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THE SUSTAINABILITY- SECURITY TRADE-OFF IN ELECTRICITY MARKETS

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Summary

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Abstract

THE SUSTAINABILITY-SECURITY TRADE-OFF IN ELECTRICITY MARKETS

Energy markets in many EU countries are undergoing substantial changes. Most importantly, to mitigate the effects of climate change, more and more renewable resources (i.e., wind, sun, and biomass) are being used for electricity generation. Two of the Europe 2020 targets are the reduction of greenhouse gases by 20% compared to 1990 and the increase in renewables in the energy mix by 20%¹. By 2050, the aim is to achieve an emissions reduction of 80-95% compared to 1990 levels.

The increase of renewable energy in the electricity mix changes the conditions for three important aspects of the 'energy security' concept. (1) The expected increase in electricity prices resulting from investments in renewables and the grid infrastructure will make it more difficult for households to cover their electricity bills. (2) The dependence on fossil fuel imports will likely be reduced. (3) The quality of service could drop as the existing grid may not be apt to even out the volatility of the additional supply of renewables. This could lead to more frequent and longer blackouts. Technical solutions to counteract a decline in service quality are available (smart grids or energy storage devices), but their development and implementation is costly.

The effects of price changes and the consumers' willingness to pay for renewable energy have been studied before. Most find that the public support in Europe for renewable energy is high. The sustainability-security trade-off is an overseen additional cost of the increase of renewables in the electricity mix. Earlier studies eliciting people's attitudes towards energy issues show

substantial differences in the valuation of energy security across Europe. For instance, while the number and the average duration of blackouts are four times higher in the UK than in Germany, security of supply is perceived to be more important by those residing in Germany. However, to what extent the willingness-to-pay for renewables is undermined by the sustainability-security trade-off remains an open question. Previous empirical studies have not looked at the consumers' attitudes towards the sustainability-security trade-off, i.e. the interplay between the increase in renewables, the decrease in the dependence on fossil fuel imports and the potential increase in the frequency and duration of blackouts. Our research seeks to fill in this gap by exploring this interplay in more depth.

We are therefore in the process of conducting a survey that looks at: (1) the perception and the valuation of energy security in the context of an increasing energy supply from renewable sources in Germany and the UK; because the two countries have adopted different energy policy regimes, a comparison between the two can provide additional insights. (2) the trade-off between the share of renewable energy in the total mix, the blackout risk and prices, and (3) the determinants of the respondents' valuation.

¹ See <http://ec.europa.eu/europe2020/targets/eu-targets/>

