Box 1

GLOBAL ECONOMIC REPERCUSSIONS OF THE EARTHQUAKE IN JAPAN

The Great East Japan Earthquake and the ensuing tsunami constitute an immense human tragedy with more than 25,000 people either missing or dead and many more residing in emergency shelters. The physical destruction is also extensive, as houses, plants and infrastructure have been damaged. A recent estimate by the Japanese government places the total amount of damages at between JPY 16 trillion and JPY 25 trillion, corresponding to 3.3% and 5.2% of GDP in 2010 respectively. This is well above that of the Kobe earthquake in 1995, where the economic costs amounted to about 2% of GDP.

Past experience suggests that the economic disruption in the aftermath of a natural disaster is commonly short-lived and followed by a rather quick reconstruction-fuelled rebound. In the case of the Kobe earthquake, for instance, the ensuing decline in economic activity was fully recovered within a few months, as damaged plants and equipment had to be restored and manufacturing capacities were transferred to other regions. Consistent with this pattern, most market observers currently expect a strong short-term contraction in economic activity in Japan. Accordingly, projections for Japanese economic growth have been revised downwards for 2011, but the outlook has been revised upwards for 2012. For instance, the IMF, in its April 2011 World Economic Outlook (WEO), revised the growth projections for Japan downwards to 1.4% in 2011 (from 1.6% in the January WEO update) and upwards to 2.1% in 2012 (from 1.8%). The OECD expects a sharper economic slowdown in 2011, projecting real GDP growth to slow to 0.8% in 2011 (compared with 1.7% in the OECD Economic Outlook released in November 2010), before picking up to 2.3% in 2012 (compared with 1.3%).

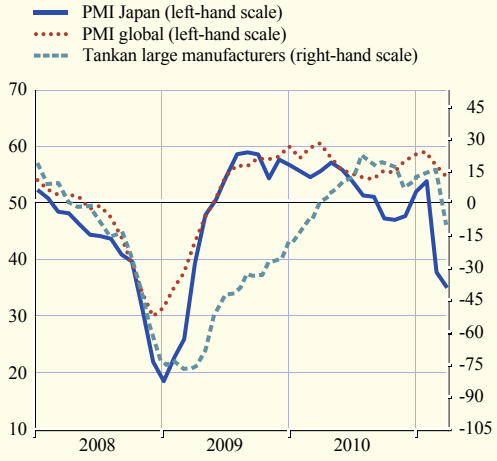
The negative impact on activity of the recent earthquake is significantly greater than in 1995 and further compounded by the nuclear crisis and power shortages. Production at several plants has been suspended or curtailed because of physical damage, supply-chain disruptions within Japan and, temporarily, rolling electricity outages in view of power supply shortages. The associated pronounced decline in economic activity has been reflected in the manufacturing output PMI,

which has fallen well below the expansion/contraction threshold of 50 since the earthquake (see Chart A). In April 2011 it stood at 35.0, following its sharp drop to 37.7 in March from 53.0 in February. The deterioration in business sentiment has been further confirmed by the Reuters Tankan survey. Correspondingly, in March Japan's industrial production plummeted by 15.3% compared with the previous month. Consumer confidence has also been dented, partly in view of the prevailing uncertainty associated with the prospective resolution of the situation at the Fukushima nuclear plant.

The international repercussions of the events in Japan through trade linkages are likely to be relatively contained. Although Japan is an important global player, its economy is rather closed, accounting for around 4.5% of global imports. Emerging Asia – given its regional proximity – is most exposed to developments in Japan. On average, about 8% of these countries' exports go to Japan. Japan's trade linkages with the Middle East and North Africa as well as Australia are even stronger, but a large proportion of this trade is in commodities. The exposure of the United States to Japan is much lower at just over 5% of its exports, and it is even lower for the euro area, as only about 2.5% of extra-euro area exports are sent to Japan (see Chart B). On the import side, the euro area depends heavily on Japanese products for specific chemicals, car parts, photographic components and machinery. With regard to the global financial repercussions of the events in Japan, these have also been rather contained, as the Japanese economy is also relatively closed from a financial perspective, compared with other advanced economies. For instance, foreign investment in Japan amounts to only about 60% of GDP in Japan, compared with 140% of GDP in the United States and 175% of GDP in the euro area.

Chart A Manufacturing output PMI and Reuters Tankan

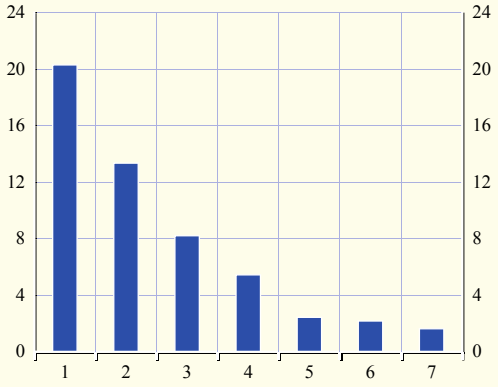
(diffusion index; seasonally adjusted; monthly data)



Sources: Markit, Reuters.
Note: Last observation refers to April 2011.

Chart B Global trade exposure to Japan (measured by Japan's share in the respective country's total exports)

(percentage of GDP; average 2005-09)



1 Australia
2 Middle East and North Africa
3 Asia (excluding Japan)
4 United States
5 euro area
6 Canada
7 United Kingdom

Sources: UN (Comtrade), IMF (WEO) and ECB staff.
Note: The geographical aggregates are GDP-weighted. The euro area aggregate refers to extra-euro area trade.

These direct trade effects could, however, be amplified by possible disruptions in global supply chains. Amid the rapid progress in globalisation in past decades, vertical specialisation has led to complex global production networks, which means that missing individual components could disrupt entire production processes in major industries. In fact, in certain product categories, a large proportion of global production by a number of the world's leading firms is located in the area affected by the earthquake and the scale of the damage requires, in some cases, rather prolonged production shutdowns. Anecdotal evidence suggests that this mainly affects the production of crucial components for the global automotive and electronics industries.

In the short term most global manufacturers can draw on their inventories to defer and mitigate the effects of such supply-chain bottlenecks. Even in a world of just-in-time production, firms normally hold sufficient inventories to cover a few weeks or even months. While sourcing the missing products from an alternative supplier or relocating production to another unaffected plant can take several months – as quality testing and logistics need to be ensured – such alternative sources of supply should eventually become operational, suggesting that possible supply-chain impediments should be only temporary. Moreover, key transport infrastructure has been restored, and there are reports that several factories affected by the earthquake in Japan have already resumed or are preparing to resume production.

The Japanese situation could also have spillover effects on global commodity prices as Japan is a major importer. In the near term the disruptions in the industrial sector and damage to refineries as a result of the earthquake may lower demand for commodities. In the medium run, however, the economic reconstruction in Japan is likely to increase demand for energy and base metals, potentially putting some upside pressure on the prices of these commodities. Such pressures may be compounded if Japan (and other countries) rethink their nuclear strategy, which could trigger a more broad-based change in the structure of energy demand in the medium term.

All in all, it remains extremely difficult to assess the repercussions of the earthquake in Japan. In the short term the economic outlook for Japan has deteriorated sharply and supply-chain challenges – both domestically and globally – are a concern for some companies. Looking further ahead, however, potential supply-chain bottlenecks should be resolved over time and the reconstruction-based recovery is likely to support economic activity in Japan. Nevertheless, the recent events may have wider long-term implications as global energy strategies, inventory policies and supply-chain connections may be reconsidered.