

Vertical Integration and the International Oil Industry: A Conceptual Error and Some Thoughts on its Implication

*By Paul Stevens**

The vertical integration of the international oil companies has long been a subject of interest to economists. More recently, interest in the issue has been revived as the result of two developments – oil company mergers and national oil company restructuring. However, much of the emerging discussion is based upon a fundamental conceptual error regarding the nature of vertical integration. This short paper seeks to explain the error and consider its implications.

The first development reviving interest in vertical integration has been the spate of mega-mergers starting with BP-Mobil's downstream venture in Europe in 1996 and culminating with a rash of very large scale mergers during 1998-99. A major driver of these mergers has been the relatively poor performance of parts of the value chain most notably refining. Refineries in general (there are niche exceptions) seem congenitally incapable of earning an acceptable return on a regular basis. Over-capacity and the underlying economics of refining with its high fixed costs force greater throughput and hence cut-throat competition to move the greater volume of products. As the mergers have been approved by the relevant authorities, so the new entities are addressing their portfolio of assets and beginning a process of divestment of lesser performing assets to try desperately to increase overall financial performance in a mature (declining?) industry. This process is giving rise to questions from both inside and outside the companies as to the shape of oil companies and their vertically integrated nature. Many are even questioning whether owning refineries an integral part of the value chain.

The second development which has revived interest in vertical integration is the recent tendency to evaluate and restructure national oil companies. Beginning in the 1980s a number of national oil companies, led by Venezuela and Kuwait, began to acquire downstream assets from the majors who were trying to rationalize their asset portfolio by divesting poor performing assets; a process in many ways similar to the current developments described above. This acquisition has been on a relatively significant scale. For example, Venezuela is now the largest gasoline retailer in the United States. The official reasons for this move to vertical integration included locking-in market share and generating investment income. However, an equally plausible explanation was to deepen the information asymmetries at the heart of the principal-agent relationship thereby enabling greater rent capture by the national oil company. Operating abroad makes it much easier to disguise what is going on from the relevant ministry. It is the growing realization by host governments of this threat which has prompted an increasing number to scrutinize the behaviour of their national oil companies, in particular in relation to this vertically integrated structure.

In this context of renewed interest in vertical integration

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in the oil industry a serious analytical error is creeping into both the academic literature and the trade press. It is a classic example of the sort of error to which economists are prone when they seek to apply the contents of their intellectual tool bags with a complete disregard of the facts of the case to which they apply the concepts. Unfortunately, study of the oil industry has been especially prone to this sort of error, the most spectacular example being the huge literature spawned by the ideas of Harold Hotelling.

The economics literature fails to make this explicit but vertical integration can take two forms. These forms I have labelled financial and operational vertical integration. Financial vertical integration is when different stages in the same value chain are owned by one holding company. The crude producing affiliate, the refinery and the marketing network are all owned by the same company which effectively controls the cash flows of the affiliates. Operational vertical integration by contrast is when the owned crude or products move between these affiliates on the basis of some sort of internal transfer. Operational vertical integration obviously requires the presence of financial vertical integration. However, the reverse is not true. It is perfectly plausible for markets to replace operational vertical integration. Hence the affiliates sell their crude into the world oil markets. The refineries secure their slate from those same markets and sell their products into global product markets where the marketing and distribution affiliates secure their inputs. The affiliates in effect all operate on an arms length basis. The literature ignores this distinction and talks about "vertical integration" when is it actually referring to companies which are financially AND operationally vertically integrated.

Which is better for a financially vertically integrated company - operational vertical integration or markets - depends upon a number of different factors.

The major private oil companies, before the second oil shock of 1979-81, were financially and operationally vertically integrated. Several factors explain. Crude markets were characterized by a small number of transactions and poor transparency. Most crude flowed on an inter-affiliate basis hence there were few arms length players and few arms length transactions. Furthermore, the details of the relatively few transactions which took place were closely guarded commercial secrets. The markets lacked transparency. The result was inefficient markets which meant their use involved very high transactions costs compared to inter-affiliate transfers. Security of throughput was crucial to profitability given very high fixed costs at all stages in the industry. The best way to achieve such security in the face of inefficient markets and the weakness of long term contracts in an uncertain world was operational vertical integration. This created a self feeding circle. Inefficient markets led to higher transactions costs which encouraged ever greater operational vertical integration. This reduced the number of players and market transparency thereby reducing efficiency and increasing transactions costs.

However, this was only part of the story. Operational vertical integration also generated a number of other benefits for the companies. Of key importance was that it inhibited competition. In theory at least, if enough oil companies were operationally vertically integrated, this created significant barriers to entry. If the companies only exchanged crude between their affiliates, there was no access to crude for third

parties. Entrants had to enter at all stages in the value chain or not at all. Also, it was possible to practise price discrimination by integrating into the low priced market preventing arbitrage. Operational vertical integration also enabled the companies to play lots of tax games through the use of transfer prices to minimize their global tax bill. In the 1950s and 1960s many West European refineries posted financial losses yet the companies were building them as fast as possible.

After the second oil shock of 1979-81, the world changed and the private companies moved away from operational vertical integration preferring instead to use markets. This increasing reflected several factors. The nationalizations of the 1970s plus the discrediting of long term contracts during the panic of the second oil shock increased the number of arms length transactions which meant a greater number of buyers and sellers and greater market transparency. This only occurred after the second oil shock because despite the nationalizations of the first half of the 1970's (which de jure dispossessed the companies of much of their crude producing affiliates), producer governments left the oil companies responsible for crude disposal.

The consequent lowering of transactions costs encouraged the further use of markets which created a self feeding process of more players and transparency. Greater transparency was also strongly reinforced by the development of forward and futures markets coupled with the information technology revolution. Amazingly but technically correct, it was not until futures trading began that we had a real statistical oil price record of actual transactions rather than the (albeit informed) guesses of analysts and price reporting agencies. Even in the days of government official selling prices, an ability to manipulate terms disguised true transactions prices.

Other factors reinforced the private companies' moves away from the use of operational vertical integration. Barriers to entry weakened as new un-integrated crude producers entered the market in the 1980s and as the majors began to sell off refineries to smaller petropreneurs. In such a world, constraint of competition became less relevant because of its unattainability and the greater number of players reinforced the growing efficiency of the markets. Finally, the tax authorities began to constrain oil companies' ability to play transfer pricing games.

The overall result was that operational vertical integration among the private companies, except in certain specific cases disappeared. For example, a refinery affiliate at the end of a pipeline affiliate was still likely to lift its crude on an inter-affiliate basis. However, the national oil companies which had developed a financial vertically integrated capability used operational vertical integration rather than markets. Several explanations are relevant. If locking-in volume was the prime motive then this required the refinery affiliate to lift from the crude producing affiliate. In addition, many in the national oil companies simply did not understand the distinction between financial and operational vertical integration. They simply assumed that private oil companies continued to use operational vertical integration because "this is what oil companies do, isn't it". Finally, inter-affiliate transaction paperwork is arguably easier to fog than an arms length contract thereby helping to maintain the information asymmetries.

With this background in mind, does the neglect of this distinction between financial and operational vertical integration matter? It does so for several reasons.

Potentially, it invalidates the study of vertical integration in the oil industry on either a time series or a cross section basis. In a time series study, comparing levels of "vertical integration" today with say the 1970s is quite misleading. The companies which were "vertically integrated" in the 1970s, today, while appearing to be the same, in reality are only financially vertically integrated. The comparison is meaningless. Similarly, a cross section study is in danger of assuming that companies which are operationally vertically integrated are comparable with those which appear to be "vertically integrated" but in fact use markets and not inter-affiliate transactions. Again any such comparison is quite meaningless.

The distinction is also important because it disguises a key issue for the future. Will companies which are financially vertically integrated use inter-affiliate transfers or markets? An issue which will have significant implications for the future efficiency of oil markets. For example, if national oil companies continue to increase their downstream capabilities and prefer operational vertical integration, will this reduce the number of players and transactions? If so and if market efficiency begins to suffer, might this persuade financially vertical integrated companies now using markets to revert to inter-affiliate transfers? A process which would further inhibit market efficiency. A similar process might be reinforced if there is any tendency to revert to the use of long term sales contracts. Would this reduced market efficiency in turn have implications for concentration and competition at different stages of the industry? Alternatively, would the development of paper barrel markets counter any reduced efficiency from fewer wet barrel transactions?

The distinction also helps illuminate questions over the future of financial vertical integration. Since companies initially developed financial vertical integration primarily to allow operational vertical integration, will a growing use of markets invalidate its continuation? What will encourage greater or lesser use of financial vertical integration? Are we moving to a world where large international oil companies need not own refineries any more than they do not own drilling rigs or seismic teams?

All these issues and more arise once the distinction is made between financial and operational vertical integration. The distinction is more than mere academic pedantry.

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