A TWO-COUNTRY CGE MODEL FOR INDONESIA AND MALAYSIA: CROSS-BORDER IMPACTS OF ENERGY SUBSIDY AND ITS REMOVAL

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Overview

The energy subsidy in Indonesia started in 1967. With no restrictions on the purchase and retail of the subsidized fuels as well as electricity, the distributional effects have been unequal and favored the rich who are more capable to consume more. The energy subsidies appeared to drive for more inefficient use of fuels and electricity, and distort the market signals for energy-related investments. On the government side, they became a fiscal burden and limits the fiscal policies' capability to stimulate economic growth (Widodo et al., 2012).

Malaysia also provides subsidies on petroleum fuels and electricity. Specially, the subsidies on electricity has two channels. One is through subsidizing the natural gas supplied to TNB (one half of the company's power generation capacity is natural gas-fired), the Malaysian national power corporation. The other is through special rebates given to low income households. Energy subsidies cause more serious problems in Malaysia than in Indonesia. Specially, such subsidies in Malaysia were believed to incentivize the use of outdated and dirtier technologies with negative environmental impacts (Hamid and Rashid, 2012).

The impacts of Indonesia's energy subsidy removal have been studied by a few studies which arrived at controversial conclusions. Hope and Sigh (1995), IEA (1999) and Mourougane (2010) estimated that GDP could be stimulated rather than depressed. Clement et al. (2007) estimated that there would be 2% real output loss in the case of Indonesia. The study by Widodo et al. (2012), using a Social Accounting Matrix method, shows a negative impact of subsidy removal on GDP. However, with reallocation of the subsidy to targeted sectors could offset the negative impacts to a large extent.

The Malaysia government is considering the so-called rationalization of subsidies, implying liberalization of pricing to reflect the cost of supply while keeping the subsidies to targeted social groups. The impacts of Malaysia's energy subsidy removal has been studied by Hamid and Rashid (2012), using a CGE model with the I-O table partitioned into energy and non-energy blocks. This study shows a painful process of subsidy removal to the economy, including declining wages and rising costs of production factors which could substitute for reduced use of fuels. However, the authors emphasize that such is healthy to long-term economic growth path of Malaysia and boost the competitiveness of Malaysia Industries.

Indonesia and Malaysia are not just geographically close neighbors. The two economies are also well linked. For Indonesia, Malaysia is not only the closest neighbor, but also the 7th biggest export market. For Malaysia, Indonesia is the 9th biggest market for its exports. As the two countries share a lot in terms of culture, language, as well as economic structure, it makes sense to ask how energy subsidies on both sides have affected each other.

Furthermore, both countries are embarking on massive reduction of energy subsidies. It is also interesting to see what would be the cross-border impacts of such actions. Scenario analysis could further display the difference in timing of action from either of the two countries. Namely, if Malaysia cut energy subsidies first, what the impacts on Indonesia would be, and vice versa.

Last but not least, which sectors of the two economies would be affected most and how policies to reallocate the fund of energy subsidies as public transfer for investment and consumption in different sectors would affect real output and welfare of each sector are also interesting questions.

Methods

With the above-raised research questions, a two-country CGE model with detailed economic activities and behavior modelled using econometric sub-models is built. Simulations are run to show not only the impacts of energy subsidy reduction, but also the impacts of different sequence in doing so by the two countries.

The CGE model is adapted from the model by Hosoe et al. (2004), with extension to the modelling of energy sectors as well as energy products as factor inputs and commodities for consumption. At the current stage, the model will be static and nonlinear. It thus serves as a tool for short-term impact analysis. In the future, the framework could be extended into dynamic models.

Results

The impact of energy subsidy removal on the two economies are estimated. Scenarios are also simulated with sequential actions of subsidy removal by the two economies. Cross-border impacts of such removal are identified. The key measures of the impacts include: output levels, imports and exports, investment levels, welfare changes to households, and so on.

Conclusions

The following conclusions and policy recommendations could be expected from this study:

- What policies are needed to ensure net welfare gain for the economy in implementing energy subsidy reduction
- What policies could reduce energy subsidies while minimizing the negative impacts on its own economy as well as possible leakages to trade partners
- What policies are needed to minimize the negative impacts on specific sectors and social groups
- What policies are needed to optimally reallocate the funds for energy subsidies to various sectors and social groups
- How to synchronize policies for removing energy subsidies to minimize negative impacts and to maximize possible gains

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