

OXFORD ECONOMICS

The Economic Impact of the Earthquake and Tsunami in Japan: What Will It Mean for Your Business?

April 2011

**An Oxford Economics syndicated
research proposal**



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1 Introduction

The Tohoku Pacific earthquake which struck Japan on 11th March was the most serious to hit Japan since the Kobe earthquake of 1995, and was followed by a highly destructive tsunami. As well as having significant short-term economic and financial impacts, these disasters could also leave a longer-term footprint on the Japanese and global economies.

In response to the widespread concern about the evolution and effect of the natural disasters in Japan, Oxford Economics is undertaking a syndicated research project to tackle questions relating to the impact on key business areas. The project will seek to analyse how the Japanese economy is likely to develop in the wake of these disasters and to map out a number of scenarios that reflect the key macro-economic and market risks.

The resulting analysis will assist decision-makers and risk managers to clearly understand the possible range of risks that might evolve from the events in Japan and to ensure that their organisations are equipped to adapt to the alternative market conditions.

The proposal is organised as follows:

- **Section 2** sets out our approach to assessing the local and global economic implications of the earthquake and tsunami in Japan.
- **Section 3** outlines our assumptions and potential scenarios
- **Section 4** outlines the deliverables for the project.
- **Section 5** provides backgrounds for Oxford Economics' team for this project.
- Examples of relevant experience are highlighted in **Section 6**.
- **Section 7** sets out the proposed project terms.
- **Appendix A** includes background information on Oxford Economics.
- A project acceptance form is included in **Appendix B**.

If you are interested in subscribing to the study, please sign the attached acceptance form and return to Lou Celi (louceli@oxfordeconomics.com).

2 Project Approach

Oxford Economics will conduct extensive analysis of the effects of the 11th March earthquake and tsunami on the Japanese economy, and the potential repercussions for neighbouring countries and the wider world.

Oxford Economics will conduct this analysis through use of its Global Economic Model, which covers some 46 economies in detail including Japan, the US, most EU economies, China, India and other leading emerging markets. This unique model provides a rigorous and consistent structure for research and forecasting, and allows the implications of alternative global scenarios and policy developments to be readily analysed at the macro, sectoral and regional levels.

We will use the capital flows extension of the standard Oxford Global Economic Model for this study. As well as the features outlined above, the capital flows extension emphasises the important role of the global allocation of financial holdings in determining bond yields and exchange rates.

The capital flows extension to the core Oxford Global Economic Model incorporates a more prominent role for changes in financial wealth, asset allocation and debt stocks in the determination of interest rates and exchange rates in the US, Eurozone and Japan. Specifically:

- Bond yields are determined by bond demand and supply equilibrium.
- Asset allocations are determined by relative rates of return
- Exchange rates are determined by relative demand for currencies as indicated by the balance of payments, i.e. international capital flows. In the long-run, the exchange rate adjusts to ensure the current account is consistent with equilibrium capital flows.

This version of the model was originally developed to assess the impact of such scenarios as the Chinese authorities re-allocating reserves holding from the US to Europe. More recently, it has been a useful tool for assessing the impact of quantitative easing on the US and Global economy.

With sophisticated modeling capabilities and 70 professional economists, Oxford Economics is ideally suited for examining the economic impact in Japan as well as the contagion impacts through the Global Model's trade, financial and commodity price linkages. The Oxford Global Economic Model will be a particularly useful tool for assessing the global ramifications of Japan repatriating assets abroad or selling reserves to support the domestic economy and reconstruction effort. In addition, the model's financial markets facility will provide very valuable insight into the financial contagion resulting from the crisis and its feedback on the real economy. This will include impacts via the stock market, risk premium and credit channels.

3 Key Scenarios and Assumptions

We will develop three scenarios, based on different assumptions about the impact of the earthquake and tsunami on developments in the following areas:

- **The Japanese power sector** – there has been substantial damage to the power generation sector in Japan, which as well as causing short-term disruptions to economic activity of uncertain length could also trigger serious medium-term changes in Japan's energy policy and fuel mix.
- **The private sector** – the natural disasters of March 11 have already led to shutdowns of a number of industrial plants and are likely to result in more prolonged disruptions of supply chains in parts of industry. In addition, the negative impact on consumer and business confidence could weigh on private-sector economic activity more broadly.
- **The government sector** – in response to the Kobe earthquake of 1995, swift government-led reconstruction efforts helped Japan make up the lost economic output in short order. Will this happen again, or will Japan's weak fiscal position and political wrangling lead to a slower and more drawn-out response?
- **Financial markets** – the disaster rocked financial markets in Japan and around the world. How long will it take them to recover and how might they behave if there are further negative developments, for example, in the power sector or the government's response? How might financial markets respond to different approaches by the Japanese government to financing reconstruction, for instance domestic bond finance versus running down foreign exchange reserves?

The possible scenarios are:

- 1) **Rapid reconstruction.** Under this scenario, industrial production in March and April is badly disrupted. With negative effects on other sectors, such as construction and services, the economy contracts in Q1 2011. This puts Japan back into technical recession, but government-led reconstruction efforts get under way quickly. So after a weak first half of 2011 economic activity picks up strongly in the next several quarters. The lost output is largely regained by the end of 2012 but there are some negative financial impacts due to an expansion of the budget deficit and public debt, which weigh moderately on growth in the rest of the forecast period. The rapid recovery of the Japanese economy means international ramifications are limited to short-term disruption of trade with key foreign partners, with an absence of significant financial contagion effects.
- 2) **Extended disruption.** Power shortages drag on for several months, hampering the recovery of industry and depressing consumer and business confidence. Because of greater supply chain disruptions, the industry does not bounce back as quickly as under the 'rapid reconstruction' scenario. In addition, the government's reconstruction efforts are delayed by political conflicts and concerns about financing,

reducing the positive stimulus from this source. This results in a weaker medium-term growth scenario, which reduces financial market confidence with feedback effects on the real economy. Trade with some neighbouring countries suffers in 2011 and 2012, with mild financial contagion effects on the wider world, as Asian growth prospects are reassessed and stock markets decline.

- 3) Nuclear shutdown.** The problems in Japan's nuclear sector worsen, leading to a rapid shutdown of a substantial part of the sector. The sharp political backlash forces the authorities to shut down most of the sector by 2015. This means severe shortages of power in the near-term, hitting economic activity hard and creating a deep recession. In the medium-term, Japan is forced to switch to other fuels, hurting the country's balance of payments and putting upward pressure on the prices of other fuels such as oil and gas. One further result is higher medium-term hydrocarbons.

Higher fuel prices are one source of contagion to the rest of the world, as is the reduced import demand from a weaker Japanese economy. Moreover, this scenario also envisages more significant financial contagion to the wider world caused by several factors, including fears about nuclear safety, a downbeat growth outlook for Asia, and related losses at Japanese and Asian banks. As a result, regional stock markets are hit hard and there is a tightening of credit by banks. Under significant fiscal pressure due to the weakness of the economy, the Japanese authorities choose to sell a significant volume of foreign reserves to finance reconstruction, with additional effects on global financial markets, including the US treasury market.

The exact specification of the scenarios will be discussed with research participants at the start of the study before Oxford Economics finalises the assumptions. For each scenario, we will:

- Quantify the implications for key macroeconomic indicators – such as GDP growth, inflation, public finances, employment, consumer spending – for Japan, key regional partners and the other major world economies.
- Highlight the implications for economic policy – both fiscal and monetary – and for financial markets (bonds, equities, currency, banks).
- Set out a clear roadmap for how the scenario would be expected to develop and the key 'road signs' to indicate whether the current short-term economic disruption will escalate into something more serious and enduring.
- Assess the implications for the global economy, including the US, EU, China and India, as well as for commodity markets.

In addition to the macroeconomic analysis outlined above, subscribers can commission an additional detailed study of the potential impacts of the different scenarios on their business sector. Such studies would utilise Oxford Economics' industry-level expertise, including the Global Industry Model, which covers up to 80 manufacturing sectors across the major world economies.

4 Project Deliverables

The core deliverables from this study will be:

- **A report that outlines the key findings of the project.** The report will highlight the main issues and conclusions in a substantial report and an executive summary.
- **Spreadsheets containing detailed forecasts under each of the three scenarios.** The spreadsheets will contain the alternative forecasts for the key economic variables, such as GDP and components, interest rates and exchange rates, inflation and unemployment.
- **Model databases** will be made available to subscribers of the Oxford Economic Model.
- **A seminar (to be held in London) and a webinar for clients around the world.** The seminar will be attended by the Oxford Economics project team and will provide project participants with an opportunity to raise questions and debate various issues that might arise from the report. There will be a web-based version for non-UK clients.

5 Project Team

Adrian Cooper, Chief Executive Office

Adrian Cooper is responsible for coordinating and managing Oxford Economics' global economic analysis, forecasting and consultancy activities, and overseeing its teams based in Oxford, London, Belfast, Paris, New York, Philadelphia, Singapore and the UAE. He has led Oxford Economics' work on a wide array of consultancy projects, ranging from policy advice to government departments in Europe, the US, Africa and Asia to detailed analysis of the economic impact of particular industries and investment proposals.

Adrian spent the first seven years of his career with HM Treasury, England. During this time, he worked on the analysis of tax and other economic policy changes as part of the preparations for the UK Budget. He was also the coordinator of the government's macroeconomic forecast for two years. Prior to joining Oxford Economics in 1994, Adrian was UK economist for James Capel & Company, responsible for analysing and forecasting the UK economy for institutional investors, as well as briefing Capel's own traders. Adrian was educated at the University of Bristol, England, where he gained a first class degree in Economics; and at the London School of Economics and Political Science, England, where he achieved a distinction in the MSc in Economics and won the Ely Devons prize for outstanding performance in the degree examination.

Scott Livermore, Director of International Macroeconomic Forecasting

Scott Livermore oversees the day-to-day running of Oxford Economics' international macroeconomic forecasting services. This involves supervising Oxford Economics' team of forecasters and developing a consistent global outlook. Scott leads many of Oxford's consultancy projects. Recent projects include developing macroeconomic models for the governments of Azerbaijan and Egypt, analysing the economic impact of R&D spending by the aerospace sector, and assessing the implications of trade liberalisation and CAP reform in the EU.

After completing a degree in Philosophy, Politics and Economics at St. Edmund Hall, Oxford University and an M.Sc. in Economics at University College London, Scott joined Oxford Economic Forecasting in 1997. Scott rejoined Oxford Economics in 2005 as a senior economist after spending two years at the Ministry of Finance in the Slovak Republic developing its medium-term macroeconomic framework and analytical capacity to prepare macroeconomic forecasts.

Adam Slater, Senior Economist

Adam Slater is a senior economist at Oxford Economics, responsible for contributing to Oxford Economics' global macroeconomic view, including writing and editing Oxford's regular publications. He has a particular interest in developments in financial markets, and specific forecast interests in the Japanese and Australian economies. He is also involved in Oxford Economics' work on a variety of consultancy projects.

Before joining Oxford Economics, he spent more than ten years working as an economist and strategist in the City of London for Nomura, Rabobank and Calyon. During this period, he was responsible for analyzing a wide variety of economies in both the developing and the industrialised world. He also covered financial market developments, including currency and bond markets, and worked directly with traders and salespeople to elaborate strategies for use internally and for dissemination to customers. Adam gained a first class degree in Economics from the University of Bath and also holds an MPhil from Cambridge University.

Christopher Portman, Senior Economist

Christopher is responsible for editing and coordinating Oxford Economics' country briefing service, as well as writing analysis on a daily basis. He has also been involved in Oxford Economics' work on Africa and the Middle East and analysis of emerging markets generally. Christopher joined Oxford Economics in 2001, having previously been managing editor for Hilfe Research, based in London.

The first ten years of Christopher's career were with Standard Chartered Bank in London covering developments in Africa and commodity markets. He then moved to ANZ Banking Group in London for ten years as Senior Economist, before becoming vice-president at ANZ Investment Bank, working in the Emerging Markets team, advising bond and local currency traders, working closely with the Syndications teams and liaising with corporate clients, while also producing the regular ANZ Emerging Markets Bond Guide. Christopher was educated at the University of Essex (1972-76) where he gained an upper second degree in Economics and then an MA in Economics

Keith Edmonds, Director of International Industry Services

Keith Edmonds is the Director of International Industry Services at Oxford Economics, leading the international industries team analysing global trends in the motor vehicle, high-tech and tourism sector. He has led Oxford Economics' work on a wide array of consultancy projects, including the production of detailed Tourism Satellite Accounts, models for particular industries and studies of charity legacy income. He also coordinates Oxford Economics' annual forecast for the global tourism industry which covers 181 countries. Prior to joining Oxford Economics in June 2001, Keith worked as a professional economist for fifteen years in London, mainly in City investment banks. He was deputy head of research at the Japanese bank Mizuho International (formerly the Industrial Bank of Japan) from 1994-2000 and a senior economist at NatWest Markets (from 1989-94). His primary focus was on forecasting European economic and monetary developments, in particular analysing the development of Europe's single currency and enlargement projects. Keith was educated in 1979-82 at King's College, Cambridge, England, where he gained an upper second class degree in Economics; and in 1982-83 at the University of Sussex, England, where he achieved an MA in Development Economics.

Rain Newton-Smith, Director of Emerging Market Macro Services

Rain Newton-Smith is the Director of Emerging Market Macroeconomic Services at Oxford Economics, with responsibility for forecasting and monitoring developments in China and Hong Kong. She works with our global model on a range of 'what if' scenarios, including global risk scenarios and the impact of fiscal policy in Asia. Rain joined Oxford Economics from the Bank of England where she had a variety of roles over the course of nine years. These included analysing the supply-side determinants of the UK economy, preparing the international forecast for the Monetary Policy Committee and working as a research advisor to Richard Lambert, a former member of the MPC. In 2004, Rain started a two-year secondment as an advisor to the UK Executive Director at the International Monetary Fund in Washington D.C., where she worked on global financial stability issues as well as on economic development in the Middle East. Rain returned to the Bank of England to lead a team on risk assessment, contributing to the Bank of England's Financial Stability Report. Rain studied Politics, Philosophy and Economics at Oxford University and holds an MSc in Economics from LSE with a focus on international trade.

6 Oxford Economics' Track Record

- **Scenarios for the global economy in the wake of the global financial crisis and implications for clients' markets and businesses** – studies for a wide range of clients in the financial, insurance, business services and manufacturing sectors.
- **Production of regular scenarios for major economies**, examining a variety of upside and downside risks for a range of clients including Royal Bank of Scotland, Bradford & Bingley and the Royal Mail.
- **Economic modelling and scenario analysis for thought leadership studies** conducted for a number of leading consultancies.
- **Development of models for oil demand by sector and fuel type** and studies on the impact of oil on the emerging market economies for the OPEC secretariat, Vienna. These models produce detailed oil demand and price forecasts for seven sectors and seven product types across key emerging market economies. The models are used to assess alternative scenarios – for example, the impact of changes in world oil prices, imposing energy cuts or taxes, boosting chemicals output or raising urbanisation and access to electricity generation.
- **Demand and supply of energy modelling** for the US Department of Energy. Detailed modelling of the supply and demand of energy for over 40 economies, separately identifying oil, gas, coal, electricity and other primary fuels, and for the major economies analysing demand at a sectoral level. This model was used in work for DoE and the European Commission to analyse the impact of measures to reduce carbon emissions.
- **Input into Ernst & Young's new quarterly Eurozone Forecast (EEF)**. Oxford provided the economic analysis underpinning the report. The new quarterly economic forecast is based on the European Central Bank's model of the Eurozone economy, which is used by the ECB to produce its quarterly forecasts for the euro area. **An assessment of the impact of a Californian debt default (with and without contagion impacts)** for a major international bank.
- **What-if analysis on how Asia would fare under various economic scenarios** for the Asian Development Bank.
- **Research on the impact and cost of Avian flu across the Asian economies** - for the Asian Development Bank.
- **Analysis into the effects on the US economy of trade and investment with China** - for the US-China Business Council.

7 Project Terms

The participation fee for this project is \$8,500 (plus VAT, where appropriate), to cover the project deliverables set out above for the macroeconomic analysis.

Existing Oxford Economics' clients who subscribe to the Oxford Global Economic Model or Global Industry Model will be entitled to a discount of 50%.

Work on the project will begin in April and the report will be delivered to participants in May.

The webinar and seminar will be held in London in late May.

APPENDIX A: About Oxford Economics



Oxford Economics - formerly Oxford Economic Forecasting - was founded in 1981 to provide independent forecasting and analysis tailored to the needs of economists and planners in government and business. It is now one of the world's leading providers of economic analysis, advice and models, with over 300 clients including:

- **International organisations**, such as the World Bank, OPEC and the Asian Development Bank.
- **Government departments** in many countries, including HM Treasury in the UK; the US Department of The Treasury and US Office of Transnational Issues; Ministries of Finance in, for example, Saudi Arabia, Slovakia, Bulgaria, Azerbaijan, Turkey and Egypt; the Economic Development Board in Libya; and tourism boards in the EU, US, Abu Dhabi, Dubai and the Caribbean.
- **Central banks around the world**, ranging from the UK and Spain to Chile, Hong Kong, Korea and Thailand.
- **A large number of multinational blue-chip companies across the whole industrial spectrum**, including, for example, IBM, Intel, BP, Shell, Unilever, HSBC, Banco Santander, Swiss Re, DaimlerChrysler and Boeing.

Oxford Economics commands a high degree of professional and technical expertise, both in its own staff of over 70 professionals based in Oxford, London, Belfast, Paris, the UAE, Singapore and Philadelphia, and through its close links with Oxford University and a range of partner institutions in Europe and the US.

Oxford Economics' services include:

- **International macroeconomic, sectoral and regional forecasts** – with country briefing reports covering 190 countries; detailed projections for 85 sectors; and forecasts for local areas throughout the EU and cities in Asia.
- **Bespoke econometric modelling** – building detailed forecasting and simulation models and training clients' staff to use them to support budget planning and policy decision-making.
- **Detailed market analysis** - translating our economic forecasts into forecasts for market segments and providing advice on market opportunities.
- **Briefings for ministers, senior officials and executives** – both presentations and tailored written reports on key economic issues.
- **Outsourced economics support** – providing on-call advice, data, modelling, briefing and policy advice.
- **Economic impact assessments** – analysing the economic and social contribution of particular sectors, investment projects or tax proposals.

The key framework in which Oxford Economics' analysis is conducted is its own Global Econometric Model, which covers some 45 economies in detail and headline statistics for another 35 economies. This Model – which is unique among the commercial economic consultancies – provides a rigorous and consistent structure for analysis and forecasting, and allows the implications of alternative global scenarios and policy developments to be readily analysed at the macro, sectoral and regional levels. It is provided with very powerful, user-friendly software, which enables Oxford Economics' clients to use its Global Model to generate their own forecasts and undertake detailed scenario and policy analysis.

APPENDIX B: Project Acceptance Form

I wish to participate in the Implications of Japanese earthquake and tsunami syndicated research for a fee of \$8,500 (plus VAT, where appropriate)

.....(Organisation name)

.....(Signature)

.....(Name)

.....(Title)

.....(Date)

Email address.....

Please indicate if you believe that you qualify for a discount of 50% as an existing client of Oxford Economics and subscriber for one or more of the following services listed below.

Please sign and date this acceptance form to indicate your agreement to participate in the project and fax a copy to Lou Celi on + 646-688-4029

Service subscriptions entitling clients to 50% discount:

- | | |
|---|--------------------------|
| Global Macro Service | <input type="checkbox"/> |
| Global Economic Model | <input type="checkbox"/> |
| Full subscription to Country Economic Forecasts | <input type="checkbox"/> |
| Global Industry Forecasts | <input type="checkbox"/> |
| Global Industry Model | <input type="checkbox"/> |
| European Cities & Regions Service | <input type="checkbox"/> |

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