Global

Economic Watch

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Economic Analysis

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Economic Impact of Japan Quake

Huge human toll, temporary and moderate economic impact but with uncertainties due to nuclear risks

- **The massive earthquake and tsunami will have a bigger death toll than Kobe in 1995, but the economic effects are likely to be lower**

  The damaged area generates around 7% of Japan's GDP (12% in Kobe) even though the direct cost to infrastructures is preliminary estimated as 3% of GDP, one and a half times the Kobe figures. However, there is high uncertainty regarding the potential for radioactive contamination to large areas.

- **The negative effects on growth will be concentrated on Q2, followed by a sharp rebound in Q3. Growth will be lower by 0.2% in 2011 and higher by 0.3% in 2012**

  Effects on activity will follow a usual pattern of a short-term dip in activity followed by a surge in durable goods purchases and investment in reconstruction. Inflation will be pushed up temporarily as supply is reduced. Radioactive contamination and persistent power outages are important downward risks to that usual pattern of growth.

- **Appreciating pressures will be resisted by policymakers**

  The repatriation of capital will add to the end of the fiscal year to press up the value of the Yen. But they will be mostly prevented by liquidity injections by the BoJ and a deliberate effort to stabilize the yen.

- **The reconstruction will frustrate efforts to control public debt, but pressure on long-term interest rates should be manageable**

  Strong demand from domestic investors and the liquidity injection by the BoJ should imply small increases in long-term rates.

- **Muted upward pressure on global long-term interest rates. Oil prices will be pressed down in the short run and up in the long-run**

  Some US treasury selling might occur, but temporarily. Crude oil demand will be reduced in the short run due to lower refining activity, but will increase later as the future of nuclear-based power is uncertain.

- **As long as there is no large nuclear contamination, the economic impact will be modest compared with the huge human cost.**

A massive earthquake and tsunami

The largest-ever earthquake recorded and ensuing tsunami resulted in massive destruction in Japan

Japan is trying to recover from the effects of the massive earthquake and tsunami that devastated the north-east of the country on March 11th. The offshore earthquake, measuring 9.0 in magnitude, was the largest ever recorded in the country. The ensuing tsunami resulted in massive destruction of property and the displacement of hundreds of thousands of people. The death toll is likely to rise rapidly and could number in the tens of thousands. The disaster has also damaged nuclear power installations, resulting so far in explosions in three reactors, a fire in a fourth, cooling problems in other two and apparently significant radiation leaks, prompting a massive evacuation programme. We outline below the main implications of the disaster.

Comparison with the 1995 Kobe earthquake

The 1995 Kobe earthquake provides a relevant benchmark

The most comparable event in the country is probably the Kobe earthquake of January 1995. The similar magnitude and the fact that it happened not so long ago provide a relevant benchmark to assess the effect of Friday's earthquake. Nonetheless, the two regions have different economic specializations. The area most impacted by the quake and tsunami is a key agricultural area, with some significant raw material industries (like oil, steel, and pulp), whereas Kobe is a major port and manufacturing center.

Human deaths and damage costs in 2011 are likely to be higher than in 1995, although the affected area accounts for a lower share of GDP

The earthquake in 1995 resulted in more than 6,000 dead and devastated a major port and an area generating 12% of Japanese GDP. Its direct damage was estimated to be around 2% of Japanese GDP. This was the sum of damage to buildings (1.2% of GDP), the port (0.5%) and commercial facilities (0.3%). In addition, indirect damage included initial demand destruction of the order of 0.5% of GDP, before offsetting measures were put in place.

By comparison, the earthquake and tsunami on Friday is estimated to have taken a larger human toll as around 15,000 people are still unaccounted for (official death toll so far is close to 3,000 and increasing). But the economic damage is likely to be smaller. Although initial estimates put the direct damage at around 3% of GDP (one and a half times the Kobe figure), the affected area generates about 7% of Japanese GDP, slightly more than half the Kobe episode (see Chart 1). These numbers are surrounded by a lot of uncertainty, in particular regarding the extent of radioactive contamination, with lasting effects on a potentially large area of the country.

Effects of the 2011 earthquake on economic activity

Japan was experiencing a fragile recovery when the earthquake hit

Japan's economy was on the track to recovery, although fragile, before the earthquake and tsunami. The growth in 2010 bounced up to 3.9% from -6.3% in 2009. Recent indicators before the earthquake confirmed that Japan was returning to its potential growth at around 1.5%, which is sluggish due to weak domestic demand, aging population and other various structural problems.

Usually GDP experiences a short-term dip followed by a sharp rebound

Estimates of the economic cost of earthquakes and tsunamis are very imprecise, especially in the very first days after the event, when information about the true extent of the disaster is still sketchy. The typical pattern involves a short-term dip in economic output owing to the closure of businesses and shops, disruptions to transportation and supply networks and key services like energy and communications. However, this is usually followed by a rebound in GDP as consumers resume spending (especially replacing damaged durable goods) even before the reconstruction effort begins (boosting fixed investment, among other components). Reconstruction tends to boost imports as well—potentially weakening the rebound in headline GDP growth—as countries buy in essential materials and goods for reconstruction. The ensuing reduction in supply also tends to push inflation up initially, in this case especially since the affected area is also an important supplier of food to the country. Deflation, which was expected to continue till mid-2012, will end sooner probably in this year.

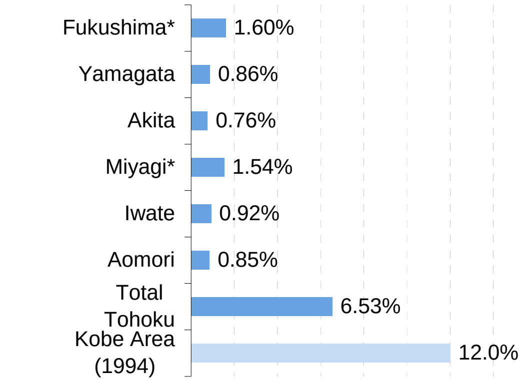
Negative effect on growth will be concentrated on Q2, surging in Q3…

In the case of Japan, the negative effect on growth would be concentrated on the first and especially the second quarter of 2011. But the effects will be limited by ample spare capacity that could allow some production to be relocated away from the affected areas. In addition, the reconstruction effort that will be put in place will to restore the infra structures in affected region will eventually stimulate the economic activities by mid-year. With the help from the government and the BoJ, the economy is expected to grow above previous estimates in 2H 2011.

… but with lots of uncertainty regarding the extent of nuclear fallout and power cuts

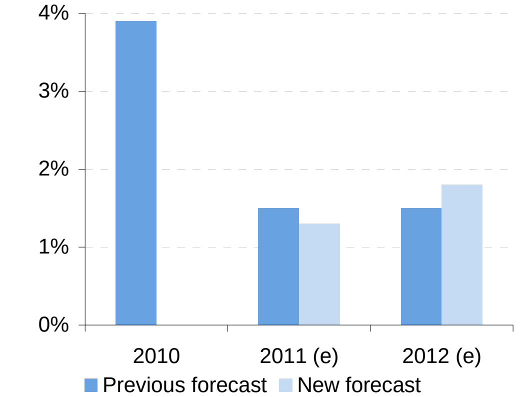
One major source of uncertainty relates to the radiation fallout from damage to nuclear plants which, in a worst case scenario, could extend beyond Japan's borders. At a minimum, the impact on power generation could be severe, as Japan relies extensively on nuclear power (28% of total electricity production) of which about a quarter could be disrupted for a long time.

Chart 1
GDP produced in affected areas (% of total)



* Areas most affected by the earthquake and the nuclear leak
Source: Economic and Social Research Institute, Cabinet Office and BBVA Research

Chart 2
Japan: GDP Growth



Source: BBVA Research

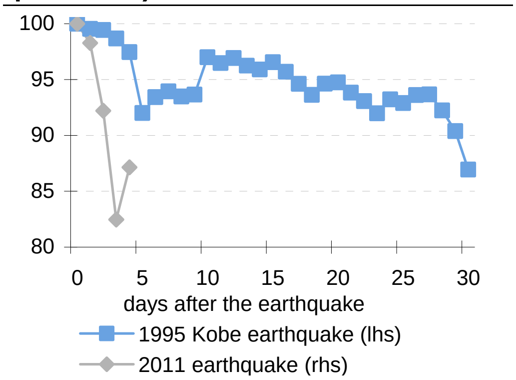
The earthquake and tsunami would reduce GDP growth by 0.2-0.3 % in 2011, but increase it by a similar amount in 2012…

With these considerations in mind, initial estimates set the impact on GDP growth in 2011 at around 0.2-0.3 percentage points, heavily concentrated on the second quarter (when quarterly growth should be reduced by around 0.4pp). As demand for durable goods increases and the reconstruction effort is set in motion, third quarter growth should be increased by around 0,4 pp, to close to 1%. These positive effects on activity should continue on the first part of 2012, increasing growth forecast that year also by 0.2-0.3 percentage points (see Chart 2). The relatively low estimates of the impact on economic activity stand in contrast with the sharp reaction of the Japanese stock exchange. A similar strong reaction of stock valuations to the Kobe quake was observed in 1995, and the faster sell-off since Monday (Chart 3) seem more a reflection of still heightened uncertainty regarding the extent of damage (including to nuclear facilities).

… in a pattern similar to the sharp drop and quick rebound seen in 1995

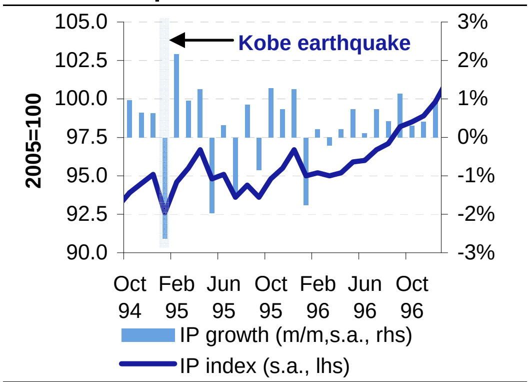
Again the Kobe earthquake serves as a reference point. In that case, the total size of the public works for the following five years was 3.2% of GDP and the additional demand created by that programme around 1.5% of GDP, exceeding the cost of the damage. Indeed, real GDP grew 0.6% qoq during the first two quarters of 1995 (the earthquake was in January) and growth was boosted to 1.1% qoq on the third quarter. The decline in consumption and industrial production was temporary, with the latter rebounding strongly the month after the earthquake (see Chart 4). [1]

Chart 3
Nikkei index after 1995 and 2011 earthquakes (index, day previous to quake=100)



Source: Bloomberg and BBVA Research

Chart 4
Japan: Industrial Production around the Kobe earthquake



Source: Haver Analytics and BBVA Research

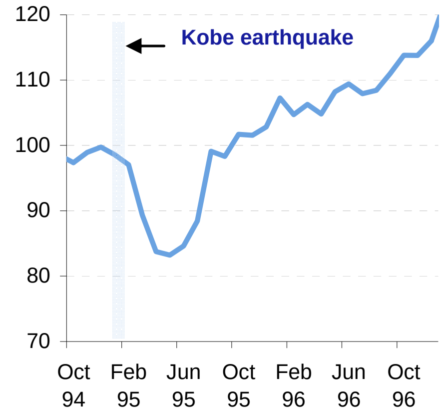
[1] Another example of quick rebounds is Chile, where following an 8.8-magnitude earthquake in February 2010, GDP growth contracted by 0.1% quarter on quarter in the first quarter of that year. The economic damage was estimated at around US$30bn and certain key export industries, such as cellulose, suffered heavy losses. However, there was a sharp rebound in GDP growth in the following quarter, with consumer spending on durable goods and fixed investment in machinery and equipment both rising by more than 20% in real terms from the previous quarter.

Impact on exchange and interest rates

Repatriation of capital will press up the value of the yen, but policymakers will resist further appreciation

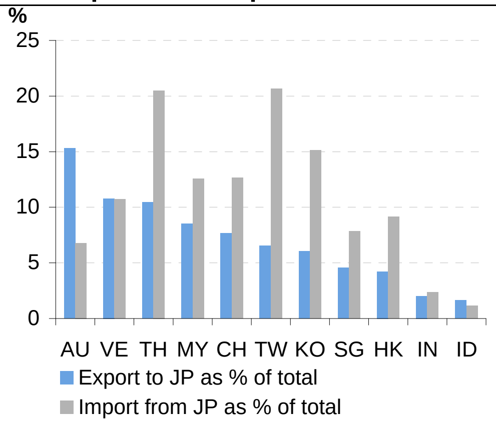
The yen was facing natural appreciation already given that end-March represents the fiscal year-end in Japan and seasonal yen inflows are not uncommon this time of year. Given the events since last Friday, however, the risk is that the yen could face additional appreciatory pressures due to the necessary repatriation flows from corporations that are likely to occur in the coming weeks. The Bank of Japan is trying to provide ample liquidity as standard practice in times of elevated stress (and the only instrument left given official rates at 0.1%). It already announced an injection of 340bn USD, equivalent to 5.8% of Japanese GDP. This, together with the reluctance of the government to see the yen strengthen by much given its ongoing efforts to ensure the recovery of the economy, should limit yen appreciation. We do not see the yen appreciating against the US dollar as it did after the 1995 Kobe earthquake by around 25% (see Chart 5); in fact, it is unlikely the yen will break the psychological level of 80 against the dollar.

Chart 5
Dollar-yen exchange rate around the Kobe earthquake (yer per USD)



Source: Haver Analytics and BBVA Research

Chart 6
Asian countries trade exposure to Japan as of 2010



Source: CEIC, Haver Analystics, and BBVA Research

Reconstruction will frustrate fiscal consolidation efforts, but pressure on long-term rates should be small and manageable

The reconstruction effort comes at a time when fiscal space is already very limited, with public debt around 200% of GDP, compared to less than 100% at the time of the Kobe earthquake. The earthquake will ask for extra budget spending for relief work, which could frustrate the government's efforts to control fiscal debt –until now, this had been a priority for medium-term fiscal plans–. Because. The resulting increase in public debt will exert some upward pressure on long-term rates, but because most of the public debt is held domestically, this should be small and manageable. Furthermore, the liquidity injection by the BoJ means that long-term rates have actually declined immediately following the earthquake.

Global Impacts: growth, interest rates and commodity prices

Impact on regional and global growth should be small

The impact on world's growth will be very mild. The economic impact on other Asian economies at this stage is expected to be limited. Some countries may see an increase in exports to Japan as the reconstruction gets underway, to meet Japan's energy needs in the event of a prolonged closure of nuclear facilities, or to fill a temporary void in international markets (see Chart 6 for those most exposed to Japan). On the other hand, a negative impact could emerge through disruptions in supply chains and/or investment flows from Japan. The sharp sell off in regional stock markets is a reminder of the uncertainties, and the economic impact will need to be monitored over time.

Some selling of US treasuries might occur, but will be short-lived

Given the role of Japan as bondholder of OECD countries (Japan holds 9% of U.S. Treasury bonds and has recently shown much interest in the purchase of European bonds), the quake is expected to press long-term interests upwards. Some US Treasury selling could occur, but will be short-lived as the BoJ will probably start accumulating foreign reserves and invest them in Treasuries to prevent the appreciation of the yen. In fact 10yr rates have hardly reacted since the earthquake struck with notes around a net 4bp lower.

Crude oil prices will be lower in the short-run, due to refinery and industry closures, but would increase in the long-run as the future of nuclear power is questioned

Regarding oil prices, effects on the short and medium run are likely to go in opposite directions. In the short run there has been a sizable reduction in crude oil demand coming from Japan, as economic activity in the industrial sector remains abated and demand from refineries is reduced by around 20% (although prices of refined products should increase due to lower supply). This was reflected in the drop of oil prices when markets opened up on Monday. However, in the medium and long run, it would not be surprising to see a large share of the nuclear-based power generation capacity taken out of line for a long period of time. More importantly, the nuclear accidents at the Fukushima plant have prompted governments elsewhere to revise their plans to continue expanding nuclear-based power generation, thus providing extra demand for hydrocarbon-based power plants and pushing oil prices up in the long run.

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