indicators 2008 (short-term debt as a share of reserves); and Rose and Spiegel (2009) (liquid assets to total assets, country ratings);

(iii) institutional variables were taken from the Economic Freedom of the World 2008 Project; the World Bank Doing Business 2009 report; Rose and Spiegel (2009); the EBRD/World Bank Business Environment and Enterprise Performance Survey (2008/09); and the Polity IV database.

A full list of variable definitions is available upon request.

First, in the baseline regression, there is a statistically significant positive association between cross-border lending and foreign bank ownership, of consistent magnitude across samples. A 10 percentage point higher foreign bank ownership is associated with higher cross-border lending flows of about 1.4 percentage points of Q3 2008 asset stocks (by comparison, the aggregate outflow of bank lending from emerging Europe in Q4 2008 was about 6 percent of the aggregate Q3 asset stock).

Second, this result is robust to additional controls in the sense that the coefficient on foreign bank ownership retains its positive sign in all regressions (though it sometimes loses statistical significance). For example, in the broad Q4 2008 sample, the estimated coefficients are all between 0.06 and 0.17 (while the baseline coefficient is 0.14).

We checked the robustness of these results along two dimensions. First, the regressions described in Table 1 all focus on net flows during the Q4 2008 crisis period. However, what is arguably more important as a measure of capital flow reversal is the deviation of net capital flows from their pre-crisis trend. In the appendix, we show the same regressions as in Table 1 using this deviation as the dependent variable. Second, we use aggregate flows in Q4 2008 and Q1 2009, rather than just Q4 2008 flows. The main result – a stabilising effect of foreign bank ownership during the crisis period – is preserved in both cases (see appendix table A.1).

Cross-Country Variation in GDP Declines in Emerging Europe

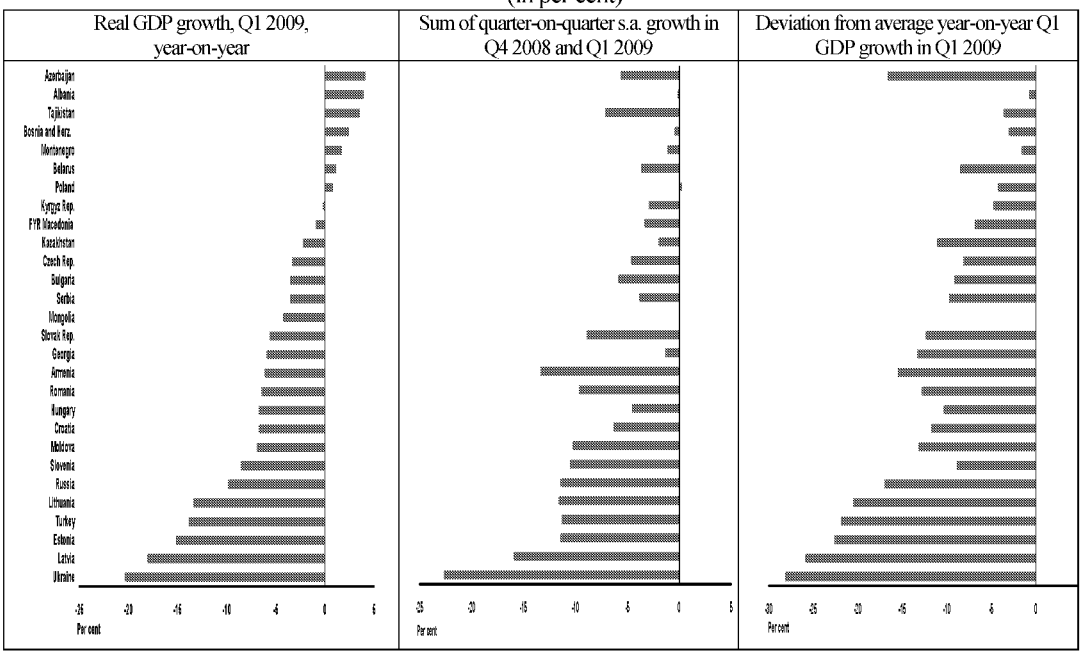
We now turn to the second salient fact of the 2008-09 crisis in emerging Europe: the large cross-country variation in crisis related output declines. Figure 8 documents this variation using three different measures. From left to right:

- First, year-on-year output growth in the first quarter of 2009 (compared to the first quarter in 2008). This measure has the advantage of being widely available and does not require any seasonal adjustment. Its disadvantage is that it reflects the cumulative effect of still positive quarter-on-quarter growth in the second and third quarters of 2008 and the generally negative growth of the fourth quarter and first quarter of 2009. Strong growth at the beginning of the period may therefore obscure sharp declines at the end.
- Second, the sum of seasonally-adjusted quarter-on-quarter declines in the fourth quarter of 2008 and first quarter of 2009. This is the best measure in so far as it captures the effect of the shocks suffered by the European transition region in terms of output in the two main crisis quarters. The main disadvantage is that official seasonally adjusted quarter-on-quarter data is not available for most countries in the sample, so it is necessary to apply an alternative seasonal adjustment in these cases.[7]

[7] Quarterly data are adjusted using five-quarter moving averages.

- Finally, year-on-year growth in the first quarter of 2009 compared to trend – that is, subtracting average first quarter year-on-year growth over the seven-year period ending in the first quarter of 2009. This measure is preferable if one believes that the effect of the crisis is to slow GDP down from a country-specific trend (or potential) growth rate.

Figure 8. Output Growth during the Crisis
(in per cent)



In Figure 8, countries are ranked in a decreasing sequence of output growth according to the first measure. It is clear that there is a large variation across countries no matter which measure is used. The correlation coefficient between the first and each of the other two measures is 0.84; and between the second and third 0.88. For the purpose of the statistical analysis that follows, we focus on the second measure (cumulative output decline in the fourth quarter of 2008 and the first quarter of 2009). Using the other two measures would lead to broadly similar conclusions.

We now explore the statistical relationship between cumulative output declines in the crisis and pre-crisis fundamentals. Doing so requires confronting similar problems as in the previous section:

- Many potential fundamentals could matter. In the context of a cross-sectional regression with around 25 observations, it is impossible to analyse them all at the same time.
- Countries suffered shocks of different magnitudes. In addition to controlling for the effect of export shocks, one would ideally also want to control for financial shocks. However, the latter cannot be measured directly (as bank debt inflows, for example, could be responding to differences in output declines rather than the other way around).

To address these problems (although imperfectly), potential determinants of the output decline are divided into two groups. The first group contains export growth, external debt at the end of 2007 as a basic measure for macroeconomic vulnerability, and corruption perceptions as a basic measure of institutional quality. The second group comprises a set of additional pre-crisis fundamentals: the credit-to-GDP ratio as a measure of financial development; changes in this ratio during 2005-08 as a measure of the pre-crisis credit boom; the loan-to-deposit ratio as a measure of foreign financing; openness to trade; reserves as a share of short-term debt; the asset share of foreign banks in the banking system; the stock of foreign direct investment liabilities; the current account deficit in 2007; the share of foreign currency debt in total liabilities of the banking system; and a dummy variable for the different exchange rate regimes.

The potential relevance of these measures is investigated in two steps. First, sequentially, by adding them to the first group containing the three basic controls (Table 2). Second, the robustness of the results is checked by running regressions the include 2-3 of these variables at the same time, and by also controlling for debt inflows and trade finance (Table 3).

Column 1 in Table 2 shows the results of a regression containing only the three core control variables (export growth in the fourth quarter of 2008 and the first quarter of 2009, private external debt and the corruption variable as a measure of the institutional environment taken from the 2008 Business Environment and Enterprise Performance Survey (BEEPS) conducted by the EBRD and the World Bank). Only one of them – pre-crisis external debt-to-GDP ratio – exhibits a statistically significant association with the decline in output. In columns 2 to 10, nine additional controls are added individually to the regression. In most cases, the statistically significant relationship between the output decline and pre-crisis debt survives these additions. Among the additional variables, only four – credit growth during 2005-2008; a dummy representing hard pegs, FDI as a share of GDP, and foreign bank ownership (measured as in the previous section) – turn out to be statistically significantly associated with the output decline.[8] Note that FDI and foreign bank ownership enter with positive signs, suggesting that they had a stabilising effect.[9]

[8] For some variables, such as the average current account deficit, this may be due to a high correlation with external debt, which is always controlled for in the regressions. The lack of significant correlation between the share of foreign currency debt and the output decline may be attributable to the fact that only a few economies with high foreign currency shares of debt (primarily, Hungary and Ukraine) experienced large depreciations during this crisis.

[9] In addition to the variables shown in Table 2, the loan-to-deposit ratio, the level of financial integration (external assets and liabilities as a share of GDP), and reserves as a share of GDP were also individually added to the regression model, but were not significantly associated with the output decline when controlling for external debt and export shocks.

Table 2. Relationship between the Output Decline and Macroeconomic Fundamentals
(Regression coefficients, p-values in parentheses)

	Depended variable: Sum of quarterly real GDP growth, Q4 2008 + Q1 2009, s.a., in per cent									
Covariate 1/	none	FD	CG	STDR	FXL	FDI	FBO	CA	Openness	HPd
Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Covariate 1/		-0.08	-0.20	-0.01	0.03	0.04	0.04	-0.03	0.02	-4.42
		(0.425)	*(0.090)*	*(0.370)*	*(0.188)*	*(0.029)*	*(0.079)*	*(0.613)*	*(0.603)*	*(0.011)*
Exports, Q4 2008-Q1 2009 2/	0.16	0.15	0.10	0.14	0.16	0.15	0.12	0.15	0.15	0.2
	(0.123)	*(0.132)*	*(0.273)*	*(0.182)*	*(0.133)*	*(0.168)*	*(0.259)*	*(0.149)*	*(0.157)*	*(0.059)*
External Debt to GDP (2007)	-0.10	-0.05	-0.07	-0.08	-0.12	-0.11	-0.10	-0.10	-0.11	-0.07
	(0.0137)	*(0.330)*	*(0.122)*	*(0.145)*	*(0.011)*	*(0.006)*	*(0.014)*	*(0.021)*	*(0.006)*	*(0.095)*
Corruption perception, 3/	-2.62	-3.37	-3.59	-2.98	-2.99	-1.95	-2.26	-2.56	-2.32	-3.42
	(0.349)	*(0.261)*	*(0.089)*	*(0.284)*	*(0.319)*	*(0.495)*	*(0.435)*	*(0.371)*	*(0.446)*	*(0.183)*
Observations	25	25	25	25	25	25	25	25	25	25
R-squared	0.31	0.33	0.42	0.33	0.33	0.34	0.35	0.31	0.32	0.38

1 / In columns (1-10) variables FD (private credit to GDP), CG (private credit to GDP change over 2005-2008), STDR (Ratio of short-term external debt to reserves), FXL (Share of FX lending in total lending), FDI (Level of foreign direct investment to GDP), FBO (Share of foreign bank assets in total banking assets), CA (Current account to GDP), Openness (Exports plus imports to GDP), HDp (dummy variable equals 1 if country has fixed exchange rate regime) that measure potential pre-crisis vulnerability have been added individually to a baseline regression with exports, external debt and institutional variables as controls.

2 / Measured as sum of 2008 Q4 and 2009 Q1 export growth, s.a. q-o-q, in per cent.

3 / Corruption as an obstacle to doing business, measured on a scale from 0 (not an obstacle) to 4 (very severe obstacle). (Source: 2008-2009 EBRD-World Bank Business Enviroment and Enterprise Performance Survey; see EBRD 2009, Chapter 5).

Note: Constant is included in all regressions but not shown.

Table 3 shows what happens to these results with inclusion of several of these variables simultaneously in the regression, and addition of extra controls. Columns 1 and 2 suggest that domestic credit booms (negatively) and foreign bank ownership (positively) are the two most robust pre-crisis predictors of the output decline. This is true even when percentage change in trade credits (column 3) and percentage change in cross-border bank lending are added to the regressions (columns 3 and 4).[10] A 5 per cent of GDP increase in the magnitude of the credit boom during 2005-08 (when the credit-to-GDP ratio in central and eastern Europe rose by about 20 percentage points, see Figure 1) is associated with an approximately one percentage point deeper cumulative output decline; while a 10 percentage points increase in the share of banking system assets owned by foreign banks is associated with an approximately 6 percentage points smaller output contraction.

Finally, in Table 3 perceived corruption also appears to be economically and statistically significantly associated with output declines. A one grade increase in perceived corruption – for example, from "minor obstacle" to "moderate obstacle", or from "moderate obstacle" to "severe obstacle" – is associated with a 4-5 percentage points larger cumulative output decline.

[10] Trade credit flows turn out to be highly correlated with the output decline, but this is likely to reflect the effect on output declines on trade as well as the impact of trade credit on exports and hence output.

Table 3. Output Decline and Macroeconomic Fundamentals: Robustness
(Regression coefficients, p-values in parentheses)

	Dependent variable: Sum of quarterly real GDP growth, Q4 2008 + Q1 2009, s.a., in per cent			
	(1)	(2)	(3)	(4)
Domestic credit to GDP growth 1/	-0.21	-0.2	-0.19	-0.2
	(0.095)	*(0.099)*	*(0.010)*	*(0.088)*
FDI in percent of GDP (end-2007)	0.02			
	(0.444)			
Foreign bank ownership (end-2007)	0.06	0.07	0.09	0.06
	(0.028)	*(0.005)*	*(0.000)*	*(0.008)*
Dummy for "hard peg"	-2.66	-3.35	-3.04	-2.94
	(0.373)	*(0.152)*	*(0.117)*	*(0.265)*
Cross-border lending, Q4 2008 - Q1 2009 2/				0.05
				(0.678)
Trade credits growth, Q4 2008 - Q1 2009 2/			0.26	
			(0.000)	
Exports, Q4 2008-Q1 2009 3/	0.04	0.05		0.04
	(0.711)	*(0.617)*		*(0.777)*
External Debt in percent of GDP (end-2007)	-0.07	-0.06	-0.03	-0.06
	(0.135)	*(0.200)*	*(0.394)*	*(0.208)*
Corruption perceptions, 2008 4/	-4.56	-4.81	-4.2	-4.71
	(0.029)	*(0.016)*	*(0.012)*	*(0.014)*
Observations	24	24	24	24
R-squared	0.58	0.57	0.78	0.58

1 / Domestic credit to private sector in percent of GDP growth over 2005-2008.
2 / In percent of Q3 2008 stock.
3 / Measured as sum of 2008 Q4 and 2009 Q1 export growth, s.a. q-o-q, percent.
4 / Measured on a scale from 0 (lowest) to 4 (highest).
Note: Constant is included but not shown. For sources, see notes to Table 2.

Cross-Country Variation in GDP Declines World Wide

As in the case of analysis of the determinants of cross-border outflows performed earlier, it is interesting to study the determinants of output declines in a broader cross-country sample that includes countries outside Emerging Europe, both to provide some reassurance in light of the small set of observations used in the previous section, and to check whether the findings for the Emerging Europe region differ from those for the rest of the world. In addition, a broader sample enables one to look at the effects of additional pre-crisis fundamentals on which the transition country sample did not provide sufficient information. In particular, we are interested in two questions. First, the role of commodity exports in crisis-related GDP declines – were commodity rich-countries hit harder given an approximately 70 per cent decline in prices of oil and a number of other commodities between July 2008 and January 2009? Second, what role did financial development play? The previous section suggested that rapid financial *deepening* – as proxied by the rise in the credit-to-GDP ratio in the 3-4 years before the crisis – exacerbated the bust. But the effects of the *level* of financial development may well be different, as deeper financial systems should make it easier for economic agents to insure against external shocks. Using a broader sample, it may be possible to distinguish between the effects of the level of financial development and recent changes in it.

However, moving to a global sample also brings some complications. First, there are differences in the quarterly timing of the crisis across countries. Second, comparing realized growth in the quarters with the highest output contractions may not be very meaningful across countries with vastly different potential growth rates (for example, China on the one hand and mature Western European economies on the other). We address these issues by measuring growth declines in terms of the deviation of expected real economic growth in 2009 from the annualised average over the period 1999–2008.[11] The forecasts are taken from the October 2009 IMF World Economic Outlook.

Table 4 first confirms that controlling for the average growth during the preceding period and per capita income (adjusted for PPP differentials) countries in the transition region on average experienced a more severe output decline, by about 5 percentage points, than the average non-transition country (column 1). Furthermore, richer countries and countries that experienced faster growth during the boom years were generally hit harder.

Columns (2) and (3) examine the effects of commodity resources, proxied either by the value of produced oil (at international prices) as a share of GDP, or – more broadly, but at the cost of losing observations – by the share of commodities in merchandise exports. In addition, these regression models include pre-crisis credit growth, measured as in Tables 2 and 3; the pre-crisis loan-to-deposit ratio as a measure of banking sector reliance on external financing, and the credit-to-GDP ratio in 2007 (as reported in the World Bank New Dataset on Financial Development) as a measure of financial development. The results suggest that the commodity revenues, regardless of how they are measured, appear to have had a stabilizing effect on output.

[11] Using the difference between the expected 2009 growth in October 2009 and the 2009 growth forecast made a few years earlier (for example, in October 2006, well before the crisis) would give similar results.

Table 4. Output Declines and Economic Fundamentals: Global Regressions
(Regression coefficients, p-values in parentheses)

Model	Dependent variable: difference between 2009 growth forecast and 1999–2008 average							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average growth, 1999–2008 (per cent a year)	–0.625 *(0.001)*	–0.881 *(0.000)*	–0.914 *(0.004)*	–0.895 *(0.001)*	–0.878 *(0.002)*	–1.216 *(0.003)*	–1.087 *(0.008)*	–0.962 *(0.018)*
GDP per capita Log, PPP	–1.605 *(0.000)*	–2.994 *(0.000)*	–3.270 *(0.000)*	–2.560 *(0.000)*	–2.536 *(0.000)*	–3.432 *(0.000)*	–3.569 *(0.000)*	–3.086 *(0.002)*
Oil rents (In per cent of GDP)		0.074 *(0.001)*				0.176 *(0.021)*	0.176 *(0.021)*	0.163 *(0.034)*
Share of commodities in merchandize exports			0.044 *(0.011)*	0.037 *(0.002)*	0.034 *(0.005)*			
Private sector credit-to-GDP		0.052 *(0.000)*	0.059 *(0.000)*	0.037 *(0.004)*	0.033 *(0.005)*	0.060 *(0.051)*	0.071 *(0.011)*	0.060 *(0.035)*
Loan-to-deposit ratio		–0.023 *(0.005)*	–0.022 *(0.012)*	–0.016 *(0.040)*	–0.013 *(0.103)*	–0.035 *(0.033)*	–0.039 *(0.041)*	–0.037 *(0.058)*
Credit growth, 2003–07 (In per cent of GDP)		–0.079 *(0.001)*	–0.091 *(0.000)*	–0.055 *(0.014)*	–0.050 *(0.022)*	–0.102 *(0.074)*	–0.101 *(0.049)*	–0.083 *(0.136)*
Financial integration				0.00002 *(0.798)*		–0.006 *(0.552)*	–0.028 *(0.074)*	–0.027 *(0.073)*
Financial integration * * transition dummy				–0.017 *(0.005)*				
Financial integration * * presence of foreign banks							0.024 *(0.060)*	0.023 *(0.052)*
External debt (In per cent of GDP)					–0.0001 *(0.898)*			
External debt * * transition dummy					–0.083 *(0.010)*			
FDI liabilities stock (In per cent of GDP)					0.0003 *(0.796)*			
FDI liabilities stock * *transition dummy					0.027 *(0.261)*			
Share of foreign banks in banking assets, %						0.004 *(0.853)*	–0.032 *(0.259)*	–0.027 *(0.359)*
Index of rule of law			0.072 *(0.910)*					
Share of higher-value-added manuf and food in exports			–0.003 *(0.892)*					
Transition region dummy	–5.212 *(0.000)*							–1.666 *(0.332)*
R^2	0.51	0.56	0.57	0.62	0.65	0.62	0.65	0.66
Number of observations	176	142	107	108	108	59	59	59

Note: Financial integration is measured by the ratio of assets and liabilities to GDP.

Data sources: see notes of Tables 1-3.

As in the transition-only sample, a rapid *increase* in the credit-to-GDP ratio during the boom years before the crisis is associated with a larger output decline, as is higher loan-to-deposit ratio. At the same time, the level of financial development (higher credit-to-GDP ratio) has the opposite, positive, effect on growth performance during the crisis. Note that financial development appears to have a significant stabilising effect notwithstanding the inclusion of two factors commonly associated with financial deepening: per capita income and institutional quality (proxied by the rule of law index taken form the World Bank Governance Indicators). Hence, it is unlikely that the significance of level of financial development merely reflects other characteristics of economic and institutional development.[12]

Next, we examine the effect of financial integration and external liabilities. When financial integration is added to model (3), its effect is small and statistically insignificant. At the same time, model (4) shows a pronounced negative effect within the transition region: the interaction term between the transition dummy and financial developments has a statistically significant coefficient, reflecting mainly the association between external debt and output growth (column 5). In this crisis, this association was negative both in the transition and non-transition samples, but statistically significant only in the former.

In a smaller sample of emerging markets it is also possible to look at the impact of foreign bank ownership on growth declines. The coefficient on the share of foreign banks in total banking assets is positive but not statistically significant (column 6). Column (7) suggests that the mitigating effect of foreign bank ownership "works" by offsetting the destabilizing effect of high external debt. The interaction term between financial integration and the dummy variable for significant presence of foreign banks (defined as a market share by assets above 32 per cent – the median value in the sample) is positive and statistically significant. At the median value of financial integration (164 per cent of GDP), the interaction term suggests a softening impact of foreign bank ownership on output decline of between 0.7 and 2.8 percentage points.

Finally, column 8 shows that when the main macroeconomic fundamentals explored in column 7 is taken into account, the transition region dummy variable is no longer statistically significant, suggesting that the vulnerabilities included in the column 7 model go a long way in explaining the strikingly larger output declines in the transition region compared to other regions.

Conclusion

Notwithstanding large output declines, the crisis in the transition region involved a comparatively mild reversal in capital flows, and has so far stopped short of systemic currency and banking crises. In light of large pre-crisis vulnerabilities in many countries in the region, this is surprising.

[12] Note also that results with respect to financial development are not sensitive to the presence of industrial countries in the sample: if advanced countries are dropped, the coefficient on financial development is somewhat lower but retains its positive sign and statistical significance.

This paper interprets this fact as reflecting offsetting strengths that are specific to emerging Europe, including a high degree of integration with Western Europe. Controlling for a large set of fundamentals, we show that countries with the higher shares of foreign-owned banks in the financial system tended to suffer smaller bank lending outflows in the fourth quarter of 2008 and first quarter of 2008. Higher foreign bank ownership is also associated with milder output declines in the transition region. In contrast, the size of pre-credit credit booms, higher external debt, and hard pegs are predictors of larger declines.

Since foreign banks contributed to credit booms and external debt accumulation in emerging Europe, the overall effect of financial integration on the crisis in emerging Europe appears to have been mixed. While foreign banks had a stabilising effect in the crisis, this mainly took the form of neutralising imbalances that they themselves had helped create in earlier years.

Looking forward, the continued ability of emerging Europe to contain the crisis – and in particular, to ride out the inevitable rise in unemployment and nonperforming loans over the next few quarters – will largely depend on two factors. First, dealing with the increasingly daunting fiscal fallout of the crisis: In line with much higher than expected output declines, the crisis is tearing much larger than expected holes in government budgets. These will require a combination of additional external and fiscal adjustment, particularly through structural fiscal measures, which will bring benefits not only during the crisis but also in the medium term.

Second, preparing for, and mitigating, the coming wave of corporate defaults and non-performing loans: If not addressed, these could threaten financial stability and trigger a new round of output declines. An effective response is likely to require additional action on two fronts: encouraging efficient corporate and household debt restructuring (or in some cases, liquidation); and ensuring adequate capitalisation of banking systems even after non-performing loans rise sharply. This, in turn, may require recapitalisation by international banking groups and, if necessary, by home country authorities at the bank group level. All this has to happen in a way consistent with evolving European Union rules for state aid to the banking sector. It is also the European competition authority that, by default, has been charged with restructuring the large banking groups using these rules. The biggest challenges for European cooperation may still be ahead of us.

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APPENDIX

Table A.1. Bank Lending Flows, Q4 2008 - Q1 2009, and Foreign Bank Ownership
(coefficient estimates, p-values in parenthesis)

	Dependent Variable: Change in Cross-Border Lending							
	Q4 2008 1/				Q4 2008 - Q1 2009 2/			
	Broad sample		Transition countries		Broad sample		Transition countries	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Foreign Bank Ownership	0.10	[0.00, 0.17]	0.14	[0.01, 0.22]	0.10	[0.03, 0.20]	0.14	[0.02, 0.27]
	(0.0234)	*[0.98, 0.005]*	*(0.0974)*	*[0.93, 0.009]*	*(0.055)*	*[0.551, 0.001]*	*(0.076)*	*[0.767, 0.001]*
Rating	-1.06	[-1.97, -0.35]	-2.01	[-4.49, 0.49]	-0.89	[-2.06, -0.36]	-0.67	[-2.65, 0.08]
	(0.100)	*[0.015,0.596]*	*(0.196)*	*[0.002,0.619]*	*(0.184)*	*[0.013,0.631]*	*(0.564)*	*[0.014,0.972]*
GDP per capita PPP, log	-6.24	[-12.04, -2.56]	-16.86	[-36.90, -10.29]	-2.61	[-10.29, 0.34]	-9.51	[-23.13, -6.48]
	(0.0924)	*[0.016, 0.423]*	*(0.0685)*	*[0.000, 0.43]*	*(0.512)*	*[0.016, 0.96]*	*(0.126)*	*[0.001, 0.424]*
Number of countries	64	[42,64]	25	[18,25]	64	[42,64]	25	[18,25]
R-squared	0.13	[0.07,0.37]	0.34	[0.23,0.69]	0.09	[0.08,0.32]	0.21	[0.08,0.75]

1/ Deviation from average Q4-Q1 inflow in per cent of Q3 stock in Q4/2008-Q1/2009.

2/ In per cent of 2008 Q3 stock.

Notes and sources: see Table 1.