World oil marketing in transition

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The past decade has witnessed an extraordinary rise in the international economic power of the world's oil-producing nations. This transformation did not occur in one fell swoop; oil-exporting countries have been nibbling away at the control of international oil companies a little at a time. And each new shift in power has had its own implications for the pattern of international oil trade.

The most recent shift in control is the rise of direct marketing of crude oil by oil-exporting countries. Until the early 1970s, multinational oil companies, especially the seven oil majors,[1] dominated crude oil trade in international markets. However, since 1973, state-owned enterprises from producer countries have increased the share of oil that they market directly to downstream users, bypassing entirely the international oil companies. Directly marketed oil rose from 8 percent of trade in 1973 to 25 percent by 1976, and reached almost 45 percent in 1980.[2] What explains the timing and extent of this shift in international marketing? What are its implications for the structure of the international market?

This paper focuses on two aspects of the evolving organization of the oil industry—the changing structure of barriers to entry by new firms into the industry both upstream and downstream, and the changing patterns of inte-

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[1]Exxon, Mobil, Socal, Texaco, Gulf, British Petroleum, and Royal Dutch Shell.

[2]"Producing Nations Expand Direct Sales to 42% of Oil Trade," *Petroleum Intelligence Weekly*, 25 February 1980, pp. 3–4.

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gration among these upstream and downstream participants. Shifting entry barriers led to changes in the identities of firms both upstream and downstream. These changes in identity contributed to the demise of traditional patterns of vertical integration. They did not, however, put an end to the pressures that had led to vertical integration in the first place. The imbalance between a market structure that generates an incentive for firms to integrate and a pattern of control that has made integration difficult to achieve, has added to the turbulence of world oil trade. To see this more clearly, we begin by exploring the reasons why vertically integrated marketing arrangements proved so resilient for so long.

The demise of vertical integration

The majors' hegemony

At the end of the Second World War, seven major oil companies dominated the international oil market. In 1949, wells owned by the seven companies accounted for 88 percent of traded oil, and most of this oil was channeled into refineries downstream that were also owned by the majors. In 1953 the seven companies controlled 73 percent of oil refining capacity outside North America and the communist countries.[3]

Good fortune, such as the discovery that led to the creation of the Anglo-Persian Oil Company (later British Petroleum) in 1909, played a role in determining the identities of the key players in the world oil industry.[4] Formidable barriers to entry, however, help explain why only a few companies came to dominate the oil industry. Potential entrants had to meet imposing capital requirements if they were to reap the substantial economies of scale present in exploration and refining. Moreover, in the early years of expansion only a few firms had access to the arcane technology of oil production and refining.[5]

Viewed from this perspective, it is hardly surprising that five of the seven majors are of U.S. origin. U.S. companies had served their apprenticeships in a market that at the turn of the century was by far the world's largest. Their successes at home gave them both the technical and organizational skills of large-scale operations, which they later would implement on a global scale, and the investment capital necessary for these global operations. Moreover, at the turn of the century U.S. exports fed world oil demand, giving American business an early toehold in overseas markets.

[3]Federal Trade Commission, Report to the Subcommittee on Monopoly, Select Committee on Small Business, U.S., Senate, *The International Petroleum Cartel* (Washington: GPO, 1952), pp. 12–25; also Neil H. Jacoby, *Multinational Oil* (New York: Macmillan, 1974), p. 194.

[4]Edith Penrose, *The Large International Firm in Developing Countries: The International Petroleum Industry* (London: Allen & Unwin, 1968), p. 109.

[5]For a discussion of these entry barriers, see Raymond Vernon, *Sovereignty at Bay* (New York: Basic Books, 1971), pp. 27–37.

At first, to be sure, U.S. firms had difficulty gaining access to potential sources of crude oil in the Middle East and elsewhere. These territories often were under the colonial control of the home governments of European rivals. However, in response to pressure from the U.S. government, these barriers were eased;[6] U.S. oil companies were, for example, included in the Turkish Petroleum Company (TPC) in 1928. But the place of all five U.S. majors was not yet secured: the 1928 Red Line agreements placed restrictions on the participants in the TPC, which effectively prevented the U.S. participants from exploiting their potential competitive advantage, and the Achnacarry (or "as is") agreements of the same year sought to carve up the world market among the three largest firms—Standard Oil of New Jersey (now Exxon), Royal-Dutch Shell, and Anglo-Persian.[7] Nonetheless, in time the other major U.S. companies succeeded in staking out their share in the market.

With control of supplies upstream, the seven majors found it at first an easy matter to maintain downstream control. They set both their internal transfer price of oil and the price at which they sold crude to third parties so high that they left only limited profit margins in refining downstream. This pricing policy had a number of benefits for the majors. It enabled them to take their profits at the upstream stage of production, where entry barriers were highest and U.S. tax advantages greatest; it curtailed the incentive for outsiders to enter the refining business; and it forced prospective entrants to invest in both oil production and oil refining, adding to the overall barriers to entry into the industry.[8] But the most important incentives for vertical integration came from the competitive pressures of oligopoly.

High fixed costs and economies of scale led firms upstream to attach great importance to stable markets downstream, and led refiners downstream to place a premium on securing a continuous flow of crude. Furthermore, the presence of only a small number of buyers and sellers created an incentive to achieve this stability by means of vertical integration. Vertically integrated firms could avoid the expense and uncertainty of bargaining for raw materials on intermediate markets; they could also avoid the risk of being dependent on potential competitors for supplies of raw materials; and they could perhaps even reap a competitive advantage over any nonintegrated competitors downstream in times of scarce crude supply.[9]

[6]For a discussion of the U.S. government role, see Louis Turner, *Oil Companies in the International System* (London: Allen & Unwin for the Royal Institute of International Affairs, 1978), chaps. 2 and 3.

[7]See U.S. Senate, *The International Petroleum Cartel,* pp. 56–61 and 199–211.

[8]See Raymond Vernon, "State-owned Enterprises in Latin American Exports," in Werner Baer and Malcolm Gillis, eds., *Trade Prospects Among the Americas: Latin American Exports Expansion and the New Protectionism* (Urbana: University of Illinois Press and NBER, forthcoming 1981); see also M. A. Adelman, *The World Petroleum Market* (Baltimore: Johns Hopkins Press, 1972), pp. 87–89.

[9]For a detailed discussion of the gains from vertical integration, see David J. Teece, *Vertical Integration and Vertical Divestiture in the US Oil Industry* (Stanford, Cal.: Stanford University, Institute for Energy Studies, 1976). See also Vernon, *Sovereignty at Bay*, p. 29; and Robert Stobaugh and Daniel Yergin, eds., *Energy Future* (New York: Ballantine, 1979), p. 51.

In sum, then, it was a mixture of the good fortune of being first, high barriers to entry, and the economic advantages of vertical integration that gave control of world oil to seven companies. In time, though, entry barriers began to decline. This decline first weakened the position of the seven majors and, eventually, led to the demise of the vertically integrated structure of marketing itself.

Shifting entry barriers upstream

After the Second World War, the major oil companies were continually on the defensive as they sought to maintain their privileged access to cheap oil. The initial threats came from other European and American oil firms. The key European competitors were France's CFP and, some years later, Italy's ENI. Both of these firms were created by governments that sought to break their dependence on foreign firms for oil.[10]

The motivations that led independent U.S. companies to venture abroad were different from those of the Europeans. The U.S. independents had been running their refineries with domestic crude, a satisfactory supply pattern as long as their rivals did not have access to cheaper crude. However, after the Second World War, the majors began bringing in low-cost oil from the Middle East and elsewhere to use in their U.S. refineries, and domestic oil companies feared for their very survival. Their response was two-fold.[11] One move was to press for quotas against imports of cheap oil. Another move, more germane here, was to search for cheap foreign oil. Their penetration abroad was rapid. Between 1953 and 1972 over three hundred companies, many from the U.S., began new ventures or significantly expanded their existing involvement overseas.[12]

These new entrants disturbed the equilibrium between the majors and the governments of producing countries. In order to gain access to oil, new entrants were willing to conclude oil exploration and production deals unusually advantageous for the host government; so governments of producing countries increasingly could play one company off against another. Early instances of the improved bargaining position of exporting countries were two deals completed in 1957 and 1958 by the National Iranian Oil Company, one with a U.S. firm and one with an Italian independent, and the 1958 agreement in which Saudi Arabia and Kuwait gave the Japanese-controlled Arabian Oil Company access to the Neutral Zone.[13] Subsequently a host of

[10]See Oystein Noreng, "State-owned Oil Companies: Western Europe," in Raymond Vernon and Yair Aharoni, eds., *State-owned Enterprises in the Western Economies* (London: Croom-Helm, 1981), pp. 133–43.

[11]See Raymond Vernon, "An Interpretation," in Raymond Vernon, ed., *The Oil Crisis* (New York: Norton, 1976), pp. 1–14.

[12]Jacoby, *Multinational Oil*, chap. 7.

[13]See George Lenczowski, *Oil and State in the Middle East* (Ithaca: Cornell University Press, 1960), pp. 82–86.

Table 1. Trends in crude oil ownership, 1950–1979[a] (percent)

	1950	*1957*	*1966*	*1970*	*1979*
Seven majors	98.2%	89.0%	78.2%	68.9%	23.9%
Other international oil companies	1.8	11.0	21.8	22.7	7.4
Producing-country National Oil Companies	*	*	*	8.4	68.7
Total	100.0	100.0	100.0	100.0	100.0

[a]Excluding ownership of crude oil supplies in the United States and the communist countries

*negligible

Sources: M.A. Adelman, *The World Petroleum Market* (Baltimore: Johns Hopkins Press, 1972), pp. 80–81; Shell Briefing Service, *The Changing World of Oil Supply*, June 1980, p. 7, and the 1970 and 1979 Annual Reports of the seven major oil companies

producing countries enhanced their position by giving the independents access to oil. Libya, in particular, sought out independent oil firms to develop its oilfields; in 1970, the Libyan government used its leverage to restructure radically the terms of its agreements with these independent companies, precipitating a rash of contract renegotiations throughout the oil-exporting world.[14] In large part as a result of the independents' influence, the majors' oil revenues per barrel fell from about 80 cents in the early 1950s to 53 cents in 1960 and 38 cents in 1970, dropping further to only 32 cents by 1972. However, continual increases in the volume of trade assured the majors of rising total revenues throughout this period.[15]

A redistribution of revenues was not the only effect of new entry. Independent oil companies now shared in oil production upstream (see Table 1). In addition, independents were willing to shade prices below the level the majors were charging in order to gain markets for their oil, leading to gradual but continual declines in real price throughout the 1960s.[16]

For the most part, the new upstream entrants, like the majors, used a large portion of their crude in their own refineries downstream. But both they and the majors increasingly sold oil to nonintegrated refiners downstream, a change of some significance, as we shall see.

For all these changes in world oil marketing, the control of marketing channels remained in the hands of international oil companies, although the seven majors increasingly had to share the field with new entrants from the U.S., Europe, and even Japan: as late as 1970, over 90 percent of crude oil traded on world markets flowed through the channels of these various international firms. But this control over marketing would not endure much

[14]See Richard C. Weisberg, *The Politics of Crude Oil Pricing in the Middle East, 1970–1975* (Berkeley, Cal.: Institute of International Studies, 1977), pp. 37–51.

[15]D. A. Rustow and John F. Mugno, *OPEC: Success and Prospects* (New York: New York University Press, 1976), Appendix A, Table 2. See also Vernon, "An Interpretation."

[16]See Adelman, *The World Petroleum Market*, chap. 6 and pp. 196–204.

longer. Alongside the independents, another emerging force was turning the balance of market power in favor of the governments of producing countries. Local interests from exporting countries were beginning to participate directly in the oil industry. This increased local involvement created the potential for producing countries to alter the structure of world oil marketing.

Changes in the environment of the international oil business eased the barriers to entry into the business by national oil companies (NOCs) from the oil-exporting countries. It was becoming easier for producer governments to obtain critical inputs that hitherto were supplied only by the oil majors. Sometimes—as we have already seen—this access came via new entrants into the international oil business; at other times, a more general opening up of world markets for capital and technology made local participation possible. In addition, local nationals were becoming increasingly knowledgeable about the workings of the oil industry, partly through "learning by doing" and partly as a result of the more general modernization accompanying economic growth.

Why world markets have grown for so many production inputs is beyond the scope of this article. Yet, clearly, since the early 1960s both private and public lenders have been increasingly willing to supply capital to Third World governments.[17] Sophisticated technologies are increasingly available for hire; today foreign contractors undertake some of the most complicated facets of the NOCs' oil operations.[18] Moreover, academic institutions in the industrialized countries have trained a generation of leaders of developing countries in the complexities of the international political and economic environment. Each of these changes has eased the entry of state-owned enterprises from oil-producing countries into the oil business.

At first, these state-owned enterprises had a modest role, namely to develop the expertise necessary to bargain effectively with foreign oil companies. Information gathering was the main activity of the National Iranian Oil Company in the years immediately after 1954 and was the sole function of the Venezuelan Co-ordinating Commission, established in 1959.[19] Typically, though, as their experience and capabilities grew, fledgling NOCs were not content to restrict their activities to gathering information. Since the formidable scale and complexity of the international market seemed to put involvement there out of reach of NOCs, they limited themselves at first to refining and distributing oil earmarked for local consumption. By the early 1960s, the National Iranian Oil Company began to take over these local markets. The Kuwait National Petroleum Corporation, Saudi Arabia's Pet-

[17]For changes in the World Bank's lending policies to state-owned enterprises, see Edward S. Mason and Robert Asher, *The World Bank Since Bretton Woods* (Washington, D.C.: Brookings, 1973), pp. 150–51 and 371–74; for trends in private lending, see Jonathan Eaton and Mark Gersovitz, "Poor Country Borrowing in Private Financial Markets and the Negotiation Issue," *Princeton Studies in International Finance* no. 47 (Princeton, N.J., June 1981).

[18]*Oil and Gas Journal*, various issues.

[19]See Fariborz Ghadar, *The Evolution of OPEC Strategy* (Lexington, Mass.: Lexington Books, 1977), p. 69; Franklin Tugwell, *The Politics of Oil in Venezuela* (Stanford: Stanford University Press, 1975), p. 56.

Table 2. State-owned enterprises in principal oil-exporting countries

Country	*Enterprise*	*Year Founded*	*Initial Goal*
Mexico	Petroleos Mexicanos	1938	management of nationalized producing areas
Iran	National Iranian Oil Company	1951	management of nationalized producing areas
Venezuela	Co-ordinating Commission	1959	information gathering
	Compania Venezolana del Petroleo	1960	negotiation of service contracts with foreigners
Kuwait	Kuwait National Petroleum Corporation	1960	local distribution
Saudi Arabia	Petromin	1962	local refining and distribution
Iraq	Iraq National Oil Company	1964	exploration and development
Indonesia	Pertamin	1968	amalgamation of existing state activities
Libya	Libyan National Oil Company	1970	local distribution; management of nationalized producing areas
Nigeria	Nigerian National Oil Company	1971	all aspects of oil business

Sources: Ghadar, *The Evolution of OPEC Strategy;* Federal Energy Administration, Office of International Energy Affairs, *The Relationship of Oil Companies and Foreign Governments* (Washington: GPO, 1975).

romin, and Indonesia's Pertamin were all initially established to take control of these local activities[20] (see Table 2).

In addition, NOCs began to take equity shares in production ventures intended for export. Once again the independents led the way in agreeing to joint ventures with host governments. To cite some examples: the Iranian government participated in a joint venture for the first time in 1957, and by 1974 there were twenty operations in which Iranian interests were linked one way or another with independent oil companies. Both the Kuwaiti and Iraqi governments set up joint ventures in 1967; so did Nigeria, in 1973.[21] In most cases equity ownership provided direct local access to oil.

Eventually the majors were also forced to renegotiate the terms for their properties. In the early 1970s the majors ceded some equity to NOCs in

[20]Ghadar, *Evolution of OPEC Strategy*, pp. 108, 125; Benjamin Shwadran, *The Middle East, Oil and the Great Powers* (New York: John Wiley, 1973), p. 418.

[21]See Ghadar, *Evolution of OPEC Strategy*, Appendix 1, pp. 149–87; Kola Adeniji, "State Participation in the Nigerian Petroleum Industry," *Journal of World Trade Law* 11, 2 (March–April 1977): 156–79.

Saudi Arabia, Kuwait, Abu Dhabi, and Nigeria; in 1975, the Kuwait National Petroleum Corporation took over 100 percent ownership of the local oilfield; Saudi Arabia's Petromin achieved 100 percent ownership in 1980. The properties of the majors were nationalized totally in Iraq, in 1972, and in Venezuela, in 1975. Finally, in Iran and Indonesia, NOCs had long held official ownership of their local oilfields; effective control of Iranian oil shifted entirely to the National Iranian Oil Company in 1979.[22]

Even as they increased their ownership, governments of oil-producing countries left marketing largely to their foreign partners. But this pattern did not endure. Eroding entry barriers downstream made direct marketing an increasingly feasible proposition.

Shifting barriers downstream

Just as entry by independents cut into the majors' upstream control, so did new entrants reduce their downstream market share. Some new entrants were themselves vertically integrated into crude oil upstream. Others, though, had no oil of their own. They purchased crude supplies from companies with access to more oil than they could use. Yet most producers of crude oil were themselves active in the refining business. Why were they willing to supply independents with crude oil?

One possibility is that some crude-long companies were reluctant to invest too heavily in refining outside their national markets; this seems to be the reason why British Petroleum was willing to sign a long-term deal to supply the independent Belgian-based refiner, Petrofina, with crude oil.[23] More importantly, national governments sometimes protected a portion of their local markets for locally-owned refineries. Crude-long companies had no option but to supply these independent refiners if they were to take full advantage of these markets. Thus, by 1966 the major companies supplied over one million barrels of oil daily to independent Japanese refiners.[24] In Europe, the French, Italian, German, and Spanish governments all established state-owned refining operations dependent for their supplies on the major companies. In addition, they reserved a portion of the local market for private, domestically owned refineries.[25] Developing countries, Brazil and India in particular, also established state-owned refineries.[26]

[22]Ghadar, *Evolution of OPEC Strategy*, Appendix 1; Federal Energy Administration, *The Relationship of Oil Companies and Foreign Governments* (Washington: GPO, 1975).

[23]See Penrose, *The Large International Firm*, p. 114.

[24]Adelman, *The World Petroleum Market*, p. 96; see also Michael Yoshino, *Japan's Multinational Enterprises* (Cambridge: Harvard University Press, 1976), p. 37.

[25]See Horst Mendershausen, *Coping with the Oil Crisis* (Baltimore: Johns Hopkins Press, 1976), pp. 23–32; see also Henri Madelin, *Oil and Politics* (Lexington, Mass.: Lexington Books, 1975), chap. 4.

[26]See Michael Kidron, *Foreign Investments in India* (London: Oxford University Press, 1965), pp. 166–75; see also Peter Evans, *Dependent Development* (Princeton: Princeton University Press, 1979), pp. 90–91, 228.

Table 3. Marketing channels of internationally traded oil, 1950–1980

	1950	*1957*	*1966*	*1973*	*1976*	*1979*
Marketing by international oil companies:						
interaffiliate transfers	92.8%	82.4%	80.0%	69.6%	59.1%	46.6%
third party sales	7.2	17.6	20.0	22.5	16.3	11.2
Direct marketing by producer countries	*	*	*	7.9	24.6	42.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

*negligible

Sources: M. A. Adelman. *The World Petroleum Market*, pp. 80–81, 90; "Producing Nations Expand Direct Sales to 42% of Oil Trade." *Petroleum Intelligence Weekly*, 25 February 1980, pp. 3–4.

As a result of changes both upstream and downstream, by 1973 marketing channels for crude had become increasingly complex, even though multinational oil companies continued to control over 90 percent of world trade. Forty-nine percent of international flows moved through the majors' own vertically integrated channels to their refineries downstream; a further 20 percent went to downstream affiliates of other international oil companies; and 23 percent was sold by international oil companies to independent refiners downstream (see Table 3).

The downstream market share of the major oil companies declined further after 1973. Some of this decline was involuntary, the result of the nationalization of refineries by the governments of oil-producing countries. In addition, though, preparing for a time when they no longer had abundant crude oil supplies upstream, the majors began selling some refineries of their own volition. As a result of these changes, by 1978 the refinery capacity of five of the seven majors was 13 million barrels per day, 2.4 million barrels fewer than in 1973; this decline took place at a time when global refining capacity outside the communist world rose by almost 20 percent, reaching 64.7 million barrels per day in 1978.[27]

A final factor that added to the number of independent refiners buying oil on the world market was the increasing volume of crude oil imports into the United States. U.S. imports of crude rose from 1.3 million barrels per day in 1970 to 3.2 million barrels in 1973, reaching 6.6 million barrels by 1977.[28] The U.S. has long had an unusually fragmented domestic refining industry. So increased U.S. oil imports added to the number of independent refiners using oil procured on the international market.

[27]British Petroleum, *Statistical Review of the World Oil Industry, 1979*, p. 25 and Exxon, Mobil, Gulf, Texaco, and British Petroleum Annual Reports.

[28]American Petroleum Institute, *Basic Petroleum Data Book* (Washington, D.C., 1980), Section 9, Table 3.

The proliferation of independent refiners was one reason for the shift to direct marketing. Producer countries had long recognized the potential market power of the majors. Rather than face them directly as antagonists in the crude oil market, NOCs preferred to leave the major international companies with some residue of the preferential access to oil they had long enjoyed.[29] The emergence of independent refiners provided an alternative market for crude oil, one where it would not be necessary to confront the majors directly.

The shift to direct marketing

At first NOCs did not supply crude oil directly to the independent refiners; these refiners procured supplies from international oil companies that had crude to spare. It was the shift from surplus to shortage on the world oil market in the early 1970s that provided the opportunity for the NOCs to break the ties binding independent refiners and crude-long international oil companies.

As a result of the increased tightness, the majors' own supply lines were sometimes stretched; in such times they could supply their third-party customers with crude oil only with difficulty. Under these circumstances, NOCs often came forward as alternative suppliers of oil. Indeed, throughout the 1970s direct marketing by state-owned enterprises from exporting countries substituted for third-party sales by international oil companies. In 1978, third-party sales of crude by international oil companies amounted to only 4.8 million barrels per day, down from 6.8 million barrels daily in 1973, and by 1980 they had fallen to below one million barrels each day.[30]

Published evidence, though incomplete, reveals that the extent and timing of the shift to direct marketing varied from one producer country to another (see Table 4). In general, countries like Venezuela and Iran, which had long nurtured their NOCs, were better placed to undertake direct marketing than countries such as Nigeria, where NOCs had not yet attained wide experience in the oil market. To be sure, circumstances specific to individual countries influenced the evolution of marketing patterns. Nationalization of the Iraq Petroleum Company (IPC) in 1972 after years of rancor, together with restrictions on oil liftings by all but one of the IPC's former partners, put Iraq at the forefront of direct marketing.[31] Another domestic rupture,

[29]For evidence that some OPEC countries have long recognized this danger, see Sheikh A. M. Yamani, "Participation Versus Nationalization: A Better Way to Survive," in Z. Mikdashi, ed., *Continuity and Change in the World Oil Industry* (Beirut: Middle East Research and Publishing Center, 1970).

[30]"Producing Nations Expand Direct Sales to 42% of Oil Trade," *Petroleum Intelligence Weekly*, 25 February 1980, pp. 3–4; Alirio A. Parra, "The New Role of NOCs," *Middle East Economic Survey*, supplement, 8 September 1980, p. 5.

[31]"Iraq-IPC Agreement," *Oil Industry Developments*, March–April 1973 (London: Petroleum Economics Ltd.), pp. 107–110.

Table 4. Selected oil-exporting countries' share of directly marketed oil in total crude oil exports (percent)[a]

Country	*1976*	*1978*	*1980*
Abu Dhabi	30%	40%	60%
Iran	5	30	100
Iraq	80	80	85
Indonesia	15	15	15
Kuwait	20	25	75
Nigeria	0	0	20
Saudi Arabia	10	10	30
Venezuela	30	40	55

[a]The estimated share of directly marketed oil is rounded off to the nearest 5 percent.

Directly marketed exports are defined to be those exports not marketed through the channels of international oil companies that own, or once owned, production facilities in the exporting country.

Sources: Estimated from *Oil Industry Developments* (London: Petroleum Economics Limited, bimonthly), all issues January–February 1978—May–June 1980; also Fariborz Ghadar, *The Evolution of OPEC Strategy*.

this time a full-fledged revolution, hastened the National Iranian Oil Company's direct participation in the international market; before the revolution, increases in Iranian direct marketing had followed a more measured course.[32]

The events of 1979 offer a useful illustration of the shift to direct marketing. The precipitating factor was a cutback in oil supply in the wake of the 1978 Iranian revolution. As a result of this cutback, prices of oil on the spot market rose far above contract prices. This created a powerful incentive for oil-producing countries to break existing long-term supply deals and sell oil at the higher, spot prices. It was an incentive that some producers could not resist.

Both those companies directly affected by the Iranian cutbacks and those left short of oil as a result of the turn to the spot market responded to these new shortfalls by cutting back sales to third parties. So former third-party buyers, now squeezed for oil, began searching for direct sources of supply. Perceiving an opportunity to extend direct marketing, some exporters cut back supplies to their long-term customers even further, selling instead to independent buyers. These cutbacks forced the majors to reduce third-party sales even further.[33]

Now a new set of buyers came onto the market. Governments of consumer countries, alarmed by their increased vulnerability to cutbacks in oil supply, began to buy crude oil directly from producing countries. Alongside other countries that had been buying oil directly for some time, Sweden,

[32]Ghadar, *Evolution of OPEC Strategy*, p. 81; "Iran Supply Ban Hits at Least Eleven US Oil Companies," *Petroleum Intelligence Weekly*, 19 November 1979, p. 4.

[33]See Thomas Neff, "The Changing World Oil Market," in David Deese and Joseph Nye, eds., *Energy and Security* (Cambridge, Mass.: Ballinger, 1981), pp. 23–46.

Belgium, Ireland, Denmark, and Kenya all sought to procure oil directly.[34] Nor, if producing countries had their way, would this intrusion by consumer governments on the territory of the international companies be merely temporary. Saudi Arabia's Petromin, for one, concluded a direct marketing arrangement with the Danish government on condition that the Danes establish a state-owned marketing network and not market their contract oil through existing oil-company channels. Other direct-sales contracts also restricted the resale of oil by consumer governments.[35]

When the dust settled in early 1980, the world crude oil market looked very different than it had two years previously. Japan alone had concluded new direct deals involving almost one million barrels daily to replace oil no longer supplied by the majors.[36] Moreover, some of the seven majors now had insufficient oil to meet their own needs. These shortfalls spurred their earlier efforts to sell off less profitable refineries. In 1979 alone, Gulf Oil stopped supplying its Korean joint-venture refinery, encouraging instead the completion of a direct deal between Kuwait and the Korean government; Gulf sold off minority shares in Spanish, French, and Japanese refineries; British Petroleum relinquished its 20 percent share in a Swedish refinery; even Caltex, less affected by supply cutbacks, sold off downstream interests in Spain and France.[37]

Yet even these adjustments were not enough. By mid 1980, the seven oil majors were purchasing 7 percent of their crude oil requirements on the open market.[38]

Some new pressures

By early 1980 the combined effects of shifting entry barriers and tight supply had led to radical changes in the structure of the world oil market. Upstream, NOCs had increasingly replaced international oil companies. Downstream, the seven major oil companies now accounted for little more

[34]"More European Nations Buying Oil in State Deals," *Petroleum Intelligence Weekly*, 15 October 1979, p. 3; "Kenya," *Platts Oilgram News*, 5 August 1980, p. 3.

[35]"Denmark—State Oil Company," *Oil Industry Developments*, January–February 1980, p. 48; Neff, "Changing World Oil Market," pp. 25–28.

[36]"Japan Nearly Covers Its Iranian Crude Supply Shortfall," *Petroleum Intelligence Weekly*, 19 May 1980, p. 3; "Producing Nations Expand Direct Sales to 42% of Oil Trade," *Petroleum Intelligence Weekly*, 25 February 1980, pp. 3–4.

[37]"Majors Selling Out More Refining Stakes in Europe," *Petroleum Intelligence Weekly*, 28 January 1980, p. 4; "Taiwan Satisfies Crude Needs, Korea Still Searching," *Petroleum Intelligence Weekly*, 11 February 1980, p. 6; "Sweden," *Petroleum Intelligence Weekly*, 2 June 1980, p. 12; "Gulf Oil Pares down Refining Stakes to Match Crude Supply," *Petroleum Intelligence Weekly*, 30 June 1980, p. 4. For earlier evidence of divestment by the majors, see Turner, *Oil Companies in the International System*, p. 209.

[38]"Major Oil Firms Still Vulnerable Despite Mini-glut," *Petroleum Intelligence Weekly*, 14 April 1980, pp. 1–2.

Table 5. The size distribution of direct deals, nine exporting countries, 4th quarter 1979 (number of transactions in each size range)[a]

	0–24,999 barrels daily	*25–74,999 barrels daily*	*75–119,999 barrels daily*	*above 120,000 barrels daily*
Abu Dhabi	14	9	0	0
Iran	23	7	4	2
Iraq	14	5	4	8
Kuwait	6	3	2	0
Libya	11	5	3	0
Mexico	11	5	2	1
Nigeria	19	6	2	0
Saudi Arabia[b]	14	10	6	2
Venezuela	22	3	0	0
Total	134	53	23	13

[a]Direct deals, as defined here, do not include any sales to international companies that hold, or held sometime in the past, equity in the exporting country's oil production operations.

Since the Table includes only those deals described in the trade journals, it leaves out those transactions details of which have not become public.

[b]The size distribution for Saudi Arabia is based on data from the first quarter of 1980.

Sources: Compiled from various issues of *Middle East Economic Survey, Petroleum Intelligence Weekly*, and *Oil Industry Developments*.

than 40 percent of those refineries that depended on the international market for supplies of crude oil.

As a result, the share of traded oil that flowed through the channels of the majors and other multinational oil companies was down to little more than 50 percent in early 1980, compared with over 90 percent in 1973. Meanwhile, a second tier had emerged in the international oil market, made up of deals between the state-owned marketing entities of oil-producing countries and a wide variety of buyers including consuming-country governments from industrialized, developing, and COMECON countries, independent oil refiners, oil traders, and independent distributors of oil products.[39]

Published details of these deals are scarce, so there is little way of knowing whether the parties involved typically adhere to the terms of their direct deals. It is even difficult to determine whether directly negotiated trade that took place in, say, the fourth quarter of 1979 was one part of a larger oil-trade deal intended to continue for some longer period or, alternatively, was a short-term transaction of under three months' duration. For all this ambiguity, one thing seems fairly clear. As Table 5 reveals, while some deals are for substantial volumes, measured on a daily basis most direct deals involved relatively small amounts of oil.

What are the implications for both buyers and sellers of this new marketing structure? It is important not to confuse those effects that can be

[39]For details of these deals, see *Oil Industry Developments* (London: Petroleum Economics Ltd., bimonthly).

attributed to changes in marketing with those related more generally to the shifting distribution of power. The redistribution of oil revenues towards producing countries largely came prior to the revolution in marketing. So, too, did the ability of the exporting nations to set for themselves an upper limit on production levels; Arab oil exporters had exhibited this power back in 1973. But, along with these changes, marketing shifts have had their own effects.

In particular, the events of the 1970s destroyed entirely some vertically integrated linkages that hitherto had bound crude oil supplies to refineries downstream. Other linkages, though still surviving, are substantially less secure than previously. Yet the search for stability in an oligopolistic market remains. Indeed, this search was the motivation for vertical integration in the first place. So buyers and sellers find themselves facing new sources of instability.

Pressures on sellers

For sellers, the reduced marketing role of international oil companies might sometimes seem a mixed blessing. As long as the large oil companies dominated the market they contributed to a stable pricing structure.

With so many varieties of crude headed for so many diverse destinations, each with its own level of transportation costs, it takes both complex computations and a high degree of predictability of the marketing behavior of rival sellers to stabilize prices at a desired level. Under the old system, the major oil companies priced according to complex conventions; as long as they were present as intermediaries it was difficult for producing countries to break secretly from overall pricing discipline.[40] As the role of the majors diminished, the burden of maintaining pricing discipline has fallen more and more on the exporting countries themselves.

The exporting countries have found it no easy task to maintain a stable pricing structure in the new international environment. The rise of direct marketing has given wider latitude to officials from exporting countries, adding to the opportunities for corruption.[41] More importantly, the reduced role of the international oil companies has brought to the forefront the widely divergent interests of the producing countries in both pricing policies and political goals. As experience in other industries confirms, these divergent interests are likely to add to the difficulties of coordination among oil-exporting countries.[42]

[40]For a similar argument, see Adelman, *The World Petroleum Market*, pp. 257–58.

[41]For some examples see "Royal Payoffs: Saudi Princes Pressure Oil Firms for Secret Payments," *Wall Street Journal*, 1 May 1981, p. 1; "Big Saudi Oil Deal with Italy Collapses after Fee Plan is Bared," *Wall Street Journal*, 4 May 1981, p. 1.

[42]For an example from the iron ore industry, see Raymond Vernon and Brian Levy, "State-owned Enterprises in the World Economy: The Case of Iron Ore," in Leroy P. Jones,

Along with these difficulties, the decline of vertical integration is likely to create additional problems for producers. In times of glut, producers who had previously severed their vertically integrated linkages could be hard pressed to sell as much oil as they would like: consumers are likely to favor whatever integrated sources they still have available over nonintegrated suppliers. As a result, those producers who have maintained their ties with international oil companies, and those with other firm links downstream, are more likely to be protected from declining demand than exporters dependent on tenuous direct-marketing links with consumers. Faced with this prospect, nonintegrated producers might succumb to the temptation of reducing prices in order to maintain their sales, perhaps precipitating a downward spiral of prices.[43] Such differences among producers in the types of ties they have maintained with their customers help account for the continual conflicts among OPEC members during the period of oil surplus in mid 1981.[44]

There are, then, new risks for producing countries in the new environment of international oil trade. But influences also remain that might prevent the pricing structure that has served the exporting countries so well from unraveling.

One factor is the presence of Saudi Arabia and, to a lesser extent, Kuwait, the United Arab Emirates, and Iraq as major oil exporters. These countries do not need to produce at maximum output in order to meet domestic revenue requirements. They could thus readily cut back their own production, relieving downward pressure on prices. In fact, Saudi Arabia has not seemed in any great hurry to stop prices from declining. With its enormous reserves, the Saudis have the most to lose should high oil prices in the short term lead importing countries to shift to alternative sources of energy in the medium and long term. Moreover, Saudi strategies have been determined by a complex mixture of economic and political motivations, which often have led them to try to moderate prices. In 1976–77 and again in 1980–81 Saudi Arabia proved quite willing to maintain production while crude oil prices were declining.[45]

The continuing presence of the large oil companies is another possible stabilizing influence. Precisely because of the majors' potential bargaining power as antagonists on the oil market, producing countries have left these large firms with some vestige of vertical integration; the internal transfers of the seven largest firms still account for close to 40 percent of international flows of crude oil. Despite the decline in their influence, the majors still play

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ed., *Public Enterprise in Less Developed Countries: Multidisciplinary Perspectives* (Cambridge: Cambridge University Press, 1982); for a more general treatment, see H. H. Newman, "Strategic Groups and the Structure-Performance Relationship," *Review of Economics and Statistics* 60 (August 1978): 241–61.

[43]See "Will the Oil Glut Spark an OPEC Price War?" *World Business Weekly*, 20 April 1981, pp. 6–7.

[44]See "Welcome Back the Glut," *Economist*, 7 February 1981, p. 81.

[45]See Theodore H. Moran, "Modeling OPEC Behavior: Economic and Political Alternatives," *International Organization* 35, 2 (Spring 1981): 241–72.

some stabilizing role. Note, though, that the incentive for the majors to limit downward pressure on prices during surpluses is the prospect of preferential access to oil in times of scarcity. Some exporting countries may not show price restraint in shortfalls; in such instances, the majors may not restrain price declines in times of glut.

Vertical integration by producers themselves is another source of stability. To be sure, the reasons for downstream investment by producing countries often had at least as much to do with economic nationalism as with market structure.[46] Whatever their motivations, investment downstream by producer countries has risen rapidly. Their new vertical integration provides producers with an assured outlet for their crude. At the same time, though, refiners from oil-producing countries might follow the familiar strategy of new entrants, shading prices in an effort to secure product markets downstream. Indeed, at least for a time, the entry of these firms into refining could add to any downward pressures on prices that might exist.

By 1979, exporting countries processed 5.5 million barrels daily in their own refineries, up 36 percent since 1975. And NOC refining capacity in 1985 is likely to be double the 1975 level.[47] Along with building new refineries, exporting countries sometimes have used their market power to obtain a share in existing operations downstream. At one time, Kuwait considered taking equity positions in various French and Korean operations as part payment for the direct supply of oil. Mexico's national oil company, Pemex, has taken up Gulf's share in a Spanish refinery; it has obtained the rights to distribute oil products in its own name, thereby obtaining—assuming Spain joins the European Economic Community—a toehold in a larger European market.[48]

Fragmentation among buyers in the lower tier market represents a final source of comfort to producers. Individual buyers may, to be sure, try to whittle away at producer stability by searching aggressively for low-priced oil. But none of these buyers currently accounts for a significant share of trade. So long as this remains true, buyer bargaining power will remain limited.

All in all, the rise of direct marketing is likely to make it harder for sellers to maintain a stable structure of crude oil prices. In the new environment, individual sellers have more opportunity than they had in the old to demand special price premiums during shortages or to offer special discounts during gluts. But despite this added instability, producers are still somewhat shielded from pressure; so they are unlikely to lose entirely their ability to set prices.

[46]For an example of the ideology underlying downstream investment by national oil companies, see Abbas Alnasrawi, "Opec National Oil Companies and the Restructuring of the International Oil Industry," *OPEC Review* 2, 4 (September 1978): 48–63.

[47]See *Oil and Gas Journal*, 29 December 1975, 25 December 1978, and 19 May 1980.

[48]"What's New Around the World," *Petroleum Intelligence Weekly*, 10 March 1980, p. 10; "Non-OPEC Mexico Broadens Its Base in European Refining," *Petroleum Intelligence Weekly*, 7 July 1980, pp. 4–5.

Pressures on buyers

A range of consumers has been affected by changes in the patterns of international oil marketing. End users of oil products face heightened uncertainty; governments of consuming countries confront new political dilemmas. Yet it is oil refiners that feel the impact of the new patterns of trade most directly.

The new pressures on refiners are very different from those faced by sellers. For one thing, they are most threatened during periods of scarcity, not glut. For another, while producers fear price declines, it is times of price increases that most threaten buyers. In times of scarcity, refiners with preferential access to oil could be somewhat shielded from price increases and so steal a competitive advantage over firms forced to depend on the spot market or other high-priced supplies; in the extreme, some firms may not be able to buy crude at a price at which they could profitably remain in business.

Under the old marketing arrangements this danger did not loom so large. The old system rested on two pillars—diversification and vertical integration. Each of the majors had available supplies of crude oil in a number of countries, and in each of these countries the majors could feel confident of preferential access. Thus, the oil majors could take advantage of their diversified supply and sales networks to distribute supply cutbacks from any one country evenly among a wide range of consumers. By and large, this is what they did during the 1973 embargo; no country was afforded privileged access to oil—although there is some evidence that the companies' own affiliates were favored over third-party buyers.[49]

The advent of direct marketing has weakened both pillars on which the old system rested. Turning first to diversification: the majors' oil now comes from fewer sources than in the past and, should supply from any one of these sources dry up, their own downstream operations could be squeezed for oil. Moreover, the majors now sell very little crude to third parties. As a result, former third-party buyers have lost the shelter that had been provided by the majors' "supply umbrella." These buyers now deal directly with exporting nations; and they usually try to purchase oil from as many countries as possible. Japan, for one, has explicitly sought to diversify its oil supply sources. Until mid 1979, oil from the Middle East and Indonesia accounted for over 90 percent of Japanese imports; yet more than one-third of Japanese direct purchases made to replace cutbacks from the majors in late 1979 and early 1980 came from nontraditional sources such as Nigeria, Libya, Venezuela, and Mexico.[50]

[49]See R. B. Stobaugh, "The Oil Companies in the Crisis," in Vernon, *The Oil Crisis*, pp. 179–202. See also Commission of the European Communities, *Report on the Behavior of the Oil Companies in the Community from October 1973 to March 1974* (Brussels: EC, 1975), p. 145.

[50]The Japanese intent to diversify was announced in the October 1978 report of the Overall Energy Council; see "Long-term Oil Strategy Succeeding for Japan," *Petroleum Economist*, September 1979, pp. 369–75. See also "Japan Nearly Covers Its Iranian Crude Supply Shortfall," *Petroleum Intelligence Weekly*, 19 May 1980, p. 3.

Of course, no matter how diversified their supply patterns might be, buyers who lose oil from one source are likely to try to make up their losses by bidding for oil already earmarked for other buyers. Moreover, the events of 1979 revealed that international oil companies can no longer rely on their traditional, vertically integrated sources for crude-oil supplies. In 1979, as described earlier, some producers cut back supplies to their long-term customers and sold instead to new buyers at higher prices, in the process forcing their former customers onto the market for high-priced oil. Thus, as in 1979, the burden of supply cutbacks from one country is likely to fall not only on the buyers immediately affected but also on buyers displaced by the resulting market turmoil.

What effects could this market reshuffling have on the structure of oil prices, the allocation of oil among consumers, and the balance of competition among firms downstream? The answers depend on the degree to which world oil trade has become competitive.

A competitive market provides one efficient mechanism for distributing oil among consumers. With competition, if supply from any one seller ceases, buyers can readily find oil elsewhere—provided, of course, that they are willing to pay a high enough price. In this competitive world, no producer will voluntarily settle for a price below that available on the market; so all buyers will be faced with the same, higher price. In reality, though, the oil market remains oligopolistic. To be sure, the role of large companies has declined. Nonetheless, in early 1980, ten companies accounted for 50 percent of consumption of internationally traded crude; and some consumers, most notably the Aramco consortium in Saudi Arabia, still have preferential access to crude oil.

Crude oil consumers thus find themselves in a new and difficult situation. The proliferation of state-owned enterprises in oil-producing countries, together with the emergence of other independents both upstream and downstream, has undermined the old, vertically integrated linkages. Yet an oligopolistic and somewhat fragmented market structure remains. In times of scarcity some buyers still have preferential access to relatively low-priced oil; others have to scramble for supplies, typically available only at far higher prices. This imbalance continually threatens to transform cutbacks in oil supplies into a major international economic crisis.

Towards a new market structure

What responses to this new instability are likely from refineries and the governments of consumer countries? One way to limit the potential instability might be to put an end to the remaining elements of vertical integration, thereby ensuring that all firms have equal access to oil, even in times of crisis. To achieve this, however, all governments of consuming countries would have to act in unison; without government intervention, firms with

preferential access to oil are unlikely to give up their privileged position. Even if they did, an incentive would remain for individual refiners to break the terms of such an agreement and seek new, integrated linkages.

Given the past record of cooperation among consumer nations, such an agreement is not likely. Emergency sharing agreements, a more circumscribed version of the option just suggested, require only in times of crisis that firms (and countries) with preferential access surrender some of their supplies to crude-short refiners. Yet even this more limited arrangement has not been put into effect successfully. The 1979 supply disruptions were not large enough to trigger the emergency sharing regulations of the International Energy Agency, even at a time when the price of crude oil doubled.[51]

In the absence of any agreements that wipe out the advantages of possessing preferential access to oil, consumers of crude have a powerful incentive to maintain strong linkages with sellers. For this reason, some of them have sought to create new ties to sellers. But forging stable, long-term linkages has been no simple matter in the new international environment.

At first glance, long-term contracts might seem to provide the obvious mechanism for stability. But these contracts have often proved unreliable in world oil trade.[52] When supply is tight, sellers have been tempted by potential windfalls; should glut appear, buyers are likely to seek lower-cost supplies. Of course, parties seek long-term agreements intending to trade off potential short-term windfalls for long-term stability. But this intention is based on a prior expectation of what the future holds. When, as so often happens, things turn out differently than planned, the foundations for long-term contracts can crumble.

The need for firm linkages, along with the fragility of long-term contracts, suggests one reason why, in their search for secure supplies of oil, consumers have begun to explore the avenues of government-to-government and bilateral barter deals. Here we must distinguish between trade conducted between two state-owned enterprises with no added governmental involvement and deals where the governments of producer or consumer countries play a more active role. In those cases where the government leaves marketing entirely to enterprise management, there is little evidence that the marketing practices of state-owned oil operations differ much from those of privately-owned sellers of crude. The characteristics of government-to-government deals, by contrast, are often distinctive, typically tying oil trade to some wider deal.

By making these ties, buyers of oil add to the incentive for exporting countries to make—and to honor—long-term oil supply arrangements. The

[51]See Joseph S. Nye, "Energy Nightmares," *Foreign Policy*, no. 40 (Fall 1980), p. 153.

[52]For examples from other industries of the fragility of linkages short of vertical integration, see Vernon and Levy, "State-owned Enterprises in the World Economy." See also Joseph D'Cruz, "Quasi Integration in Raw Material Markets: The Overseas Procurement of Coking Coal by the Japanese Steel Industry," Ph.D. diss., Harvard Business School, 1979.

incentives for producers could be political concessions or economic aid that might otherwise not have been forthcoming; the risk of losing these gains could deter exporters from tampering with the oil supply arrangements.[53] These advantages help explain why Japan chose to participate in the expansion of Mexico's steel industry in exchange for oil and linked involvement in huge petrochemical complexes in Saudi Arabia and Iran to oil purchases;[54] they also help explain why France—which had been heavily dependent on Iraqi oil—was willing to supply Iraq with nuclear technology, and why oil trade between Italy and Venezuela has recently been tied to economic collaboration in industry and agriculture.[55]

It is not yet clear whether these deals in fact assure additional stability of oil supplies. To cite one possibility, the nuclear side of the French-Iraqi deal may turn out to be even more unstable than oil trade itself; such instabilities could add to the volatility of the world oil market. But even if these wider deals do provide some added security of oil supply, it is security that comes at a cost to consuming countries. To shore up oil supplies in this way, consumers sometimes make concessions that reduce their own freedom of action. For this reason, oil-consuming countries have become increasingly wary of direct deals that involve some political quid pro quo. And so they find themselves in a bind.

While the demise of the old marketing system has left consumers increasingly vulnerable to supply cutbacks, no alternative way of assuring stability has emerged. Competition is not yet sufficiently widespread to assure security of supply and, so far, buyers and sellers have not come up with any joint mechanism to create stable, long-term linkages.[56] Nor have they reached agreements that undercut the incentive for consumers of crude oil to integrate upstream. Yet the urge for oil consumers to integrate upstream, which has been so powerful for so long, remains.

To be sure, the urge for integration may temporarily be weakened. Consumers of crude only need the security against instability provided by vertical integration in times of scarcity. The evidence of mid 1980 suggests that there may well be no chronic shortfalls of oil in the next few years. What cannot be ruled out, however, is some sudden cutback, perhaps the result of an escalation of war in the Middle East, perhaps a consequence of internal unrest in Saudi Arabia. Given the fragile market structure, such cutbacks are likely to lead to rapid increases in prices with large costs to consumers.

All of this raises the question of whether oil-importing countries should attempt to increase the share of their energy supplies satisfied within their

[53]Parra makes a similar point in "The New Role of NOCs."

[54]"Oil Exchange for Steel Finance," *Financial Times*, 21 July 1980; "Mitsubishi's Long-pending Saudi Project Starts Taking Shape," *Japan Economic Review*, 15 May 1980.

[55]"Iraq Plans to Sell More Oil to France," *New York Times*, 12 July 1979; "Caracas to Double Italy Oil Sales," *Financial Times*, 14 December 1979.

[56]For one expert's depiction—or, perhaps, as he suggested, "unrealistic utopian fantasy"—of what such linkages might be, see Walter J. Levy, "Oil and the Decline of the West," *Foreign Affairs*, Summer 1980, pp. 1014–1015.

national boundaries. If they do not decrease their dependence, they face possible international economic disaster in the event of supply disruptions. But if they do encourage investment in alternative domestic sources of supply, governments of consuming countries present potential investors with the risk that world oil prices may fall below the costs of domestic energy production. If these investments are undertaken and oil prices do fall, consuming countries, by maintaining free trade in oil, would effectively be writing off billions of dollars of domestic energy investments. But, if they do restrict oil trade, consumer governments would be saddling local industries with energy priced higher than their foreign competitors' sources.

This, then, is the prospect for the world oil market. If glut prevails, even the present fragile market structure would offer adequate stability for consumers. However, if supplies again become tight, consumers are likely to be faced with renewed instability and unequal access to crude oil. The costs of cutbacks and the resultant instability are so high that it probably remains prudent for consuming countries to reduce their dependence on imported oil. The cost of insuring against a potential energy disaster is high. It is hardly likely that it could be otherwise. Oil remains, after all, the lifeblood of the international economy.