

# Chapter 11

## Analysis of the Robustness of Norway's Economy and Energy Supply/Demand Fluctuations

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### ABSTRACT

*The high dependency on fossil fuels, fluctuations in prices and supply have macro/micro-economics effects for both energy exporters and importers. Therefore, understanding economic stability based on energy market changes is an important subject for policymakers and researchers. Norway, as a fossil fuel exporting country, is a good choice for the analysis of the relationships between economic robustness and fossil fuel economic fluctuations. While the country is one of the pioneers in the field of sustainable energy utilization, they have tried to provide a robust economic environment for oil export revenues. In this chapter, the impacts of energy changes on the economy are investigated in Norway. In this regard, first, the impact of oil prices on macro-economic parameters is discussed. Afterwards, the main issues related to energy economics including resilience of the energy sector, energy policies, economics analysis of the energy sector, and the electricity markets are discussed.*

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## **INTRODUCTION**

Norway is one of the Nordic countries with a population of 5.22 million and one of the richest in economic terms and social welfare provision in the world (Fløttum, Dahl, & Rivenes, 2016). While the country is one of the richest in fossil fuel reserves and production, more than 96% of electricity is generated by hydropower ("International Energy Agency," n.d.). Although available hydropower resources in Norway can provide low-cost electricity, the costs of electricity usage are more expensive than in other countries like Sweden. Hence, the government has decided to reduce the dependence of the budget on oil income. Norway as one of the energy exporting countries plays a key role in securing oil supplies to the European Union; thus, its economic stability is crucial, especially for European countries (International Energy Agency, 2014b; Claes, 2010). Therefore, it can be stated that investigating the relationship between the energy and economics in Norway has a great importance (Yousefi, Hamlehदार, Tabasi, & Noorollahi, 2017).

Energy as the main input of products/services has a significant effect in improving living standards. On the one hand, energy price and world energy demand have increased, on the other hand, fossil fuel replacement with renewable energies to meet energy demand has developed gradually. For these reasons, energy security has become a major concern for most societies (Mehrpooya, Mohammadi, & Ahmadi, 2018; Mohammadi et al., 2018; Noorollahi, Itoi, Yousefi, Mohammadi, & Farhadi, 2017; Noorollahi, Saeidi, Mohammadi, Hosseinzadeh, & Amiri, 2017; Yousefi, Roumi, Tabasi, & Hamlehदार, 2017; Yousefi, Tavakkoli-Moghaddam, Oliaei, Mohammadi, & Mozaffari, 2017). Because Norway is a wealthy country in terms of energy resources, thus the policy of using indigenous energy resources has helped the industrialization and economic growth in this country (Tønne & Tonne, 1983). In 2013, Norway was the first country in the world based on sustainability management and economic growth ("Norway - the official site in Canada," n.d.). Given the relationship between energy and economic growth, energy price plays a decisive role in economic activity (Stern, 2004).

## **BACKGROUND**

Many empirical studies have investigated the relationship between oil price fluctuations and macroeconomic activity. Moreover, the importance of taking the two-way causality into account with regard to international shocks is strongly emphasized (Baumeister & Peersman, 2013; Kilian, 2009; Kilian & Murphy, 2012). (Kilian, 2009) and (Kilian & Murphy, 2012) demonstrated that oil demand volatility was the most significant factor in oil price fluctuations throughout the 1974–2009

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