

SPECIAL COMMENT

CEE and CIS Countries Could be affected by Possible Euro Area Economic Shocks, Albeit to Varying Degrees

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Summary

- » The purpose of this report is to assess the potential short- to medium-term effects of further negative economic shocks from the euro area on some economies in Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS). We examine three possible channels of transmission – trade, foreign direct investment and bank flows – by using the econometric technique of Vector Auto Regression (VAR). The report does not speculate on the likelihood of further economic shocks occurring or on how these may materialise.
- » As part of this analysis, we have grouped CEE and CIS economies into three categories to take account of the different levels of institutional integration with the euro area: (1) the EU member states in the CEE that are not members of the euro area, (2) EU accession countries in the CEE, and (3) economies in the CIS that are often referred to as the EU's "Eastern Neighbourhood".
- » We conclude that economies in the CEE and, to a lesser extent, in the EU's Eastern Neighbourhood could potentially be negatively affected by further economic stress emanating from the euro area, given the numerous linkages and therefore also transmission channels between these economies and the euro area. Specifically, with the help of the VAR technique we have arrived at the following estimates of the likely extent to which the three categories of CEE and CIS economies might be affected:
 - » Not surprisingly, the CEE region's EU economies that are not members of the euro area have a high average sensitivity and would be significantly affected by euro area developments.
 - » EU accession countries would also be affected, although there is a significant variation among them.
 - » While the economies in the EU's Eastern Neighbourhood are the least exposed compared with the other two groups, they would nevertheless be affected by euro area shocks, despite the absence of the more comprehensive integration frameworks that are available to EU and accession countries.

- » Debt ratings currently assigned to sovereign governments covered by this report reflect our current economic forecast for the euro area, which calls for a slight contraction in 2012 and weak recovery next year. Although not our central scenario, this report suggests that a deep and prolonged contraction in the euro area following an intensification of the current crisis would likely have negative rating implications for some countries in the CEE region and possibly in the CIS. Rating implications arising from such a situation would ultimately be a function of each country's shock absorption capacity, fiscal position and debt profile, as well as the effectiveness of the country's policy response to manage the economic and financial pressures that would arise from a severe economic disruption in the euro area.

The euro area crisis and CEE and CIS economies

Our Assessment of the Euro Area Crisis So Far

As stated on 5 July 2012, our opinion¹ on the ongoing euro area crisis continues to be that the measures contained in the statement by euro area leaders from 29 June 2012 will reduce the near-term risks of deposit runs or credit market shutdowns. The statement confirms that policymakers are inclined to take the necessary steps to avoid the severe and profoundly credit-negative downside scenario of a gradual unravelling of the euro area through additional defaults and/or exits. Nevertheless, the path of gradual policy developments towards closer fiscal integration also carries a high cost, as those countries that are effectively supporting the others will continue to face an increase in their contingent liabilities – which will in turn weaken their creditworthiness (as reflected in our outlook changes of 23 July 2012). In July we also noted that, given the continued reactive nature of policy decisions, we also believe that the normalisation of sovereign debt markets could take a number of years, with the risk of policy accidents and rising sovereign defaults the longer the crisis persists. Therefore, the long duration of the euro area crisis is due to its unique mixture of deep-seated economic problems that are difficult to resolve (low long-term growth potential, reflecting profound structural constraints, ranging from rigid labour markets to competition bottlenecks) and the evolving but still incomplete institutional framework.

Grouping CEE and CIS Economies According to Euro Area Exposure

The crisis does not detract from the euro area's unchanged position as a significant player in the world economy: while the whole EU represents around 25% of global GDP, the euro area represents around 19%, which is still roughly twice the share of China. This economic weight is even more relevant for CEE and some CIS economies, for which the euro area is the natural economic partner.

For the purposes of analysing the effects of any stresses emanating from the euro area, we have categorised CEE and some CIS economies into three groups to reflect their differing levels of institutional integration with and access to the EU/euro area economy:

- » EU member states in CEE, including the Baltic states, that are not members of the euro area (hereafter referred to as "EU non-EA economies"): Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Poland and Romania.
- » EU accession countries, or ACs, comprising candidates and potential candidates: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Turkey.

¹ See Moody's Special Comment entitled ["European Sovereigns: Post-Summit Measures Reduce Near-Term Likelihood of Shocks, But Integration Comes at a Cost"](#), published on 5 July 2012.

- » Selected non-EU economies in the CIS: Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine.²

From among the above categories, EU non-EA economies have the strongest linkages with the euro area, as there are no barriers to trade, full capital or labour mobility. Many economies in this category also have a direct link with the euro as a currency (for instance, via currency pegs), as well as largely common policy and regulatory frameworks.

They are followed by the ACs, which usually benefit from many pre-accession links, like largely liberalised trade access to the EU's internal market and regulatory harmonisation programmes in several areas.

The least exposed group is that of the CIS economies, which are often called the EU's "Eastern Neighbourhood"³ and maintain trade and/or FDI agreements with the EU on case-by-case and limited sector-specific basis.

Potential Transmission Channels of Euro Area Stresses to CEE and CIS Economies

This report will assess the likely short- to medium-term effects of further negative economic shocks arising from the euro area on these three groups of economies by using a simple but powerful analytical tool: a VAR model. In this report we do not speculate on how further economic stresses might develop. We begin by offering a brief description of some of the potential channels of transmission of possible economic stresses and their relative importance for these economies.

1) The 'Real' Channel: Trade

Trade relations are the main channel through which the euro area crisis and the associated economic slowdown could affect the economies covered here.⁴ In general, the share of the total exports absorbed by the euro area market offers a reasonable proxy for the likely magnitude of the shock facing the partner country, and this is the approach used below. Nevertheless, several other factors might affect actual outcomes.

GDP-adjusted trade exposure is one such factor: a large export exposure to the euro area would mean relatively less for a country whose exports are a small share of GDP (in general, the larger the size of an economy, the lower the degree of trade openness). Another factor is the possibility of these economies switching towards alternative markets, either inside the euro area – e.g. from more to less stressed parts of it – or outside the EU/EA. The *composition* of exports is relevant in this respect: both traditional commodities (agricultural and mineral products) and more sophisticated industrial products could easily achieve a greater geographical diversification in their export markets, albeit for different reasons.⁵

² Georgia, albeit normally seen as a CIS member, left the organisation in 2008. Additionally, Ukraine never ratified the CIS membership treaty, so formally it is not a member either. Finally, we exclude from this report the Central Asian CIS countries (Kazakhstan, Kyrgyzstan, Turkmenistan, Tajikistan, and Uzbekistan), as they have (a) naturally weaker links with the EU and EA given their geographical position, and (b) are not covered by EU policy frameworks that have significant integration components.

³ Albeit Russia is not actually covered by the "Eastern Neighbourhood": its relations with the EU are regulated by a so-called "Partnership and Cooperation Agreement".

⁴ The trade channel would also incorporate the potential effects in global commodity prices caused by further EA economic stresses.

⁵ Exporters of basic agricultural and mineral commodity products would simply continue to shift their exports to faster-growing developing economies like China, a process that is already underway: an important qualification here is that those products need be cost-competitive in global terms for this to occur (for instance, the market share of some EU agricultural exports reflects support via subsidies or import restrictions). As for the latter, more sophisticated industrial products frequently have a degree of market power on their specific industry niches.

However, this may be more challenging for exporters of more traditional, undifferentiated and low-technology products.

Exhibit 1 below provides an initial assessment of the importance to these economies of the EU, the euro area, and five euro area economies (“EA5”) that could currently be classified as “stressed” (namely, the four euro area economies under EU or EU/IMF programmes – Greece, Ireland, Spain and Portugal, plus Italy).⁶

Exhibit 1 also shows that, despite considerable variations by country, non-EA EU members in the CEE have the highest average exposure to the EU and the euro area: on average, the exports to these areas are high, representing over a third and almost 23%, respectively, of the GDPs of non-EA EU members, while the EA5 average share of this group’s exports is just about 4% of GDP.

The average exposure of CIS economies and the ACs to the EU and euro area is quite similar, ranging from 12%-13% and 8%-10%, respectively. As expected, the average exposure of CIS economies and the ACs to the EU and euro area is less than half that of CEE non-EA EU members. The average exposure of CIS economies and the ACs to the EA5 is similar, at 4%-5%.

This nevertheless notable exposure to the EU and euro area is based on some CIS economies’ position as large commodity or *quasi*-commodity exporters: for example, Azerbaijan and Russia are energy exporters, while Belarus and Ukraine are “transit countries” for oil and gas exports to the EU market. Given that energy products have liberalised access to the EU market, CIS economies and the ACs have a correspondingly large weighting of exports to GDP. Also, some types of commodity exports (notably gas) have a transportation infrastructure which is market-specific, limiting the ability of CIS economies and the ACs to diversify exports. Specifically, the Russian gas pipeline network that runs through Ukraine and Belarus was essentially built to supply the EU market only, therefore increasing its exposure.

⁶ Although Cyprus is also a stressed euro area country, it was not included in this analysis due to its small size.

EXHIBIT 1
Exposure of CEE and CIS countries' exports to Europe, as a percentage of GDP

	X as a GDP%	X to EU as a GDP%	X to EA as a GDP %	X to EA5 as a GDP %
CIS				
Bulgaria	43.2	25.9	18.8	7.5
Czech Rep.	59.0	49.1	38.8	4.2
Hungary	71.0	52.9	38.5	6.0
Latvia	37.9	25.0	11.8	0.9
Lithuania	56.8	33.5	17.8	2.0
Poland	35.3	26.9	18.7	3.1
Romania	30.0	20.8	15.6	5.1
EU's ACs				
Albania	12.7	8.9	8.6	7.6
Bosnia	29.8	16.2	14.3	3.9
Croatia	19.8	12.4	10.6	4.0
Macedonia	36.0	22.0	16.5	11.0
Montenegro	11.5	6.4	4.9	3.7
Serbia	25.6	14.6	10.2	3.6
Turkey	16.5	7.7	5.6	1.8
European Neighbourhood				
Armenia	12.5	6.3	4.3	0.3
Azerbaijan	51.1	24.3	23.7	18.5
Belarus	46.4	13.9	7.3	0.4
Georgia	21.2	4.1	2.1	0.9
Moldova	27.4	12.9	5.4	3.0
Russia	27.1	12.4	9.0	2.1
Ukraine	37.8	9.6	5.5	2.3

Sources: EUROSTAT, DG TRADE, IMF, UNECE

2) The Hybrid Real/Financial Channel: Foreign Direct Investment

Foreign direct investment (FDI) is not only a financial flow, but can be seen as either a complement or a substitute for trade flows. This, together with its long-term nature, differentiates it from a pure “financial flow”. The reasoning here in terms of their expected relative importance is also similar to that for trade, but with the importance of institutional convergence looming larger, as the costs of reversing an FDI exposure are considerably higher than those related to a more fluid trade flow. As shown in Exhibit 2 below, because of these greater “sunken costs”, the relative exposure closely follows the ordering outlined in the first section: for the non-EA EU members states in the CEE, the average dependency on the EU and the euro area is at around 84% and 72%, respectively, while for the ACs it is 76% and 64%, and for the CIS economies it is a lower albeit still very significant 47% and 30%, respectively.

The exposure of the three categories of economies to the EA5 reflects the regional importance of two of those economies – Italy and Greece – to the ACs' western Balkans sub-region: while these two economies are responsible for just 6% of the FDI in the non-EA EU, and 1.2% in the “Eastern Neighbourhood”, they represent almost 17% of the ACs' total FDI.

EXHIBIT 2
Share of FDI Flows

	EU % of FDI	EA % of FDI	EA5 % of FDI
EU's MS			
Bulgaria	88.8	87.4	9.1
Czech Republic	89.0	84.3	4.7
Hungary	77.4	74.5	1.7
Latvia	77.7	51.0	1.4
Lithuania	80.2	41.0	0.5
Poland	86.5	78.2	10.3
Romania	90.7	86.2	13.9
EU's ACs			
Albania	71.5	70.3	58.0
Bosnia	53.9	48.3	2.0
Croatia	92.7	75.1	4.1
Macedonia	79.4	60.5	13.8
Montenegro	66.3	43.5	27.1
Serbia	89.0	83.0	2.9
Turkey	79.2	69.2	10.6
European Neighbourhood			
Armenia	42.4	41.7	1.1
Azerbaijan	67.3	2.3	0.0
Belarus	21.0	17.0	0.0
Georgia	30.5	20.2	1.2
Russia	38.6	32.6	1.6
Ukraine	81.3	67.5	3.4

Sources: EUROSTAT, WIW, national central banks and statistical offices

3) The Financial Channel: Bank Flows

Another source of potential shock transmission stems from the euro area's stake in the regions' banking systems. Those euro area banks that currently face strong deleveraging pressures are geographically very widespread in the euro area's neighbourhood and frequently one of the largest sources of local credit in the areas in which they operate. Consequently, the banking channel of transmission has the potential to directly affect economic growth and potentially with far greater speed than the trade and FDI channels. As a measure of that potential exposure, Exhibit 3 below presents the shares of the total bank foreign claims⁷ of the EU, euro area and EA5 in terms of the partner country's GDP.

⁷ These may include several different types of financial assets (loans, debt securities and equities, including participation in foreign subsidiaries). International banks may increase their foreign claims either by establishing foreign affiliates and then extending claims locally through these, and/or they may extend cross-border claims by

Again, the relative exposure is largely as suggested by the ordering outlined at the beginning of this report: for the non-EA EU members states, the GDP share of the EU and euro area bank claims is around 58% and 44%, respectively, while for the ACs it stands at 45% and 45%, and for CIS economies it is a much more limited 7% and 6%. As in the case of FDI, the EA5 also have a more than proportional share in terms of bank claims, both for the non-EA EU members (with 14%) and the ACs (with above 20%) – again, largely due to the presence of Italian and Greek banks in those markets, but with a marginal 2% in CIS economies.

EXHIBIT 3
Share of euro area bank claims in CEE systems, as a percentage of GDP

	EU	EA	EA5
EU's MS			
Bulgaria	59.2	58.3	37.7
Czech Republic	83.9	81.8	7.9
Hungary	70.5	67.9	16.2
Latvia	60.8	6.7	2.8
Lithuania	40.5	5.6	1.2
Poland	46.7	43.1	17.6
Romania	42.0	41.1	16.6
EU's ACs			
Albania	30.2	30.2	23.6
Bosnia	54.6	54.6	18.6
Croatia	109.4	109.1	48.5
Macedonia	24.7	24.7	18.2
Montenegro	23.7	23.6	0.5
Serbia	56.2	56.1	30.2
Turkey	19.4	15.4	6.6
European Neighbourhood			
Azerbaijan	3.5	2.7	0.1
Belarus	3.5	3.5	0.5
Georgia	4.8	4.6	0.0
Moldova	5.0	4.9	4.7
Russia	7.6	6.2	1.5
Ukraine	15.2	13.8	5.2

Source: IMF, BIS.

Jointly Estimating the Vulnerabilities: The VAR Model

The section above outlined the very significant and multifaceted links between the euro area and its bordering regions, both within and outside the EU. Estimating the potential effects of a greater level of euro area economic stress arising from these links is a considerably less straightforward process, as it

providing credit and booking the resulting claim outside the recipient, or even the original host countries (although cross-border claims are usually provided via the banks' headquarters).

would require not only an assessment of the particular weights and the interactions of all those different channels – which are both country-specific and vary over time – but also a quantification of those effects. This is at the same time analytically quite complex and demands a very large amount of data.

One way of achieving this effectively is through the use of a VAR model, a widely used estimation procedure. The inputs to the VAR consist of the following:

$$\Delta \text{Country_GDP}_t = a_{11} \Delta \text{Country_GDP}_{t-1} + a_{12} \Delta \text{Country_GDP}_{t-2} + b_{21} \Delta \text{EA_GDP}_{t-1} + b_{22} \Delta \text{EA_GDP}_{t-2} + c_{31} \Delta \text{OIL}_{t-1} + c_{32} \Delta \text{OIL}_{t-2} + d_{41} \Delta \text{DEV_GDP}_{t-1} + c_{42} \Delta \text{DEV_GDP}_{t-2} + v_{it}$$

Essentially, the GDP growth changes in the euro area partner country are assumed to capture *all* the euro area linkages in a joint fashion, without the need to specify these channels individually. For that purpose, the series that represent an external “energy price shock” (as denoted by ‘OIL’) and a measure of an external demand shock from *developing* countries (‘DEV’⁸) were added as control variables, as shown above.

The data series are annual, reflect real changes and cover the period 2000-2011.⁹ Prior to the estimations, they were all subject to the traditional econometric tests to ensure that they possess the statistical properties necessary to make the VAR estimations reliable.¹⁰

In practical terms, the VAR will estimate the effects of a standard deviation euro area GDP shock on the individual CEE and CIS economies (this would translate into a 2% GDP shock off the benchmark). The VAR estimation will be complemented with impulse response and variance decomposition analyses, which are tools that enable a differentiation between the strength and the relative importance of the shock for the partner country. The results are summarised in Exhibit 4 on the next page.

As shown in Exhibit 4 (where economies are now ordered in each grouping by the level of importance of the EA shock, and not alphabetically as before), the typology of the shocks mostly follows the expected patterns: the average percentage of the total shock attributable to the euro area increases in proportion to the depth of integration of that grouping with the euro area: it is 73% for the non-EA EU economies, 52% for the ACs and 38% for CIS economies.

Nevertheless, there is a considerable country variation among EU ACs: for example, while the simulated shocks that hit the very small and very open Bosnian economy are fundamentally just a euro area shock, the share for Serbia (a country that has long faced significant economic sanctions by the EU) is marginal, and even negative for Turkey (i.e., the domestic demand share of the aggregate GDP shock in Turkey is so strong – for example, the country grew by 8.5% in 2011 – that it would completely drown out the negative effects of the euro area shock).

⁸ Developing countries’ GDPs are introduced as an additional variable for several reasons: firstly, developing countries have been the true engine of the global economy since the beginning of the current millennium; secondly, the “developed countries” GDP shock is already represented by the EA GDP changes; and thirdly, the DEV variable also acts as a proxy for intra-regional economic partners, as it also includes some important regional economies like Russia and Turkey (beyond, of course, other developing country giants like China, etc.).

⁹ This enables the data series to cover a full economic cycle (peak-to-trough), while at the same time bypassing the rather unstable dynamics experienced during the post-“transition” period of the 1990s (most of the neighbouring EA regions are former command economies, and the implementation of market economy institutions is followed by a frequently prolonged period of economic instability, or even downright economic contraction). Pre-1990s data is either not available or not reliable.

¹⁰ Results are available from the author upon request.

On the other hand, while the average relative intensity of the simulated shock would indeed be greater for the non-EA EU economies than it would be for the ACs (at respectively 2.2% and 1.4% of GDP for the cumulated two-year effects of the euro area shock), the intensity for the CIS economies is essentially the same as for the non-EA EU economies, at 2.3%. This figure implies an elasticity to growth that is slightly above 1 (i.e., a 1% growth reduction in GDP in the euro area reduces growth on average in the non-EA EU economies and in CIS economies by a little more than 1%).

This is because economies like Armenia, Russia and Ukraine – which either have significant trade, FDI or banking exposures to the euro area– are shown to be relatively sensitive to a euro area shock because of those links, even though they do not benefit from the comprehensive integration frameworks provided by full EU membership or Accession status.

EXHIBIT 4

Estimated Effects of a Euro Area Shock on CEE Countries, percentage of GDP

	GDP effects of 1% EA GDP shock in Y1	GDP effects of 1% EA GDP shock in Y2	Total Shock Attributable to the EA in %
EU's MS			
Romania	1.1	2.2	99.8
Bulgaria	1.5	1.4	96.0
Hungary	0.5	0.3	82.0
Czech Republic	1.6	0.3	77.2
Poland	1.1	0.3	64.9
Lithuania	2.0	1.2	51.5
Latvia	2.6	-0.7	36.4
EU's ACs			
Bosnia	1.2	0.8	124.7
Macedonia	1.7	0.4	86.7
Albania	0.5	0.6	60.9
Croatia	0.9	0.9	57.8
Montenegro	1.3	1.7	45.5
Serbia	-0.2	0.3	3.4
Turkey	0.6	-1.1	-16.5
European Neighbourhood			
Ukraine	2.0	1.3	54.4
Belarus	0.6	1.4	51.0
Armenia	2.8	1.5	45.5
Moldova	1.2	0.3	44.9
Russia	1.9	0.1	43.3
Georgia	1.4	-0.2	26.9
Azerbaijan	1.0	1.0	19.0

Sources: Estimations by the authors

Conclusions

The economies to the East of the euro area, regardless of whether or not they are EU members, are linked to it via several different channels, from trade to FDI to banking flows. This exposure, which reflects the very significant economic might of the euro area, carries with it the potential for those economies to be negatively affected by further euro area economic stress. Given the stronger links, the non-EA EU economies are potentially more exposed to this risk than economies with weaker connections.

A VAR estimation of the potential magnitude of those hypothetical effects shows that, while non-EA EU economies have a high average sensitivity and are significantly affected by euro area developments, there is a very significant variation among the universe of ACs that cannot be ignored. The average magnitude of the shock for some CIS economies rivals that faced by the non-EA EU members, even in the absence of the formal integration frameworks shared by the EU and the ACs.

Debt ratings currently assigned to sovereign governments covered by this report reflect our current economic forecast for the euro area, which calls for a slight contraction in 2012 and weak recovery next year. Although not our central scenario, this report suggests that a deep and prolonged contraction in the euro area following an intensification of the current crisis would likely have negative rating implications for some countries the CEE region and possibly in the CIS.¹¹ Rating implications arising from such a situation would ultimately be a function of each country's shock absorption capacity, fiscal position and debt profile, as well as the effectiveness of the country's policy response to manage the economic and financial pressures that would arise from a severe economic disruption in the euro area.

¹¹ On that, see, for instance, Moody's Special Comment entitled ["Rating Euro Area Governments Through Extraordinary Times – Implications of Spain's bank recapitalisation needs and the rising risk of a Greek Exit"](#), published on 8 June 2012.

Moody's Related Research

Special Comments:

- » [European Sovereigns: Post-Summit Measures Reduce Near-Term Likelihood of Shocks, But Integration Comes at a Cost, July 2012 \(143694\)](#)
- » [Rising Severity of Euro Area Sovereign Crisis Threatens Credit Standing of All EU Sovereigns, November 2011 \(137652\)](#)
- » [Rating Euro Area Governments Through Extraordinary Times – Implications of Spain's bank recapitalisation needs and the rising risk of a Greek Exit \(142756\)](#)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Other Research:

- » [Spillovers to Low Income Countries: Importance of Systemic Emerging Markets, IMF Working Paper WP/12/49](#)
- » [How Russia Affects the Neighborhood: Trade, Financial, and Remittance Channels, IMF Working Paper WP/09/277](#)
- » [Low-Income Countries' BRIC Linkage: Are There Growth Spillovers? , IMF Working Paper WP/11/267](#)

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