



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SCIENCE @ DIRECT®

Resource and Energy Economics 27 (2005) 321–342

RESOURCE  
and ENERGY  
ECONOMICS

[www.elsevier.com/locate/ree](http://www.elsevier.com/locate/ree)

# What motivates membership in non-renewable resource cartels? The case of OPEC<sup>☆</sup>

Charles F. Mason<sup>a,\*</sup>, Stephen Polasky<sup>b</sup>

<sup>a</sup> *Department of Economics and Finance, University of Wyoming,  
1000 E University Avenue, Laramie, WY 82071-3985, USA*

<sup>b</sup> *Department of Applied Economics, University of Minnesota, St. Paul,  
MN 55112, USA*

Received 10 June 2004; received in revised form 15 April 2005; accepted 22 April 2005

Available online 8 August 2005

---

## Abstract

In this paper, we analyze the question of membership in a non-renewable resource cartel, with specific application to OPEC. One would expect the benefits of cartel membership to be positively related to the size of remaining reserves, while domestic petroleum consumption should be negatively related to membership if countries care about consumer interests. Our econometric analysis indicates that larger reserves and lower consumption are positively associated with OPEC membership. On the other hand, membership does not appear to be systematically related to

---

<sup>☆</sup> Earlier versions of this paper were presented at the NBER conference on *Cooperation, Coordination, and Collusion Among Firms* in Cambridge, Massachusetts, and the 4th California Environmental and Resource Economics conference in Santa Barbara, California. We thank Severin Borenstein, Preston McAfee, Rob Porter, Steve Salant, and seminar participants at the Australian National University, Colorado School of Mines, Massey University, and the Universities of Central Florida, Kentucky, Michigan and Wyoming for their remarks. An anonymous referee provided insightful comments that helped us improve the focus of the paper. Valuable research assistance was provided by Gurcan Gulen, Don Olson, Steve Pavich, Nori Tarui, and Christian Vossler. Much of this work was conducted while Mason was visiting the Economics Departments at Oregon State University and the University of Waikato, and he thanks them for their hospitality. The usual caveat applies.

\* Corresponding author. Tel.: +1 307 766 5336; fax: +1 307 766 5090.

E-mail address: [bambuzlr@uwyo.edu](mailto:bambuzlr@uwyo.edu) (C.F. Mason).

countries' religious makeup. Our regressions correctly predict membership for the vast majority of oil-producing countries.

© 2005 Elsevier B.V. All rights reserved.

*JEL classification:* D43; L1; Q3

*Keywords:* Non-renewable resources; Cartel; OPEC

---

## 1. Introduction

The Organization of Petroleum Exporting Countries (OPEC) has been a major factor in the world oil market since the early 1970s. While the cartel appeared relatively ineffective from the late 1980s through much of the 1990s,<sup>1</sup> recent events have again put OPEC in the spotlight. Production cutbacks by large oil producers helped increase oil prices from the US\$ 10 per barrel range in early 1999 to over US\$ 30 per barrel in 2000. Prices in early 2005 climbed over US\$ 50 per barrel with virtually no spare production outside of OPEC to meet rising demand. OPEC continues to have regular meetings to discuss production quotas and pricing strategies. Further, its member countries own 69.3% of the world's proven reserves as of the beginning of 2005 (*Oil and Gas Journal*), approximately the same as the 69.8% figure they owned at the beginning of 1973. In light of long-term trends towards increasing world demand and limits on production capacity outside of OPEC, it is likely that the cartel will remain an important force in international oil markets.

Hnylicza and Pindyck (1976) and Pindyck (1978) argue that there are substantial gains to cartelization available to members of OPEC, potentially in the neighborhood of 50–100% of non-cooperative profit flows. In light of this observation, why does OPEC include less than one-fourth of all oil producing countries? In fact, a group of non-member countries were invited to attend OPEC meetings beginning in the late 1980s. These countries, referred to as “shadow OPEC,” were involved in discussion of production and pricing with OPEC member states. In March 1998, two members of shadow OPEC, Mexico and Norway, announced that they would limit their production at the same time that OPEC was doing so. Griffin and Xiong (1997) also find gains to cartelization. However, they also argue that member states have substantial incentives to defect. A cartel is a classic example of a prisoner's dilemma: all members are better off when all cooperate but each member does better by defecting. Given this incentive, why do countries remain in OPEC or adhere even partially to their quotas? Indeed, Ecuador dropped its membership in OPEC in 1992, the first such defection since the group was formed in 1960. More recently, Gabon also left the cartel. Since Ecuador and Gabon exited from the cartel without retribution, why don't other OPEC members follow suit? The basic question these observations raise is: which producers have an incentive to join the cartel, or remain in it, and which producers do not?

In this paper, we analyze the question of membership in a non-renewable resource cartel, focusing specifically on OPEC. In Section 2, we discuss examples of non-renewable resource cartels and the relevant literature on collusion in repeated and dynamic games. We use this

---

<sup>1</sup> See, for example, Adelman (1986), Griffin and Vielhaber (1994), and Jones (1990). On the other hand, Griffin and Xiong (1997) argue that world oil prices are higher than those predicted for a non-cooperative oligopoly.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات