Office Memorandum

To: Members of the Executive Board July 10, 2013

From: The Secretary

Subject: **German-Central European Supply Chain—Cluster Report**

The attached correction to FO/DIS/13/100 (7/3/13) has been provided by the staff:

Typographical Error

Page 7, para. 7, first line: for "Ireland" read "Italy"

Questions may be referred to Mr. Lall (ext. 36113), Mr. Aiyar (ext. 35973), and Mr. Elekdag (ext. 34835) in EUR.

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FO/DIS/13/100
Correction 1

Italy, Portugal and Spain—another group of European countries which globalized rapidly in the run-up to the 2007-08 crisis but have had very different recovery paths (Background Note 2). While FDI and bank flows were the main source of external financing for the CE4, portfolio and bank flows were the main types of external financing for the SP. The pattern of bilateral German claims on the CE4 and SP is broadly similar to the global exposures.

8. Moreover, the FDI inflows into CE4 countries have largely financed greenfield investments (Figure 4). Greenfield investment—as opposed to mergers and acquisitions (M&A) activity—is generally associated with an expansion in productive capacity and therefore growth. Moreover, it is a relatively stable source of external funding, and the least prone to sudden stops and reversals. Notably, much of the FDI directed to the CE4 countries was in the Motor Vehicles and Transport Equipment sectors (Background Note 2), supporting the offshoring of German passenger car production (Box, Background Note 1). 2009 marked the first year in which offshored production outstripped domestic German production of passenger cars.

9. While foreign bank finance has played a large role in the CE4, *cross-border* bank flows have been less pronounced (albeit still important). The CE4 countries have been reliant on foreign bank financing to roughly the same extent as the SP countries on a *consolidated* basis, which includes not just cross-border bank flows, but also local lending by resident foreign branches and subsidiaries. But cross-border bank flows to the CE4 countries have been far less pronounced than in the SP (Figure 4). In the run-up to the financial crisis, cross-border claims on the SP countries built-up to a much larger extent than in CE4 countries, and the corresponding deleveraging was also much sharper. Foreign bank lending to the CE4 contained a relatively larger share of local lending by resident banks, which tend to support their lending operations through local deposits and are thus more stable and less prone to sudden reversals. However, there are important differences between CE4 countries; in particular, the share of cross-border bank flows was much larger in Hungary (where the pattern more closely resembled the SP countries).

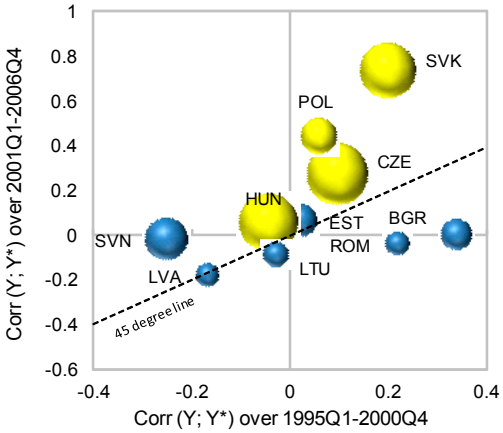
10. Overall, therefore, it would appear that the external financial linkages supporting the GCESC countries have developed in a sustainable fashion over time. The stock position indicates the predominance of FDI and lending by foreign-owned but locally resident banks. FDI is a relatively stable source of external funding, and holds up better during external crises, as documented by a well-established literature, most recently, Catao and Milesi-Ferretti (2013). FDI was directed to the manufacturing—and in particular, motor vehicles and other transport equipment—sectors, and a substantial amount of this FDI comprised greenfield investments. By way of contrast, the SP attracted a greater share of portfolio and cross-border banking flows, which—with the benefit of hindsight—exacerbated overheating pressures. In general, while FDI flows promoted durable growth in the CE4, non-FDI flows added to macroeconomic and financial imbalances across the SP.

MACROECONOMIC CONSEQUENCES AND POLICY IMPLICATIONS

A. Business Cycle Synchronization

11. The business cycles of the CE4 countries have become more synchronized with Germany. The CE4 countries stand out in a ranking of the bilateral conditional correlation of output gaps against Germany.[3] The conditional correlation has increased over time for all the CE4 countries except Hungary (Figure 5), and this is associated with the size of German VA embodied in the countries' exports. For other CEE countries, the output synchronization seems to have diminished over the time. This result—that greater vertical trade integration with Germany contributes to closer business cycle co-movement—is supported by a more formal econometric analysis that attempts to account for endogeneity concerns (see Background Note 1).

Figure 5. Conditional Correlation of Output Gap*



Source: WEO; and IMF staff estimates.
*Bubbles represent the size of German's Value-Added embodied in countries' i gross exports in 2009.

B. Technology Transfers

12. There is evidence that participation in the GCESC has led to considerable technology transfers to the CE4 countries. As documented in the previous section, export growth in knowledge-intensive sectors has been particularly rapid in the CE4 countries. Moreover, the share of these sectors in domestic value added exports has been increasing.

13. Revealed Comparative Advantage (RCA) patterns for the CE4 countries have evolved in line with such technology transfers.[4] Table 1 provides RCA calculations in the manufacturing sectors for the CE4 countries, Germany and some comparator countries. The manufacturing sectors are grouped into labor-intensive, capital-intensive, and knowledge-intensive sectors. The RCA calculations show that with the exception of Poland, all other CE4 countries have largely "caught up"

[3] The correlation of output gaps is computed using output gaps (for each country and Germany) purged from the effect of global economic conditions. The resulting output gaps therefore represent idiosyncratic shocks observed in each country. See Background Note 1 for further details.

[4] Traditionally, RCA is defined as the proportion of a sector's exports in a country's total gross exports relative to the average share of the same sector's exports in the world's total exports. A value higher than one indicates that the country has a comparative advantage in that particular sector. Here RCA is calculated on the basis of domestic VA, as in Rahman and Zhao (2013). See Background Note 1 for further details.