



Implications of a long-term increase in oil prices for tourism

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ABSTRACT

It is expected that global oil prices will increase in the future. Assessing the overall economic impacts on tourism is difficult, as oil price rises will be concomitant with global changes in other commodity prices, exchange rates, and incomes. A general equilibrium perspective is therefore presented in this paper. The model couples a global general equilibrium model with a purpose-built CGE model of New Zealand, which focuses on describing tourism supply and demand in some detail. The results indicate a decrease in real gross national disposable income of 1.7% for a doubling of oil price and a 9% reduction in the real value of tourism exports. As a result of segment-specific price increases and differing income and exchange rate effects and elasticities, the reduction in demand for tourism in New Zealand by 18 segments differs substantially. The greatest reduction in demand is observed for tourists from the United Kingdom.

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1. Introduction

Concern over the availability of oil as a finite natural resource has been prevalent since the oil crises in the 1970s. More recently, speculations about peak oil have sparked substantial interest, reflected in an increasing number of scientific publications, dedicated websites (e.g. www.theoildrum.com) and media coverage. Examples include “Global downturn cushioned peak oil impact” (Waters, 2010, ABC news) and “A new era of cheap oil is just wishful thinking” (Halligan, 2008, Telegraph). Despite differences in the various oil assessments (Bentley, 2002; Campbell & Laherrère, 1998; Greene, Hopson, & Li, 2006; Hirsch, 2008), there now seems to be a wide belief that conventional oil is likely to decline in the near future, probably before 2020 but no later than 2030 (UK Energy Research Centre, 2009). The International Energy Agency's (2009) (IEA) World Energy Outlook estimates that non-OPEC conventional oil production peaks around 2010, which means that the predicted global oil demand growth of 1% p.a. from 2007 to 2030 needs to be met with oil from increased production of OPEC countries and of non-conventional resources (e.g. oil sands).

A large number of factors influences the price of oil in the short term, but long-term prices are driven by world oil demand and supply, which is ultimately limited by resources. Several studies show the negative economic impacts of oil supply shocks for net

oil-importing countries (Blanchard & Gali, 2007; Jones, Leiby, & Paik, 2004). Countries' oil vulnerability depends on a range of market and supply factors, such as share of oil costs in national income, the intensity and technical efficiency of use of oil in production, flexibility of the labour market, the ratio of value of domestic reserves to oil consumption, exposure to geopolitical risks, and the availability of alternative energy sources and the ability to substitute to these (Gupta, 2008; Peersman & Robays, 2009). Also, some individual industries are more vulnerable to high oil prices than others. The aviation industry alone, for example, currently consumes 6.3% of world refinery production (Nygren, Aleklett, & Höök, 2009).

Tourism is clearly dependent on oil, largely because of its inherent transport component (Becken, 2008). Additionally, there are a range of particularly vulnerable tourism activities, such as recreational activities that depend substantially on fossil fuels (e.g. scenic flights, jetboating, and boat cruises, Becken & Simmons, 2002). Countries that rely strongly on tourism as an export industry are potentially relatively more vulnerable than those that do not rely on people being transported between and within destinations. Current tourism forecasts, both by the United Nations World Tourism Organisation for global travel and by national agencies such as the New Zealand Ministry of Tourism indicate ongoing growth, ignoring potential impacts of higher oil prices. This oversight is risky, especially when major investments, such as expansions of airports, are made based on expected demand increases.

Tourism has proven relatively resilient to many adverse events, including terrorism, pandemics, flight disruptions due to the

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volcanic ash cloud in April 2010, climate change concerns and high fuel prices. However, the extreme increase in operating costs for airlines in 2008 due to unprecedented prices for aviation fuel also meant, that despite the introduction of fuel charges, the global airline industry recorded record losses (in the order of US\$ 5.2 billion for the year 2008, [International Air Transport Association, 2008](#)). Even if alternative fuels become commercially available for airlines they are still likely to be more expensive than present aviation fuel. Higher airfares in the future are likely to lead to reductions in travel and cause tourists to shift from more distant to closer destinations (e.g. [Gillen, 2004](#)). While some of the economic responses to higher oil prices are obvious, assessing the overall economic impacts on tourism is difficult. Long-term changes in global oil price rises will be concomitant with global changes in other commodity prices, exchange rates, and incomes. It is therefore important to consider the impacts of high oil prices on tourism from a general equilibrium perspective, rather than relying only on bottom-up, partial equilibrium approaches.

This paper describes a two-stage modelling approach to construct and analyse high oil price scenarios for New Zealand. In the first stage, we use a global general equilibrium model to simulate a negative productivity shock to global oil production that causes a 100% increase in global oil prices. From these simulation results, we determine (a) macroeconomic impacts on tourist origin countries and so the effect on tourism demand from these countries, (b) the changes in relative prices of goods and services imported to and exported from New Zealand, and (c) changes in demand for New Zealand's non-tourism exports. These changes are then analysed using a purpose-built CGE model of New Zealand, which focuses on describing tourism supply and demand in some detail.

2. Background

Research in Scotland ([Yeoman et al., 2007](#)) and more recently in New Zealand ([Becken, 2008](#); [Becken & Schiff, 2010](#)) suggests that tourism is likely to suffer in an environment of high oil prices. Given that tourism destinations typically receive tourists from a range of origins it would be useful to understand if some countries are more

vulnerable to increasing oil prices than others. Several studies provided evidence that net oil-importing countries are more vulnerable to higher oil prices than oil exporting countries ([Gupta, 2008](#); [International Monetary Fund, 2006](#)). For the particular case of New Zealand, [Fig. 1](#) shows the top ten countries of origin for international visitor arrivals and the percentage of net oil imports or exports in their GDP. Only Canada is a net oil exporter.

New Zealand is a long-haul destination for all of its major markets, except for Australia, and major increases in the cost of international air transport threaten international tourism to New Zealand ([Becken, 2008](#)). Recent work by [Small and Sweetman \(2009\)](#) indicates that based on tourist arrivals between 1996 and 2008, changes in the oil price and airfares each had significant but weak effects on tourist arrivals to New Zealand. Other macroeconomic variables are generally found to be more important, especially income ([Davis & Mangan, 1992](#); [Dritsakis, 2004](#); [Munoz & Amaral, 2000](#)). Income in countries of origin influences both travel propensity and distance ([Lim, Min, & McAleer, 2008](#); [Nicolau, 2008](#)). In many cases, higher oil prices are likely to be associated with negative income effects that are likely to reduce global tourism and redistribute flows ([Becken, Ngyen, & Schiff, 2010](#)). Reduced economic activity is also likely to result in reduced volumes of business travel ([Njegovan, 2005](#)).

While both economic theory and empirical studies (e.g. on income effects) indicate negative impacts on tourism demand, the exact effects of higher oil prices for specific destinations are far from clear. First, different market segments show different sensitivities to price changes. It is plausible that visitors to long-haul destinations are generally wealthier than average and therefore potentially less affected, as energy costs would be a smaller proportion of their income compared with those from less wealthy groups. No research could be found on such differential effects in countries of origin. Second, oil prices do not linearly translate into higher transport costs, especially not on air routes that are highly competitive and that are maintained for strategic reasons. Third, many other factors shape tourists' decision making, including emotional drivers or those related to images, fashions and perceptions. Increasing environmental awareness of tourists could also be an important factor in the future ([Becken, 2007](#)).

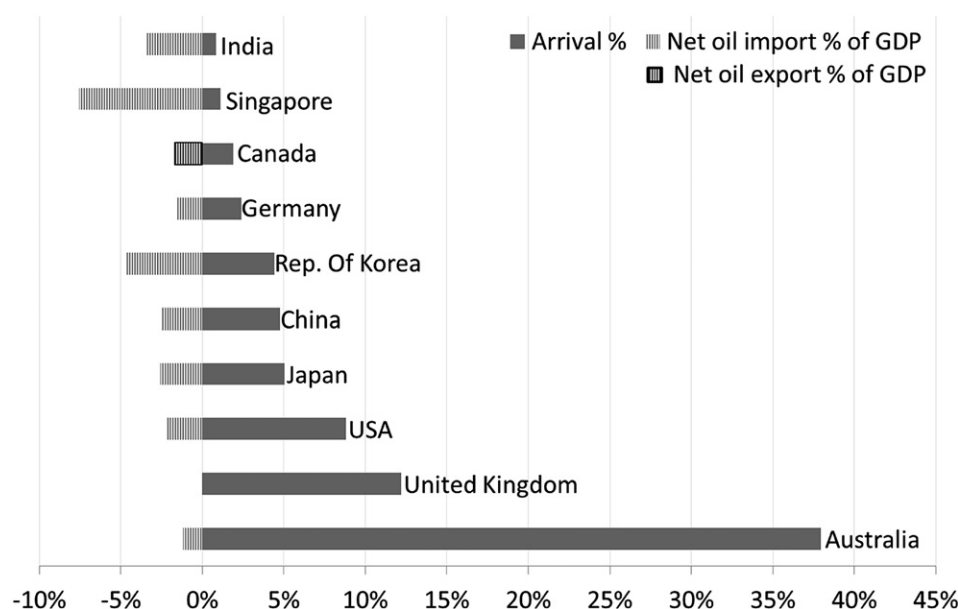


Fig. 1. Top ten countries of origin for New Zealand international visitors and importance of oil in GDP (Source: NZ Ministry of Tourism, 2009; United Nations Statistics Division, 2007) (Note: Singapore differs from the other countries in that it is a major oil refiner and trade hub).

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