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The Financial Crisis and European Emerging Economies*

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Abstract
The crisis has affected all European economies, but it has also brought into relief the substantial differentiation across the region. We demonstrate that it has put an increased premium on sound macroeconomic and macroprudential policies: economies with lower inflation, smaller current account deficits, and lower dependence on bank-related capital inflows have fared significantly better. We also show that the crisis has led to the disappearance of the so-called "halo effect", which was the observation in the pre-crisis period that spreads on sovereign bonds in the new European Union member countries were lower than could be explained by fundamentals.

1. Introduction

What determined the impact of the global financial crisis on the emerging markets in Europe? An analysis of cross-country differences in sovereign bond spreads during the crisis suggests that the soundness of pre-crisis 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 the emerging European economies that remain outside the European Union (EU) as well as those that became EU members (the so-called "New Member States"); for the latter group, adherence to EU rules and institutions has helped to mitigate the impact of the crisis, but it has not shielded them completely.

Analyzing spreads on New Member State (NMS) sovereign bonds in early 2000s, one could find that while a fundamental (economic) analysis pointed to rising vulnerabilities in some of the NMS economies, markets remained optimistic, compressing sovereign bond yields. This difference between the fundamentals and the actual sovereign bond rates has been dubbed the "halo effect". The increase in the NMS sovereign bond spreads in the years 2007–08 can be viewed in part as a dissipation of the so-called "halo effect." The analysis in this article suggests that the "halo effect" was essentially an unexplained residual that has turned out to be temporary.

The remainder of the article has the following structure. Section 2 reviews the stylized facts of the impact of the crisis. Section 3 presents the analysis of the EU halo effect. Section 4 focuses on the role of domestic policies and external vulnerabilities. Section 5 concludes.

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Table 1 Snapshot of Emerging Europe

Country groups	Intensity of the Crisis Aug 07–Nov 08		Macroeconomic Indicators				EU Convergence Criteria		
	Change in stock prices (%)	Change in spreads (basis points)	Bank-related capital inflow 2007Q2–2008Q1 (sum, % of 2008 GDP) [a]	Current account balance 2008 (% of GDP) [b]	Fiscal balance in 2007 (% of GDP)	Government debt in 2007 (% of GDP)	Deviation of inflation from (notional) convergence criterion 2008 (percentage points) [c]	Is the exchange rate criterion satisfied? [d]	Is the long-term bond yield criterion satisfied? [e]
Emerging Europe	-61.4	612	9.7	-11.4	-0.2	26.8	4.9	…	…
Emerging Europe countries receiving IMF support	-59.4	788	12.9	-11.1	-1.8	25.2	6.9	…	…
EU New Member States [f]	-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	…	…	…	…
Memorandum items									
Emerging Europe [g]	-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.

Notes: [a] Balance of payments, Financial Account: Other investment, net liabilities. The data is the sum of "Currencies and Deposits", which includes all foreign parent bank loans to subsidiaries, and "Loans", which includes crossborder loans to banks and nonbank corporates.

[b] IMF, World Economic Outlook.

[c] 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.

[d] Based on DG ECFIN's May 2008 and ECB's May 2008 convergence reports.

[e] Based on DG ECFIN's May 2008 and ECB's May 2008 convergence reports. The benchmark was 6.5 percent in 2008.

[f] 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.

[g] 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 received IMF financial support as of March 20, 2009.

2. Who Got Hurt More? Stylized Facts

Developments in emerging European economies in the run-up to and during the global financial 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 1*).[1] 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 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.

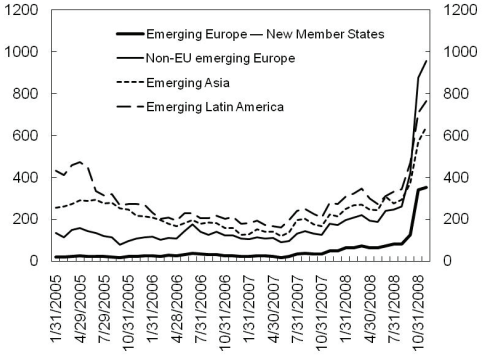
Despite these remarkable common characteristics, cross-country variation among the emerging European economies remained substantial, in particular in the response of stock prices and bond spreads in the crisis countries (*Table 1*).

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 1*). Bond spreads in some emerging economies have widened several times more than in the euro area. 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.[2] The widening has rather reflected market participants' concerns about the governments' contingent liabilities in case of major banking and other corporate defaults.

[1] For the purpose of this article, 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, Turkey, and Ukraine. In the subsequent econometric analyses, some countries were dropped due to lack of data. (It should be noted that in early 2009, the Czech Republic and the Slovak Republic were reclassified as advanced economies for the purposes of the IMF's *World Economic Outlook*.)

Figure 1 Sovereign Bond Spreads, 2005–08



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

– *Strong role for bank-related capital inflows.* The ratio of bank-related capital inflows to gross domestic product (GDP) in emerging European economies has been a multiple of the ratios for emerging non-European economies (*Table 1*).[3] In general, emerging European economies have strong banking linkages to advanced economies – for instance, emerging Europe's stock of bank liabilities to advanced countries exceeded 50% of its GDP, about three times the ratio for other emerging markets. But even within emerging Europe, the size of these cross-border banking flows has varied. At about 13% 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% 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 2*). The same holds true for emerging markets with inflexible exchange rate regimes (*Table 1*).

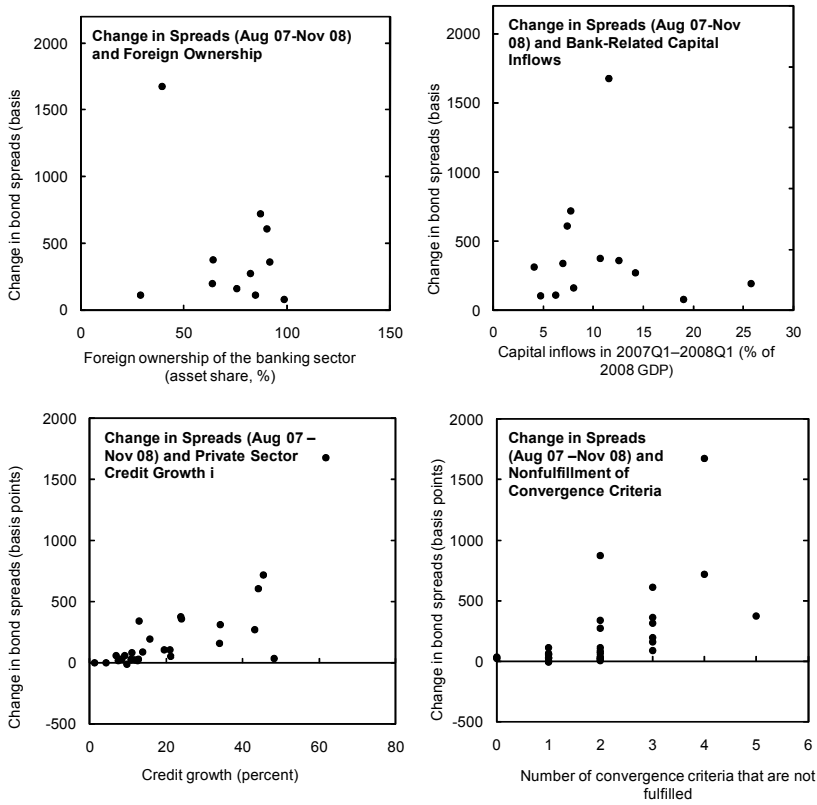
3. Regional Factors: EU Halo Effect

What factors explain the differentiated sovereign bond spreads? Specifically, to what extent do the changes in spreads reflect investors' views on emerging econo-

[2] 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.

[3] Bank-related capital inflows are defined as the balance of payments item "other investment, liabilities," aggregating the sub-items "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 nonbank 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.

Figure 2 European Emerging Economies: Crisis Impact and Other Variables



Sources: European Bank for Reconstruction and Development; International Financial Statistics; Bloomberg L.P.; and authors' calculations.

mies' prospects for meeting the convergence criteria and adopting the euro?[4] And to what extent do the spreads reflect macroeconomic vulnerabilities in each country?

Several papers have analyzed spreads on NMS sovereign bonds in the pre--crisis period. Those papers found that, while a fundamental (economic) analysis pointed to rising vulnerabilities in some of the NMS economies, markets remained optimistic, compressing sovereign bond yields to below levels seen in other emerging economies. This discrepancy was dubbed "the halo effect." Hauner, Jonas, and Kumar (2007) and Luengnaruemitchai and Schadler (2007) find the halo effect for 2001–06 and 1995–2005 data, respectively.

The interpretations of the halo effect in the literature differ. Hauner, Jonas, and Kumar (2007) posit that the EU halo effect is linked to the EU membership. Better institutions and processes, such as fiscal rules, that have been put in place

[4] 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% of GDP), government debt (less than 60% of GDP), inflation (less than 3.2% for 2008), the long-term interest rate (less than 6.5% for 2008), and the exchange rate (participation in the Exchange Rate Mechanism (ERM) II).

since EU accession may also have had the effect of reducing sovereign risk (thus bringing countries closer to meeting the Maastricht criterion on government bond rates). This would suggest that the "halo effect" may be lasting. Luengnaruemitchai and Schadler (2007) argue that the "halo effect" is essentially an unexplained residual that may turn out to be temporary.

To examine what the increased sovereign bond spreads during the crisis meant for the halo effect, we have used an econometric analysis to identify the role of fundamentals and global liquidity conditions in determining the level of spreads on foreign currency denominated bonds – sovereign spreads – issued by emerging market countries.[5]

We have employed a methodology similar to Eichengreen and Mody (1998), Hauner, Jonas, and Kumar (2007), and Luengnaruemitchai and Schadler (2007). Following this methodology, we use three indices of fundamentals that group variables influencing economic risks, financial risks and political risks. This avoids the problem of multicollinearity among explanatory variables since several influences affect each risk category and in many instances they move in similar ways. Three other measures of global interest rates and liquidity conditions are also included. IMF (2006) suggests that this estimation model does a good job in predicting the spreads on a global level.

To approximate the price of "risk" of the emerging markets in the sample, JP Morgan's Emerging Market Bond Index-Global (EMBIG) sovereign spreads is used as the dependent variable. The spreads of each country are weighted averages of yield spreads over US treasury bills of external debt instruments issued by sovereign and quasi sovereign entities (denominated in US$). For countries where (US$) EMBIG spreads are not available, Euro EMBIG spreads are used. These are yield spreads over German reference rates of external debt instruments denominated in Euro. The sample encompasses the 25 emerging market countries included in both MSCI Emerging Markets index and JP Morgan EMBIG index, and spans 1998 to 2008 for most of the countries.

One caveat in this exercise is that it focuses on market perceptions about government or quasi-government default risks, which do not necessarily reflect overall risks to the economy including the private sector. This is an unavoidable shortcoming insofar as sovereign bond spreads are the principal asset class comparable across countries. Other asset classes – domestic currency bonds, stock markets and exchange markets – are influenced by a variety of factors not directly related to the risk profile of issuing countries.

Each of the three indices of fundamentals that is included as explanatory variables – political, financial and economic – are composites of ratings of several variables from *International Country Risk Guide* (ICRG).[6] In addition, following IMF (2006) and Luengnaruemitchai and Schadler (2007), the present study includes three measures of global liquidity conditions: (1) Volatility Index (VIX), which is the volatility of U.S. stock market volatility implied in the pricing of S&P500 options; (2) implied yield of 3-month ahead 30-day Fed Funds futures, which reflects

[5] An earlier version of some of this work appeared in Čihák and Fonteyne (2009).

[6] The Guide is available from http://www.prsgroup.com.

short term global interest rates as well as market expectations of future U.S. monetary policy; and (3) 90-day rolling standard deviation of the difference between implied yields on 3-month ahead Fed Funds futures and the Fed policy target rates. The volatility measure indicates the uncertainty about U.S. monetary policy, which has a large impact on global financial markets. These variables are from Bloomberg and are available daily. Since the ICRG ratings are updated on a monthly basis, all of the variables are averaged to a monthly frequency (this also filters out some of the noise in the day-to-day volatility of high-frequency variables).

For comparability, the econometric approach in this study follows broadly the previous research, in particular IMF (2006) and Luengnaruemitchai and Schadler (2007). In line with those papers, the present study includes the measures of fundamentals and liquidity conditions in the same estimating equation, using a pooled ordinary least squares (OLS) with country fixed effects. Specifically, the following equation is estimated:

$$\ln(spread_{it}) = \alpha + \beta_1 econ_{it} + \beta_2 financial_{it} + \beta_3 political_{it} + \\ + \beta_4 VIX_t + \beta_5 FF_t + \beta_6 FFvol_t + u_i + \varepsilon_{it} \quad (1)$$

where $econ_{it}$, $financial_{it}$ and $political_{it}$ are the values of ICRG's economic, financial and political risk ratings of country i at time t, respectively. For all these variables, higher values mean better fundamentals, so the respective slope coefficients are expected to be negative . VIX_t is the implied volatility index, FF_t is the implied yield on the 3-month ahead 30-day Fed Funds futures, and $FFvol_t$ is the 90-day rolling standard deviation of the difference between implied yields on 3-month ahead Fed Funds futures and the Fed policy target rates. These three variables are likely to have a positive impact on the spreads. u_i denotes individual country-specific fixed effects, and ε_{it} is the residual term.

The estimation results (*Table 2*) are encouraging in that the underlying specification is robust and consistent with previous estimates in the literature. The variables enter with expected signs, and their coefficients are significant at 1% level of significance. As expected, better fundamentals (lower economic, financial and political risks) are associated with lower sovereign spreads. Higher global interest rates and higher volatility in the financial markets lead to higher spreads. Similarly, spreads are higher when the volatility of interest rates implied by Fed Fund Futures rises.

The residuals of the fixed effects regression (*Figure 3*) suggest that after controlling for global liquidity conditions and fundamentals, the level of spreads of the NMS, which has been low and stable by emerging markets standards up to 2006, has returned to the "fundamental" levels (and even slightly above) in 2007–08. In other words, the NMS-wide halo effect seems to have disappeared during the global financial crisis. The charts are similar when one examines the residuals plus country fixed effects for individual NMS countries, even though there is considerable cross--country differentiation within the NMS. The differentiation among the NMS has increased in the crisis period, with the Baltic countries showing substantially higher spreads (differentiation has also occurred among the OMS, even though not to the same extent as among the NMS).

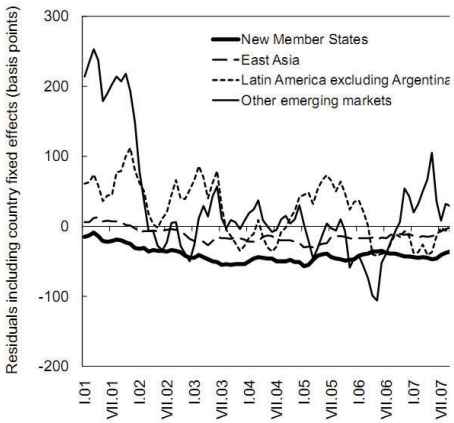
In sum, the NMS-wide halo effect seems to have disappeared during the global financial crisis. At the same, it still holds that those NMS that adhere more closely

Table 2 EU Halo Effect: Explaining Spreads on Sovereign Bonds

	Ordinary Least Squares	Random Effects	Fixed Effects
Economic Risk	-0.03	-0.03	-0.04
	(5.91)**	(9.58)**	(9.86)**
Financial Risk	-0.12	-0.07	-0.06
	(25.70)**	(13.80)**	(13.81)**
Political Risk	-0.05	-0.02	-0.01
	(30.25)**	(6.54)**	(4.82)**
VIX Index	0.06	0.05	0.05
	(23.58)**	(30.25)**	(33.25)**
Fed Fund Futures	0.04	0.02	0.02
	(4.95)**	(4.52)**	(4.89)**
Vol of Fed Fund Futures	0.96	1.56	1.58
	(3.12)**	(7.91)**	(7.86)**
Constant	10.94	8.72	8.69
	(54.23)**	(43.53)**	(47.57)**
Observations	3,171	3,171	3,171
Number of Countries	25	25	25
R^2-overall	0.60	0.51	0.49
R^2-within	0.61	0.60	
R^2-between	0.61	0.58	
LM Test for Random Effects		21,548	
Hausmann Test			20.51
Prob > Chi^2		0.00	0.00

Notes: Absolute value of *t* statistics in parenthesis.
* significant at 5%, ** significant at 1%

Figure 3 Residuals from the Fixed Effect Regression for Sovereign Spreads
January 2001–October 2008



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

to the Maastricht criteria tend to have lower spreads and face less strong market pressures. This is consistent with the findings of Debrun and Joshi (2008), who, using data for 1990–2005, do not find an EU-wide "halo effect," but find that countries adhering more closely to EU's fiscal rules tended to have lower bond spreads (which is likely to be a fiscal soundness effect rather than an EU effect).

4. 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 for euro adoption. The individual states have differed substantially in 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 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 mini-crisis 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) a more recent phase, after September 2008 (*Table 3*). 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.

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 old EU countries. [7] And the widening of bond spreads in emerging non-EU European countries was on average almost double the increase of that in the NMS. In contrast, there was some latitude towards the euro area countries.

Second, inflation performance matters. Countries that had greater convergence with the convergence criteria saw smaller increases in bond spreads and smaller drops in stock prices during the crisis. 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.

[7] Each convergence criterion 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).

Table 3 Did the Convergence Criteria Matter?
Dependent Variable: Crisis Impact--Log of Change in Bond Spreads[a]

			Convergence criteria (CC) and note"b"				
		Regional differences	Only the CC	Actual perfor-mance	Current account balance	Capital inflow	Capital inflow and credit growth
(1)	Euro area	-0.04					
		(0.09)					
(2)	New Member States (NMS)	0.19					
		(0.10)+					
(3)	Other emerging European countries	0.39					
		(0.15)*					
(4)	Nonfulfillment of the CC (index 0–6)[b]		0.11	0.03	0.06	0.07	0.06
			(0.03)**	(0.03)	(0.03)**	(0.03)**	(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)				-0.003		
					(0.01)		
(13)	Bank-related capital inflow/GDP					0.000	0.000
						(0.00)	(0.00)
(14)	Bank-related capital inflow/ /GDP (European emerging)					0.014	0.01
						(0.01)*	(0.00)*
(15)	Bank credit growth						0,001
							(0.00)
(16)	Bank credit growth (European emerging)						0.005
							(0.004)
(17)	Episode "pre-Lehman"	0.13	0.17	0.12	0.15	0.14	0.12
		(0.03)**	(0.04)**	(0.04)**	(0.04)**	(0.03)**	(0.04)**
(18)	Episode "post-Lehman"	0.37	0.37	0.23	0.36	0.35	0.36
		(0.07)**	(0.07)**	(0.06)**	(0.07)**	(0.07)**	(0.07)**
(19)	European emerging dummy				0.17	0.11	-0.06
					(0.07)*	(0.06)+	(0.13)
(20)	Constant	-0.06	-0.17	-0.19	-0.15	-0.17	-0.20
		(0.08)	(0.05)	(0.08)	(0.05)	(0.05)**	(0.07)**

Continued

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

Notes: [a] Standard errors in parentheses; **, *, + indicate signficance at 1 percent, 5 percent, and 10 percent levels, respectively.

[b] Each convergence criteria (see footnote 4) is assigned one point. If the country fulfills a criterion,i it gets 0, otherwise 1. Therefore, a country that fulfills all criteria get 0, if none of the criteria, gets 5. The variable used in the regression takes values from 0 to 5.

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

– *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 – except for the Czech Republic, Russia, and Turkey, for which foreign currency loans in all countries exceeded 30% of total loans (IMF, 2009b) – make credit quality 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, 2009b). 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 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.

5. Conclusions

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.

The analysis in this article underscores this point by showing the disappearance of the EU halo effect. We find that, during the crisis, the sovereign bond spreads in EU's New Member States have gone to what can be explained by fundamentals.

We have also illustrated the increased country dispersion of sovereign spreads during the crisis, and demonstrated that it can be, to a large part, 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.

REFERENCES

Cappiello L, Gerard B, Kadareja A, Manganelli S (2006): Financial Integration of New EU Member States. *European Central Bank Working Paper*, no. 683.

Čihák M, Fonteyne W (2009): Five Years After: European Union Membership and Macro-Financial Stability in the New Member States. *IMF Working Paper*, no. 09/68 .

Debrun X, Joshi B (2008): Credibility Effects of Numerical Fiscal Rules: An Empirical Investigation. In: Hungary: Selected Issues. *IMF Country Report*, no. 08/314 .

Eichengreen B, Mody A (1998): What Explains Changing Spreads on Emerging Market Debt: Fundamentals or Market Sentiments? *NBER Working Paper*, no. 6408 (Massachusetts, National Bureau of Economic Research).

Hauner D, Jonas J, Kumar M (2007): Policy Credibility and Sovereign Credit – The Case of the New Member States. *IMF Working Paper*, no. 07/1.

International Monetary Fund (2006): Global Financial System Resilience in the Face of Cyclical Challenges. *Global Financial Stability Report*. Washington, International Monetary Fund.

International Monetary Fund (2008): *Regional Economic Outlook: Europe*. November. Washington, International Monetary Fund.

International Monetary Fund (2009): *Regional Economic Outlook: Europe – Addressing the Crisis*. May. Washington, International Monetary Fund.

Luengnaruemitchai P, Schadler S (2007): Do Economists' and Financial Markets' Perspectives on the New Members of the EU differ? I*MF Working Paper*, no. 07/65.

Schadler S, Drummond P, Kuis L, Murgasova Z, Elkan R van (2005): Adopting the Euro in Central Europe: Challenges of the Next Step in European Integration. *IMF Occasional Paper*, no. 234 .