

OPEC and other commodity cartels: a comparison

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Abstract

The economic literature provides specific characteristics for cartels. Although the theory of international cartels is not well developed in the literature, and every cartel is unique, some of these characteristics exist in each cartel. This study investigates the existence of these characteristics in six known commodity cartels including OPEC. In addition, it compares the oil companies' cartel, 'the Seven Sisters', to OPEC, and summarizes the findings of OPEC econometric models developed in the literature in the last 25 years and concludes that the results do not support cartel or competitive models for OPEC. Although other cartels are more successful than OPEC, many books and articles in economics use OPEC as a cartel example. Neither statistical tests nor theory support the popular use of OPEC as a cartel example. Indeed, this article concludes that OPEC is composed of Saudi Arabia, the dominant world producer, plus several distinct sub-groups and that separate models are required to explain the behavior of each. Assigning the power of some OPEC members to OPEC has caused confusion about its behavior. Recent OPEC success is attributed to political, natural, and technical capacity limitations in the oil fields that prevented countries from cheating on their quota. In other words, OPEC adherence to the quota, except for Saudi Arabia, is anything but voluntary. © 2000 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Adelman (1995) argues that 'A price of any commodity may change because of a change in scarcity — the supply/demand balance — or a change in market control — the degree of Monopoly'. He also states that 'Increasing global oil scarcity is an illusion'.¹ This leaves one option: monopoly, specifically OPEC.

In the economic literature, OPEC is synonymous with *cartel* or *monopoly*. OPEC puzzles many economists because it does not have the characteristics of a cartel; yet, the international oil market does not seem competitive. Adelman (1995) states:

There is no way to explain the price upheavals by higher demand, deficient supply, changes in dis-

counting, or political objectives. The only story that makes sense is that sellers achieved some degree of market control: Monopoly. In a little over a decade, OPEC became a cartel unbound (p. 3–4).

Many economics textbooks use OPEC as an example of a profit-maximizing cartel, and instructors inform their students that cartels divide the market, establish quotas, and defend prices. Yet, OPEC never divided the market, had no quotas until 1983, and never defended oil prices as an organization.² Some of the confusion surrounding OPEC behavior has been caused by mistakenly assigning the power of Saudi Arabia, along with its Gulf allies, to OPEC.³

Many models have been developed to forecast oil prices and to model the world oil market based on the assumption that OPEC is a profit-maximizing cartel. The only consistent element in these models is that all of

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¹ See Adelman (1995) P. 27. This view reinforced the Odell and Rosing (1983) conclusions that energy crisis are not related to scarcity. Their simulation models indicate that a crisis 'will not be the result of a physical lack of enough oil to keep more and more of the world's wheels turning for at least another 40 years' p. 191.

² We found over 250 economics textbooks (micro, macro, principles, and managerial economics) that use OPEC as a cartel example. About half of them have been published in the last 10 years.

³ Green *et al.* (1998) have assigned the core power (Saudi Arabia, Kuwait, Iraq, Iran, UAE and Libya) to OPEC despite the negative correlation between the production of some of these countries and the production of Saudi Arabia.

them failed in their forecasts and predictions.⁴ A few studies argued that OPEC did not fit the cartel model but this part of the literature is underdeveloped because of the widespread assumption that OPEC is a cartel. The failure of the cartel approach suggests that non-cartel approaches are needed to explain the oil market

A profit-maximizing cartel is an organized group of producers formed to obtain higher prices by restricting production or dividing the market. To achieve its ends, the cartel usually controls production and thus limits market supply.⁵ Using the basic attributes of a cartel, this study compares OPEC with six other commodity cartels. In addition, it provides a non-monopoly explanation of wealth transfer to OPEC members, and it concludes that several models are needed to explain OPEC behavior.

Section 2 of this study summarizes the literature. Section 3 compares OPEC to five other commodity cartels. Section 4 compares OPEC and the 'Seven Sisters' oil companies cartel that was established in 1928 and continued through the 1960s. Section 5 discusses the relationship between elasticity of demand and profit maximization. Section 6 reviews the results of econometric tests of OPEC behavior. Finally, Section 7 summarizes the conclusions.

2. Literature review

While the majority of OPEC literature refers to OPEC as a profit-maximizing cartel, a minority of it believes that OPEC does not fit either monopoly or cartel models. Some of these studies provide explanations for the behavior of price and output in a way unrelated to monopoly or cartelization.⁶ For Johany (1979) and Mead (1979), changes in property rights explain the sharp increase in oil prices in 1973. Odell and Rosing (1983) believe that changes in property rights changed the concept of 'scarcity'. While the oil companies were overly optimistic about the future of oil supplies, changes in property rights led to lower production and lower investment. They state 'it is essentially this change in ownership and control over a commodity essential to the West's modern economic and social systems that has produced the crisis of confidence over the future of oil' (p. 203).

⁴ Many studies that are published in the 1970s predicted prices above \$75 a barrel in the 1990s.

⁵ Notice that this definition does not apply to OPEC despite the fact that OPEC is a group of producers. OPEC was created in 1960 to form a 'united front' to fight the oil companies who reduced prices twice in 1959. The objective was to restore prices to the pre-cut levels (Yergin, 1992). OPEC did not own the reserves and did not control production. Reserves and production were controlled by the oil companies until the mid-1970s.

⁶ For a detailed literature review see Cremer and Isfahani, 1991; 'Models of the Oil market', Salehi-Isfahani (1995), and Mabro (1996)

They emphasize the role of changes of property rights by declaring that these changes made scarcity 'a permanent condition' and 'turn the belief in scarcity into reality'. They also state that:

Recent oil supply problems emerged out of the shift in the balance of oil power from the international oil companies to oil exporting countries as the latter have not only reduced levels of production, but also failed to keep earlier higher levels of exploration and development moving along (p. 206).

Others believe that political factors increased oil prices and that prices were sustained because of the limited absorptive capacity of OPEC members. These studies include Ezzati (1976, 1978), Teece (1982), and Salehi-Isfahani (1987) among others.⁷ For some economists, the international oil market is competitive and speculation, panic and market inefficiency caused the oil crisis.⁸ Bohi and Toman (1993) believe that OPEC has not been effective in using its potential monopoly power.

Many economists who believe that OPEC is not a cartel argue that Saudi Arabia acts as the dominant producer. Several studies were introduced along this line including Mabro (1975), Erickson (1980), Plaut (1981), and Singer (1983). Even Adelman, the proponent of the cartel model, argues in many of his articles published in 1980s–1990s that Saudi Arabia acts as a dominant producer:

In fact, the Saudis have acted as what they are: the leading firm in the world oil cartel. To defend their market share against the nibbling of their fellows, they must some times make good a threat to maintain output ... In 1973, they took the lead in cutting output, which raised the price from \$2 to \$7. In 1974, they took the lead in raising it to \$11. In January and April 1979, their output cuts set off the second price explosion, whose peak price they set at \$34 in October 1981. Later they nearly ruined themselves in cutting back output to maintain the price, until they give up in 1985. They encouraged Iraq in 1990 to enforce lower output, until the enforcer turned robber. They continue to lead in restricting output to maintain prices (Adelman, 1995, p. 81).

Many statistical tests were introduced to verify previous approaches. These studies number only 13; most of them are static models, and include Griffin (1985), Loderer (1985), Salehi-Isfahani (1987), Green (1988), Matutes (1988), Dahl and Yücel (1991), Polasky (1992), Jones (1990), Kandel (1992), Griffin and Neilson (1994), Gülen

⁷ For a review of these models see Alhajji and Huettner, (2000a). 'The Target Revenue Model and the World Oil Market: Empirical Evidence from 1971 to 1994.'

⁸ See, for example, Verleger (1987) and MacAvoy (1982).

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