

Fuel Subsidies, the Oil Market and the World Economy

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Fuel subsidies are used by many developing countries to help lower the cost of energy for their people. According to the International Energy Agency (IEA) there were 37 countries with subsidies on oil products for an estimated total value of \$285 billion dollars in 2011. In general, countries which are net exporters tend to have the largest subsidies. The size of the subsidies has skyrocketed over the last 10 years. The existence of such large and widespread subsidies undoubtedly has an effect on oil demand and world oil prices.

In this paper, we develop a transparent, two-country Dynamic Stochastic General Equilibrium model to study the impact that fuel subsidies in oil exporting countries have on the world oil market, and the pattern of world trade. We assume both the oil exporters and importers produce oil, with the oil importers also manufacturing a traded, non-oil good. The non-oil good is used in oil production and also consumed by households in both countries. The model fits in to the recent literature on general equilibrium models that include an oil sector and endogenous oil prices.

We identify 24 oil producing countries which have fuel subsidies. We find that in recent years they consume about 13.5 percent of the world's oil, produce nearly 48 percent, and have retail fuel prices around 34 percent of world prices. To analyze the impact of these subsidies on oil markets and the global economy, we calibrate our model to match this data. We then conduct the policy experiment of permanently removing the subsidies on oil and analyze how this affects the relative price of oil, the consumption of both oil and non-oil goods, oil production, GDP and welfare in the long run.

With our benchmark calibration, the results show that removing the subsidies would reduce the world price of oil by about 6 percent. Consumers in oil exporting countries would re-allocate their consumption away from fuel products towards other goods and consumers and manufacturers in the oil-importing country would consume more oil. The removal of the subsidy and the consequent oil price decline act as a positive oil shock for the oil-importing country, leading to a small increase in non-oil GDP. We also analyze how the removal of subsidies affects welfare in both the oil importing and exporting countries and find that for our benchmark calibration welfare in both countries increases when the subsidies are removed.

Certain factors are particularly important in determining the results. These include the elasticities of oil supply and oil demand, as well as the share of oil production and consumption in the two countries. Given the uncertainty surrounding the values of the elasticities, we considered the robustness of our results to variations in these factors. The qualitative nature of our results generally holds for a variety of calibrations considered, and we find that removal of the subsidies is welfare enhancing for the oil importing countries in all cases considered.

On the other hand, if oil import demand is sufficiently inelastic, the removal of subsidies can cause welfare in the oil-exporting countries to fall. The subsidy artificially increases the world price of oil, and as the subsidizers are large net exporters of oil they potentially stand to benefit from increased export revenue at the expense of the oil importers. When demand for imported oil is very inelastic, removing the subsidies leads to a large decline in oil export revenue. The oil exporting country, in these cases, is unable to increase its consumption of the non-oil good enough to offset the decrease in oil consumption brought about by removing the subsidies, and experiences a welfare loss from doing so. In general, the optimal subsidy is not zero as there is a tradeoff between exploiting inelastic oil import demand and the negative consequences of distorting oil supply and consumption in the oil exporting country.