

**Discussion of  
Drago Bergholt's and Vegard Hoghaug Larsen's  
"Business Cycles In An Oil Economy"**

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# This Paper

- presents a model of an oil-exporting economy. The environment is a two-country model:
  - One country is large and closed.
  - The other is small and with a large share of oil in GDP.

## — Features of Interest:

- (a) Oil price is endogenously determined.
- (b) Oil sector is related to the rest of the economy through input-output connections.
- (c) A sovereign wealth fund used to smooth out oil-related wealth effects.

- The model is partially calibrated and partially estimated using Bayesian techniques.
- Results are presented in the form of a variance decompositions, impulse responses, and a number of counterfactual exercises.

## Main Results

**(1)** Oil price shocks are not very important drivers of Norwegian GDP. They explain at most 10 percent of its variance at any horizon.

**(2)** The effects of oil price shocks on the Norwegian Mainland economy stem, not from wealth effects, but from derived demands for goods produced by the mainland economy and used as intermediate inputs in the oil industry.

**(3)** The sovereign wealth fund has a significant stabilizing effect on the Norwegian Mainland economy.

## **Overall Assessment**

The paper is well written and makes a number of relevant contributions.

## Estimation

- The sample is 2000:Q1 to 2014:Q4 (2 to 3 business cycles). This is too short a sample to estimate such a large model (about 36 structural parameters).
- The rest of the world is proxied by Europe-28. This is a bit unsatisfactory, since this bloc of countries is unlikely to be economically large enough to determine the world oil price and other world variables relevant for the oil exporter. Suggestion: use G7 plus (data permitting, China).

## What Is An Oil-Price Shock?

- In the present model, the price of oil is endogenously determined within the large closed economy.
- Therefore, the model does not feature such a thing as an oil-price shock.
- The paper, however, does present impulse responses to an oil-price shock, which is confusing. What is this shock?
- By an oil shock, the paper means a productivity shock in the oil sector of the rest of the world.
- What is the rationale behind this choice? It turns out that in the estimated model, most of the variance of the oil price is explained by this productivity shock.
- Two Suggestions: (1) Drop the terminology 'oil-price shock' in favor of, e.g., 'external oil productivity shock.' (2) Explain how much of the variance of the oil price is explained by this shock.

## The Foreign Bloc: Necessary?

- The foreign bloc is a fully fledged dynamic economy. This feature make the model large and complicated to estimate.
- The payoff, however, is quite small. Shutting off all of the endogenous responses of the foreign economy to a productivity shock in the oil industry makes almost no difference for the response of the oil exporter (Norway).
- Also, as mentioned earlier, the estimation of the model implies that there is no significant difference between the price of oil and the productivity shock in the international oil industry.
- **Conclusion:** A simpler version of the model without a foreign bloc and in which the price of oil follows an exogenous stochastic process is likely to perform as well as the present model

# Counterfactuals and the Lucas Critique

- One of the counterfactual exercises presented consists in removing the sovereign wealth fund.
- The elimination of the SWF causes the economy to be much more sensitive to changes in oil prices.
- The conclusion is that the SWF does contribute to stabilizing the business cycle in Norway.
- The exercise, however, keeps constant all other aspects of the policy regime, such as the interest-rate feedback rule.
- In reality, it is reasonable to expect that the Norges Bank would change monetary policy in response to the removal of the SWF. Similarly, the fiscal authority is likely to alter its government spending policy.
- Suggestion: Compute the optimal monetary-fiscal regime with and without the SWF. Then compare the resulting responses to an innovation in the price of oil.



## Conclusion

- This is an interesting and relevant paper.
- It is one of few studies of the macroeconomics of oil shocks that puts the oil exporter at center stage.
- It presents relevant findings regarding the importance of input-output relations between oil and nonoil sectors and the stabilizing properties of a sovereign wealth fund.
- The findings in this paper are relevant for understanding business cycles not only in oil-exporting economies, but more generally in commodity exporting countries.