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Abstract

Against the backdrop of the international financial and economic crisis, this paper seeks to identify financial vulnerabilities in Emerging Europe. Data are presented for 20 countries using a 'balance-sheet' framework to disaggregate financial weaknesses within each economy. First, financial flow imbalances and general macroeconomic weaknesses are identified, leading to a discussion of the financial stock imbalances that were caused by these persistent flow imbalances. The paper concludes with an assessment of which countries are most vulnerable to any potential 'sudden-stop' of financial flows to the region.

Key words: financial crisis, balance-sheets, emerging economies, Emerging Europe.

1 Introduction

Despite the market reforms of the past two decades, the contraction of capital and financial flows to emerging markets that has occurred since the beginning of August 2007, and which accelerated in September 2008, appears to pose a greater risk to the countries of Emerging Europe than other region.[1] It is perhaps the most vulnerable of the emerging market regions to the sudden and severe deterioration in the global economic and financial environment because of the presence of, in many cases: large current account deficits; significant levels of maturing and short-term external debt; the unwinding of previously strong bank credit booms and high loan-to-deposit ratios; the presence of considerable foreign-currency debt on balance sheets; relative trade openness and, in the case of resource rich countries, exposure to rapidly declining commodity prices that are resulting in precipitous terms of trade shocks. By spring 2009, some countries have begun to display severe vulnerabilities, with Belarus, Georgia, Hungary, Latvia, the Kyrgyz Republic, Romania and Ukraine all securing International Monetary Fund (IMF) assistance.[2] Even countries with large currency reserves, such as Russia and Kazakhstan, built up after a period of buoyant current account surpluses, have experienced high volumes of capital flight, the depletion of currency reserves, and significant exchange rate depreciation. The year ahead is likely to bring even greater risks. The region faces an aggregate adjusted gross external financing requirement of approximately $460bn, or around $930bn if short-term debt is added (Fitch, 2008). The deterioration in the outlook for private capital flows to emerging markets makes "roll-over" of these loans increasingly unlikely, with the Institute of International Finance (IIF) projecting a fall in private capital flows to the region from around $254bn in 2008 to only $30bn in 2009 (IIF, 2009).

In this context it is important to identify the key economic vulnerabilities that exist, and in some cases are intensifying, across Emerging Europe in order to isolate the sources of financial fragility across the region. This is particularly important for European economies due to the high level of exposure of many European banks and financial institutions in the region. Unlike the earlier stages of the financial crisis – where the costs of bad investments were spread across financial institutions in North America, Europe and Asia – the immediate effects of any financial crisis in Emerging Europe would be primarily limited to European banks.[3] The vulnerability of the region is primarily driven by two factors: a sharp reduction in capital and financial inflows, and a slowdown in demand in the euro zone, the primary export market for many of the region's economies (Barysch, 2009). Because of the relative openness of many countries of the region, the prospect of

[1] The term Emerging Europe is used here to describe the countries of the post-communist region. However, the analysis presented in this paper is limited to those countries within the region for which data are available. Consequently, Albania, Montenegro, Macedonia, Serbia, Tajikistan, Turkmenistan, and Uzbekistan are excluded.

[2] The European Union has also provided assistance to Hungary and Latvia.

[3] According to BNP Paribas (2008), European banks generally (including the UK and Switzerland) account for about 75 percent of all foreign bank claims on developing economies ($3.6 trillion out of a total $4.8 trillion of claims). Approximately $2.6 trillion of claims are attributable to euro zone banks, and the other $1.0 trillion to UK, Swiss and Swedish banks. Emerging Europe is the area of greatest exposure, accounting for $1.4 trillion of their emerging economy exposure (over 10 percent of euro zone GDP). These risks are not spread evenly across the euro zone, however. Austrian banks' claims on Emerging European economies, for instance, amount to approximately 67 percent of GDP, mostly concentrated in Hungary, Ukraine and Serbia. Elsewhere, domestic bank exposure to Emerging Europe accounts for around 30 percent of Swedish GDP, and 20 percent in Greece and Belgium. As a general rule, the smaller euro zone countries have greater exposures relative to the size of their economies than the larger economies. Moreover, while, for example, the claims of UK banks in the region are smaller as a proportion of GDP, the perilous state of the banking sector in the UK could see any losses in the region exerting an effect that is disproportionate to their relative weighting within UK banks' balance sheets.

'decoupling' from downturns in the euro zone and Russia appear quite limited.[4] The focus of this paper is on the financial vulnerabilities in Emerging Europe and is organized as follows. The first section outlines the literature on financial crises and proposes a 'balance' sheet framework for analysing financial vulnerabilities in Emerging Europe. A second section then applies the balance sheet framework to Emerging Europe using data from 2000 to 2008 to pinpoint areas in which countries of the region are vulnerable to a sudden contraction in external capital flows. This is split into two parts. First, an overview of flow imbalances across the region is presented, followed by an outline of the most important stock imbalances. A final section summarises the financial imbalances across the region and assesses which economies display the greatest degree of vulnerability.

2 A framework for identifying vulnerabilities in emerging market economies

There are a wide range of sources of vulnerability that are common to crises in emerging market economies (Roubini and Setser, 2004, p.32). These can include, but are not limited to: (i) large macroeconomic imbalances, such as current account deficits, fiscal deficits, or both, that can cause an accumulation of large stocks of public and foreign liabilities; (ii) risky financing of such imbalances (e.g., with short-term debt, foreign-currency debt, debt in place of equity, etc), in ways that render countries vulnerable to liquidity runs that increase the risk of sharp exchange rate depreciation that might lead to a debt crisis through the 'balance sheet' effect; (iii) negative assessments by investors concerning the credibility of a government's commitment to implement policies that might increase a country's long-term creditworthiness; (iv) exchange rate mechanisms that are fixed or semi-fixed that might increase the risk of a large current account imbalance and the risk that borrowers would underestimate currency risk and rely too heavily on foreign-currency debt; (v) inadequate regulation of the banking sector, implicit and/or explicit government guarantees, corruption, and other microeconomic distortions that might lead to moral hazard and excessive levels of investment or borrowing; (vi) political shocks – in the form of elections, scandals, protests, government incapacity, war, etc. – that increase policy uncertainty and unsettle investors; and finally (vii), exogenous shocks that tend to have proportionately larger effects on emerging economies than on developed economies. Such shocks can include commodity price shocks that result in the sharp deterioration of a country's terms of trade, a sudden decline in demand from export markets, sudden increases in the cost or a decline in the availability of finance, and an increase in risk aversion by international investors.

Analytical approaches to emerging market crises

There are a number of analytical tools available to assess the likelihood of currency, output and financial crises in emerging markets, each of which emphasize different causal factors from the list described above (see Roubini and Setser, 2004, pp.35-36; Aghion, Bacchetta and Banerjee, 2001). The 'first generation' of models that were developed primarily to explain currency crises identified weaknesses in the macroeconomic 'fundamentals' of a country as the source of currency crises (e.g., Krugman, 1979; Flood and Garber, 1984). Currency crises were conceived of as a function of monetized fiscal deficits leading to reserve losses and eventually the abandonment of an exchange

[4] Openness to trade is defined as the ratio of the sum of imports and exports to gross domestic product (GDP).

rate peg once reserves fell below a critical level. Additional macroeconomic factors were introduced to explain the dynamics of a crisis, including current account imbalances, real exchange rate misalignments, the effect of exchange rate misalignment on output, borrowing to defend a pegged exchange rate, and a projected increase in a government's debt-servicing costs after an anticipated devaluation. Such 'fundamentals-centric' models of currency crises tended to view crises as occurring mechanically once foreign exchange reserves had fallen below a critical threshold with policy makers occupying a passive and static role in the process.

A 'second generation' of crisis models emerged in response to the 1992 exchange rate mechanism (ERM) crisis in Europe, and later, the 1994-95 Mexican crisis (Obstfeld, 1994; Drazen and Masson, 1994; Cole and Kehoe, 1996). These models acknowledged that contrary to crises being triggered by a mechanical fall in reserves, they could instead be triggered by an endogenous policy response as authorities decide whether to devalue based on a trade-off between the benefits and costs of floating. During the 1992 ERM crisis, for instance, some European governments chose to devalue when the costs of using high interest rates to defend an overvalued exchange rate (e.g., lower growth, higher unemployment) outweighed the benefits. Crises were also seen to be sometimes caused by self-fulfilling shifts in investor expectations. During the Mexican crisis in 1994, for example, a large stock of short-term foreign currency linked debt was reaching maturity at a point that existing liquid foreign reserves would be insufficient to service this debt, thus generating a self-fulfilling rollover crisis caused by investors' panic. Doubts about the government's commitment to the exchange peg raised the costs of defending the peg above a level that the government could tolerate, and the government's abandonment of the peg had the effect of validating *ex post* the *ex ante* doubts of investors. The possibility of multiple equilibria contained in many of these second generation models was expanded to include the possibility of liquidity mismatches (in the public or private sector) leading to a currency crisis in the event of a self-fulfilling rollover crisis. Mismatches of this type may lead to a self-fulfilling currency run, a debt rollover crisis, or a bank run crisis. This risk of runs because of gaps between short-term debts and liquid foreign reserves was developed further in the 'third generation' of analytical models.

'Third generation' models were developed in the aftermath of the Asian crisis of 1997-98 where fiscal imbalances of the sort identified in first generation models were not the primary source of concern. For some analysts, the Asian crisis displayed the familiar elements of a self-fulfilling liquidity run described in second generation models (e.g., Sachs and Radelet, 1998, Rodrik and Velasco, 1999; Chang and Velasco, 1999). However, elsewhere, imbalances built up in the private sector were viewed as the most significant factors behind the crisis, as sharp and unexpected movements in the capital account (such as a sudden halt or reversal of capital inflows), rather than traditional current account imbalances, caused currency crises (e.g., Calvo and Mendoza, 2000; Mendoza, 2001; Dornbusch, 2001). Indeed, currency crises were envisaged even where current account surpluses existed (Aghion, Bacchetta and Banerjee, 2001). Thus, the focus shifted from government imbalances to vulnerabilities accumulated in the corporate and financial sectors of the economy. Third generation models also focused on how balance sheet effects of private-sector currency mismatches could possibly increase the likelihood of runs and on how the erosion of capital that occurs after a currency depreciation can cause the loss of access to external capital markets, credit constraints that result in corporate and public defaults, and significant losses in output due to real balance sheet effects (Krugman, 1999; Aghion, Bacchetta and Banerjee, 2001). Other factors considered in third generation models include microeconomic distortions such as weakly supervised and regulated financial systems; corrupt or informal lending practices; moral hazard driven by implicit or explicit government guarantees causing overinvestment and excessive current account deficits; and fixed exchange rates causing distortions in the level of external borrowing denominated in foreign currencies (e.g., Krugman, 1999; Corsetti, Pesenti and Roubini, 1999a and 1999b).

The balance sheet framework

The framework employed in this paper was developed by Roubini and Setser (2004) and pulls together the insights from the different strands of the three generations of analytical models described above.[5] It suggests that a useful way to analyse the financial vulnerabilities of emerging market economies is to view an economy as a system composed of the balance sheet of all its agents. As in traditional, first generation models, *flows* that occur over a defined period of time are considered, such as the annual output, fiscal balance, current account balance or capital flows. However, balance sheet analysis also examines *stocks* of assets and liabilities, such as debt and foreign exchange reserves. These two approaches are, of course, closely connected as the difference in a stock variable at two points in time is related to the flow in the period between them.[6] This synthetic framework enables the analyst to consider the risk created by mismatches between a country's existing debt stock and its assets; two countries may display identical debt-to-GDP ratios but the degree of vulnerability will be a function of whether one country's debt is short- or long-term, or denominated in foreign or local currency.

This balance sheet framework focuses on three main features of a debt stock: the maturity structure; the capital structure; and the currency structure. Mismatches in any or all of these areas may render a country especially vulnerable to an exchange rate, financial or solvency crisis. It is also important to distinguish between an economy's main sectoral balance sheets: the government sector (including the central bank), the private financial sector (mainly banks) and the non-financial sector (corporations and households). Each sector has claims on and liabilities to each other, as well as to external (non-resident) entities. When consolidating the sectoral balance sheets into the country's balance sheet, the assets and liabilities held between residents net out, leaving the country's external balance vis-à-vis the rest of the world (non-residents).

Maturity mismatches: Maturity mismatch risk typically arises if assets are long term and liabilities are short term. This creates *rollover risk*: the risk that maturing debts will not be refinanced, and the debtor will have to pay the obligation in cash. Maturity mismatches also create interest rate risk for the debtor: the risk that the level and/or structure of interest rates that the debtor has to pay on its outstanding stock will change. Interest rate risk can also arise if longer-maturity liabilities carry a floating interest rate, particularly one linked to the interest rate on short-term debt. Maturity mismatches can arise in either domestic or foreign currency. For example, a debtor may have short-term foreign currency debts that exceed his liquid foreign currency assets, even if his aggregate foreign currency debts match foreign currency assets. Assessing a country's full maturity mismatch requires the examination of the structure of both its liabilities and assets. Maturity mismatches can occur in any sector where there exists a high ratio of short-term debts to liquid assets. Where short-term debts exceed liquid assets, a government, bank or firm runs the risk of being unable to roll over its short-term debt, leading to restructuring or default, particularly if foreign capital comes to a "sudden stop" (Calvo, 2005).

Capital structure mismatches: Capital structure mismatch risk results from excessive dependence on debt financing rather than equity. The absence of an 'equity buffer' might lead to financial distress if a sector encounters a shock. While payments from equity are contingent on economic conditions, with profits and dividends falling in bad times, debt-service payments, in general, remain constant. An excessive dependence on debt financing — including short-term debt that gives rise to a maturity as well as capital structure mismatch — might be the result of weak corporate governance or tax and regulatory distortions. In the corporate and financial sectors,

[5] This section summarizes the framework outlined in Roubini and Setser (2004), p.44-47.

[6] The change in stock is a combination of changes in valuation of the existing stock of assets and liabilities, and net additions to the stock from flows during the preceding period.

capital structure mismatches arise when a high debt to equity ratio exists, or for banks, where there are high debt to capital ratios. Mismatches in public sector capital structure exist if there is a high ratio of senior to junior debt. A country's overall capital structure might display signs of risk if it is dependent on debt rather than FDI or equity portfolio investment to finance current account deficits.[7]

Currency mismatches: Currency mismatches occur if the currencies in which debts are denominated in differ from the currency of assets held or revenues earned by different sectors within the economy (see Jeanne and Wyplosz, 2001). Typically, mismatches occur when debts are denominated in foreign currencies but revenues or assets are denominated in local currency. There is considerable evidence that foreign currency exposure is correlated with the likelihood of a crisis with Hausmann et al. (2000) demonstrating that the countries most likely to go into a crisis were those in which firms held high levels of foreign currency denominated debt (see also Goldstein and Turner, 2004). Indeed, the Asian crisis of 1997-98 demonstrated the dangers of short-term borrowing in foreign currency due to increased risk of simultaneous maturity and currency mismatches (Eichengreen, 2004). If a currency mismatch exists at a time of currency depreciation the real value of debt held by domestic sectors increases. Thus, while a depreciation of currency might be expected to increase exports, decrease imports and stimulate import substitution among local producers, the effects of an increase in the real debt burden of an economy without a corresponding increase in repayment capacity might cause a greater contraction in economic activity than would otherwise be expected. Currency mismatches are generally more pronounced in emerging economies than in advanced economies because emerging markets agents, public and private, are often unable to borrow in local currency from non-residents or even, in some cases, from residents. As a result, obtaining capital for investment often requires taking on currency risk.[8] The high volumes of cross-border capital flows that were a feature of the international economy over the past few decades might be expected to have raised the volume of actors taking on currency risk across the region.

Solvency risks: Solvency risk arises when the assets of a firm, sector or country no longer cover its liabilities. Solvency risk is related to maturity, currency, and capital structure mismatches, which can all increase the risk that a negative shock will trigger insolvency. The concept of solvency is relatively straightforward for the private sector's balance sheets: the value of a private firm's assets — appropriately valued — need to exceed its liabilities. But it requires some further explanation for the government sector and the country as a whole. A government's greatest net asset is the ability to generate primary fiscal surpluses, that is, its ability to raise more revenue from taxes than it spends. It is solvent as long as the present discounted value of all future fiscal primary balances is greater than the current stock of net government debt. Similarly, a country as a whole is solvent as long as the present discounted value of all future balances in the non-interest current account is greater than the current stock of net external debt. Thus, when assessing solvency, government debt can be compared to flow figures such as GDP or revenues, and a country's debt can be compared to GDP or current account receipts (i.e. exports). Weaknesses in the financial

[7] In the mid- to late-1990s, many Asian economies financed external deficits with debt rather than equity, with many firms and financial institutions displaying high levels of leverage and exhibiting large debt to equity ratios. FDI is considered least risky as the investment is, once made, more or less captured and is illiquid. To the extent that it can be liquidated in a crisis, it would probably be at a considerable discount and in domestic currency.

[8] Any attempt by one sector to hedge currency risk associated with such borrowing will just transfer the currency mismatch to other sectors within the country. For example, banks borrowing in dollars and then lending in dollars to corporations can technically reduce the currency risk on their books. However, this increases the corporate sector's currency risk, and, if those firms borrowing in foreign currency are not large net exporters, the risk that the firms will be unable to pay the banks in the event of devaluation. Such currency mismatches can then trigger shifts in capital flows that create pressure on foreign exchange reserves.

structure of a firm, sector, government or country are not the only sources of risk, particularly in times of economic stress. However, they can overwhelm what might otherwise appear to be sources of economic strength and can exacerbate the economic contraction associated with shocks. For instance, the balance sheet effects of devaluation can increase the real debt burden on agents within an economy, thus hindering efforts at recovery. Moreover, shocks associated with a sudden decline in demand for the region's exports might also aggravate existing financial positions that are already quite precarious.

3 Financial vulnerabilities in emerging Europe

Flow imbalances and general macroeconomic vulnerabilities

Although the emphasis in this paper is on the balance sheets (i.e. assets and liabilities of different sectors) of the economies of Emerging Europe, financial flows and general macroeconomic issues remain important for several reasons. First, stocks of debt are the result of cumulative flows of past deficits. Second, solvency requires that the present discounted value of future flows (primary balances or trade balances) will be large enough to service current stocks of debt and prevent an unsustainable accumulation of debt. Third, in most capital account crises, existing flow imbalances often also occupy an important role in the development of a crisis situation because any difficulties encountered in attracting the new inflows required to finance a large flow deficit may then cause problems for agents attempting to roll over or refinance the existing stock of short-term debt.

As Table 1 illustrates, growth rates across the region has been generally very strong. Between 2000 and 2007, the only country within the sample to experience a contraction in economic activity was Kyrgyzstan in 2005. Even in 2008, some months after the onset of the initial seizure in international credit markets, Estonia was the only other country to have experienced a downturn. The degree to which the recession in Estonia was a direct consequence of the financial crisis is unclear. Although Estonia had experienced a housing bubble that burst in 2007, both strong domestic wage inflation that eroded the competitiveness of Estonia's important export sector, and perhaps more importantly, the sudden halt of Russian transit trade in response to the deterioration in bilateral relations in 2007, were probably of much greater significance. In general, strong demand across emerging markets, particularly in China and India, benefited the resource rich countries of the former Soviet Union (FSU) as commodity prices rose well into the summer of 2008, while the CEB countries enjoyed strong demand from the euro zone for their exports. Because of the global economic crisis, forecasts for 2009 are considerably lower than in previous years.[9]

[9] According to the European Commission (2009), the EU economy contracted by 0.2 percent in the third quarter of 2008. The same forecast predicted that the EU economy will contract by approximately 2 percent in 2009. These forecasts appear to be optimistic, however, given their assumption that financial markets will recover in 2009. If this does not happen – which is a distinct possibility, particularly if another shock, such as a euro zone sovereign default or a fresh banking or financial crisis of the sort discussed in this paper, occurs – then it is reasonable to expect that the contraction in economic activity across both the EU and the wider world will be even more severe. Indeed, by the end of March 2009, the forecasts for economic growth have deteriorated quite significantly, with, for example, the Organization for Economic Co-operation and Development (2009) forecasting an average 4.1 percent decline in economic output in 2009 for the twelve OECD members of the EU.

Table 1 Growth in GDP, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009f	2010f
Armenia	6.0	9.6	13.2	14.0	10.5	14.0	13.2	13.8	6.8	-5.0	0.0
Azerbaijan	6.2	6.5	8.1	10.5	10.4	24.3	30.5	23.4	11.6	2.5	12.3
Belarus	5.9	4.7	5.0	7.0	11.4	9.4	10.0	8.6	10.0	-4.3	1.6
Bulgaria	5.4	4.1	4.5	5.0	6.6	6.2	6.3	6.2	6.0	-2.0	-1.0
Croatia	2.9	3.8	5.4	5.0	4.2	4.2	4.7	5.5	2.4	-3.5	0.3
Czech Rep	3.6	2.5	1.9	3.6	4.5	6.3	6.8	6.0	3.2	-3.5	0.1
Estonia	9.6	7.7	7.8	7.1	7.5	9.2	10.4	6.3	-3.6	-10.0	-1.0
Georgia	1.9	4.7	5.5	11.1	5.9	9.6	9.4	12.4	2.0	1.0	3.0
Hungary	5.2	4.1	4.1	4.2	4.8	4.0	4.0	1.1	0.6	-3.3	-0.4
Kazakhstan	9.8	13.5	9.8	9.3	9.6	9.7	10.7	8.9	3.2	-2.0	1.5
Kyrgyzstan	5.4	5.3	0.0	7.0	7.0	-0.2	3.1	8.5	7.6	0.9	2.9
Latvia	6.9	8.0	6.5	7.2	8.7	10.6	12.2	10.0	-4.6	-12.0	-2.0
Lithuania	4.1	6.7	6.9	10.2	7.4	7.8	7.8	8.9	3.0	-10.0	-3.0
Moldova	2.1	6.1	7.8	6.6	7.4	7.5	4.8	4.0	7.2	-3.4	0.0
Poland	4.3	1.2	1.4	3.9	5.3	3.6	6.2	6.7	4.8	-0.7	1.3
Romania	2.1	5.6	5.0	5.3	8.5	4.1	7.9	6.2	7.1	-4.1	0.0
Russia	10.0	5.1	4.7	7.3	7.2	6.4	7.7	8.1	5.6	-6.0	0.5
Slovakia	1.4	3.4	4.8	4.7	5.2	6.5	8.5	10.4	6.4	-2.1	1.9
Slovenia	4.1	2.8	4.0	2.8	4.3	4.3	5.9	6.8	3.5	-2.7	1.4
Ukraine	5.9	9.2	5.2	9.6	12.1	2.7	7.3	7.9	2.1	-8.0	1.0

Note: F = forecast.

Source: IMF: World Economic Outlook (WEO). Crisis and Recovery (April 2009), Table A1. Summary of World Output.

Unfortunately, while growth rates have been high across the region, previous currency and financial crises have tended to occur in fast growing economies that are suddenly hit by domestic or external shocks, particularly where large stocks of debt were accumulated as sectors or whole economies borrowed to fund rapidly growing investment and consumption. In Emerging Europe, the external shock represented by the protracted global financial crisis threatens to tighten liquidity in a region that is composed of a number of countries that have persistently run excessive current account deficits, and that have accumulated considerable stocks of external debt. Indeed, Emerging Europe is the only emerging market region to collectively run a current account deficit, perhaps due to its failure to draw the same lessons apparently learnt by other emerging markets after the financial crises of the 1990s and 2000s, i.e. not to tolerate current account deficits for fear of inviting capital flight by foreign investors in times of economic stress (Wolf, 2009).

Table 2 Current account balance (percent of GDP); government financial balance (percent of GDP); general government interest payments (percent of general government revenue), 2000 & 2008

	Current Account Balance (percent of GDP)		Government Financial Balance (percent of GDP)		Government Interest Payments (percent of Government Revenue)	
	2000	**2008[f]**	**2000**	**2008[f]**	**2000**	**2008[e]**
Armenia	-14.5	-3.5	-6.4	-2.6	7.1	1.3
Azerbaijan	-3.6	39.5	-0.6	29.1	4.7	0.9
Belarus	-3.2	-7.0	-0.1	0.4	-	-
Bulgaria	-5.6	-21.2	-0.5	3.7	10.5	2.2
Croatia	-2.9	-9.9	-7.5	-2.0	4.3	4.9
Czech Rep	-4.7	-2.9	-3.7	-2.0	2.1	2.9
Estonia	-5.4	-11.2	-0.6	-1.8	0.6	0.5
Georgia	-7.9	-20.6	-4	-6.5	-	-
Hungary	-8.4	-5.7	-2.9	-3.4	12.2	9.0
Kazakhstan	2.9	3.8	-1	6.7	6.3	1.7
Kyrgyzstan	-4.3	-4.3	-10.4	-1.5	-	-
Latvia	-4.7	-12.1	-2.8	-1.3	2.8	1.4
Lithuania	-5.9	-13.9	-3.1	-1	4.8	2.1
Moldova	-7.6	-15.3	-1.8	-1.4	20.6	3.0
Poland	-5.8	-5.2	-3.0	-2.5	7.6	6.3
Romania	-3.7	-13.3	-4.6	-2.8	15.5	2.6
Russia	18.0	6.4	3.2	5.2	10.1	1.3
Slovakia	-3.3	-5.0	-12.2	-2.5	5.9	4.4
Slovenia	-2.7	-3.6	-3.8	-0.5	5.6	2.8
Ukraine	4.7	-6.5	-1.1	-1.2	13.3	1.0

Note: Government interest payments data are not available for Georgia and Kyrgyzstan.

Source: EBRD (2008), p.16 and p.18; Moody's (2008) for interest payments, pp.90-94

Table 2 describes the current account and fiscal balances of the region. The considerable extent of the region's dependence on external financing is clear: the estimated figures for 2008 indicate that 14 of the 20 countries from within the sample ran large (i.e. greater than 4 percent of GDP) current account deficits. Moreover, only 3 countries – Azerbaijan, Kazakhstan and Russia – are estimated to have run current account surpluses in 2008, primarily because the export profiles of these three countries are dominated by oil and gas (Connolly, 2008). The presence of current account deficits across the region is not a new development, with the figures for 2000 showing a similar trend.

While the tendency for current account balances is towards deficit, the opposite is true of government fiscal balances. In 2000, only one country ran a positive government financial balance (Russia). However, by 2008, 5 countries were running surpluses, while the deficits of a further 13 countries were less than 3 percent of GDP. Clearly reckless government borrowing was not the source of the persistent and expanding current account deficits across the region. Indeed, the interest payment burdens on governments were, with the exception of Hungary, generally sustainable. Even

in the case of Hungary, the situation has improved since 2000 after the austerity package formulated under the then Prime Minister Ferenc Gyurcsany in 2006. While the general fiscal health of the region is a positive tendency, it is worth noting that in the event of defaults from within the private sector, the contingent liabilities of the state are likely to rise if governments are likely to be required to step in and provide emergency financing to distressed borrowers. Recent research suggests that the real value of government debt expands on average by 86 percent in countries that experience a financial crisis (Reinhart and Rogoff, 2008). Indeed, even if a full-blown financial crisis is avoided, the effects of counter-cyclical fiscal expansion in the face of slowing growth should also result in deteriorating fiscal balances.

If the persistent and widening current account deficits across the region were not caused by excessive levels of government spending then perhaps the most obvious explanation is that the region enjoyed a rapid increase in private borrowing. Rapid growth in domestic credit generated by the banking system can be a characteristic of the early stages of the liberalization of the financial system and is not necessarily a negative development. However, during these stages, banks may expand lending rapidly without giving sufficient attention to credit risk, while the country's banking inspection and supervision institutions may be unwilling or unable to keep pace with these developments. Consequently, rapid and protracted credit growth can sometimes act as a leading indicator of the presence of significant levels of nonperforming loans in the banking system, which could lead to a future decline in the confidence of domestic and external depositors.[10] The total stock of domestic credit as a proportion of GDP is a useful indicator of the depth of financial intermediation reached in the evolution of the financial system and also of the degree to which the provision of credit is dominated by banks. A rapid increase may, like the previous indicator, signal a buildup of loan loss potential while, on the other hand, efforts to develop the institutional foundations for nonbank sources of credit (pension funds, insurance companies, asset management, equity markets, etc.) will be likely to slow its growth.

Table 3 shows that the annual growth in domestic credit was, by 2007, running at over 50 percent in seven countries, with Ukraine and Azerbaijan exhibiting the most rapid growth (77 and 98.5 percent respectively). Moreover, the stock of domestic credit as a proportion of GDP increased quite dramatically in several economies. By 2007, total domestic credit exceeded 50 percent of GDP in Bulgaria, Czech Republic, Lithuania and Slovakia, while levels in Croatia, Estonia, Hungary and Latvia surpassed the more worrying threshold of 70 percent. Indeed, recent research suggests that weak banks expanded lending faster than stronger banks, at least within CEB economies (Tamirisa and Igan, 2008). However, by 2008 the effects of the contraction in credit can be seen in the reversal of domestic credit growth in the majority of economies across the region. In some countries this credit-fuelled, consumption-led economic growth model also resulted in housing bubbles. This is indicated by levels of household and mortgage lending that are closely correlated with overall credit levels (Table 4). Those countries that have engaged in perhaps excessive borrowing – whether in the corporate or household sectors – are particularly vulnerable to the rapid contraction in external financing is occurring. This is likely to exert considerable downward pressure on domestic consumption levels.

[10] Caution should be applied in using this measure in cross-country comparisons because changes will be affected by differences in inflation rates and because rapid growth may reflect a normal trend deepening of financial intermediation.

Table 3 Domestic credit growth and domestic credit as a proportion of GDP, 2000-2008

	Domestic Credit Growth (y-o-y %)			Domestic Credit (percent of GDP)		
	2000	**2007**	**2008[f]**	**2000**	**2007**	**2008[a]**
Armenia	-7.8	78.4	86.6	11.5	12.1	11.2
Azerbaijan	14.6	98.5	77.4	9.6	18.2	10.7
Belarus	72.9	21.3	38.9	19.2	27.2	21.6
Bulgaria	26.0	58.8	46.8	17.8	59.2	53.4
Croatia	21.6	12.9	8.2	47.2	82.9	76.6
Czech Rep	-0.6	20.1	12.4	49.4	52.9	51.1
Estonia	25.2	33.6	17.8	34.9	95.1	90.4
Georgia	2.9	62.9	-	21.6	31.6	29.6
Hungary	3.4	16.8	11.4	53.5	74.4	72.9
Kazakhstan	18.0	58.8	-4.9	12.3	41.0	30.1
Kyrgyzstan	-7.1	49.9	-	12.2	14.2	-
Latvia	34.4	32.0	18.5	23.3	94.8	86.0
Lithuania	9.3	45.9	31.6	15.2	60.2	55.7
Moldova	29.6	39.0	24.4	25.2	40.2	36.3
Poland	12.4	22.2	23.4	34.4	46.6	46.0
Romania	34.9	74.5	76.9	14.0	35.7	31.9
Russia	14.5	43.6	30.4	24.7	25.2	19.5
Slovakia	14.8	15.8	20.8	56.6	51.6	48.2
Slovenia	18.9	20.6	-	8.9	79.0	-
Ukraine	21.9	77.0	60.2	37.9	48.7	44.4

Source: IMF (2008); Moody's (2008); author's calculations; (a) Data are for first quarter of 2008

In many CEB countries, foreign banks have acted as the main conduits in financing external deficits and the rapid growth of lending. However, in contrast to the situation in some other countries, such as Iceland, banking sectors have not been as dependent on now frozen interbank markets to finance their domestic lending: they have instead borrowed from their foreign parents, with most banking sectors in the region being dominated by western European-owned banks (Table 4). While this has protected countries from the prospect of a sudden cut-off in access to credit, it has left them more dependent on the continued financial health of their parent banks. As concerns about the financial strength of western European banks have spread, this reliance on parent institutions could leave Emerging Europe's banks exposed. In particular, they would have to scale back their domestic lending dramatically if their parent institutions' financial strength were to weaken suddenly. If this occurs, then banking systems that are reliant on foreign funding would have to turn to the interbank market where they would be likely to encounter considerable difficulty in raising finance.

Table 4 Domestic credit to households and mortgage lending, percent of GDP; asset share of foreign banks, percent of total banking assets, 2002 and 2007

	Domestic Credit to Households (percent of GDP)		Mortgage Lending (percent of Domestic Credit to Households)		Asset Share of Foreign-owned Banks (percent of Banking Sector)	
	2002	**2007[e]**	**2002**	**2007[e]**	**2002**	**2007[e]**
Armenia	1.5	6.4	-	26.6	54.2	49.0
Azerbaijan	1.4	5.8	-	12.1	4.1	7.5
Belarus	1.8	8.3	88.9	55.4	8.1	19.7
Bulgaria	3.7	23.0	-	45.2	75.2	82.3
Croatia	23.8	41.1	28.6	39.9	90.2	90.4
Czech Rep	7.3	20.0	41.1	62.5	85.8	84.8
Estonia	10.6	43.3	51.9	87.1	97.5	98.7
Georgia	3.0	8.8	16.7	29.5	12.2	90.6
Hungary	7.4	21.7	55.4	75.6	85.0	64.2
Kazakhstan	1.6	20.3	12.5	20.2	34.3	38.5
Kyrgyzstan	0.3	3.3	-	72.7	50.4	58.7
Latvia	7.3	42.7	56.2	78.9	42.8	63.8
Lithuania	2.4	24.4	79.2	70.5	96.1	91.7
Moldova	0.5	5.5	180.0	72.7	36.7	24.8
Poland	9.4	20.0	25.5	49.5	70.7	75.5
Romania	-	17.7	-	7.9	52.9	87.3
Russia	1.0	9.0	-	21.1	8.1	17.2
Slovakia	5.5	16.3	18.2	27.6	84.1	99.0
Slovenia	10.5	19.2	19.0	32.3	16.9	28.8
Ukraine	1.6	22.5	88.9	28.9	12.3	39.4

Note: Domestic credit to households is the ratio of outstanding bank credit to households, at end-of-year, to GDP; mortgage lending is the ratio of mortgage lending to households, at end-of-year, to GDP; asset share of foreign-owned banks is the share of total bank sector assets in banks with foreign ownership exceeding 50 percent, end-of-year.

Source: EBRD (2008); author's calculations

By contrast, Russian rather than European banks have tended to be more prominent as outside owners in the former Soviet Union (FSU). Unfortunately, Russian banks, along with many domestic banks across the FSU, had previously borrowed heavily on external markets. The sharp change in investor sentiment that began in August 2007, but which accelerated in September 2008, has meant that access to these capital markets has largely seized up, leading banks to turn to either the state or to international organizations. In Russia and Kazakhstan this has led to the provision of state assistance using their sizable foreign reserves and oil stabilization funds. In the absence of either, Ukraine, on the other hand, has had to seek international assistance in the form of the IMF.

Stock imbalances

The cumulative effect of the flow imbalances described above has caused the emergence of a number of stock imbalances across the region that, in the context of a contraction in activity in international capital markets and growing risk aversion among investors, threaten the financial stability of, at best, a number of Emerging European economies and, at worst, the entire region. This section considers the stocks of debt and assets in three areas: maturity structure; capital structure; and currency structure. Where data availability permit, the balance sheets of the government sector (including the central bank), the private financial sector (mainly banks), and the non-financial sector (corporations and households) are considered. The consolidated balance sheets of these sectors and the presence or otherwise of maturity and liquidity risks, capital structure imbalances or currency mismatches should present an accurate picture of the financial health of the region and pinpoint any areas with the potential to present future difficulties.

Maturity mismatch and liquidity/roll-over risks

Several measures are available to assess a county's susceptibility to a maturity mismatch crisis. The external vulnerability indicator (Table 5) is one indicator of whether a country's immediately available foreign exchange resources are sufficient to allow it to make all external debt payments, even if there is a complete refusal of creditors to roll over debt due within a given year. Also included in the numerator are deposits in domestic banks by nonresidents with a maturity greater than one year (those below one year are already included as part of short-term debt). This is included because, in a general run on the currency, depositors may attempt to withdraw longer-term deposits even if they have to pay a penalty to do so.

The external vulnerability indicator measures a country's capacity to withstand a (temporary) loss of investor confidence resulting from heightened risk perception or a general liquidity squeeze.[11] A high ratio can be a signal of vulnerability, resulting either from excessive short-term debt or a temporal concentration of repayments on long-term debt, possibly exacerbated by insufficient reserves. However, the detailed composition of short-term debt must also be examined, since some countries that are major commodity exporters may have a high volume of trade-related short-term debt, which is not vulnerable to withdrawal to the same degree as interbank working-capital credit lines. In addition to an accumulation of stocks of debt measured in the numerator, changes in the denominator might also lead to increased vulnerability. This might occur if an economy is subjected to a sudden decline in its terms of trade as the increasing price of imports drains exchange reserves. Alternatively, the increase in the sale of foreign exchange reserves that accompanies defensive action to protect a pegged exchange rate might also increase the ratio of debt to foreign exchange reserves.

[11] External Vulnerability Indicator = Short-Term External Debt + Currently Maturing Long-Term External Debt + Total Nonresident Deposits Over One Year/Official Foreign Exchange Reserves

Table 5 External vulnerability indicator, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008[e]
Armenia	133.2	128.0	96.7	100.2	73.3	50.2	33.6	30.3	40.6
Azerbaijan	26.3	22.0	31.8	33.4	23.5	37.5	28.6	24.9	24.2
Belarus	401.3	521.8	394.4	443.8	493.6	306.5	428.4	201.5	256.3
Bulgaria	62.5	59.5	58.7	48.9	70.8	139.1	118.2	135.5	114.2
Croatia	126.4	107.6	77.1	76.5	111.5	130.0	150.2	124.2	135.6
Czech Rep	97.3	85.5	58.1	62.1	75.3	67.4	63.4	82.3	87.2
Estonia	141.4	160.3	173.7	199.8	190.7	304.2	382.8	476.0	388.7
Hungary	160.0	167.6	180.6	240.4	239.7	233.5	239.9	286.0	232.3
Kazakhstan	287.1	423.7	359.1	314	157.3	286.0	118.4	201.8	117.0
Latvia	367.5	293.3	363.2	422.7	425.9	454.0	306.4	357.6	328.9
Lithuania	182.0	172.2	162.1	144.9	162.7	190.9	180.8	190.2	219.2
Moldova	236.7	234.0	224.0	234.2	149.1	151.7	134.6	97.6	86.5
Poland	71.9	98.2	97.5	122.9	156.4	141.0	125.7	140.6	114.7
Romania	92.2	79.0	70.3	64.8	58.2	59.6	79.4	95.0	121.1
Russia	147.2	111.1	71.3	63.3	30.8	57.6	45.1	34.7	41.1
Slovakia	108.6	115.4	64.0	75.3	71.7	97.3	100.2	105.8	136.6
Slovenia[a]	106.2	84.1	52.7	48.1	97.5	136.6	168.6	89.5	-
Ukraine	593.2	278.4	207	149.5	128.4	63.8	76.2	76.4	103.2

Note: Data are not available for Georgia and Kyrgyzstan.

Source: Moody's Statistical Handbook (2008), pp. 166-273

The data in Table 5 provide an approximate measure of the magnitude of debt relative to reserves and also of the direction in which the ratio is moving. Between 2000 and 2007, Armenia, Azerbaijan, Czech Republic, Russia and Ukraine all experienced a steady improvement in their scores that left them with a manageable ratio of maturing debt to foreign exchange reserves. However, the drop in the price of commodities and steel since the summer of 2008 has resulted in a rapid deterioration of the terms of trade for Armenia, Azerbaijan, Kazakhstan, Russia and Ukraine that has reversed the accumulation of reserves in these countries, resulting in the deterioration of the external vulnerability indicator for all of these countries.

Of greater concern are those countries that score higher than 100 on the external vulnerability indicator. Of these, Bulgaria, Croatia, Kazakhstan, Lithuania, Poland, Romania, Slovakia and Ukraine have worrying ratios of maturing external debt to exchange reserves that could have damaging consequences if short-term debt is not rolled-over by foreign creditors. In previous financial crises, maturity mismatches of this magnitude were present in Thailand, Indonesia (both in 1996), Brazil (1998), and Argentina (2000). Even more worrying are the severe maturity mismatches in Belarus, Estonia, Hungary, Latvia and Lithuania. Scores of over 200 leave all five countries extremely vulnerable to any deterioration in liquidity conditions of the sort that is currently present in international capital markets. Even Russia - which displays a relatively benign score here - is becoming increasingly vulnerable to maturity mismatches due to the rapid depletion of over a third of its foreign currency reserves since the summer of 2008.

Table 6 Liquidity ratio, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008[f]
Armenia	19.8	15.9	4.7	4.0	5.8	7.6	8.7	14.4	17.3
Azerbaijan	34.1	11.7	10.9	9.7	9.1	11.2	29.7	44.7	46.8
Belarus	20.1	36.1	39.3	30.3	41.9	49.7	71.6	37.0	28.1
Bulgaria	15.7	14.1	28.7	49.7	53.6	71.4	85.3	105.6	119.6
Croatia	40.5	31.9	54.0	62.1	63.0	119.2	104.3	121.7	140.8
Czech Rep	53.9	42.0	48.2	53.7	50.2	63.8	65.1	81.0	83.6
Estonia	118.8	166.7	178.1	190.1	262.6	292.2	336.9	166.4	154.8
Hungary	159.0	132.4	135.2	174.1	172.5	169.5	193.1	235.7	218.8
Kazakhstan	65.3	84.0	156.9	206.8	141.9	101.7	186.4	105.0	74.5
Latvia	45.4	58.9	67.2	103.1	76.7	205.2	406.8	223.5	232.5
Lithuania	92.9	113.0	105.2	239.6	148.8	218.6	208.6	166.5	150.9
Moldova	25.9	20.0	22.0	9.5	2.3	3.0	33.5	13.6	23.6
Poland	45.3	52.0	70.1	63.4	35.5	46.7	43.0	56.7	51.9
Romania	51.2	67.6	93.5	110.9	157.1	206.8	605.9	578.1	754.5
Russia	45.4	51.1	36.8	38.8	32.1	29.7	23.4	40.2	43.0
Slovakia	106.2	93.0	144.5	146.2	114.6	249.9	177.3	269.2	246.1
Slovenia	48.3	46.4	39.5	36.5	28.9	20.8	19.1	17.9	-
Ukraine	45.8	56.5	23.4	28.0	24.4	33.9	48.5	78.1	72.7

Note: Data are not available for Georgia and Kyrgyzstan.

Source: Moody's Statistical Handbook (2008), pp.169-172

The liquidity ratio (Table 6) is another measure of maturity mismatch risk that should be used in conjunction with the external vulnerability indicator. It makes use of information on the assets and liabilities of Bank of International Settlements-reporting (BIS) banks vis-à-vis each country. The numerator measures all short-term liabilities of domestic institutions that are claims of banks located in BIS-reporting countries. Consequently, it omits liabilities held by nonbank creditors in BIS countries and those held in non-BIS countries. The denominator encompasses foreign assets of domestic institutions placed in BIS banks (including the portion of the central bank's reserves placed as deposits in BIS banks) but leaves out the reserves held as securities and any claims on non-BIS banks. This indicator displayed very high values in 1996-97 for some of the countries that experienced a financial crisis, including Thailand, Korea, Russia, and Indonesia. The data for Emerging Europe in 2008 reveal several countries to display worryingly high liquidity ratios. These include: Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Romania, and Slovakia. The fact that all of these countries also register high scores on the external vulnerability indicator suggests that – notwithstanding data limitations – the risk of maturity mismatches across Emerging Europe is generally quite high.

Capital structure mismatch

Capital structure mismatches are evident when external deficits are financed with debt rather than FDI or equity inflows. As Table 7 illustrates, although some countries appear to be relying on

excessive levels of debt, in most countries FDI flows did tend to cover the bulk of current-account deficits, at least up until 2005. Since 2000, exceptions include: Belarus, Estonia, Georgia, Hungary, Latvia, Lithuania and Romania. However, FDI inflows slowed considerably in nearly all economies in 2007-8, indicating that countries are increasingly reliant on debt to finance external deficits, even where the median FDI inflows are high (i.e. approximating unity). Many of the countries that display evidence of capital structure mismatches also display strong credit growth and small fiscal deficits or even surpluses. This suggests that their external deficits have taken the form of private sector debt that has been used to expand domestic credit. In such cases this has tended to result in property bubbles and high levels of consumption growth. The sectoral composition of FDI also changed in recent years, shifting away from traditional manufacturing sectors. For example, there was a sharp increase in FDI in construction sectors, particularly in those countries that were in the midst of housing bubbles (Fitch, 2008, p.9).

FDI flows are, however, projected to slow even further in the coming year (European Commission, 2009), leaving an increased number of countries dependent on access to foreign finance to cover external financing requirements. If the current uncertainty in international financial markets persists, there is a risk that these countries could face more significant problems in obtaining the finance they need to cover current-account deficits, as well as to rollover maturing debt. None of the parent institutions of the banks operating in the region has experienced serious problems so far, but evidence of weaknesses has emerged. For example, earlier in the crisis Unicredit (Italy) - the owner of several subsidiaries in the region - announced that it was seeking a large capital increase from its private owners in order to strengthen its financial position (Financial Times, October 6, 2008). Similarly, Swedbank – with a particularly large exposure to the Baltic region – also moved to increase its capital base (Financial Times, October 28, 2008). More recently, Moody's rating agency warned that a number of western European banks, including the Austrian banks, Raiffeisen and Erste Bank, and Swedbank in Sweden, were in danger of being downgraded amid concerns that they were particularly vulnerable to the deteriorating economic situation across the region (Financial Times, April 9, 2009).

Provided that the foreign parents of banks within the region do not run into serious financial problems themselves, there is likely to be a controlled slowdown in bank lending to countries in the region over the next year. However, there is also a significant risk that some foreign banks may abruptly scale bank their lending in order to preserve their capital. If this were to occur, access to credit would become much more difficult, with damaging effects on economic growth, currencies and banking systems. If the financial situation were to deteriorate suddenly, and the state were required to step in to support the domestic banking system, authorities would be likely to seek external multilateral financial assistance.[12] As noted previously, this applies only in cases where foreign banks are active. In other cases, high credit growth would probably have been financed through external capital markets. Overall, although FDI inflows have generally played a positive role in funding external deficits over recent years, they are likely to diminish at precisely the same point as access to external capital is curtailed. This could cause capital structure mismatches to result in a liquidity (roll-over) crisis, a currency crisis, or a full blown financial crisis.

[12] Even Hungary and Ukraine remain vulnerable as a sharp curtailment of access to international private financing to meet their remaining debt obligations (not covered by bail-out packages) would hit them hard.

Table 7 Ratio of annual FDI flows to absolute current account balance, 2000- 2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008[e]	Median (2000-2008)
Armenia	0.37	0.35	0.75	0.63	12.06	5.14	2.96	0.77	0.41	0.75
Azerbaijan	0.80	5.75	1.36	1.16	0.91	2.74	0.35	0.58	0.10	0.91
Belarus	0.35	0.23	1.39	0.39	0.14	0.70	0.24	0.58	0.31	0.35
Bulgaria	1.42	1.05	2.31	1.88	1.77	1.23	1.48	0.96	0.63	1.42
Croatia	2.02	1.63	0.30	1.05	0.41	0.63	0.94	0.87	0.74	0.87
Czech Rep	1.84	1.67	1.94	0.31	0.69	7.00	1.28	2.57	1.13	1.67
Estonia	1.06	1.06	0.20	0.69	0.50	1.63	0.21	0.25	0.29	0.50
Georgia	0.64	0.39	0.53	0.98	0.92	0.69	0.90	0.77	0.51	0.69
Hungary	0.54	1.12	0.59	0.07	0.40	0.73	0.46	0.21	0.11	0.46
Kazakhstan	2.34	2.40	2.11	8.11	16.23	2.01	3.46	0.71	0.78	2.34
Kyrgyzstan	0.12	0.05	0.07	1.38	1.21	0.62	2.09	37.35	0.80	0.80
Latvia	1.08	0.18	0.40	0.28	0.30	0.29	0.33	0.34	0.39	0.33
Lithuania	0.56	0.76	0.97	0.11	0.30	0.38	0.48	0.23	0.18	0.38
Moldova	1.29	3.77	6.60	0.55	2.47	0.65	0.55	0.59	0.28	0.65
Poland	0.93	1.08	0.78	0.93	1.21	1.89	1.09	1.01	0.56	1.01
Romania	0.76	0.52	0.70	0.62	1.00	0.75	0.90	0.42	0.37	0.70
Russia	0.01	0.01	0.00	0.05	0.03	0.00	0.11	0.13	0.04	0.03
Slovakia	2.83	0.87	2.11	0.97	0.93	0.56	0.96	0.65	0.39	0.93
Slovenia	0.11	5.94	6.11	0.77	0.31	0.10	0.24	0.01	0.22	0.24
Ukraine	0.40	0.55	0.22	0.49	0.25	2.98	3.55	1.75	0.56	0.55

Source: EBRD (2008); author's calculations

Currency mismatch risk

Currency mismatches and balance sheet risks from real exchange rate depreciation are also a significant worry in several cases. Although the quality of regulation and supervision of the financial sector improved, particularly in the CEB economies (EBRD, 2006), a high level of foreign currency borrowing by banks and the corporate sector has been a feature of the credit-led economic expansion of recent years. Moreover, a currency crisis can occur even in cases where borrowing in foreign currency may have been at moderate and manageable levels as illustrated by the experience of Malaysia in 1996. The capital structure of current account deficits is important in this respect; FDI is less liquid than debt and also tends to be denominated in local currency. However, cases in which there exists a high dependence on debt that is denominated in foreign currency pose the greatest risks. This tends to be prevalent in emerging markets where foreign investors are reluctant to lend in local currencies. An overall balance might also disguise sectoral imbalances within the economy. High levels of foreign currency debt in only one sector can affect the wider economy; for example, currency mismatches in the household sector (for example, in mortgages denominated in foreign currencies) that lead to defaults can quickly cause a banking crisis which, in turn, might result in a heavy cost to the government in the event of a bail-out. Moreover, high levels of foreign currency-denominated debt can also impair domestic monetary policy as policy makers might be

deterred from loosening the money supply for fear of inviting currency depreciation and a corresponding increase in the real external debt burden.

Table 8 Foreign currency government debt (General Government Foreign Currency and Foreign Currency-Indexed Debt/General Government Debt)

	2000	2001	2002	2003	2004	2005	2006	2007	2008[f]
Armenia	94.0	93.1	93.5	93.5	92.5	90.6	86.1	85.4	86.3
Azerbaijan	90.1	86.6	90.7	86.3	88.2	86.9	86.6	84.4	80.9
Belarus	42.8	31.8	32.9	25.0	27.1	26.2	21.8	44.1	45.6
Bulgaria	95.1	94.3	91.1	90.4	87.0	81.6	79.3	74.2	72.7
Croatia	91.5	89.6	87.7	87.0	86.6	79.5	68.8	65.4	63.0
Czech Rep	9.1	3.0	2.5	3.5	9.2	12.2	11.9	11.2	11.0
Estonia	65.8	57.2	49.4	51.4	52.9	59.7	61.9	41.4	49.7
Hungary	34.7	30.1	24.6	24.4	25.7	28.2	28.2	28.7	37.0
Kazakhstan	90.3	89.0	80.8	72.2	58.5	40.0	33.4	26.0	18.3
Latvia	61.0	64.1	61.4	49.6	56.6	56.0	58.1	61.6	64.2
Lithuania	67.9	64.7	60.0	61.2	61.7	60.3	68.4	67.2	70.5
Moldova	91.0	87.7	89.6	86.5	79.9	78.4	75.0	74.7	72.0
Poland	51.0	43.0	41.1	40.8	39.9	40.9	39.0	36.7	36.0
Romania	53.2	51.6	61.1	67.4	67.6	58.9	63.1	47.9	48.3
Russia	86.1	85.9	82.5	81.3	78.1	70.6	53.4	43.8	46.5
Slovakia	40.4	36.2	31.4	27.6	27.3	20.9	40.7	39.2	37.1
Ukraine	72.7	67.5	67.2	70.6	75.3	75.4	79.6	85.8	91.7

Note: Data are not available for Georgia, Kyrgyzstan and Slovenia.

Source: Moody's Statistical Handbook (2008), pp. 92-98

Table 8 contains data describing the exposure of governments across Emerging Europe to currency mismatch risk. This is particularly important for those countries with a high level of government debt (i.e. over 40 percent of GDP; these are highlighted in bold) as high levels of foreign currency-denominated debt could, in the event of a significant depreciation, raise the level of effective government debt through balance sheet effects. Moreover, while the extent of foreign currency borrowing might be considered relatively unimportant for countries with extremely low levels of government debt, a sudden real depreciation might have a dramatic negative effect on even moderate public debt levels if a high proportion of government debt is denominated in foreign currency. Fortunately, government debt levels are not generally very high (see Table 11) with only Hungary, Kyrgyzstan and Poland exceeding 40 percent of GDP. In these cases, foreign currency was, in 2007, at reasonably low levels. Indeed, even where the proportion of foreign currency-denominated debt is high, such as Armenia, Azerbaijan, Bulgaria, Croatia and Moldova, the overall levels of government debt is low to moderate, with perhaps the exception of perhaps Croatia and Moldova. Thus, a currency mismatch emanating from the public sector does not appear to be a particularly acute or widespread risk for the region.

Table 9 Ratio of foreign currency reserves to external debt, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Armenia	0.33	0.34	0.38	0.27	0.29	0.35	0.52	0.71	0.42
Azerbaijan	0.64	0.63	0.28	0.29	0.30	0.27	0.51	0.73	0.67
Belarus	0.28	0.15	0.19	0.14	0.15	0.22	0.16	0.31	0.24
Bulgaria	0.27	0.31	0.38	0.46	0.50	0.42	0.44	0.52	0.44
Croatia	0.30	0.38	0.41	0.36	0.31	0.27	0.31	0.30	0.28
Czech Rep	0.60	0.63	0.86	0.75	0.62	0.63	0.53	0.46	0.42
Estonia	0.31	0.25	0.21	0.19	0.18	0.18	0.17	0.13	0.17
Georgia[a]	0.07	0.09	0.11	0.10	0.19	0.22	0.47	0.65	-
Hungary	0.36	0.31	0.27	0.23	0.22	0.22	0.20	0.18	0.19
Kazakhstan	0.13	0.13	0.14	0.18	0.26	0.14	0.24	0.17	0.20
Kyrgyzstan[a]	0.13	0.16	0.16	0.18	0.24	0.27	0.33	0.49	-
Latvia	0.18	0.21	0.18	0.15	0.14	0.15	0.18	0.14	0.16
Lithuania	0.27	0.30	0.37	0.40	0.34	0.30	0.30	0.25	0.21
Moldova	0.13	0.14	0.15	0.16	0.25	0.29	0.31	0.40	0.38
Poland	0.38	0.35	0.33	0.30	0.27	0.30	0.27	0.27	0.27
Romania	0.22	0.30	0.36	0.36	0.49	0.55	0.67	0.81	0.35
Russia	0.15	0.22	0.26	0.37	0.53	0.68	0.95	1.00	0.86
Slovakia	0.37	0.37	0.67	0.64	0.61	0.55	0.39	0.62	0.34
Slovenia[a]	0.26	0.37	0.56	0.53	0.45	0.31	0.23	0.02	-
Ukraine	0.09	0.22	0.33	0.28	0.31	0.48	0.39	0.37	0.24

Source: IMF (2008); Moody's (2008); EBRD (2008); author's calculations.

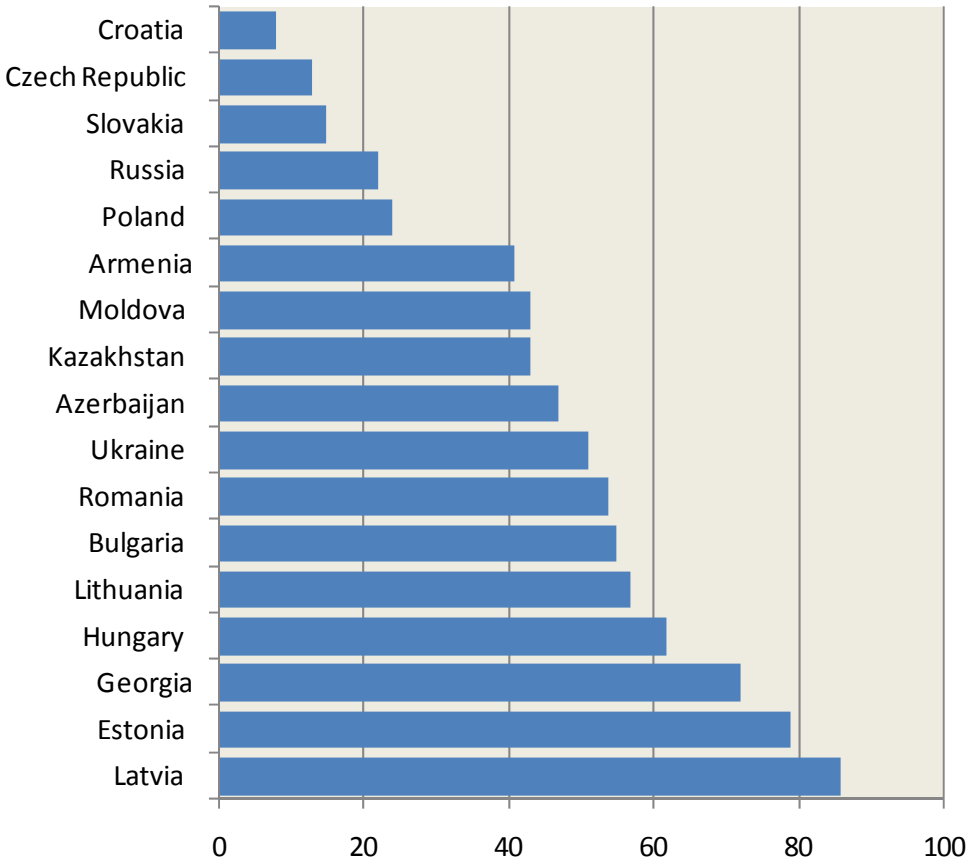
The data for private sector financial and non-financial net foreign currency-denominated debt are not as broadly available as they are for the government sector. Although most central banks provide data on the maturity and capital structure of external debt, only a few specify which currencies debts are denominated in, and even fewer provide data on foreign currency-denominated assets that are needed to calculate net foreign currency liabilities. In the absence of such data, a more unreliable measure is to simply assume that much of the region's external debt is denominated in foreign currencies. This is not necessarily a wild assumption; most international lenders to emerging market banks and corporations prefer not to take on exchange rate risk, therefore indicating that the majority of external debt is not denominated in domestic currency (Roubini and Setser, 2004; Wolf, 2009). Consequently, examining the overall gross external debt levels on the assumption that the majority of it is denominated in foreign currencies as a ratio of foreign currency reserves should provide an approximate indication of the any risk of overall currency mismatches (Table 9). Of course, identifying which specific sector might hold the currency mismatch risk is more difficult; however, if high levels of external debt are combined with high levels of household and mortgage debt there is an increased likelihood that the financial and household sector are taking on much of the risk. Where external debt is not mirrored by household or mortgage debt it might be more likely

that the corporate sector is holding the risk.[13] The data in Table 9 suggest that the worst positioned countries (i.e. with ratios of lower than 0.25) include Estonia, Hungary, Kazakhstan, Latvia and Lithuania. Slovenia has the lowest ratio but is insulated from currency mismatch risk because of its membership of the euro zone. Other moderate to strong (ratios of between 0.25 and 0.40) risks include Belarus, Croatia, Poland and Ukraine. Because of its huge reserves, Russia appears to be at the least risk of currency mismatch risk, although the ratio will have declined since the summer of 2008 due to both the depletion of reserves and the depreciation of the ruble. The combined effect has been a significant increase in Russia's real external debt burden.

These conclusions are given extra weight by the data that are available for foreign currency-denominated debt in the non-financial private sector (i.e., the household and corporate sectors; see Figure 1). In some instances corporations have been responsible for the bulk of foreign currency-denominated liabilities. This has tended to be most evident in Kazakhstan, Romania and Russia. In the Baltic countries, Bulgaria and Hungary, on the other hand, the household sector has absorbed a large percentage of foreign currency-denominated debts as foreign banks fuelled a rapid expansion of mortgage lending. In both cases, the lower rate of interest on foreign currency-denominated loans made some sense while there was exchange rate stability. However, the depreciation of some domestic currencies that has occurred in countries with floating or semi-fixed exchange rates has increased the real debt burden of borrowers (e.g., Hungary, Romania, Russia and Ukraine). So far, countries with currency board systems have yet to experience devaluation (i.e., the Baltic countries and Bulgaria). This situation could change, however, particularly if the decline in capital inflows continues to persist into the year. Thus, while currency mismatch appears quite low when looking at public sector balance sheets, the situation in some corporate and household sectors is far more worrying. If significant domestic currency depreciation results in an increase in defaults in either the corporate or household sector, the risk of a banking crisis that will affect international as well as domestic banks will rise appreciably.

[13] Russia – one of the countries that does provide the currency denomination and sectoral composition of foreign debt – is a case in point. According to the Russian Central Bank (2009), the proportion of foreign currency denominated external debt in September 2008 was 79 percent of total Russian external debt, 77 percent in the financial sector, and 81 percent in the private (or quasi-private) non-financial sector. These are, however, gross figures, and do not include foreign currency assets for these sectors. Credit to households and mortgage lending as a proportion of GDP are not as high as other countries across the region. Instead, external borrowing has taken place primarily to fund high levels of corporate activity (e.g. mergers and acquisitions, domestically and abroad). However, although Russia's foreign exchange reserves were nearly $600bn in August 2008, compared to total foreign currency denominated liabilities of the private (or quasi-private) sector in September 2008 of $427.8bn, the steady decline of the ruble suggests that currency mismatch risk may emerge even in a country with the world's third largest currency reserves. The perceptions of investors – as highlighted in second generation models – appears key here: each 'mini-devaluation' reinforces the perception that the ruble is a 'one-way bet', thus fuelling a further sell-off of rubles. Given the high proportion of foreign-currency denominated external debt, this might then lead to a self-fulfilling currency crisis as balance sheet effects increase the real debt burden of the Russian private sector. If, in turn, the government chooses to bail out domestic banks and corporations and effectively absorb these external debts with its vast but diminishing foreign currency reserves, as it has done so far, the simultaneous depletion of reserves and expansion of public debt could, in the worst case, lead to sovereign default risk.

Figure 1 Foreign currency-denominated debt in non-financial private sector (percent of total non-financial sector debt), 2007



Source: Fitch Ratings (2008)

Country and sovereign solvency risk

The imbalances that are highlighted above leave many countries in the region especially vulnerable to the reduction or reversal of capital flows from abroad. Those with extreme imbalances and multiple financial mismatches risk facing a more general solvency crisis should investor sentiment turn against them in the near future. Table 10 contains data that summarise the overall levels of external debt built up across the region as a proportion of both GDP and of exports in 2007. In terms of external debt to GDP ratios, the situation has with a few exceptions deteriorated since 2008. This is, of course, to be expected given that these are the same countries that have run persistent current account deficits over the same period. The ratio of external debt to GDP is one contributing factor to the future flow of interest payments that the residents of the country will have to pay over time to nonresidents, relative to the capacity of the country to generate income.[14] As with the ratio of the current-account balance to GDP, the ratio of external debt to GDP can be somewhat misleading for large, relatively closed, economies, like India and Brazil. The low ratio of exports to GDP means that these countries can have high debt service requirements even though the

[14] The other is the average interest rate paid on the debt

debt to GDP ratio would not indicate this.[15] An external debt level of anything over 60 percent of GDP is a source of concern as many countries within the region have unfavourable demographic projections that should see more pressure being put on public finances over the coming decades (Magnus, 2009). External debt levels in Croatia, Kyrgyzstan, Lithuania and Moldova all exceed 60 percent, with Poland, Slovakia and Ukraine not far behind. Of more concern are those countries with external levels that approximate or exceed GDP. These include Bulgaria, Croatia, Estonia, Hungary, Kazakhstan, Latvia and Slovenia.

The level of external debt as a proportion of exports is a widely used general measure of the foreign debt burden. All things being equal, a country with a high ratio is more likely to face a disruption of its capacity to service debt when faced with adverse external or internal shocks, such as a change in the terms-of-trade, a seizure of capital markets, a decline in demand in major export markets, a change in country-specific risk perception, or a rise in international interest rates. However, even a low ratio can be compatible with debt payment problems if debt costs are very high, principal repayments are bunched, or debt can't be refinanced because of a confidence shock. All of these are problems are present at the current time. They may result in a loss of investor confidence if large debt to exports ratios exist in conjunction with any of the mismatches considered in this paper. Perhaps unsurprisingly, the Baltic countries, Croatia, Romania, Bulgaria, Hungary and Ukraine – the same countries that display significant signs of balance sheet mismatches – all have high external debt to export ratios. These countries must be considered to be at the greatest risk in the current financial crisis.

[15] Although it should be noted that such countries have a high potential for switching productive resources from the non-tradeables to the tradeables sector, thereby increasing the rate of growth of external receipts. Such a trend to greater openness depends on structural reforms of the trade regime and improvements in the flexibility of labor and product markets.

Table 10 Gross external debt (percent of GDP); gross external debt (percent of current account receipts), 2000 and 2008

	Gross External Debt (percent of GDP)	Gross External Debt (percent of GDP)	Gross External Debt (percent of Current Account Receipts)	Gross External Debt (percent of Current Account Receipts)
	2000	2008[f]	2000	2008[f]
Armenia	45.0	29.6	192.5	86.1
Azerbaijan	19.8	20.6	50.7	24.7
Belarus	12.1	31.4	16.6	47.4
Bulgaria	88.6	102.0	159.5	146.8
Croatia	61.5	74.6	130.2	142.2
Czech Rep	38.1	40.5	60.3	47.9
Estonia	53.5	114.7	62.9	124.9
Georgia[a]	51.7	20.3	143.8	70.3
Hungary	62.6	110.7	86.4	121.5
Kazakhstan	69.3	84.9	122.7	139.4
Kyrgyzstan[a]	133.2	61.2	318.6	102.1
Latvia	60.0	134.8	142.8	220.2
Lithuania	42.6	72.0	95.1	110.9
Moldova	133.6	81.4	268.3	104.8
Poland	40.6	63.7	150.0	111.1
Romania	30.4	60.2	92.9	141.9
Russia	61.6	34.4	139.6	95.9
Slovakia	53.0	55.0	76.5	64.9
Slovenia[a]	52.1	108.6	81.6	143.8
Ukraine	37.8	73.7	60.5	136.7

Source: Moody's(2008); (a) Data are taken from EBRD (2008).

More surprisingly perhaps, are the high external debt to export ratios present in Russia and Kazakhstan; these two countries have run regular current account surpluses since 2000 along with positive government financial balances. Private or quasi-private sector banks and companies (including state-controlled companies such as Gazprom and Rosneft) accounted for 93 percent of Russia's US$527bn foreign debt outstanding at the end of June 2008. Should the credit crunch persist, and external borrowing conditions remain difficult, significantly larger volumes of foreign-exchange loans would need to be provided to refinance maturing debt in 2009, estimated at US$150bn (Fitch, 2008). While Russia's sizable foreign reserves enable it to bail-out domestic banks and corporations, future sovereign default remains a possibility, albeit small at the current time. Elsewhere, Kazakhstan was one of the first countries to be affected by the global liquidity squeeze, owing to the high exposure of its commercial banking sector to international capital markets. Since August 2007 Kazakh banks have faced liquidity problems, and the authorities were forced to intervene, offering financial support, not just to the banks, but also to sectors, such as construction, that were heavily reliant on bank credit. The government has had to inject as much as US$15bn into the economy, and has followed this up with a proposal to buy stakes of up to 25 percent (consisting of both ordinary and preference shares) in Kazakhstan's four largest banks to help to recapitalize them.

Table 11 Sovereign solvency risk: government debt (percent of GDP); government debt (percent of revenues), 2000 and 2008

	Government Debt (percent of GDP)	Government Debt (percent of GDP)	Government Debt (percent of Government Revenues)	Government Debt (percent of Government Revenues)
	2000	2008[f]	2000	2008[f]
Armenia	46.8	15.4	239.9	72.6
Azerbaijan	20.3	7.2	100.3	25.2
Belarus	16.5	10.5	36.0	22.7
Bulgaria	73.6	13.8	187.8	33.3
Croatia	39.7	35.8	87.8	92.3
Czech Rep	18.2	26.6	47.7	65.2
Estonia	4.7	4.2	13.1	11.1
Georgia	69.7[a]	23.4[a]	460.7[a]	83.6[a]
Hungary	53.8	72.7	123.4	159.4
Kazakhstan	25.5	6.0	115.0	22.9
Kyrgyzstan	122.3[a]	57.7[a]	659.9[a]	182.6[a]
Latvia	12.9	13.5	38.1	36.5
Lithuania	23.8	17.5	66.1	51.6
Moldova	91.7	19.9	280.4	48.6
Poland	36.8	43.9	96.5	111.4
Romania	22.7	13.4	74.1	41.4
Russia	62.5	6.4	169.5	18.3
Slovakia	49.9	28.8	98.0	90.0
Slovenia	27.1	21.8	62.2	51.7
Ukraine	45.9	15.1	137.6	33.1

Source: Moody's (2008), pp.82-90; (a) data are for 2007, taken from EBRD (2008); author's calculations.

On the positive side, the size and direction of public debt levels has generally been good and is one of the mitigating factors that may protect many countries of the region from too much damage (EBRD, 2008). As Table 11 shows, debt levels, as a proportion of GDP and of total government revenues, have declined in most countries. Countries with currency boards have, because of the constraints placed on government borrowing, performed particularly well. The only governments to increase their debt have been the more advanced economies of Czech Republic, Hungary and Poland. Of these, only Hungary's government debt level is precarious, although this has improved since the austerity measures implemented since 2006. Unfortunately, despite the positive actions taken by governments across the region to constrain the growth of public debt, the existence of persistent current account deficits has resulted in the accumulation of large stocks of debt which contain, in many cases, evidence of maturity, capital structure or currency mismatch. These have been accumulated in the private sector, as a result of increased financial, corporate and household borrowing, although the precise mix varies with each case. Thus, the region as a whole resembles, in many ways, the East Asia region in 1996 with strong government financial balances coupled with a boom in externally financed private sector borrowing. Should any country experience a currency,

banking or liquidity crisis, government balance sheets will be likely to expand as contingent liabilities are turned into actual liabilities.

4 Conclusion

By the end of 2008, a large number of economies from within the Emerging Europe region displayed extreme vulnerabilities to any contraction in capital flows that might occur as a result of the financial and economic crisis that is currently gripping the world. The contraction in the volume of capital flows to Emerging Europe and other emerging markets is likely to be exacerbated by the enormous volume of sovereign bond issues by advanced economies as they seek to compensate for declining private demand in their domestic economies. Indeed, by April 2009, the IMF warned that capital flows to emerging market regions might dry up completely, thus representing a 'sudden stop' (IMF, 2009b) Therefore, after enjoying an extended period of sustained economic growth that was, in many cases, accompanied by an accumulation of high levels of external debt built up through persistent current account deficits, the region now faces the prospect of much lower levels of economic growth as it moves towards a situation of greater macroeconomic balance. While the public sector has not generally contributed too much towards this accumulation of debt, it is likely that fiscal balances will be stretched as private sector agents struggle with the multitude of financial mismatches that threaten the economic health of many countries of the region. Indeed, any banking crisis that might occur will also increase the contingent liabilities of domestic governments. Finally, the downturn in trade is also likely to exacerbate what are already challenging economic conditions. Many of the countries from within the region are open, export-oriented economies that are particularly reliant on trade with the European Union. The contraction in economic activity in the EU has already caused a dramatic decline in the demand for Emerging Europe's exports. If this situation persists, the susceptibility of some of the economies analysed in this paper to a financial crisis is likely to increase.

The most vulnerable group of countries include the Baltic countries, Bulgaria, Romania, Croatia, Hungary, Georgia and Ukraine. All have run persistent current account deficits of varying magnitudes and have experienced strong growth in domestic credit, particularly in the household sector, that has resulted in them all displaying severe balance sheet mismatches. Furthermore, they are all extremely open, export-oriented economies that will be sensitive to the likely downturn in demand for their exports. Moreover, the large current deficits in some cases will, in an environment of diminishing foreign capital, be exposed to a disorderly contraction that is likely to be effected through a sharp decline in domestic consumption.

The second tier of countries is predominantly occupied by commodity exporters. These countries have, over recent years, tended to run strong fiscal balances and a mixed range of current account balances. Domestic credit growth has tended to be much more restrained than in those countries of the first tier and there is much less evidence of balance sheet mismatches. However, two main vulnerabilities are apparent. First, an overdependence on commodity exports renders them supine in the face of plummeting prices; even the strongest macroeconomic balances and the deepest reserves of foreign currency can be rapidly eroded if spending does not decline in tune with income. Second, the accumulation of external debt by private or quasi-private agents is also a concern and suggests that governments across the region will become more actively involved as they are forced to provide bail-outs. In an extreme case, this could threaten sovereign insolvency.

The final group includes the Czech Republic, Poland, Slovakia and Slovenia. According to the framework employed in this paper, they appear to pose the least risk of financial crisis. Although they all run current account deficits, they are not excessive. Fiscal balances are

manageable and sustainable. Although some balance sheet mismatches are evident (e.g. Slovakia displays worrying signs of capital structure mismatch), currency mismatch risk appears low (with two countries now in the eurozone) and maturity mismatches appear moderate. They are also energy importers, leaving them well-positioned to benefit from declining commodity prices. However, there remain concerns that could threaten even these ostensibly well-run economies. First, high levels of credit growth in recent years should be expected to decline. This may have an exaggerated effect on consumer demand in the region as households are forced to reign in their spending. Second, the extent of foreign currency-denominated household borrowing is unclear and could pose risks for the future. Finally, Czech Republic, Slovakia and Slovenia have been hugely dependent on trade with Western Europe. If, as forecast, this should decline, new financial vulnerabilities may emerge. In this respect, Poland is best positioned due to its larger domestic market and relatively smaller exposure to trade.

Finally, even the best run economies find themselves at the mercy of the confidence of international investors. Should a crisis erupt in one economy of the region, it could result in a financial contagion that could threaten the entire region. Contagion is likely for several reasons: markets are directly linked with each other, both in terms of finance and trade[16]; the perception of weakness in one economy often leads to doubts about conditions in other, apparently similar, countries; failures of policymakers to act decisively will also lead to doubts about other governments' willingness or capacity to act; one crisis is likely to result in a heightened perception of risk in other ostensibly similar cases; and, finally, higher risk premiums or the rationing of credit can lead to vulnerabilities that were previously considered manageable and sustainable developing into crisis. The weaknesses that are evident within the balance sheets of different sectors across Emerging Europe suggest that a crisis is extremely likely, particularly if the downturn in trading volumes persists.

[16] Indeed, a recent report concludes that financial linkages through which any contagion may spread are extremely high in the Emerging Europe area (IMF, 2009a). This report argues that Emerging Europe is particularly vulnerable to financial contagion because of the heavy dependence of a number of countries on only a few regional 'common lenders'. Thus, any shift in the health of that regional lender (for reasons that may have little to do with Emerging Europe, such as continued write-downs on asset-backed securities) or in its perception of risk within the region could quickly generate negative effects across the entire region.

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