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Highlights in this issue:

- Main drivers of international reserves in the CEE8 region during the crisis period
- Simple reserve adequacy measures turn out to be sound indicators of the largest vulnerabilities
- Different types of financial flows can lead to significant reserve outflows during moments of heightened financial market pressures

International reserves in the CEE8 – lessons from the financial crisis

By Zdeněk Čech and Anton Jevčák*

Summary

This Country Focus analyses the development of international reserves in the non-euro-area EU Member States from Central and Eastern Europe (CEE8)¹ against the background of the financial crisis that hit the region in 2008-2009. The analysis identifies which balance-of-payments components mostly affected international reserves in the CEE8 region during this crisis period and contrasts these with indicators used in simple "rule-of-thumb" reserve adequacy measures. It shows that some simple reserve adequacy measures (particularly based on external debt indices) – although suffering from a number of drawbacks – turn out to be sound indicators of the largest vulnerabilities within the region. Nevertheless, the analysis of balance-of-payments flows also reveals that some other types of financial flows, normally not captured by the traditional simple measures (e.g. financial derivative flows), may also significantly affect the overall balance of payments – particularly at moments of heightened financial market tensions. As a result, a broader consideration of gross foreign liabilities beyond short-term external debt levels appears justified when analysing reserve adequacy, especially in countries where equity and bond markets are more developed and/or cross-border derivative flows are substantial.

Background and definitions

According to the IMF Balance of Payments Manual, international reserve assets are external assets controlled by monetary authorities readily available to meet balance of payments financing needs and/or to undertake interventions in exchange markets to affect the currency exchange rate (IMF 2009). International reserves thus consist predominantly of high-quality assets denominated in major reserve currencies, gold and Special Drawing Rights of the International Monetary Fund (SDRs). Net reserves (gross reserves minus short-term foreign liabilities of the central bank) might be a better indicator of resources readily available to counter balance-of-payments (BoP) pressures in countries where monetary authorities have substantial short-term foreign liabilities (e.g. Turkey)². Furthermore, other types of foreign assets – including assets held by sovereign wealth funds and contingent credit lines (precautionary IMF or EU facilities, swap lines with major central banks) – can also be used to complement official reserves in mitigating external shocks and associated risks. Reserve assets are sometimes also accumulated for inter-generational savings (e.g. in commodity-exporting countries), for boosting international confidence in the domestic currency and economy or as a result of a particular exchange rate policy, as in the case of currency boards (ECB, 2006).

To measure reserve adequacy, simple "rule of thumb" metrics like gross reserve coverage of imports, short-term external debt or broad money (M2) are still most widely used, although they suffer from a number of drawbacks. In general, the ad-

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Simple "rule of thumb" measures of reserve adequacy still most widely used despite a number of limitations.

vantage of all such simple measures is that they are easy to construct and compare across countries. Traditionally, three months' import coverage of reserves was seen as the main proxy for risks related to current account financing (for a discussion see e.g. IMF 2011). Recently, the so-called "Greenspan-Guidotti" rule of 100 percent reserve coverage of short-term external debt³ gained prominence – since the high level of short-term external debt was seen as the driving factor of the Asian crises in the 1990s (see e.g. Aghevoli (1999)). An important constraint of this indicator is the limited availability of its data components.⁴ On the other hand, Obstfeld et al. (2008) argue that reserve adequacy should be rather assessed relative to M2 (with a 20% coverage being usually taken as a benchmark) to capture the risk of capital flight financed through a drain of domestic bank deposits. Nevertheless, all simple indicators are per definition narrow in scope. As a result, they are often considered in parallel.

Some combination metrics and cost-benefit models were proposed to broaden the scope of risks covered by reserve adequacy measures.

Some combination metrics were proposed to broaden the range of risks covered. According to the expanded Greenspan-Guidotti rule, full reserve coverage of short-term external debt plus the current account deficit should be targeted. De Beaufort Wijnholds and Kapteyn (2001) suggested that reserves should cover short-term external debt and a fraction of M2 dependent on the exchange rate regime and a country's perceived risks. A recent paper by the IMF proposed to assess the adequacy of gross official reserves against a weighted average of export earnings (X), short-term debt at remaining maturity (STD), medium- and long-term debt and equity liabilities (OPL) and broad money (M2) in order to encompass a broader set of potential drains on reserves. Different sets of weights were recommended for countries operating under fixed and floating exchange rate regimes (IMF 2011).⁵

In addition, there are a number of cost-benefit models aimed at identifying the optimal level of reserves. Heller (1966) pointed out that demand for reserves by the monetary authority is subject to a trade-off between the benefits of reserves and the opportunity costs of holding them. A commonly used cost-benefit framework is the model developed by Jeanne and Rancière (IMF 2006), according to which the optimal level of reserves for emerging market economies is a function of the stock of short-term external debt, the output cost of a sudden stop in capital flows, as well as the opportunity costs of holding reserves and the degree of risk aversion. However, Obstfeld et al. (2008) do not find short-term external debt to be a significant explanatory factor for reserve holdings in emerging markets, while showing that there is a statistically robust and economically significant correlation between a country's financial development (proxied by the M2-to-GDP ratio) and its reserve level.

Although the theory suggests that countries with fixed exchange rate systems should keep higher official reserve holdings than floaters in order to be able to defend their currency values, the empirical studies do not support this standard view (see e.g. Choi and Baek (2004)). In the CEE8 region, some countries have shifted from currency pegs to floating exchange rate regimes since the late 1990s⁶, but the stock of international reserves increased significantly in all CEE8 countries in recent years. International reserves have been boosted *inter alia* by the new SDR allocations and, importantly, through the off-market conversions of the sovereign FX revenue (e.g. EU structural funds inflows, FX-denominated sovereign debt issuance and other foreign borrowings including in some cases disbursements of international financial assistance, privatisation revenue).

Main drivers of international reserves changes in CEE8

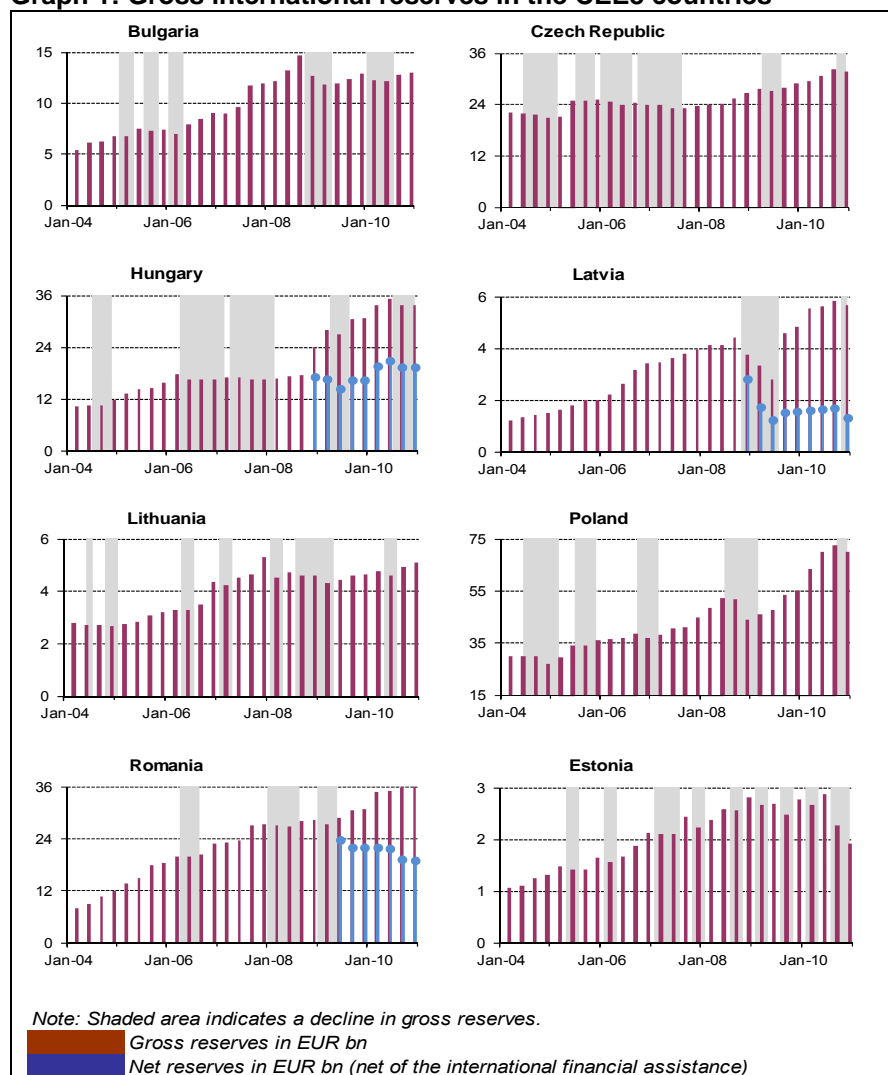
Gross international reserve holdings of the CEE8 countries increased between 2004 and 2007 by an average annual rate of 19.5% for the area as a whole – although there were significant differences across the region. They then decreased slightly at the time of the intensification of the global financial turbulence in the second half of 2008 and early 2009. However, the accumulation of reserves in the CEE8 region rebounded strongly in the second half of 2009. Gross international reserves reached all-time highs by end-2010 in the Czech Republic, Hungary, Latvia, Poland and Romania, while only in Bulgaria and Lithuania have they not yet fully recovered the losses incurred during the crisis.

The fact that gross international reserves of the CEE8 countries continued to expand recently is partly explained by the fact that official international financial BoP

After a temporarily decline during the peak of the crisis, international reserves resumed their upwards trend in H2-2009.

assistance (IFA) was provided to Hungary, Latvia and Romania. In particular, the IFA outweighed otherwise significantly negative (net) reserve evolution in Latvia and Romania. In addition, the so-called "Vienna initiative" coordinated actions of major parent banks active in the region to avoid disorderly deleveraging process. In Poland, the IMF's Flexible Credit Line (available since May 2009) has contributed to stabilisation of financial markets during the crisis. Finally, some local Central Banks also benefited from foreign-liquidity-providing arrangements with reserve-currency-issuing Central Banks.

Graph 1: Gross international reserves in the CEE8 countries



Source: Reuters EcoWin, Commission Services

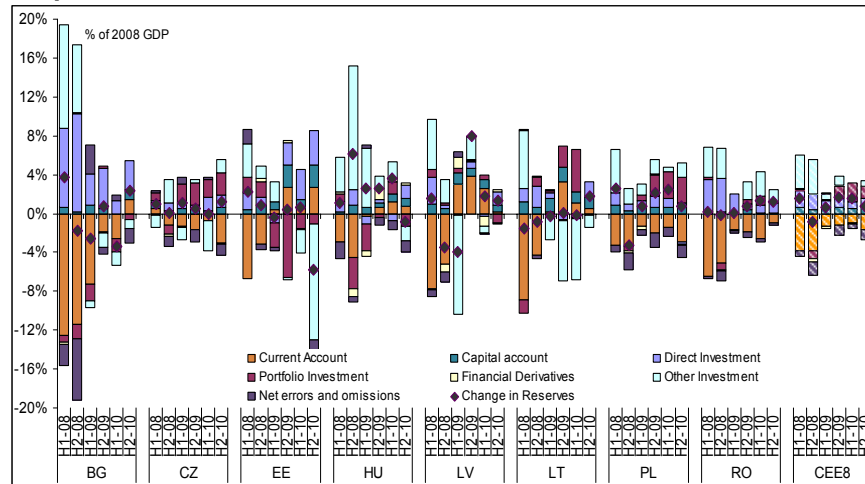
As far as the aggregated CEE8 balance of payments is concerned, the current account balance was the main negative driver of reserve evolution throughout the 2008-10 period.⁷ By contrast, thanks also to the IFA, other investment flows accounted for most of the increase in CEE8 international reserves. In addition, capital account and direct investment flows remained positive during the entire period. The sum of portfolio flows throughout 2008-10 was also positive, but there were net portfolio investment outflows in H2-2008. The cumulative contribution of financial derivatives was marginally negative, mainly due to net outflows during the peak of the financial market turmoil.

However, in the CEE8 countries experiencing substantial foreign funding outflows, current account deficits turned into surpluses or decreased substantially during the crisis period. A reversal of foreign funding inflows induced a contraction in domestic demand and thus led to a turnaround in current account balances from deficits to surpluses in H1-2009 in the Baltics, in H2-2009 in Hungary and in H2-2010 also in Bulgaria. Although remaining in deficit, the current account balance also narrowed

Reversal of foreign capital inflows induced a substantial improvement in current account balances in the countries most affected by the crisis.

substantially in Romania. On the other hand, the Czech Republic and Poland recorded relatively persistent current account deficits during most of the crisis period. The form of net foreign financing outflows differed somewhat across the CEE8 countries. Portfolio investment was the main driver of financial outflows from Hungary, other investment accounted for most of the outflows from Latvia and Lithuania, whereas both portfolio and other investment outflows were relatively substantial in Bulgaria and Estonia. Financial derivatives also played a significantly negative role at the peak of the financial crisis in Latvia, Hungary and to a lesser degree in Poland. Finally, other investment inflows into Romania remained positive only thanks to substantial official international BoP assistance.

Graph 2: Drivers of international reserves from H1-2008 until H2-2010

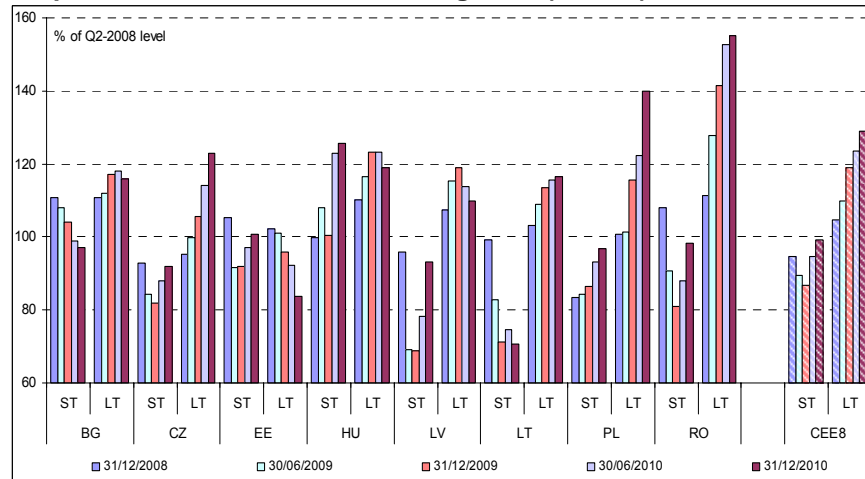


Source: Reuters EcoWin, National Central Banks

Considering separately each potential driver of reserve outflows included in the traditional simple "rule-of-thumb" adequacy measures (short- and long-term external debt, M2 and imports), short-term external debt is confirmed as the major direct source of FX outflows from most of the CEE8 countries. Compared to its Q2-2008, the stock of short-term (at original maturity) external debt started to decline rapidly in the second half of 2008 or in first half of 2009 in all CEE8 countries apart from Bulgaria and Hungary⁸. The largest drops were recorded in Latvia and Lithuania, where short-term external debt bottomed out at below 70% of its Q2-2008 level. The short-term debt levels then recovered to varying degrees during 2010. Long-term debt levels were more resilient, with only the Czech Republic recording a temporary decline during the peak of the crisis (when contracting new long-term external debt was likely not to be advantageous if other funding alternatives were available), while Estonia has experienced a persistent decline since mid-2009. Finally, long-term external debt levels in Hungary, Latvia and Romania were boosted by the official external financial BoP assistance.

The stock of short-term external debt declined rapidly in most of the CEE8 countries at the outset of the recent crisis period.

Graph 3: Evolution of short and long-term (ST<) external debt levels

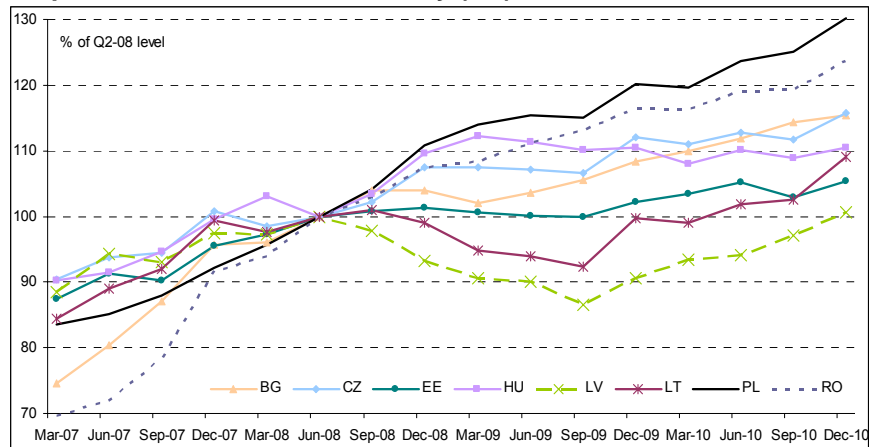


Source: Reuters EcoWin, National Central Banks

Broad money (M2) was an important source of reserve outflows only in Latvia and Lithuania. The expansion of M2 slowed down across the whole CEE8 region throughout 2008 or in early 2009, as local banking sectors, which are largely foreign-owned, held up further credit expansion. Nevertheless, only Latvia and Lithuania experienced a sustained significant decline in their M2 levels between mid-2008 and late 2009, which cumulatively accounted for 14% and 8% of their respective Q2-2008 levels of M2. Moreover, since the contraction of M2 in both countries was probably to a large extent driven by the need of the local banking sectors to service their rapidly declining stocks of short-term external debt, a part of the external vulnerability stemming from M2 volatility was in this case already captured by the reserve adequacy indicator based on short-term external debt coverage. Hence, in contrast to the Argentinean experience in mid-1990s (see e.g. Obstfeld et al. (2008)), it was mainly foreign capital flight, not the domestic capital flight (exchange of domestic for foreign currency cash/deposits by local residents), that affected the M2 evolution in the CEE8 region during the recent crisis period.

Only Latvia and Lithuania experienced a significant decrease in their M2 levels.

Graph 4: Evolution of broad money (M2)

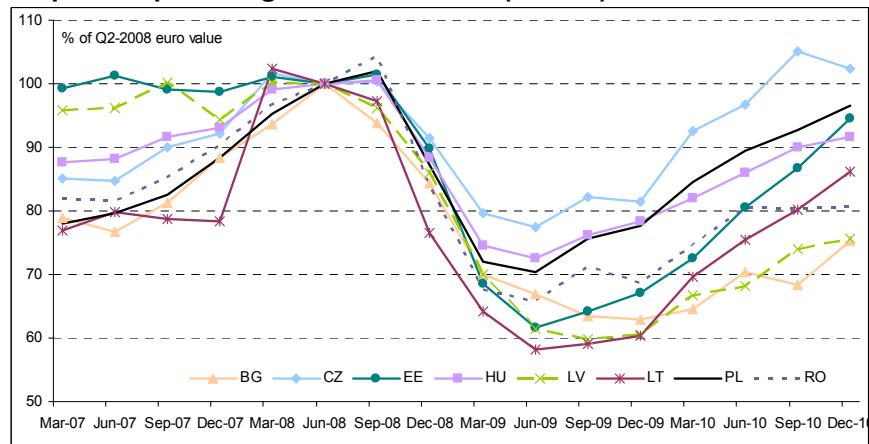


Source: Reuters EcoWin, National Central Banks

Imports of goods and services dropped substantially in all CEE8 countries during the peak of the crisis, thus decreasing the potential drain on reserves stemming from the trade channel. The euro value of imported goods and services fell rapidly between late 2008 and mid-2009 across the whole CEE8 region, before it started to recover gradually by late 2009. The peak-to-trough decline varied significantly between some 40% in the Baltic countries and just about 23% in the Czech Republic. Moreover, except for the Czech Republic, the euro value of imports has remained below its Q2-2008 level in all other CEE8 countries until end-2010. As a result, the amount of FX resources needed to finance prospective imports also decreased accordingly throughout the region.

Imports of goods and services dropped substantially in all CEE8 countries during the peak of the crisis.

Graph 5: Imports of good and services (in euro)



Source: Eurostat, seasonally and working days adjusted data

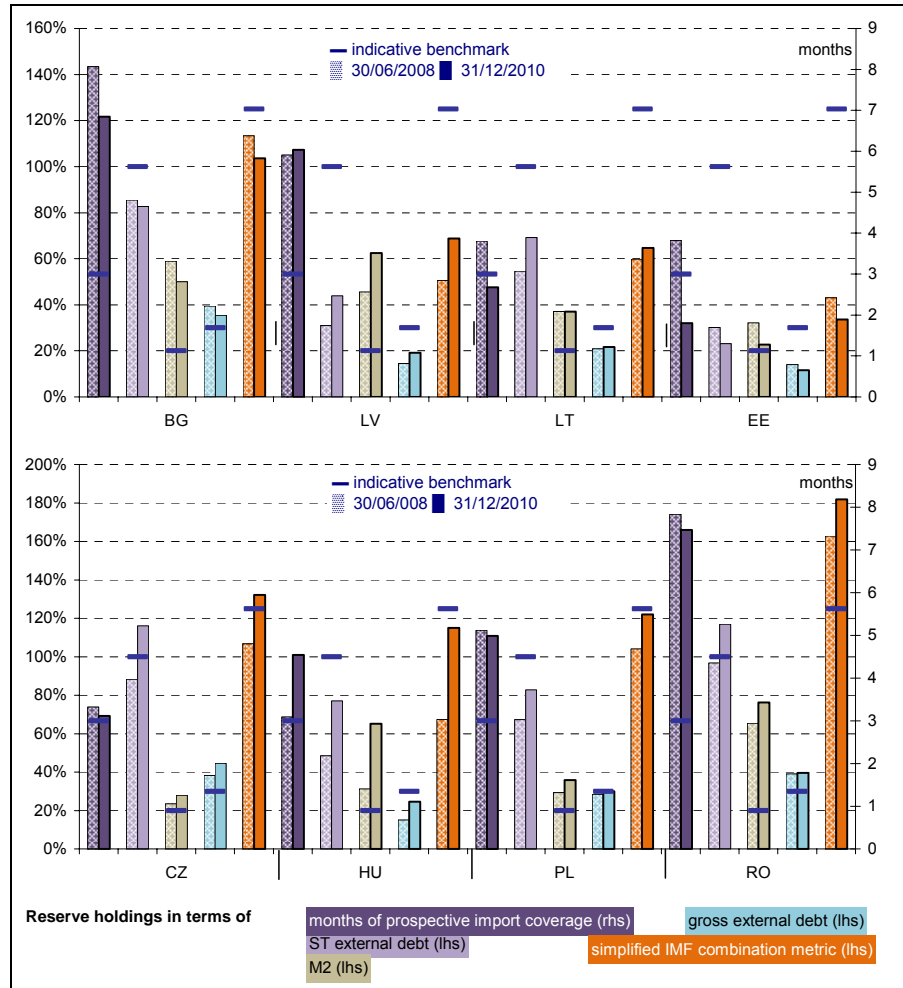


Simple indicators of international reserve adequacy before and after the crisis

The following main simple "rule-of-thumb" reserve adequacy measures are considered in this section: gross official reserve coverage in terms of months of prospective imports, short-term external debt, M2 and gross external debt as well as a simplified IMF combination metric. Given the limited role of foreign portfolio equity liabilities in the CEE8 region, only medium- and long-term debt liabilities are included among the other portfolio liabilities (OPL) to simplify the calculation of the IMF combination metric.

Graph 6: Indicative measures of reserve adequacy in Q2-2008 & Q4-2010

According to most indicators, reserve adequacy has improved in the majority of the CEE8 countries recently.



Source: Reuters EcoWin, National Central Banks and Commission Services

According to most indicators, reserve adequacy seems to have improved somewhat in all CEE8 countries, except for Bulgaria and Estonia, during the crisis period. At the end of Q2-2008, before the intensification of global financial crisis, gross official reserve levels in the Baltic countries⁹ and in Hungary were clearly below all three external-debt-related indicative benchmarks for reserve adequacy (e.g. 100% of short-term external debt, 30% of gross external debt and 125% of the IMF combination metric).¹⁰ On the other hand, most adequacy measures suggested that reserves were sufficiently high in the Czech Republic, Bulgaria and Romania. However, in the Romanian case¹¹, minimum reserve requirements on FX liabilities of the banking sector accounted for a significant part (43%) of the official reserves in Q2-2008. During the crisis, the gradual correction of the underlying macro-financial stability risks, together with international financial assistance, resulted in a relative improvement in most indicative reserve coverage measures in all CEE8 countries, apart from Bul-

garia and Estonia.¹² Nevertheless, at the end of 2010, reserve coverage still remained below the three external-debt-related indicative benchmarks in the Baltic countries and, to a lesser extent, also in Hungary. In Poland and Bulgaria, reserve coverage in terms of both short-term external debt and the IMF combination metric (which includes short-term external debt) was lower than the indicative benchmarks. Finally, gross official reserves in the Czech Republic and Romania appeared adequate according to all indicators.

Conclusions

Recent experience of the CEE8 countries shows that when access to foreign funding becomes severely constrained, as was the case in the Baltics and Hungary, the ensuing contraction in domestic demand (sometimes also accompanied by falling M2) leads to substantially lower imports and thus a significant improvement in the current account balance. As a result, among the indicators traditionally employed in simple "rule-of-thumb" reserve adequacy measures (e.g. short-term external debt, M2 and imports), short-term external debt seems to represent the major risk factor for the BoP sustainability in the CEE8 region. Nevertheless, BoP developments during the recent crisis period also revealed that various types of financial flows, in particular portfolio investment, financial derivatives and other investment flows, may contribute to a drain on international reserves in periods of elevated financial market tensions. Hence, a broader focus on other gross foreign liabilities beyond short-term debt dynamics, especially in countries where equity and bond markets are more developed and/or cross-border derivative flows are substantial, seems appropriate when analysing official reserve adequacy. In addition, it should be taken into account that various other factors beyond the scope of this paper, such as existence of broader financial stability risks (e.g. overleveraged local banking sector, open FX position of the nonfinancial sector or unsustainable public finance situation), can trigger a substantial deterioration in BoP flows during crisis periods.

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¹ Bulgaria, the Czech Republic, Estonia (since only the period before its entry into the euro area on 1 January 2011 is considered), Latvia, Lithuania, Hungary, Poland, Romania.

² Government FX deposits at the central bank, which are sizeable in some countries (e.g. Bulgaria) are not subtracted from gross reserve levels; while they are formally not under the control of the central bank, they should in practice be utilizable to cover official BoP financing needs.

³ Proposed by policymakers Alan Greenspan and Pablo Guidotti in 1999 (Greenspan (1999)).

⁴ In some countries, recording of the private external debt is not mandatory and debt maturity profiles are often not available or released with a substantial lag.

⁵ fixed ER countries: 30% of STD + 15 % of OPL + 10% of M2 + 10% of X

floating ER countries : 30% of STD + 10 % of OPL + 5% of M2 + 5% of X

⁶ The Czech Republic in 1998, Poland in 2000 and Hungary in 2008.

⁷ The predominantly negative net errors and omissions component implies that a substantial part of FX outflows from the CEE8 region is not captured by the sources for the official BoP statistics.

⁸ As part of the official IFA programme for Hungary, parent banks of the foreign subsidiaries operating in the country committed to keep their exposure from the outset of the programme in October 2008 and they seem to have in general complied with their commitments.

⁹ It has to be noted that under currency board arrangements (such as in Lithuania and Estonia prior to its euro-area entry) official reserves are a function of monetary base/demand for domestic currency, which is not under the discretionary power of local monetary authorities.

¹⁰ Hungary and Latvia were forced to seek international financial BoP assistance in late 2008.

¹¹ In Q2-2009 Romania became the third EU country benefitting from the official BoP assistance during the crisis.

¹² When Estonia joined the euro area in January 2011, the euro-denominated items of its Central Bank balance sheet became domestic-currency-denominated items, while the financing of BoP flows does not depend on central bank reserves any more within monetary union.

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