

Changing Oil Market Fundamentals and the Implications for OPEC Strategy

Daniel P. Scheitrum Amy Myers-Jaffe Lewis Fulton

University of California-Davis

dpscheitrum@ucdavis.edu

Presentation to ITS Seminar, September 30, 2016

Overview

- 1 Introduction
- 2 Implications for OPEC
- 3 Dynamic optimization results
- 4 Conclusion

Background

Since 1980s, “**easy oil**” running out.
World becomes **increasingly reliant on OPEC oil**.

In this scenario:

- OPEC reserves become increasingly valuable
- OPEC benefits from **strategically deferring production**

Recent events → departure from conventional understanding.

Shale Boom: non-OPEC reserves not as scarce

Global economic & oil consumption outlook downgraded

Oil Industry: Conventional Wisdom

- Crude oil demand growth starting to be questioned
 - Climate Initiatives
 - Paris Climate Agreement
 - Keep it in the Ground
 - Weakening Economic Growth
 - “Risks to the global outlook remain tilted to the downside.” IMF, Jan 2016
 - “Developing economies are catching up ever more slowly.” - Economist, Jun 2016.
 - Advances in efficiency upcoming
 - improvement in fuel economy standards
 - improved logistics

Methodology

Results of our oil projections inform a model of OPEC strategy

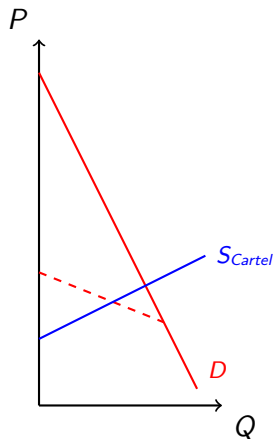
- Solve for optimal OPEC production path in the face of a perfectly competitive fringe
- Adjust parameters to allow for deviations from conventional wisdom
 - 1 **Increased fringe reserves** (Fracking)
 - 2 **Negative oil demand growth** ("Peak Oil Consumption")

Implications for OPEC

Start with a model Cartel-Fringe (Salant 1976)

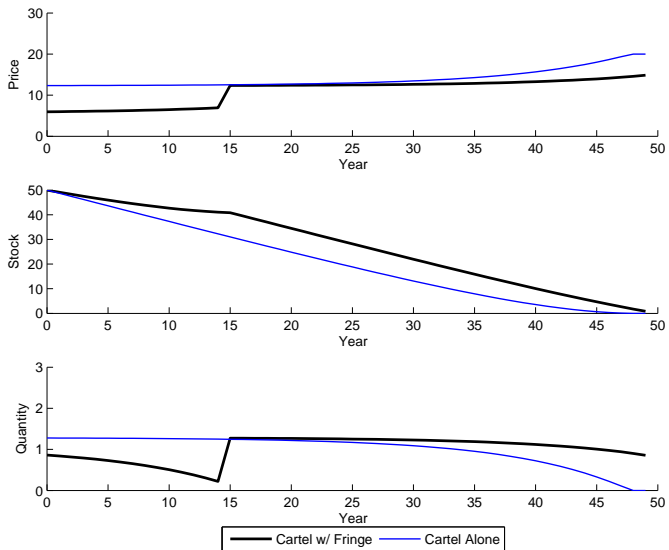
- **OPEC** operating as a perfectly **cohesive cartel**
- A **perfectly competitive fringe** of **non-OPEC** producers
- OPEC reserves $>$ fringe reserves
- OPEC marginal costs $<$ fringe marginal costs

Static model: OPEC vs Fringe

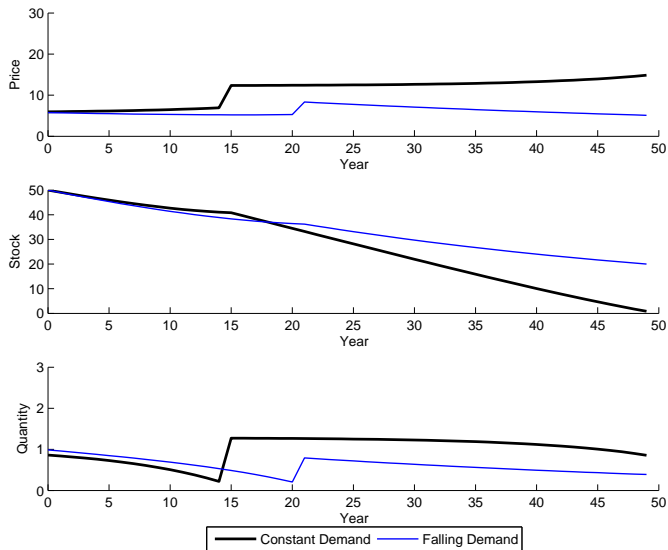


- Cartel enjoys market power, but diminished by the fringe
- Cartel faces residual demand curve (dashed) while fringe is active
- Cartel faces entire demand curve (solid) while fringe is absent

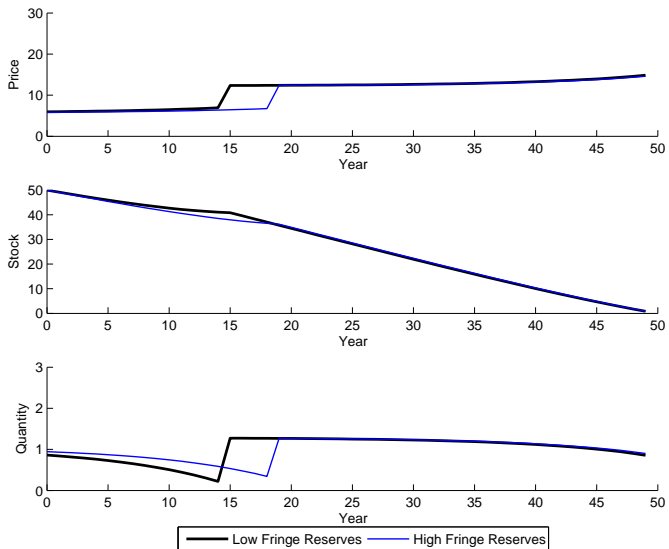
Dynamic Optimization: OPEC vs Fringe



Dynamic Optimization: Declining consumption outlook



Dynamic Optimization: Fracking Consequences



OPEC Freeze

- News chatter of “OPEC Freeze” (production pause)
- OPEC already at record production
- Markets do not seem to be responding
“Oil Wavers as Doubts Grow Over OPEC Deal” - WSJ today
- Future work

Conclusion

- Great uncertainty
- Commonly available projections could be overestimating
- Perception of consumption outlook materially affects production today

The End