

3. European Emerging Economies in the Crisis: Impact and Recovery

A short period of apparent resilience to the global financial turmoil has given way to a deep crisis in several European emerging markets, though with substantial differentiation across the region. The crisis has put an increased premium on sound macroeconomic and macroprudential policies: countries with lower inflation, smaller current account deficits, and lower dependence on bank-related capital inflows in recent years have so far fared better. While the external environment and structural reform efforts will matter, the banking sector, which has played a central role in the run-up to the crisis, holds a key to the speed of recovery from the crisis. In the short term, bank recapitalizations seem unavoidable to prevent recessions from becoming protracted. In the medium term, recovery efforts need to be supported by a strengthening of financial stability arrangements, including for cross-border activities, and the introduction of more forward-looking provisioning policies.

What determines the impact of the global financial crisis on European emerging economies? An analysis of cross-country differences of sovereign bond spreads during the crisis suggests that the soundness of precrisis macroeconomic policies, as reflected particularly in inflation and current account deficits, is very important in explaining the severity of the impact. This is true for both the emerging European economies that remain outside the European Union (EU) as well as those that became EU members; for the latter group, adherence to EU rules and institutions has helped to mitigate the impact of the crisis but has not shielded them completely.

What could determine the speed of recovery from the crisis? Aside from external factors and reform effects, it is likely that the banking sector, which played a central role in the run-up to the crisis, will be critical to determining the speed of

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recovery as well. Indeed, evidence of procyclicality in banks' operations suggests a negative impact on banks' capitalization from the crisis, and likely a credit crunch. There is evidence that even households—which have traditionally been relatively debt free—have become dependent on credit for their consumption. This suggests that cuts in lending could slow the recovery from the financial crisis. Hence, policies that, in the short term, help support bank capitalization are likely to be beneficial. These policies need to be calibrated with a view to the longer term, namely, to allow sustainable development and financial deepening in the European emerging markets.

Who Got Hurt More? Stylized Facts

Developments in emerging European economies in the run-up to and during the global crisis had several common characteristics. In most of these economies, large declines in stock prices and increases in sovereign bond spreads during the crisis were associated with large external and internal imbalances and bank-related capital inflows prior to the crisis (Table 11).³⁷ Many of the emerging markets had large current account deficits, financed largely by borrowing of subsidiaries of foreign banks from their parents. The banks used the relatively cheap foreign funding to extend credit to

³⁷ Emerging European economies are defined to include (1) countries that joined the EU in 2004 or thereafter and had not joined the euro area by end-2008 (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and the Slovak Republic), and (2) the non-EU countries of Albania, Belarus, Bosnia and Herzegovina, Croatia, FYR Macedonia, Moldova, Montenegro, Russia, Serbia, Turkey, and Ukraine. In the subsequent econometric analyses, some countries were dropped due to lack of data.

Table 11. A Snapshot of Emerging Markets

Country groups	Intensity of the Crisis Aug 07–Nov 08		Macroeconomic Indicators				EU Convergence Criteria		
	Change in stock prices (percent)	Change in spreads (basis points)	Bank-related capital inflow 2007:Q2–2008:Q1 (sum, percent of 2008 GDP) ^{1/}	Current account balance, 2008 (percent of GDP) ^{2/}	Fiscal balance, 2007 (percent of GDP)	Government debt in 2007 (percent of GDP)	Deviation of inflation from (notional) convergence criterion, 2008 (percentage points) ^{3/}	Is the exchange rate criterion satisfied? ^{4/}	Is the long-term bond yield criterion satisfied? ^{5/}
Emerging Europe	-61.4	612	9.7	-11.4	-0.2	26.8	4.9	...	...
Emerging European countries receiving IMF support	-59.4	788	12.9	-11.1	-1.8	25.2	6.9	...	...
EU New Member States 6/	-58.3	359	12.1	-10.4	-0.8	26.3	4.5	...	...
Non-EU emerging Europe	-64.4	865	7.4	-12.2	0.2	27.2	5.2	...	...
Flexible exchange rate emerging	-57.6	394	7.0	-6.9	-2.6	39.8	2.7	...	...
Nonflexible exchange rate emerging	-61.8	485	12.9	-9.4	0.9	16.3	6.3	...	...
Euro area	-51.2	60	...	-0.7	-0.7	65.8	-0.4	...	...
Non-euro area advanced	-51.5	121	11.4	6.9	5.1	44.5	-0.7	...	...
Non-European emerging (except China)	...	...	1.4	...	-1.3	...	...	...	...
<i>Memorandum items:</i>									
Emerging Europe 7/	-61.4	612	9.7	-11.4	-0.2	26.8	4.9	...	...
Albania	...	...	1.4	-13.5	-3.8	52.7	-0.9	...	...
Belarus	...	...	5.9	-8.4	0.4	11.5	...	...	...
Bosnia and Herzegovina	...	...	5.1	-15.0	-0.1	29.8	...	...	...
Bulgaria	-76.9	355	14.2	-24.4	3.5	19.8	8.0	No	Yes
Croatia	-68.1	404	6.9	-9.4	-1.2	33.2	2.0	...	...
Czech Republic	-51.8	125	4.7	-3.1	-1.0	28.9	2.2	No	Yes
Estonia	-71.9	...	19.0	-9.2	3.0	3.5	6.2	Yes	Yes
Hungary	-56.6	431	10.7	-7.8	-4.9	65.9	1.9	No	No
Latvia	-56.1	326	25.8	-13.2	0.7	7.8	11.3	Yes	No
Lithuania	-66.6	488	12.5	-11.6	-1.2	17.0	6.8	Yes	No
Macedonia	...	...	...	-13.1	0.6	23.4	3.0	...	...
Moldova	...	...	7.7	-19.4	-0.2	27.7	8.7	...	...
Montenegro	...	...	...	-31.3	6.2	27.5	...	...	...
Poland	-57.4	199	8.0	-5.5	-2.0	44.9	0.1	No	Yes
Romania	-70.8	823	7.7	-12.6	-3.1	19.8	3.6	No	No
Russia	-64.7	662	7.4	6.1	6.8	7.3	9.3	...	No
Serbia	...	...	16.0	-17.3	-1.9	33.7	8.8	...	...
Slovak Republic	-16.8	127	6.2	-6.3	-1.9	29.3	0.4	Yes	Yes
Turkey	-51.3	392	4.1	-5.7	-2.1	39.4	5.8	...	No
Ukraine	-73.5	2003	11.5	-7.2	-2.0	12.8	...	...	No

Sources: Bloomberg L.P.; IMF, *International Financial Statistics and World Economic Outlook*; European Central Bank; European Commission; and IMF staff calculations.

1/ Balance of payments, Financial Account: Other investment, net liabilities. The data are the sum of "Currencies and Deposits," which includes all foreign parent bank loans to subsidiaries, and "Loans," which includes cross-border loans to corporates and banks.

2/ IMF, *World Economic Outlook*.

3/ Deviation from 4.17 percent–1.5+average inflation in the three lowest inflation EU members. Thus the inflation benchmark is based on recent data for 2008, rather than the EC and the ECB's benchmark for the 2008 reports, 3.2 percent.

4/ Based on DG ECFIN's May 2008 and ECB's May 2008 convergence reports.

5/ Based on DG ECFIN's May 2008 and ECB's May 2008 convergence reports. The benchmark was 6.5 percent in 2008.

6/ New Member States or countries that joined the EU in 2004 and 2007 and had not joined the euro area as of end-2008. In the subsequent analyses, some countries are excluded owing to lack of data; Cyprus, Malta, and Slovenia are included in one analysis.

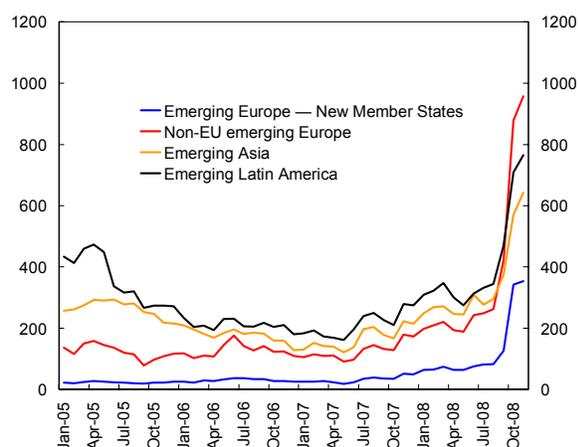
7/ Definition of emerging Europe as of end-2008; in early 2009, the Czech Republic and the Slovak Republic were reclassified as advanced economies for the purposes of the *World Economic Outlook*. Bold indicates countries that have requested IMF financial support as of March 20, 2009.

households and nonfinancial firms. This resulted in rapid growth of domestic credit, denominated mostly in foreign currency in almost all the countries. Credit went largely into financing nontradables and imports of consumer durables, spilling into current account deficits, and, in most cases, into inflation. Despite these remarkable common characteristics, cross-country variation among the emerging European economies remained substantial, in particular in the response of stock prices and bond spreads in the countries that receive IMF support (Table 11).

Three stylized facts emerge from this analysis:

- *Differentiation in sovereign spreads.* Non-EU emerging European economies have been among the worst hit. The new EU member states (emerging economies that joined the EU in 2004 and thereafter; NMS), which had smaller spreads to begin with, have suffered the least (Figure 21). Bond spreads in some emerging economies have widened several times more than in the euro

Figure 21. EMBIG Spreads, 2005–November 2008 1/ (Basis points)



Sources: Bloomberg L.P.; and IMF staff calculations.
1/ Spreads in euros for New Member States and non-EU emerging Europe; in U.S. dollars for all others.

area, and in a few cases spreads have remained wider than in the most affected euro area countries. With the exception of Hungary, the reason has not been primarily fiscal: the spreads have in most cases widened despite relatively healthy fiscal balances and low government debt.³⁸ The widenings have rather reflected market participants' concerns about the governments' contingent liabilities in case of major banking and other corporate defaults.

- *Strong role for bank-related capital inflows.* The ratio of bank-related capital inflows to GDP in emerging European economies has been a multiple of the ratios for emerging non-European economies (Table 11).³⁹ In general, emerging European economies have strong banking linkages to advanced economies—for

³⁸ In fact, the average ratio of government debt to GDP in countries that had to resort to official financial assistance has been less than half of the euro area average.

³⁹ Bank-related capital inflows are defined as the balance of payments item "other investment, liabilities," aggregating the subitems "loans" and "currency and deposits." These two items capture loans comprising inflows from parent banks into emerging market subsidiaries and cross-border loans to banks and corporates, excluding portfolio and foreign direct investment inflows. The breakdown of this category into bank and nonbank flows is not available consistently across countries, but available data and anecdotal evidence suggest that the bank-related portion is large, reflecting the central roles of the banking sector and the high degree of foreign ownership in most emerging European banking systems.

instance, emerging Europe's stock of bank liabilities to advanced countries exceeded 50 percent of its GDP, about three times the ratio for other emerging markets (IMF, 2009a). But even within emerging Europe, the size of these cross-border banking flows has varied. At about 13 percent of GDP in the run-up to the crisis, bank-related capital inflows were especially strong in the countries that eventually received multilateral financial support.

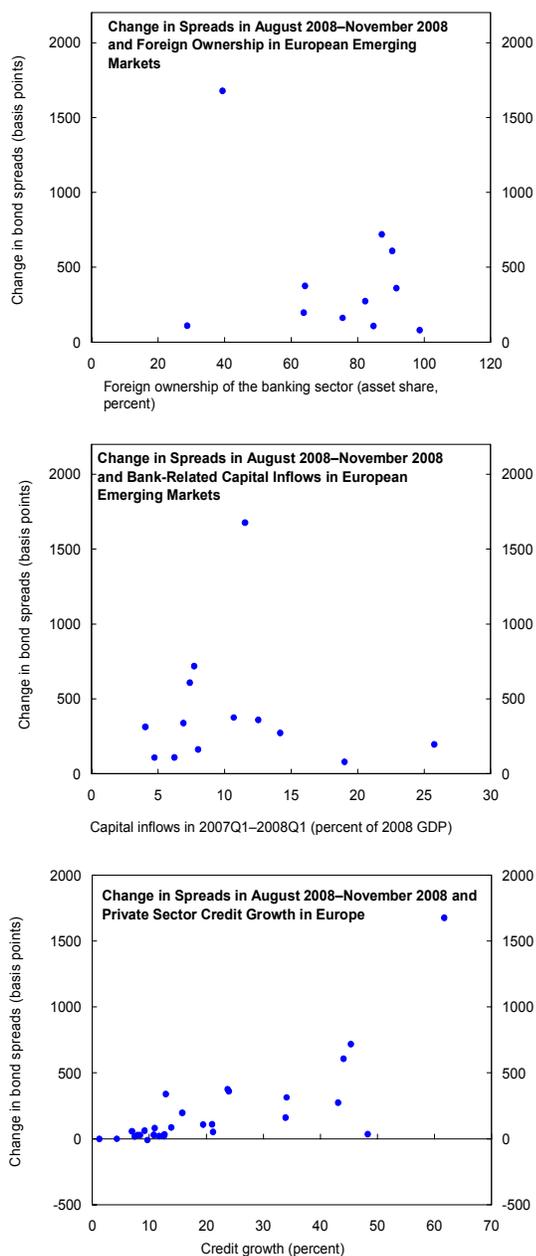
- *Macroeconomic vulnerabilities.* Indicators of overheating, such as large current account deficits, fast credit growth, and accelerating inflation, were flashing red in these countries subsequently most affected by the crisis. The massive capital inflows helped to finance high current account deficits, averaging about 11 ½ percent of GDP in emerging European economies in 2008. Moreover, countries with higher bank credit growth to the private sector seem to have been worse hit (Figure 22). The same holds true for emerging markets with inflexible exchange rate regimes (Table 11).

What Explains the Widened Spreads: Known Vulnerabilities or the Convergence Criteria Checklist?

What factors explain the differentiated sovereign bond spreads? Specifically, to what extent do the changes in spreads reflect investors' views on emerging economies' prospects for meeting the convergence criteria and adopting the euro?⁴⁰ And to what extent do the spreads reflect macroeconomic vulnerabilities in each country?

⁴⁰ The European Central Bank and the European Commission provide assessments for the NMS on their progress toward meeting the criteria for convergence to euro adoption (the "convergence criteria"). The five criteria are the fiscal deficit (less than 3 percent of GDP), government debt (less than 60 percent of GDP), inflation (less than 3.2 percent for 2008), the long-term interest rate (less than 6.5 percent for 2008), and the exchange rate (participation in the Exchange Rate Mechanism (ERM) II).

Figure 22. Spreads and Banking System Characteristics

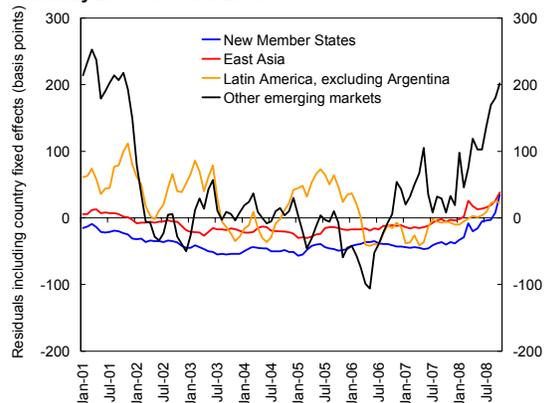


Sources: European Bank for Reconstruction and Development; IMF, *International Financial Statistics*; Bloomberg L.P.; and IMF staff calculations.

The EU Halo Effect Seems to Have Disappeared . . .

Empirical analyses of spreads on NMS sovereign bonds during the early 2000s often found that, while a fundamental (economic) analysis pointed to rising vulnerabilities in some of the NMS economies, markets remained optimistic because of the EU halo effect, compressing sovereign bond yields to below

Figure 23. Residuals from the Fixed Effects Regression for Sovereign Spreads, January 2001–October 2008



Sources: Bloomberg L.P.; IMF, *International Financial Statistics*; national authorities; and IMF staff estimates.

levels seen in other emerging economies (Hauner, Jonas, and Kumar, 2007; and Luengnarumitchai and Schadler, 2007).⁴¹ However, this effect seems to have disappeared during the global financial crisis. Using data through early 2009, Čihák and Fonteyne (2009) find that, after controlling for global liquidity conditions and fundamentals, the NMS sovereign spreads, which had been low and stable by emerging markets standards up to 2006, returned to “fundamental” levels (and even slightly above) in 2007–08 (Figure 23). At the same time, countries implementing more prudent macroeconomic policies (in particular, those that keep inflation low) still tend to have smaller spreads and face weaker market pressures—a conclusion that is consistent with earlier findings by Debrun and Joshi (2008).

. . . and the Convergence Criteria Have Been Less Important Than Domestic Policies and External Vulnerabilities

Among the NMS, an important measure of countries’ macroeconomic stability has been the degree of compliance with the convergence criteria

⁴¹ Different authors have interpreted the halo effect differently. Hauner, Jonas, and Kumar (2007) posit that it is linked to EU membership, in particular the effect of better institutions and processes, such as fiscal rules, that have been put in place since EU accession. This would suggest that the halo effect may be lasting. Luengnarumitchai and Schadler (2007) point out that the halo effect is essentially an unexplained residual that may turn out to be temporary.

for euro adoption. The individual states have differed substantially on their ability to meet the convergence criteria. Slovenia and the Slovak Republic have already entered the euro area. The other EU emerging economies have been able to satisfy some of the criteria, but have had difficulties meeting all of them at the same time.

Against this background, can a country's performance relative to the convergence criteria explain movements in bond spreads during the crisis? The answer is a qualified "yes," based on an analysis of cross-country differences in bond spreads in European countries during three recent episodes of increased financial market stress: (1) the minicrisis period from January 2006 to September 2006 (marked by a negative ratings report on Iceland, and revelations about worse-than-expected fiscal outcomes in Hungary); (2) the first phase of the financial crisis, from August 2007 to August 2008 (before the fall of Lehman Brothers); and (3) the most recent phase, from September 2008 to November 2008 (Table 12).⁴²

The spreads are influenced by global factors to a large extent (the episode fixed effects are strong) but beyond these, country-specific differentiation took place. The main findings of the empirical analyses suggest the following:

First, the immediate impact of the crisis was clearly differentiated among country groups. The NMS were hit significantly harder than the euro area.⁴³ And the widening of bond spreads in emerging non-EU European countries was on average almost double the increase of that in the NMS.

⁴² The econometric analysis involves robust ordinary least squares (OLS) estimates on pooled data of 43 European countries, covering three main subgroups: euro area members, NMS, and other emerging Europe. Episode fixed effects were used to control for common factors that affected all countries. Country-specific variables were used to explain cross-country differences in performance.

⁴³ Each convergence criterion (see footnote 40) is assigned one point. If the country meets a criterion, it gets 0; otherwise, 1. Therefore, the variable used in the regression takes values from 0 (for a country fulfilling all criteria) to 5 (for a country meeting none of the criteria).

Second, inflation performance matters. Countries that had greater compliance with the convergence criteria saw smaller increases in bond spreads. A more detailed analysis suggests that this overall result was driven by inflation performance, which seems to matter more in explaining cross-country differences in the crisis impact on spreads, as well as in explaining the evolution of bond spreads, than the other items on the convergence criteria checklist.

Third, financial markets reacted adversely to external vulnerability indicators, over and above their reaction to the convergence criteria.

- *High current account deficit.* Even when controlling for the fulfillment of the convergence criteria, the spreads increased with current account deficits. This effect is significantly stronger in the NMS and other emerging European economies than in advanced economies in Europe. This puts renewed emphasis on the importance of known vulnerabilities.
- *Bank-related capital inflows.* Reflecting some of the stylized facts discussed above, countries with larger bank-related capital inflows in percent of GDP were hit harder. In this respect, the impact on NMS did not substantially differ from that of other emerging European economies, possibly due to the similarity of structure of ownership of the banking systems in almost all countries in emerging Europe. One interpretation would be that financial markets reacted adversely to bank subsidiaries' borrowing overseas from parent banks in an environment where the parent banks were experiencing increasing liquidity tightness themselves. A "sudden stop" in loans from foreign parent banks to subsidiaries, or cross-border loans to corporates, would have far-reaching adverse effects on credit and GDP growth, apart from pressures that it would put on the exchange rate or reserves. Large-scale foreign currency mismatches in the private sector in most of emerging Europe make credit quality

Table 12. Did the Convergence Criteria Matter?

Explanatory variables	Dependent Variable: Crisis Impact--Log of Change in Bond Spreads 1/					
	Focus of each regression:					
	Regional Differences	Only the Convergence Criteria (CC)	Actual performance	Current account balance	Capital inflow	Capital inflow and credit growth
(1) Euro area dummy	-0.04 (0.09)					
(2) New Member States (NMS) dummy	0.19 (0.1)+					
(3) Other emerging European countries dummy	0.39 (0.15)*					
(4) Nonfulfillment of the CC (index 0-5) 2/		0.11 (0.03)**	0.03 (0.03)	0.06 (0.03)**	0.07 (0.03)**	0.06 (0.02)**
(5) Nonfulfillment of the CC*Euro area dummy			-0.04 (0.03)			
(6) Nonfulfillment of the CC*NMS dummy			-0.02 (0.02)			
(7) Inflation rate			0.05 (0.02)*			
(8) Real GDP growth in previous year			0.01 (0.01)			
(9) Fiscal deficit in previous year			-0.01 (0.01)			
(10) Government debt/GDP in previous year			0.00 (0.00)			
(11) Current account balance/GDP				-0.004 (0.01)		
(12) Current account balance/GDP (European emerging) 3/				-0.003 (0.01)		
(13) Bank-related capital inflow/GDP					0.000 (0.00)	0.000 (0.00)
(14) Bank-related capital inflow/GDP (European emerging) 3/					0.014 (0.01)*	0.01 (0.00)*
(15) Bank credit growth						0.001 (0.00)
(16) Bank credit growth (European emerging) 3/						0.005 (0.004)
(17) Episode "pre-Lehman"	0.13 (0.03)**	0.17 (0.04)**	0.12 (0.04)**	0.15 (0.04)**	0.14 (0.03)**	0.12 (0.04)**
(18) Episode "post-Lehman"	0.37 (0.07)**	0.37 (0.07)**	0.23 (0.06)**	0.36 (0.07)**	0.35 (0.07)**	0.36 (0.07)**
(19) European emerging dummy 3/				0.17 (0.07)*	0.11 (0.06)+	-0.06 (0.13)
(20) Constant	-0.06 (0.08)	-0.17 (0.05)	-0.19 (0.08)	-0.15 (0.05)	-0.17 (0.05)**	-0.2 (0.07)**
Test				H0: (12) + (19)=0	H0: (14) + (19)=0	H0: (13) + (14)=0
P-value of test				0.02	0.00	0.02
R-squared	0.46	0.37	0.57	0.44	0.48	0.58
Observations	97	97	94	97	97	88

Sources: Bloomberg L.P.; IMF, *International Financial Statistics* and *World Economic Outlook*; European Central Bank; European Commission; and IMF staff estimates.

1/ Standard errors in parentheses; **, *, + indicate significance at 1 percent, 5 percent, and 10 percent levels, respectively.

2/ Each convergence criteria is assigned one point. If the country fulfills a criterion, it gets 0; otherwise, 1. Therefore, a country that fulfills all criteria gets 0; if none of the criteria, it gets 5. The variable used in the regression takes values from 0 to 5.

3/ "European emerging" refers to the dummy variable for all emerging--NMS and Other emerging European--countries.

very sensitive to sudden exchange rate movements.

- *Credit growth.* By itself, credit growth was a source of concern for financial markets, but not independently of that of the capital inflow from parent banks. Indeed, such inflows appear to dominate the effect of credit growth on bond

spreads. In other words, the funding of credit growth and the adverse implications that a drop in such funding would have on GDP growth—given the dependence of economic activity on rapid credit growth so far—seems to be a source of concern for foreign investors in emerging Europe.

The fact that crisis resilience varied so widely across emerging markets has its deeper roots in differing policies and vulnerabilities. For instance, among NMS economies, Hungary with its large fiscal deficit, high inflation, and external debt was an early victim of the crisis; the Slovak Republic, which adopted the euro in January 2009 after satisfying all the convergence criteria, has mostly been riding a wave of investor optimism on its spreads and stock prices; the Czech Republic, with small fiscal and current account deficits, moderate bank-related capital inflows, and lower foreign currency bank lending, has fared better than its neighbors so far. Across these countries worries about contingent government liabilities from the financial turmoil (e.g., in the event parent bank financing dries up and nonperforming loans escalate in the banking system) have been at least as important as the actual policy performance on the fiscal deficit and government debt.

Another factor affecting country performance was the quality of domestic policies in the face of the massive private sector capital inflows prior to the crisis. Loans from parent banks to eastern European subsidiaries and direct cross-border loans from foreign banks to corporates created large debt-rollover needs in the private sector (IMF, 2009a). These flows have largely financed activities in the nontradable sectors and contributed to overheating of the economies: the larger the capital inflows, the stronger the demand boom, the greater the overheating of the domestic economy, and the larger the widening of the current account deficit. While this surge in private capital flows was an overwhelming force for all, some emerging European economies were more able than others to limit this overheating pressure; this explains why inflation and current account deficits are good predictors of the current problems.

There are also some indications that countries operating under flexible exchange rate arrangements have so far seen, on average, a smaller fallout from the crisis in terms of bond spreads. The flexibility of the exchange rate provided a welcome policy tool to control inflation in the run-up to the crisis, while

most hard-peg countries have ultimately been unable to prevent overheating despite generally prudent fiscal policies—Bulgaria, for instance, managed to create a substantial fiscal reserve account. This experience reinforces the policy lesson that, especially (but not only) under fixed exchange rates, strong financial regulation and, in particular, macroprudential policies are needed to deal with surging capital inflows and the risk they entail. Examples of such policies are regulations that make banks hold more capital for short-term cross-border funds, including those from parent banks, and for risky loans, including those in foreign currency, that banks extend using such funds.

Not surprisingly, the policies and vulnerabilities underlying the country differences in resilience also seem likely to matter for the duration of the crisis. Econometric analysis of emerging economies (Box 7) shows that larger external debt and current account deficit at the outset of a crisis tend to extend its duration. As a consequence, European economies as a group are, on average, likely to face a longer crisis than the rest of the world. But again, the substantial cross-country variation within emerging Europe are likely to influence the likelihood of an early escape from current troubles.

Banking Sector Holds a Key to the Recovery from the Crisis

The banking sector in most of the emerging European economies played a central role in the run-up to the financial crisis, and it holds a key to the speed of recovery from the crisis. In recent years, high growth in bank credit, increasingly funded by foreign parent banks, enabled the rapid growth of incomes in emerging Europe, thereby helping the convergence process. At the same time, the speed of convergence may have been unsustainable, with imprudent banks engaged in reckless lending. Risks have, therefore, accumulated in the banking sector. However, the rapid reassessment of these risks—by both domestic and cross-border lenders—threatens to do more than correct excessive precrisis growth: it could lead to a

Box 7. Crisis Duration Across Emerging Markets

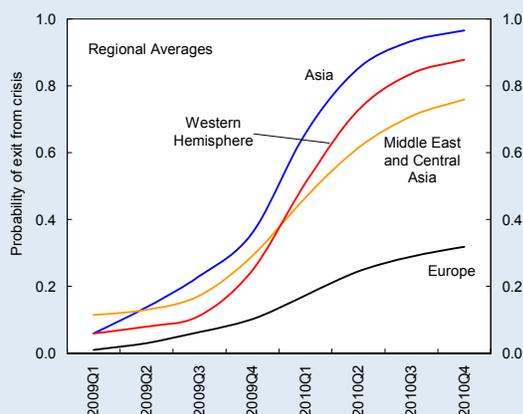
The current period of financial distress in emerging economies is likely to be prolonged, given the protracted nature of the global credit freeze. Even though there are differences across regions and countries, the current crisis could result in a large deterioration in external emerging market conditions, owing to greater risk aversion and smaller expected capital flows to emerging markets. Therefore, emerging market countries, especially those with weaker underlying economic fundamentals and policy frameworks, are likely to face pressures that could extend beyond the average of past crises.

External Debt and Deficits Are Key

Looking at the empirical link between crisis duration and its possible determinants,¹ emerging European economies are likely to experience, on average, longer periods of financial distress than other regions (first figure).² While Asian and Latin American countries could exit the distress period in about one year, the average probability of exiting at the end of the second year in eastern Europe is only about 30 percent.

The large variation among regions' probability of exiting from the distressed state is mostly driven by stark differences in initial conditions. Countries with higher levels of initial external debt are likely to endure more extended periods of financial stress because the probability of exiting the crisis state remains low for longer (second figure). Similarly, there is a negative relationship between the length of the crisis period and the initial current account balance of countries. In sum, while many emerging markets are confronting the turmoil from a relative position of strength, given their stronger initial conditions, European countries—on average—are less likely to fare well. That said, there is substantial variability in the probability of exiting from the distressed state among the European countries in general, and the crisis countries in particular. Moreover, global financial conditions play an important role as well and could help to shorten crisis duration for all countries. An important caveat to these results is that the underlying model only indirectly takes into account financial sector and banking sector conditions.

Emerging Markets: Estimated Probability of Exit from Crisis 1/



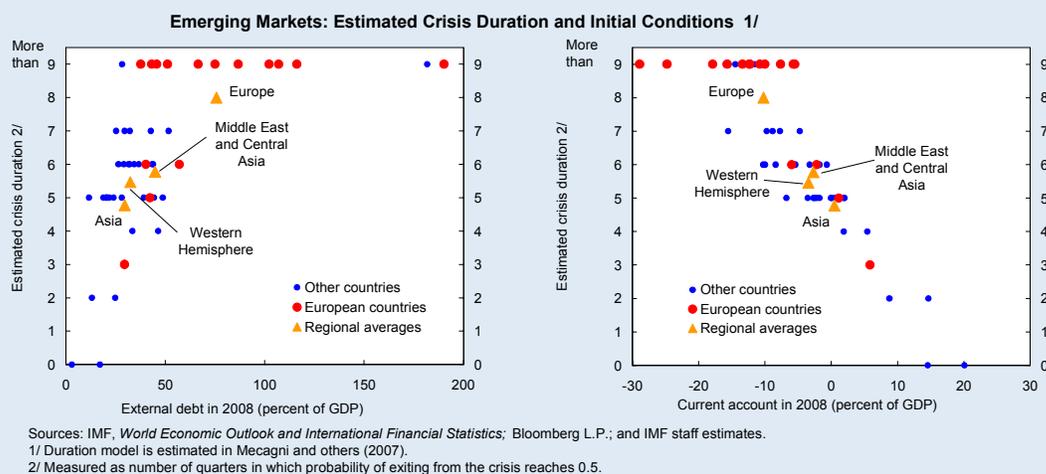
Sources: IMF, *World Economic Outlook and International Financial Statistics*; Bloomberg L.P.; and IMF staff estimates.

1/ Duration model is estimated in Mecagni and others (2007).

Note: The main authors of this box are Ruben Atoyan, Eugenio Cerutti, and Uma Ramakrishnan.

¹ More specifically, the probability of exiting a crisis is modeled as a function of time-varying and country-specific variables, including a country's initial external position (the level of external debt and current account balance in 2008); global emerging market financing conditions (net private capital flows to emerging markets, world interest rate, and trade-weighted partner country demand); domestic policies (changes in primary balance, real interest rate differential, and the exchange rate regime, which are all to be fixed at their 2008 levels); and IMF financing (if any). See Mecagni and others (2007).

² The duration analysis is probabilistic rather than deterministic and only illustrates how long the crisis duration might be; it is not meant to be an accurate predictor of the actual duration. Furthermore, the analysis is an out-of-sample prediction, which may or may not be well suited to predict the duration of the current spells of market pressures.



Policy Implications

Lessons from past crises suggest that a strong policy response during a crisis has a positive effect in shortening the crisis duration, but strong market pressures during crises severely limit actual policy options. As the probability of exiting from distress is highly sensitive to external conditions, crisis resolution efforts should focus on restoring investor confidence and improving global liquidity conditions, which, in turn, depend on a quick resolution of the crisis in advanced economies.

reversal of desirable financial deepening and economic convergence. If banks hit by the crisis respond drastically by cutting lending, this could have a major knock-on effect on the economy, in particular on consumption and investment, considerably slowing the recovery from the crisis. A drag on consumption and a general credit crunch would make the recovery in investment sluggish as well, hurting long-term growth.

Banks' Past Imprudence Can Hurt Their Capital, Leading to a Credit Crunch . . .

Many banks in emerging Europe, although still appearing to be well capitalized and profitable, did not build sufficient reserves for future loan losses during the good times. These banks were generally in compliance with basic microprudential regulations, but they should have gone well above the required minimums to maintain sufficient capital during the financial crisis. This is true for many banks globally, but it is especially valid for those in

emerging European markets that experienced credit booms, building up credit risks. Most of the emerging markets were dominated by subsidiaries of foreign (mostly western European) banks, meaning that many key decisions (such as those on reserves and capital) were largely taken outside emerging Europe. Host country supervisors have been reluctant to impose tougher prudential rules on provisioning and higher capital buffers, referring to possible inconsistencies with Basel II preparations, retaliation by parent banks, and the perceived high quality of home country supervision of these institutions. As a consequence, when borrowers fail to pay their dues, banks need to write off or reduce profits by the amount of such loans because existing reserves are not adequate. This situation makes bank earnings very volatile (and potentially negative), adding to bank risk.

Empirical evidence on eastern European banks shows that, as a rule, bank provisions (i.e., charges to profits that build loan loss reserves) have not been countercyclical, with important consequences

Table 13. Correlation with Loan Loss Provisions 1/
(Percent of total assets in previous year)

Real GDP growth	-0.15 **
Unemployment rate	0.14 **
Return on assets (ROA)	-0.14 **
Bank stability (z-index) 2/	-0.15 **
Real credit growth	-0.05

Sources: Bankscope; IMF, *International Financial Statistics*; and IMF staff calculations.

1/ ** indicates significance at 1 percent level.

2/ (ROA + equity/assets)/mean deviation of ROA. Higher z implies higher stability/lower risk.

for the time profile of bank profits. Pointing in this direction is the negative correlation between provisions and, respectively, real GDP, asset returns, and real credit growth (Table 13). More specifically, a panel data analysis on banks in emerging Europe for 2000–07 suggests the following (Table 14):⁴⁴

- *Banks have not been smoothing their earnings.* Instead, lower provisions have been associated with larger profits: a 1 percentage point increase in return on assets is associated with a 0.06 percentage point decrease in provisions to assets on average. In other words, banks have profited partly by

Table 14. Banks in Emerging Europe Were Imprudent in the Past
Testing procyclicality of bank provisions, 2000–07
Dependent variable: loan loss provisions 1/

	Emerging Europe	New Member States
Return on assets (ROA)	-0.06 (0.03)*	-0.09 (0.03)**
Real GDP growth	-0.07 (0.02)**	-0.05 (0.02)**
Unemployment rate	0.01 (0.01)*	0.00 (0.01)
Bank stability (z-index) 2/	-0.06 (0.03)*	-0.03 (0.03)
Total asset growth	-0.00 (0.00)	-0.00 (0.00)
Number of bank-year observations	850	651
Number of banks	138	126
R-square within	0.06	0.07
Mean of dependent variable	0.66	0.47
Standard deviation of dependent variable	1.24	0.87

Sources: Bankscope; IMF, *International Financial Statistics*; IMF staff estimates.

1/ Loan loss provisions in percent of one-year lagged assets. Generalized least squares, with bank-specific random effects and year dummies. Standard errors in parentheses; **, *, indicate significance at 1 percent and 5 percent levels, respectively.

2/ (ROA + equity/assets)/mean deviation of ROA. Higher z implies higher stability/lower risk.

⁴⁴ The estimates use an augmented version of the methodology by Laeven and Majnoni (2003). A limitation of the estimates is the shortness of the time series as well as the fact that eastern European banks have not yet been through many business cycles. The estimates therefore need to be treated only as illustrative.

provisioning less. This suggests that banks will be subject to higher profit volatility when borrowers actually default on their payments during the crisis.

- *Provisioning is procyclical.* This means that banks have not been saving for bad times. They are therefore likely to have to provision when economic downturn actually sets in: a 1 percentage point decline in real GDP growth is associated with a 0.07 percentage point increase in provisioning. In addition, there is a 0.01 percentage point increase in provisioning for every percentage point increase in the unemployment rate, indicating a need for additional provisioning later in a typical business cycle.
- *Riskier banks are provisioning more than other banks.* Using the z-index as a measure of bank stability, results show that banks provision more when stability goes down (lower z). This behavior exacerbates the problems of the banking sector by reducing capitalization when the risk goes up, rather than building enough capital in anticipation of the higher risk.⁴⁵

All the above three results hold when the sample is restricted to NMS.

Based on the estimates, bank provisions are likely to multiply manifold with the ongoing deepening of the economic downturn. Since profits might not be able to cushion such increases in provisions and loan losses, capital buffers would have to be tapped, thereby reducing banks' capitalization.⁴⁶

⁴⁵ See De Nicolò (2000); and Macchler, Mitra, and Worrell (forthcoming) for a discussion of the z-index and its various forms. Here, $z = (\text{return on assets} + \text{equity}/\text{assets})/\text{mean deviation of return on assets within a bank}$. Higher z should in general indicate greater stability or lower risk of insolvency.

⁴⁶ To give an example based on the empirical model, a decrease in Latvia's growth rate from 10.0 percent in 2007 to -4.6 percent in 2008—a decline of about 15 percentage points—would mean an increase in provisions by 1.05 percentage points—for a total of 1.26 (=0.21+1.05) percent of 2007 assets. For most countries, such an increase is beyond two standard errors of average provisions. The quantitative impact modeled in the regression is linear, and hence probably on the lower side. During a crisis, the effects could be nonlinear mainly for two

(continued)

Such losses are likely to decrease capitalization to a point where banks cut back on lending. To some extent, cuts in bank lending are exactly what some of the emerging European economies need, after a period of unsustainable growth and overheating. However, a sudden and widespread unavailability of loans could have a dramatic impact on the real economy, and in particular on private consumption. This second-round effect could prolong the recession considerably. In emerging Europe, where foreign banks dominate the banking system, a sharp cutback in cross-border funds and failure of private owners of parent banks to respond to the recapitalization needs of the emerging European subsidiaries could have a serious impact on the broader economy. Given that there is already some evidence of banks' reluctance to lend (as Senior Loan Officer's Lending Surveys in some countries indicate for the first quarter of 2009), recapitalizations done preemptively (before the actual shortfall is noticed) would help build confidence in the banking systems.

... and the Tightening Credit Could Have Severe Effects on the Many Households Whose Spending Is Constrained by Credit Availability

A major credit tightening could have a large impact on the real economy in emerging Europe. In particular, the sensitivity of consumption to bank credit would suggest large declines in consumption if a credit crunch were to take place. Indeed, the April 2009 *World Economic Outlook* shows that the key reason that recessions associated with financial crises are much worse than other recessions is the decline in private consumption.⁴⁷ Credit crunch and

reasons: first, second-round effects of reduced credit flows on output and employment would cause further distress on bank balance sheets, and, second, widespread balance sheet mismatches in foreign currency of the private sector could be exacerbated through large-scale exchange rate depreciations generating further credit risk for banks. These second-round effects have not been modeled here due to lack of data.

⁴⁷ In a bivariate vector autoregression of consumption growth and income growth in the United States, Blanchard (1993) shows that shocks to consumption could be long-lasting and could delay recovery from crises.

depressed consumer sentiment could play a role in delaying recoveries from the current crises, absent appropriate policy responses.

Recent analytical work (e.g., IMF, 2008d) stresses that borrowing constraints faced by households in the mortgage market play an important part in the transmission of monetary policy shocks and asset price fluctuations over the cycle. Specifically, private consumption tends to be more sensitive to financial shocks in countries where housing credit markets are more developed. Even where mortgage credit markets are not well developed, private consumption growth can be adversely affected if a large portion of households are dependent on credit. With the financial crisis, credit could dry up either due to a funding crunch, as unsettled markets make it prohibitively expensive for banks to raise funds from abroad, or due to a drying up of capital inflows from parents in advanced European countries to their emerging European subsidiaries. Also, with the onset of a crisis and a severe recession, any difficulties experienced by customers in repaying their lenders could threaten solvency in banks, leading to a credit crunch.

There are indications that, in emerging Europe, a credit decline is associated with a consumption decline. Taking retail sales (available at a monthly frequency) as a proxy for consumption (available only at a quarterly frequency), household credit growth is positively correlated with retail sales growth in a number of emerging European countries, even though the strength of the correlation differs across countries (Table 15).⁴⁸

A more in-depth analysis confirms the importance of credit constraints. Specifically, instrumental variable regressions of retail sales growth on current income growth, household credit growth, and consumers' expectations about job

⁴⁸ The correlation between consumption and retail sales growth is, on average, higher than 50 percent (and significant) for the emerging European economies.

Table 15. Consumption Growth Is Correlated with Credit Growth

Correlation between retail sales growth and real household credit growth

Bulgaria	0.56 **
Croatia	0.68 **
Czech Republic	0.09
Hungary	0.38 **
Latvia	0.36 **
Poland	0.60 **
Romania	0.25 *
Russia	-0.10
Slovak Republic	0.18
Ukraine	0.20 +

Sources: EMED Emerging EMEA; and IMF staff calculations.

Note: **, *, + indicates significance at 1 percent, 5 percent, and 10 percent levels, respectively.

prospects (Table 16) for selected countries in emerging Europe show the following:⁴⁹

- *Growth in household credit helps to explain growth in retail sales in almost all countries.* A 1 percentage point increase in annual real credit growth raises

Table 16. Consumption Growth Depends upon Credit Growth (Instrumental Variables Estimation), January 2002–November 2008
Dependent variable: Retail sales growth (year-on-year) 1/

	Real Wage Growth 2/	One-Month Lagged Real Household Credit Growth	Consumers' Expectations About Unemployment Prospects in the Next 12 Months 3/	R-Bar Square
Bulgaria	0.13	0.26 *	-0.12	0.63
Croatia	1.67**	0.13+		0.42
Czech Republic	0.80*	0.04	-0.10**	0.19
Hungary	1.23**	0.11**	-0.12**	0.78
Latvia	1.05**	0.16**	-0.26**	0.78
Poland 4/	2.22**	0.23**	-0.07	0.77
Romania 4/	0.61*	0.04+	-0.53*	0.08
Russia	0.67+	-0.09		0.70
Slovak Republic	1.44**	0.14**	-0.03	0.70
Ukraine	-0.16	0.13*		0.77

Sources: EMED Emerging EMEA; and IMF staff estimates.

1/ **, *, + indicate significance at 1 percent, 5 percent, and 10 percent, respectively. Constants and MA terms not shown.

2/ Instruments used are one through three-, six- and nine-month lagged real wage growth, real credit growth, and retail sales growth.

3/ European Central Bank survey on the percentage of consumers expecting unemployment to rise minus that expecting it to fall. An increase represents deteriorating prospects. Not available for non-EU countries.

4/ For Poland, May 2005 to November 2008, and, for Romania, January 2002 to December 2005, due in both cases to strong structural breaks.

⁴⁹ The methodology follows Bacchetta and Gerlach (1997) and Bayoumi and Melander (2008), who estimate the effect of predictable changes in credit on consumption growth. It augments these regressions with measures of consumer sentiment about unemployment expectations following Carroll and Dunn (1997). To address the shortness of the time series for emerging European markets, monthly series on retail sales

(continued)

annual retail sales growth by an average of 0.14 percentage point. The sensitivity of retail sales growth to credit growth is especially strong in Bulgaria, which has experienced rapid credit growth in recent years, but almost zero in the Czech Republic, where aggregate credit developments have been more subdued. This suggests that a severe credit crunch would have a much larger negative impact on consumption growth in Bulgaria than in the Czech Republic.

- *The above finding holds even after controlling for fluctuations in current real wages, a proxy for real disposable income.*⁵⁰ This suggests that consumers who depend upon current income are coexisting with liquidity-constrained consumers who depend upon credit for current consumption.
- *In addition, unemployment prospects shape consumption.* In most countries, unemployment expectations contain additional predictive power for retail sales growth, beyond the information contained in wage growth and credit growth. This implies that some households reduce consumption growth when unemployment prospects loom larger in the future. Following a financial crisis, private consumption growth is likely to be weak until households are comfortable that they are more financially secure (IMF, 2009d).⁵¹

and real wages are used, with the latter approximating movements in income.

⁵⁰ Because there could be reverse causality from retail sales to current income growth, instrumental variables were used to substitute for current real wages. Instruments included real wage growth and retail sales growth lagged by one through three, six, and nine months. Granger causality tests show that credit growth, on average, does a much worse job at predicting future wage growth than past wage growth or retail sales growth. This finding supports the interpretation that the significance of credit growth in the regression reflects its ability to explain retail sales growth beyond its role in explaining current income growth.

⁵¹ Carroll and Dunn (1997) show that, for the United States, when uncertainty about future labor income increases, consumers postpone purchases of durable goods until their balance sheet condition improves. Another result suggests that durables consumption was more sensitive to this uncertainty measure after financial liberalization. The sensitivity could have increased over time for emerging markets too as their financial systems were gradually liberalized over the last decade.

Policy Implications

The crisis has clearly put an increased premium on sound macroeconomic and macroprudential policies in individual emerging market countries, as financial market participants are paying less attention to group effects. This is illustrated by the disappearance of the EU halo effect (i.e., the return of the NMS bond spreads back to what can be explained by fundamentals). It is also illustrated by the increased country dispersion of sovereign spreads during the crisis, which can to a large part be explained by differences in the macroeconomic performance and external vulnerabilities of the countries, in particular by their success (or lack thereof) in keeping inflation low and the financing of the current account deficit at a sustainable level in the run-up to the crisis.

What policies should be implemented to get the emerging European countries out of the crisis? Given the important cross-country differences, the policies will necessarily differ across countries. Because of the high financing costs, fiscal stimuli cannot be implemented in most of the emerging European markets. Rather, further fiscal adjustment is required in these countries to restore confidence in policies. Financial market measures to revive credit and restructure household debt can shorten the recessionary span by relieving the borrowing constraints of households.

Given the central role of the banking sectors in emerging European economies, and reduced confidence in most of the banking sectors, bank recapitalization will be an important element in the policy packages in many countries in the short term. Even though most banks appear to be well capitalized and profitable for the time being, they remain vulnerable to loan losses as the economic downturn deepens. Capital injections into banks seem necessary to prevent recessions from becoming protracted in some of the emerging economies. Based on this line of reasoning, recent IMF-supported programs in crisis countries have indeed included substantial funds for meeting the recapitalization needs of banks. Such

recapitalizations could be done preemptively, rather than in response to actual insolvencies, to rebuild confidence in the banking systems. Stress tests that assume a worse-than-expected downturn in the next two years could be used to determine potential capital shortfalls, in coordination with parent bank owners and supervisory authorities.

Bank recapitalization would be wasteful if not accompanied by a strengthening of the supervisory, regulatory, and macroprudential framework. There is substantial scope for more effective supervision in individual countries under the existing financial supervisory frameworks. This includes for instance the possibility of imposing stricter capital requirements for weaker banks under Basel II Pillar 2.⁵² But given the strong cross-border linkages within Europe and given the major role of foreign-owned banks in emerging Europe, the stricter capital requirements need to be accompanied by much stronger cross-border cooperation between home-host central banks, supervisors, and ministries of finance. In addition to the microprudential improvements, more is also needed to address the macroprudential challenges. This should involve forward-looking (countercyclical) provisioning (IMF, 2008d), to reduce the macroprudential volatility in bank profits. Without such reforms, provisions are likely to continue to be procyclical, meaning that sharp economic downturns can adversely affect borrowers' ability to repay loans and drain capitalization of banks, ultimately leading to an unwanted credit crunch and lower consumption and investment.

Addressing the current crisis requires credible policies to restore confidence, including confidence about future job prospects. In conjunction with short-term countercyclical policies, structural reforms should be intensified to prevent declines in

⁵² Under Basel II Pillar 2, bank supervisors need to evaluate banks' internal capital adequacy calculations and compliance, and could require higher capitalization for individual banks if their risk profiles are higher. Supervisors need to determine this risk by conducting stress tests. But countries need to have the supervisory capacity to make the necessary assessments and the adequate legal framework to take action.

long-run productivity and growth. One such reform would be to reinforce policymaking institutions, for instance, fiscal frameworks for long-term fiscal sustainability (see Chapter 2 and Debrun and Joshi, 2008). Doubts about fiscal sustainability can slow the recovery by lowering consumer spending and raising long-term real interest rates, which could hurt investment growth (IMF, 2009d). Other

reforms, potentially important but not analyzed here in detail, include measures facilitating a structural shift in production from the nontraded toward the traded sector, for example, by making labor markets more flexible (IMF, 2008d). Finally, higher policy credibility would eventually help the NMS to satisfy the convergence criteria for euro adoption.