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SPECIAL EDITION

How the *Japanese earthquake disaster* may affect Australian investors *and the global economy*

The 9.0-magnitude earthquake that struck the Tohoku region of north-eastern Japan on 11 March 2011, and the large-scale human tragedy that ensued, stunned the world. Already more than 12,000 people have been confirmed dead and a further 15,000 are still missing, as search operations remain suspended within the 20-kilometre exclusion zone around the Fukushima Daiichi nuclear power plant¹.

The event brought to the surface both the frailty of human life as well as a nation's fragility. Naturally, when this kind of severe disaster occurs, economic and investment considerations aren't particularly important. Nonetheless, over the years ahead, the region will require both a physical rebuilding and psychological redevelopment to restore confidence. This will clearly have a substantial economic impact.

This paper – compiled by Australian Unity Investments – aims to explore some of the consequences of the earthquake and resulting tsunami, its effect for Japan, and how it may impact investors in Australia and across the world.

A slow recovery

The near-term consequences of the natural disaster are expected to be significant. On 14 March 2011 – the first day of trading after the disaster – the Japanese stock market fell 6.2%.

By the end of the first week, Tokyo stocks had plunged by roughly 10 percent, reaching their lowest levels since 1987. In contrast, the Japanese Yen has increased against

the US dollar – likely a reflection of the repatriation of foreign capital positions by Japanese nationals and firms ahead of the reconstruction effort.

There was also a severe disruption to Japanese production and manufacturing. The Tohoku region services Japan with ports, steel mills, oil refineries, nuclear power plants, and automotive and electrical manufacturers; the four hardest-hit prefectures of Iwate, Miyagi, Fukushima and Ibaraki account for between 6-7% of Japan's population and economic output².

Electricity shortages continue across the country, as one-fifth of Japan's nuclear capacity was suspended. Manufacturing activity within the country has fallen to its lowest reading for two years, with the Markit manufacturing purchasing managers index dropping to 46.4 in March from its February level of 52.9³.

According to a recent Bank of Japan report, business sentiment among medium-sized manufacturers throughout the April-June period is set to plunge from minus three before the quake to an anticipated minus seven⁴. Electrical and automotive facilities have suffered particularly, with production in companies such as Sony and Toyota momentarily brought to a standstill.

Given Japan's integral role in the global supply chain, these gaps in production networks are likely to negatively impact Japan's economy over the near-term.

Real GDP growth for Japan during 2011 is also expected to be negatively affected as a result. Reports from the World Bank suggest it will be impacted by 0.25 – 0.50%.

Importantly, however, it also maintains that growth should pick up in subsequent quarters as reconstruction efforts accelerate. In relation to global GDP, Japan's temporary decline in output is not expected to dramatically impact global growth. Of the International Monetary Fund forecast of 4.20% for the 2011 year, Japan had been expected to contribute only 0.1%.

Lessons learnt from the Kobe earthquake of 1995

When attempting to gauge the lasting economic implications of the Japanese earthquake, the historic patterns of past natural disasters may assist our understanding. This would suggest that the disruptions, although enormous in the short-term, will not be sustained.

The Great Hanshin earthquake, which struck Kobe on 17 January 1995, measured 7.2 in magnitude and left a death toll close to 6,500. At the time, it was the most severe quake to strike a modern urban region.

While the damage following Tohoku is expected to be greater than Kobe, both regions were of similar size and have comparable economic significance for the country. The rebuilding costs for Kobe were \$US100 billion, around 2% of GDP, versus the estimates of \$US122 – \$US235 billion or 2.5-4.0% of GDP following Tohoku⁵.

The Kobe quake ravaged 100,000 buildings, many of the facilities of one of the world's largest container ports, and the source of nearly 39% of Kobe's industrial output. In the weeks succeeding this disaster, we witnessed a decline in Japanese bond yields. This decline was somewhat tempered by the Bank of Japan's injection of emergency liquidity into the economy.

Despite the widespread devastation, the local economy recovered at a steady pace. While industrial production fell by 2.6% during the month of the earthquake, levels had returned to pre-quake standards within two months.

Following the Kobe earthquake, Japan's trade slowed only for a few quarters; imports recovered fully within one year, and exports rebounded to 85% of pre-quake levels.

Less than 15 months after the earthquake, in March 1996, manufacturing activity in greater Kobe was at 98% of its projected pre-quake level⁶.

Analysts suggest likely reasons for this quick rebound were the enhanced procedures and updated machinery to counter losses and prevent sustained disruption in the event of future disasters, coupled with government stimulus, which accelerated processes once production resumed.

Reports from the World Bank provide further comfort by highlighting that reconstruction projects contribute to growth by putting people to work, and replacing infrastructure with more efficient structures helps expand the nation's productivity and growth.

Economies also benefit as damaged roads, ports, buildings and equipment are replaced.

At this point in time (mid-April 2011), the Kobe earthquake experience remains the most suitable historical experience from which we can draw an understanding of how Japan's economy might recover. However, if the nuclear risks escalate and there is a meltdown or serious radiation leakage at the Fukushima

Short-term effects to recover over medium-term

Wingate Asset Management is a global fund manager and joint venture partner with Australian Unity Investments. According to Wingate, while there will be substantial disruptions to Japanese manufacturing, this is likely to be a short-term effect of the earthquake.

As Chad Padowitz, Wingate's Chief Investment Officer explains, "We expect raw material exports from Australia to slow as Japanese manufacturers take time to rebuild capacity. However, this is likely to be compensated by higher prices for raw materials, oil and liquefied natural gas. Importantly though, we believe these are mainly short-term

issues that should be resolved as the enormous rebuilding effort takes place.

"We also believe that over the medium-term, any growing demand for alternative forms of energy from Japan, combined with rising coal prices, may provide an opportunity for Australia if the needs are redirected towards thermal coal or gas."



Daiichi nuclear complex, comparisons may shift to Chernobyl, the world's worst nuclear disaster.

The long-term economic consequences

What differs from the recent experience and the Kobe quake is the 30-metre tsunami that crashed into Ofunato and overwhelmed the 40-year-old Fukushima Daiichi nuclear power plant. As electricity outages still persist across the region, workers are racing to regain control of the plant.

Unfortunately, even a month after the initial crisis, the nuclear threat continues to become more urgent, with reports on 12 April 2011 suggesting Japan was to raise its assessment of the severity of its nuclear emergency to the maximum seven on an international scale, putting it on a par with Chernobyl⁷.

It is this unfolding crisis that threatens prolonged consequences for the country and the global economy. And the effects of such a threat could be catastrophic, leading to long-term ecological and human consequences for many around the disaster area. As well,

should the situation continue to deteriorate, Japan will likely be required to resort to fossil fuels for energy, such as natural gas.

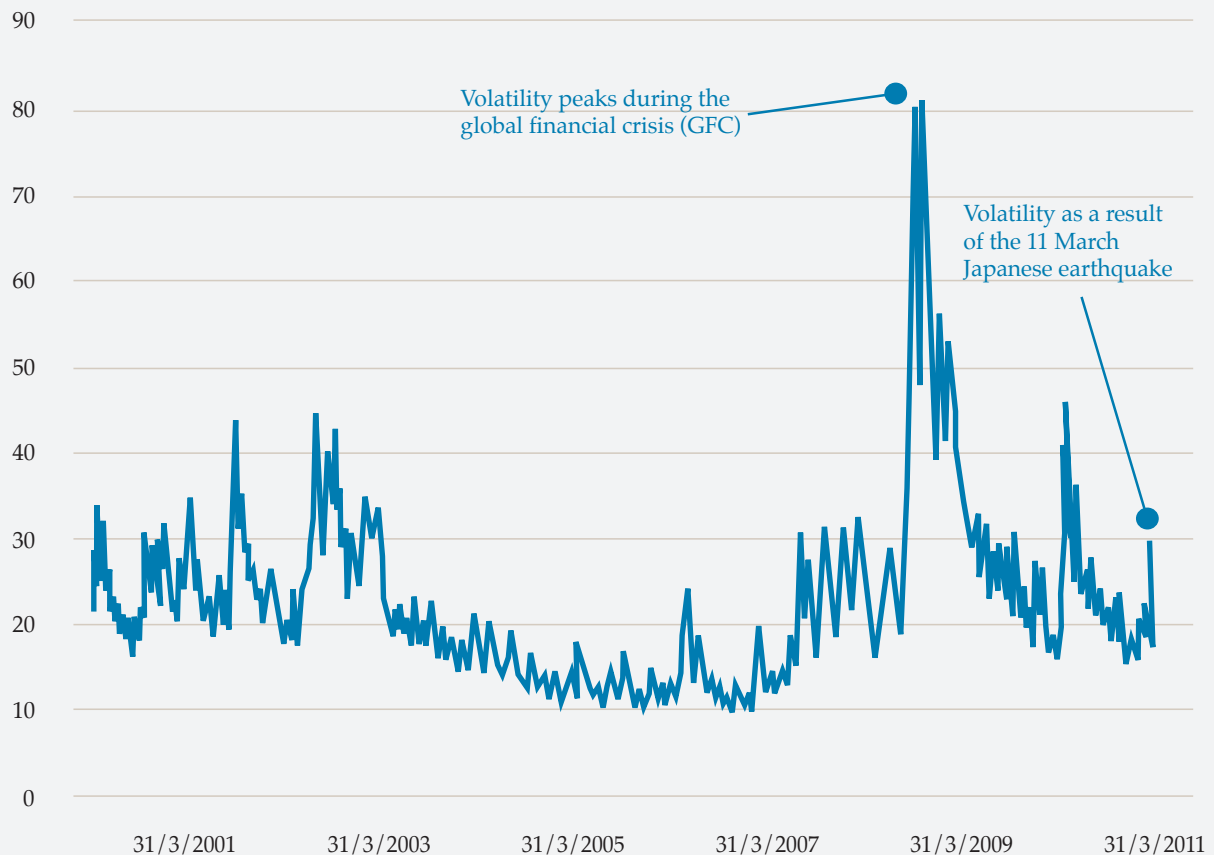
Further, we are now seeing the impact of the nuclear crisis on other projects across the globe. In Germany, Chancellor Angela Merkel announced a three-month moratorium on plans to extend the operation of its nuclear power plants, and Switzerland likewise suspended plans to replace five plants. Italy and Poland have also decided to rethink prior decisions to invest in nuclear energy.

Volatility spikes but settles quickly

As a result of the disaster and the immediate uncertainty, investment markets reacted with a marked increase in volatility. This spike, however, had only a relatively near-term impact as more information and certainty about the situation emerged.

This scenario is a familiar one for investment markets. After almost every severe natural disaster, we generally witness anxious and knee-jerk reactions from investors.

Chart 1: Chicago Board Options Exchange (CBOE) Volatility Index (10 years to 31 March 2011)



Nicholas Bloom, Associate Professor at Stanford Department of Economics, studied the behaviour of organisations following a range of uncertainty shocks, from the assassination of JFK to the 9/11 terrorist attacks.

Bloom argues that volatility shocks are strongly correlated with other measures of uncertainty, such as the cross-sectional spread of firm- and industry-level earnings and productivity growth, and the shocks generate short sharp recessions and recoveries. This theory may help explain the subsequent strengthening of the yen, occurring as a result of weakened investor confidence as investors retreat to safer currencies⁸.

The impact of this uncertainty is evident in the Chicago Board Options Exchange (CBOE) Volatility Index (see chart page 3), which provides insight into market uncertainty and the fear that can capture investment markets. The index charts a rise from approximately 15 in early February to close to 30 in March.

Importantly, these measures would take into account the impact not just of the Tohoku earthquake but also rising oil prices and ongoing political unrest in the Middle East. Nonetheless, compared with the volatility experienced

during the global financial crisis in 2008, these initially elevated reactions have now largely normalised.

The effect for Australian investors

From an Australian perspective, while we do not envisage long-term negative economic consequences, we do anticipate initial impacts to certain exports, as Japan is our second-largest trading partner and third-largest source of foreign investment.

While it is always impossible to accurately predict the future, using history as a guide suggests that the consequences will not be permanent and that the global economy will withstand the temporary economic deceleration within Japan.

¹ NHK World, 1 April 2011

² 'The Tohoku Pacific Earthquake: Economic Consequences', *The OECD Conference Centre*, 11 March 2011

³ 'Japan manufacturing plunges', *The Age*, 1 April 2011

⁴ 'Japan's business confidence to plunge', *The Age*, 4 April 2011

⁵ 'The Recent Earthquake and Tsunami in Japan', *World Bank East Asia and Pacific Economic Update 2011*, Volume 1.

⁶ Horwich, G. 'Economic Lessons of the Kobe Earthquake', *Economic Development and Cultural Change*, Vol. 48, No. 3, April 2000

⁷ Fukushima nuclear disaster now on par with Chernobyl in wake of more quakes, *The Age*, 12 April 2011

⁸ Bloom, N. 'The Impact of Uncertainty Shocks', *Econometrica*, Vol. 77, No. 3 (May, 2009)

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