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PRODUCTION CONTROL IN THE PETROLEUM INDUSTRY: A CRITICAL ANALYSIS†

John Vafai*

INTRODUCTION

The purpose of this article is twofold: First, to study a motivational relationship between production programming in the international petroleum industry and prorationing in the United States; and second, to demonstrate certain deficiencies of the prorationing mechanism in the United States and certain problems of production programming in the international petroleum industry.[1]

International petroleum is the most dynamic energy resource in the world. More than seventy-five percent of primary energy in the United States[2] and sixty percent of energy in the world is supplied by petroleum and natural gas.[3] In 1970, 2,334 Million tons of petroleum were necessary (and were produced) to meet the energy needs of the world.[4] In view of the extreme importance of petroleum as a source of energy, it is of primary significance to examine the production policies within the international petroleum industry. The

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[1] Necessarily, the intention here is not a detailed analysis of the prorationing policy in the United States, nor a study of the cost and price implications of prorationing. A discussion of the policies adopted by exporting countries which are indirectly related to production programming is not a part of this work. Many of these areas have been discussed in J. VAFAI, THE FEASIBILITY OF PRODUCTION CONTROL IN THE INTERNATIONAL PETROLEUM INDUSTRY (soon to be published by Fredrick A. Praegers, New York). For the purpose of this article, only a few problems of the OPEC Transitory Production Programme and the Joint Production Programme (proposed by the Caracas Resolution of December 1970) will be discussed.

[2] Crude oil accounts for about forty-five percent and natural gas for about thirty percent of the United States' energy requirements. A. Ensor, *United States Energy Policy*, in INTERNATIONAL OIL AND ENERGY POLICIES OF THE PRODUCING AND CONSUMING COUNTRIES 34 (a Collection of Papers presented at the OPEC Seminar held in Vienna, July 1969) [hereinafter cited as OPEC Seminar].

[3] *Id.*

[4] Petroleum Press Service 6 (Jan. 1971).

complexity of the production policy of this industry is readily acknowledged by all who are familiar with it. Understanding the relationship between the production policy in the international petroleum industry and prorationing in the United States requires a study of the institutional developments which have taken place in the past decade. The most important of these developments was the creation of the Organization of Petroleum Exporting Countries (OPEC) in 1960.[5] OPEC is a permanent organization composed of countries which produce and export oil in substantial amounts. A country must not only be a producer but also a substantial exporter to qualify for membership in OPEC.[6] Today, ten exporting countries are members of this organization, whose headquarters are in Vienna.[7] Membership is globally spread from Africa (Libya and Algeria), to Latin America (Venezuela), to the Far East (Indonesia), and to the Middle East (Iran, Iraq, Saudi Arabia, Kuwait, Qatar, and Abu Dhabi).[8] In 1970 OPEC members collectively supplied over eighty-five percent of petroleum exports[9] to the consuming countries.[10]

OPEC is not an isolated regional institution. By the recommendations of the United Nations Conference on Trade and Development (UNCTAD) in 1965, by unanimous approval of the United Nations Economic and Social Council (ESOSOCO),[11] and in accordance with Articles 57 and 63 of the United Nations Charter, OPEC established formal relations with the United Nations.[12] OPEC

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[5] For a detailed analysis of OPEC's structural organization, its accomplishments and failures, *see* J. Vafai, 1 The Changing Structure of the International Petroleum Industry: A Lexo-Economic Analysis, ch. 5 1970 (unpublished dissertation on file at Yale Law School).

[6] Both the Soviet Union and Nigeria are exporting countries (producing in 1970, 353 and 53 Million tons respectively. Petroleum Press Service 7 (Jan. 1971)) but are not members of OPEC.

[7] On December 6, 1965, OPEC and the Republic of Austria entered into an agreement entitled "Headquarters Agreement," (effective January 1, 1966) in which the Austrian government recognized the extra-territoriality of OPEC headquarters "which shall be under the authority and the control of OPEC." *See* OPEC, Agreement Between the Republic of Austria and the OPEC Regarding the Headquarters of the OPEC, Dec. 30, 1965.

[8] The recently independent country of Bahrain has applied for membership with the chances of her becoming a member quite strong. Middle East Economic Survey 4 (Supp. July 3, 1970).

[9] The Economist 59 (Jan. 23, 1971).

[10] OPEC members produce about forty percent of world oil. OPEC BULLETIN No. 4, at 1 (1970).

[11] In this respect, a draft resolution was submitted to the Council by six OPEC members. The draft resolution was passed unanimously on June 30, 1965. *See* E/Res/1053 (XXXIX) (1965).

[12] The resolution of the Geneva Conference of the Economic and Social Council requested the Secretary General of the United Nations to take appropriate steps to: (a) ensure reciprocal exchange of information and documentation between OPEC and the United Nations; (b) provide for the representation of the Organization of the Petroleum Exporting Countries at meetings of United Nations organs dealing with matters of mutual interest; and (c) provide for

participates in the deliberation of the Board of UNCTAD[13] without the right to vote, "on questions within the scope of its activities."[14]

The organizational structure of OPEC includes the Conference,[15] the Board of Governors,[16] the Secretariat,[17] the Economic

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consultation and technical cooperation between the Organization of Petroleum Exporting Countries and the United Nations on matters of common interest. *See* OPEC, NOTE ON RESOLUTION IX.61., at 9-10; A. MARTINEZ, OUR GIFT, OUR OIL 116 (N. V. Drukkerij D. Reidl-Dordrecht, Vienna 1966) [hereinafter cited as MARTINEZ].

[13] OPEC, OPEC AND THE CONSUMING COUNTRIES 2, 6 (May 1967).

[14] MARTINEZ, *supra*, note 12, at 116.

[15] The Conference, which meets twice a year by the order of its president (art. 12), is the supreme authority of the Organization. It consists of representatives of member countries, each accorded one vote (art. 11). All its decisions must receive the unanimous approval of the members. Its basic function is to formulate the general policy of the Organization and to determine the appropriate ways and means of its implementation (art. 15(1)). The Conference is vested with the following powers:

1. To consider and pass upon applications for membership in OPEC;
2. To confirm the appointment of members of the Board of Governors;
3. To direct the Board of Governors to submit reports or make recommendations on any matters of interest to OPEC;
4. To consider the reports and recommendations submitted by the Board of Governors on the affairs of OPEC;
5. To decide budgetary matters as submitted by the Board of Governors;
6. To approve or reject the Statement of Accounts and the Auditor's Report submitted by the Board of Governors;
7. To approve any amendment to the OPEC Charter;
8. To call the Consultative Meeting for such purposes, and in such places, as the Conference deems fit;
9. To appoint the Chairman of the Board of Governors, Secretary General, Deputy Secretary General, and the Auditor of OPEC; and,
10. To establish specialized organs that operate within the general framework of the Secretariat, both functionally and financially (art. 41 (A & B)). OPEC Res. V. III, 56 (ch. IV, at 97).

This list is not exhaustive. If, in the future, certain matters arise which are not expressly assigned to one of OPEC's organs, the Conference will assume competence and jurisdiction upon those matters. *See generally* OPEC, THE STATUTE OF THE ORGANIZATION OF THE OPEC, chs. II and III; OPEC Res. 11.6 and VIII 56.1.

[16] The Board of Governors consists of Governors nominated by the member countries and confirmed by the Conference (art. 17(A)). It holds its meetings at least twice a year at the Secretariat, at suitable intervals to be determined by the Chairman of the Board after consultation with the Secretary General (art. 18(A)). The Chairman of the Board of Governors is appointed in accordance with the alphabetical rotation of the member countries by the OPEC Conference from among the Governors to serve for one year. The date of membership in OPEC takes precedence over the principle of alphabetical rotation (art. 21). The term of each Governor is two years (art. 17 (E)).

The Board of Governors has the following powers:

1. To direct the management of the affairs of OPEC and implement the decisions of the Conference;
2. To consider and pass upon any reports submitted by the Secretary General;
3. To submit reports and make recommendations to the Conference;
4. To draw up the budget of OPEC for each calendar year and submit it to the Conference for its approval;
5. To nominate the Auditor of OPEC;

Commission,[18] and the Consultative Meeting.[19] These legislative

6. To consider the statement of accounts and the Auditor's Report and submit them to the Conference for its approval;
7. To approve the appointment of department heads, upon nomination by member countries, giving due consideration to the recommendations of the Secretary General;
8. To convene an extraordinary meeting of the Conference (art. 18 (B));
9. To nominate a Deputy Secretary General to be appointed by the Conference; and,
10. To prepare the agenda for the Conference. *See generally* OPEC Res. VIII. 56, II, at 87-90; Art. 20(1-10).

[17] The Secretariat is the executive and research branch of OPEC. It carries out the functions of the Organization in accordance with its Charter and direction of the Board of Governors (art. 25). The Secretary General, Deputy Secretary General, and staff of the different executive departments are the component parts of the Secretariat (art. 26). The chief duties of the Secretary General are:

1. To organize and administer the work of OPEC;
2. To ensure that the functions assigned to the different executive departments of the Secretariat are carried out;
3. To prepare reports for submission to each meeting of the Board of Governors concerning matters which call for consideration and decision;
4. To inform the Chairman and other members of the Board of Governors of all Secretariat activities, of all studies undertaken, and of the progress of the implementation of the resolutions of the Conference;
5. To make any public statement regarding decisions taken by the Conference, the Board of Governors, or the Consultative meeting (art. 37(B));
6. To ensure due performance of duties which may be assigned to the Secretariat by the Conference or the Board of Governors;
7. To appoint the chiefs of departments (with approval of the Board of Governors (art. 31(A))), and officers of the Secretariat (upon nomination by their respective governments) (art. 31(2));
8. To commission consultants, as necessary, to advise on special matters or to conduct export studies when such work cannot be undertaken by the Secretariat (art. 39(A); OPEC Res. VI .46 as amended);
9. To engage such specialists or experts as OPEC needs for a period to be approved by the Board of Governors, provided there is a provision for such appointment in the budget (art. 39(B)); and
10. To convene "Working Parties" to carry out any studies on specific subjects of interest to the member countries (art. 39(C); OPEC Res. VI.46 as amended).

The Secretary General is the legally authorized representive of OPEC and the chief officer of the Secretariat (art. 27(A)). In this capacity he has the authority to direct the affairs of the Organization (art. 27(B)). The Secretary General is elected by the Conference of OPEC for a period of three years (Res. XX.117). The charter takes specific note of the international status of officials of the Secretariat and prohibits conduct not in accordance with such status:

"The Staff of the Secretariat are international employees with an exclusively international character. In performing their duties, they shall neither seek nor accept instruction from any government or from any other authority outside OPEC. They shall refrain from any action which might reflect on their position as international employees and they shall undertake to carry out their duties with the sole object of bearing the interests of the organization in mind." Art. 32. The Secretariat is composed of the Administration Department, Legal Department, Information Department, Technical Department, and Economics Department. *See* Art. 33(1); OPEC BULLETIN 2 (Feb. 1967).

[18] The Economic Commission was established under the OPEC Resolution of November 1964. OPEC's agenda required creating a special organ to:

and administrative bodies have provided a forum for gathering and disseminating information and communication among the members and colloquy on issues which commonly concern the oil exporting countries, e.g., price structure, relinquishment process, national oil company organization. No doubt through these communicatory processes OPEC has contributed to the economic consciousness of the under-developed oil exporting countries.[20]

The actual accomplishments of OPEC have been related to two issues: royalties and taxes. OPEC introduced a new method of royalty calculation—Expensing Royalties[21]—which, after a long

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1. Establish the necessary contacts with private and public bodies, in particular, in the oil industry;
2. Collect data and information which OPEC may require to achieve its objectives;
3. Examine the position of petroleum prices on a permanent basis;
4. Study all economic and other factors that may in any way affect petroleum prices and price structure significantly;
5. Submit to OPEC countries reports on the position of petroleum prices, including relevant economic factors and current status of the Commission's recommendations; and,
6. Formulate and submit to the Conference relevant recommendations based on its findings. *See generally* OPEC, Statute of the OPEC Commission, OPEC Resolutions I.1, IV and V. The Economic Commission is composed of the Commission Board, The National Representatives, and the Commission Staff.

[19] The Consultative Assembly is a special body composed of heads of member countries' delegations or their representatives (art. 40(B)). In practice, Consultative meetings have been rare but theoretically, if a Conference is not in session, a Consultative meeting may be convened at any time at the request of the President of the Conference (art. 40(D)). The Consultative Assembly may make decisions, or it may merely make recommendations for consideration at the next Conference (art. 40(C)). The President of OPEC's Conference is responsible for preparing the agenda for each Consultative meeting (art. 15(G)).

[20] For more details *see* M. Tehranian, Origins, Development Problems and Prospects of OPEC: An Essay in Political Economy, 1969 (dissertation on file at Harvard University).

[21] "Expensing" royalties has been one of the most controversial issues in the international petroleum industry's recent economic history. Since its founding, the Organization of Petroleum Exporting Countries has been determined to change the structure of three basic elements of the present international oil industry: royalties, prices, and the production of crude oil. The royalty issue has been the most successful struggle of OPEC vis-à-vis the Internation Oil Companies. Under the 50/50 concession agreements, the IOC were obliged to pay, as a part of the producing country's share, 12 1/2 percent of the crude oil production in cash or in kind. This percentage was usually treated as a direct credit against the total tax liability of the concessionaire companies which amounts to fifty percent of their net profits. Thus, royalty payments were not deducted from the gross income of the IOC as expense items in computing the income tax owed to the OPEC members, but rather were credited directly against the tax payable to the producing country. In its Resolution of June 8, 1962, OPEC challenged this system and recommended that: "Each Member Country affected [by the royalty issue] should approach the Company or Companies concerned with a view to working out a formula whereunder royalty payments shall be fixed at a uniform rate which Members consider equitable, and shall not be treated as a credit against income tax liability." OPEC Res. IV.33.

OPEC insisted that royalties should be "expensed," i.e., treated as costs

struggle with the International Oil Companies (IOC),[22] has been accepted by the latter and since 1968 practiced by the exporting member countries. The second accomplishment of OPEC was to break the traditional fifty-fifty tax system. The December 1970 Resolutions of the OPEC Conference instructed the member countries "to establish fifty-five percent as the minimum rate of taxation on the net income of the oil companies operating in the Member Countries."[23] In early 1971 the IOC adopted the new tax base in most of the OPEC countries.[24]

The fundamental principles of OPEC's Petroleum Policy have been described as follows:

(1) Optimization of Member Countries' Benefits from the Exploitation of their Petroleum Resources;
(2) Integrating the oil industry with the National Economy of the Producing Countries; and
(3) Efficient Development and Conservation of Petroleum Resources.[25]

These goals are all related to a uniform production policy in the OPEC community, and reflect the United States' production control systems in many ways. Just as the prorationing mechanism in the United States has been given many justifications, numerous reasons have been offered for global prorationing. Because there are fundamental parallels between the two prorationing concepts, and because these parallels are not easily recognized, the United States' prorationing systems as a model for past and proposed international prora-

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before determining the profits. In such accounting, royalty payments would be treated as operating costs and deducted from gross income like any other expense, and income tax would be paid on net earnings. Thus, the IOC would pay a fifty percent income tax plus a certain percentage of production (in cash or in kind) which would constitute the royalty. Finally, negotiation between the IOC and certain OPEC members took place, and after a period of hard bargaining, frustration and procedural maneuvers, an agreement with regard to expensing royalties was reached in London on November 12, 1964, with OPEC represented by both its Secretary General and the President of its Sixth Conference. This agreement was supplemented by the same parties in 1968. For an analysis of expensing royalties, *see* J. Vafai, *supra*, note 5, at 414-544.

22 These companies are Standard Oil Company (N.J.), Standard Oil Company (Calif.), Mobil Oil Corporation, Texaco, Gulf Oil Corporation, Royal-Dutch Shell, British Petroleum and Compagnie Française de Pétroles (CPF). These companies control approximately eighty-five percent of the crude oil outside the United States and the Communist sphere, and seventy percent of refinery throughput and of total petroleum product sales in this area. *See* J. HARTSHORN, POLITICS AND WORLD OIL ECONOMICS 114-26 (1967). The IOC's share of output from the OPEC area is about eighty-four percent. OPEC BULLETIN No. 6, at 9 (1970).

23 OPEC Res. XXI.120.

24 In late 1970 by special legislation, Venezuela raised its tax level on oil income to sixty percent. Thus among the OPEC members, Venezuela enjoys the highest income tax on crude oil production.

25 OPEC BULLETIN No. 6, at 1 (1970).

tioning will be briefly discussed. Furthermore, any prorationing system must be distinguished from pure conservation measures in order to reach an understanding of production control. And finally, the policies, programs, mechanisms and obstacles of production control will be discussed as they have applied to the OPEC area in the past, and possibly in the future as they effect the newly proposed Joint Production Programme.[26]

PRORATIONING IN THE UNITED STATES

Market demand prorationing may be defined as a sytem of adjusting production to expected demand.[27] Each state establishes a regulatory agency to determine the allowables for that state.[28] A description of the mechanism by which this determination is made is tortuous[29] and therefore, for the purpose of clarity, only an overly simplified model will be drawn.[30] The regulatory agency in each state holds hearings to determine expected future consumption.[31] The purchase of crude oil (mostly the refiners) indicate their nomination (anticipated requirement) for each ensuing period. By considering factors such as the actual and required amount of crude oil in storage and in pipeline, the imports, production and storage in other states, the regulatory agency determines the expected consumption. Nationwide estimates are decided by the United States Bureau of Mines, which are then available to the state regulatory agency as a general guideline.[32]

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[26] The phrase "production programming" has been used in the international petroleum industry and particularly in the OPEC and Arab Petroleum Congress (APC) circles. "Prorationing" has been used both in and out of the United States. For all practical purposes they connote the same concept.

[27] For the legal validity of prorationing, *see* Julian Oil and Royalties Co. v. Capshaw, 145 Okla. 23, 292 P. 841 (1930); Dancigar Oil & Refining Co. v. R.R. Commission of Texas, 49 S.W. 2d 837 (Tex. Civ. App. 1932); Champlin Refining Co. v. Corporation Commission of Oklahoma, 286 U.S. 210 (1931); J. ROGERS, COMMON PURCHASER, MARKET DEMAND, PINELINE PRORATION, Ninth Annual Institute on Oil and Gas Law and Taxation, South Western Legal Foundation, Dallas, Texas 63 (1958).

[28] For an evaluation of the statutory authorities of the regulatory agencies, *see* P. GARFIELD & W. LOVEJOY, PUBLIC UTILITY ECONOMICS 260-93 (1963).

[29] *See generally* E. ZIMMERMAN, CONSERVATION IN THE PRODUCTION OF PETROLEUM 328-43 (1959); W. LOVEJOY & P. HOMAN, PROBLEMS OF COST ANALYSIS IN THE PETROLEUM INDUSTRY 59-79 (1964); M. NEAVE, *The Conservation of Oil and Gas*, MELBOURNE U. L. REV. 201–36 (1969); M. ADELMAN, THE SUPPLY AND PRICE OF NATURAL GAS 77-84 (1962).

[30] For an excellent analysis of prorationing in the United States, *see* W. LOVEJOY & P. HOMAN, ECONOMIC ASPECTS OF OIL CONSERVATION REGULATION 127-84, 237-60 (published for Resources for the Future, Inc.) [hereinafter cited as OIL CONSERVATION].

[31] *See, e.g.*, TEX. REV. CIV. STAT. ANN. art. 6049d (1962); G. Dutton, *Proration in Texas: Conservation or Confiscation*, 11 SW. L. J. 187 (1957).

[32] J. Marshall & N. Meyers, *Legal Planning of Petroleum Production*, 41 YALE L. J. 33, 53 (1931).

Once the state allowables are decided in a market demand order, the second stage begins—allocation of allowables among the pools and wells in a particular state. Different technical factors are taken into consideration in determining pool and well allowables, such as the "yardstick" or "top allowables",[33] and spacing. Based on these considerations, each pool (and within each pool, each well) receives its share of the state's total estimated demand. The amount of production allocated to the pool by the regulatory agency under the market demand mechanism might coincide with the maximum efficient rate of production (MER) of that pool.[34] In that case prorationing acts as a conservation device. But such a coincidence is merely accidental.[35] It is precisely this phenomenon which allows a confusion between conservation and prorationing to be used as a justification for the market demand system.[36] Despite such adroit confusion, market demand prorationing is clearly the cause of economic waste and misallocation of resources.

One problem with market demand prorationing is that the aggregated amount of production is controlled by mutual agreement between the regulatory agency and the purchasers of crude oil. If this is not a conspiracy to limit the supply of oil as has been suggested by some,[37] it is a collaboration between the regulatory agency and purchasers to control the amount of production. The regulatory agency does not authorize production of a barrel of oil unless it is sure that the purchaser will take it. Therefore, the industry's supply is not dictated by the interplay of market forces, but by a collective

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[33] For definitions, *see* OIL CONSERVATION, *supra*, note 30, at 142.

[34] Under the MER method, production is scheduled in such a way that the efficiency of the driving forces for production, and thus, the recoverable oil from the reservoir, will be maximized. The rate of production under the MER system could be determined irrespective of considerations such as market demand, transportation facilities, or a specific interest of a group of producers. It must be noted that MER should be used not only as an engineering concept, i.e., maximizing the number of barrels within the given physical structure, but also as an economic concept, i.e., consideration of engineering factors plus consideration of present and future prices and costs. It is only with economic MER that conservation may be sought after. Under these considerations the maximum ultimate recovery would not mean to recover the last drop of oil at any cost. Conservation would not imply limiting the efficient well production for the more costly and inefficient marginal well under economic MER.

[35] E. ROSTOW, A NATIONAL POLICY FOR THE OIL INDUSTRY 120-24 (1948).

[36] An interesting discussion could be made regarding the cost of production at the MER level as opposed to below MER. One of the major reasons that the average cost per barrel of oil in the OPEC area is less than in the U.S. is the fact that production in the OPEC area is basically at the MER level. M. Adelman, *The World Oil Outlook*, in NATURAL RESOURCES AND INTERNATIONAL DEVELOPMENT 34-46 (M. Clawson ed. 1964); M. ADELMAN, OIL PRODUCTION COSTS IN FOUR AREAS 96 (Proceedings of the Council of Economics of the American Institute of Mining, Metalogical and Petroleum Engineers, Inc., Feb.-Mar. 1966).

[37] For a discussion on this point, *see* OIL CONSERVATION, *supra*, note 30, at 140.

decision based upon the market demand. Given the present import restriction,[38] the interplay of competitive forces from in and out of the United States are effectively controlled. Limitation of production in this manner will surely maintain the prices above their competitive level. At this price level new exploratory activities will take place; new capacities will be provided; and new discoveries will be made. The regulatory agency has to make room for new discoveries (irrespective of cost factors). This simply means that, given a constant demand,[39] allowables for the old pools have to be reduced despite the fact that their MER capacity has not changed. As one authority indicates, in Texas allowables are based below their maximum efficient rate of production.[40] It is clear that an allowable is a function of market demand rather than the efficiency of a reservoir. To the extent that a reservior produces less than its MER level, economic waste exists.

Another economic waste closely related to market demand prorationing is development of idle capacity. Given artificially high prices—a direct result of production control—investment in the petroleum operation receives extra stimulation.[41] An idle capacity will be created and the capital will be tied up in different phases of the industry.[42] It is extremely difficult to determine the extent of idle capacity because there is no way to know what the "normal capacity" would be, had it not been for market demand prorationing.[43] Professor Lovejoy has estimated that the annual costs

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[38] For a description of the United States import restriction, *see* THE CABINET TASK FORCE ON OIL IMPORT CONTROL, THE OIL IMPORT QUESTION, A Report on the Relationship of Oil Imports to the National Security 8-17 (1970) [hereinafter cited as THE OIL IMPORT QUESTION]; E. SHAFFER, THE OIL IMPORT PROGRAMME OF THE UNITED STATES (1968).

[39] In practice the market demand has increased steadily in the United States. (In 1970 the United States overall demand for oil and natural gas liquids increased 4½ percent. Petroleum Press Service 6 (Jan. 1971).) Thus the old pools do not feel penalized as a result of a newcomer. This however does not change the rationale of the argument.

[40] According to Professors Lovejoy and Homan, "[f]or practical purposes of setting rates of production from reservoirs, MER appears at present to have no significance, except in California, since restriction to market demand in most instances gives a lower level than MER." OIL CONSERVATION, *supra*, note 30, at 84.

[41] For an analysis, *see* E. Kahn, *The Combined Effects of Prorationing, The Depletion Allowance and Import Quotas on the Cost of Producing Crude Oil in the U.S.*, 10 NATURAL RESOURCES J. 57 (1970).

[42] *See* H. LUBELL, MIDDLE EAST OIL CRISES AND WESTERN EUROPE'S ENERGY SUPPLIES 102 (1963).

[43] There is, however, no doubt that excess investments are made in the United States, particularly in the exploratory and developmental stages. According to Professor Lovejoy, a total excess investment of 9.3 Billion dollars is made in excess producing wells, excess dry holes, and excess idle equipment. *See* W. Lovejoy, *Oil Conservation, Producing Capacity and National Security*, 10 NATURAL RESOURCES J. 92 (1970).

of maintaining idle capacities are between 1 Billion and 1.5 Billion dollars.[44]

Perhaps the most staggering waste under market demand prorationing is the pattern of allocation of the allowables among the pools and wells. Significant exceptions from market demand prorationing have been granted in various cases.

The first and most important exception to the prorationing system is that made for marginal wells.[45] According to a conservative estimate there are some 400,000 old marginal wells in the United States, "most of their energy long since dissipated."[46] The majority of these wells are yielding not more than a few barrels each day.[47] There are 20,000 marginal wells in Pennsylvania producing on the average half a barrel each day.[48] It has been indicated that in one case 17,600 flowing wells, with an average capacity of producing more than a hundred barrels a day, had to curtail their average scheduled daily allowables to twenty-one barrels per day per well as a result of the application of the prorationing formula. This restriction was made more stringent by the limitation of the flowing wells' production to sixteen days during the month. As a result, the flowing wells (with the potentials of hundreds of barrels per day) were producing an average of twelve barrels a day per well when their production per day was averaged over an entire month; whereas, nine hundred marginal wells, producing at their full capacity every day of the month, averaged more than twelve barrels per day per well.[49] This example indicates that prorationing has a definite penalizing effect upon the efficient wells and therefore is repugnant to the idea of conservation.

The second exception to the prorationing system is the "dis-

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[44] *Id.* at 95.

[45] A marginal well has been defined as "any oil well which is incapable of producing its maximum capacity of oil except by pumping gas lifts or other means of artificial lift." *See* The Marginal Well Act, TEX. REV. CIV. STAT. ANN. art. 6049(b)2 (1962). For the purposes of prorationing, a marginal well is defined in terms of its production as compared to the depth of the well. Therefore, as is the case in Texas, a well which produces 100 barrels a day, without the aid of artificial lifting from a 2,000 foot depth is considered marginal. As the depth increases, production requirements for the well rise. Hence, if a well produces 35 barrels a day at 8,000 feet, it will still be classified as marginal. *See* LOVEJOY & HOMAN, PROBLEMS OF COST ANALYSIS IN THE PETROLEUM INDUSTRY, *supra*, note 29, at 69.

[46] The Bank of New York, *Petroleum Conservation, How America Is Making the Most of Its Oil and Gas Revenues*, 3 NATURAL RESOURCES LAWYER 278 (1970).

[47] Marginal wells have been distinguished from stripper wells. Wells with an average production of 20–25 b/d are called marginal, and those with an average production of less than 10 b/d are considered stripper wells. Both types are exempted from the application of allowables. Petroleum Press Service 407 (Nov. 1967).

[48] A. Kahn, *supra*, note 41, at 59.

[49] G. Dutton, *supra*, note 31, at 187.

covery" or "exploratory" well. The discovery allowable is a special allowable assigned to wells completed in a particular oil pool for a specified period of time. Until 1966 the discovery allowables in Texas were limited to the first five wells completed in the field within an eighteen month period. Since that year the Texas Railroad Commission has become more generous in exempting the discovery fields from market demand prorationing. The number of exempted wells has doubled and the duration of the exemption has been increased to two years.[50] Discovery allowables may exceed the usual per well allowable for older wells; they are also not subject to the scheduled allowable days which the older reservoirs generally follow.

Dense spacing is another phenomenon of discovery wells. Since the spacing rules are not applicable to these wells until two years have elapsed and ten wells are drilled, and since each well will receive a specific allowable irrespective of its distance from another well, the producers will be encouraged to space them as densely as possible (within the forty acre space limit allowed in Texas). Thus, there are two misallocative effects in the second exception: First, under market demand prorationing other reservoirs will have to produce less in order to give room for the discovery wells, irrespective of productive capacity; and second, a general over-crowding may occur which is costly and may reduce the ultimate recoverability of the discovery wells. There are also exemptions such as "special orders" and "piercement salt dome fields,"[51] the "capacity water flood fields" and exemptions related to the "fair chance" doctrine.[52]

All these exemptions are made at the cost of non-exempted efficient wells which will have to produce less than their capacity. Texas provides a striking illustration. In a given year the total allowables in Texas were estimated to be 2,828,000 barrels per day from which 1,248,000 were exempted.[53] As a result, the non-exempted wells had to bear the burden of exempted ones. The prorated wells which—according to the Texas authorities—could produce 3,700,000 barrels per day were allowed to produce only 1,580,000 barrels per day. The capacity of these wells was 232 percent of what was allocated to them.[54]

The foregoing indicates that market demand prorationing has caused an economic waste in the United States which far offsets its

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[50] OIL CONSERVATION, *supra*, note 30, at 159.

[51] *Id.* at 155.

[52] Dailey v. R.R. Commission, 133 S.W. 2d 219 (Tex. Civ. App. 1939), *error ref'd*; Morris v. R.R. Commission, 142 Tex. 293, 177 S.W. 2d 941 (1944).

[53] OIL CONSERVATION, *supra*, note 30, at 114.

[54] *Id.*

incidental conservational effects. Reacting to only one of these many wastes—marginal wells—Professor Adelman appropriately stated: "By all means, go get lost! In Texas alone it would be worth paying about $1.3 Million a year to get rid of this public nuisance, a liability masquerading as an asset. . . ."[55]

The United States as a Model for Production Control

Students of the petroleum industry have mainly treated the problem of prorationing in an abstract manner. Most prorationing analyses deal with regional prorationing in the United States, and not global production control in the large exporting countries of the world. Thus, no relationship between these two production programs has been observed. Despite this limited and traditional approach there does exist a real interconnection between the regional prorationing policy in the United States and the global prorationing policy in the exporting countries (except the Soviet Union). The prorationing and conservation concepts of OPEC—with some considerable exceptions which may be attributed to the differences between the property systems prevailing in the OPEC area and those in the United States—are a melange of the various conservation and prorationing systems adopted in this country by different oil-producing states. The United States' conservation laws have been the subject of serious study by both OPEC and the APC. Indeed, some of the economists in these organizations have justified global prorationing merely because it was originated and applied on a national scale in the United States. For example, in the Sixth Arab Petroleum Congress, held in March 1967, it was stated that:

> Nobody can deny that conservation of natural resources and prorationing of its production are an American invention. Thus, one can never do without deduction from the U.S. style of conservation as the oldest and most stable style practiced on earth.
>
> . . . .
>
> The adoption of an international prorationing system has become imperative and it has all its fair justifications. The system is mainly deduced from the methods used by the advanced nations, especially the U.S.A.[56]

At the same Congress it was indicated that prorationing crude oil on a market demand basis is "a legitimate behavior adopted by the United States itself."[57] The majority also rejected the point that

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[55] M. Adelman, *Efficiency of Resources Use In Crude Petroleum*, S. ECON. J. 104 (Oct. 1964).

[56] R. A. Kamel, *International Proration of Oil and Its Impact on Prices*, Sixth APC 14 (Organized by the Secretariat General of the League of Arab States, Baghdad, Mar. 6-13, 1967) [hereinafter cited as Sixth APC].

[57] *Id.* at 14.

prorationing may be detrimental to the interest of consuming countries on the ground that "controlling supply is a legitimate case practiced by the U.S.A. and others . . . ."[58]

The Sixth Arab Petroleum Congress makes it clear that United States' prorationing has become a postulation for crude oil prorationing on a global scale. In this Congress it was suggested by a participant that:

1. For the purpose of obtaining an accurate world market demand, an "organization like the United States Bureau of Mines must be established."

2. The market demand must be allocated "among the fields and wells by the competent authorities in each exporting country."

3. If the amount of crude oil produced exceeds the quota of any exporting country "this situation has to be faced by a 'Hot Oil' law applied on a world scale." The enforcement power of this "International Connonly Act" is suggested to be given to consuming countries. Consuming countries will have to undertake "not to accept any shipments produced in violation of the quota defined for each exporting country."[59]

Thus, the prorationing procedures adopted in the United States have become a framework for the Arab oil prorationing formula. This point was admitted even by the sponsors of the Sixth APC Congress, as the following indicates:

> The prorationing system is a deduction from the procedure of the Texas Railroad Commission, the Corporation Commission of Oklahoma, together with the harmony performed [sic] by the Interstate Compact Commission and the Bureau of Mines.[60]

Like the APC, OPEC has considered the establishment of a mechanism whereby output would be determined according to market demand at "fair" and stable prices. Such a policy is very similar to the method adopted by the regulatory agencies in the United States. Predictably, this was a theme to which OPEC returned in December 1970. Although OPEC's "Transitory Production Programme" of 1965 was formulated more modestly than its American counterpart,[61] its goals were certainly no less ambitious. The 1970 "Joint Production Programme" for 1972 can be expected to be in the same vein.

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[58] *Id.* at 19.

[59] *Id.* at 15.

[60] *Id. See also* statements by Dr. A. el Kassam, *id.* at 9; and statements by F. Al Hussainy, *id.* at 13-19.

[61] J. HARTSHORN, *supra*, note 22, at 208, 344. OPEC emphatically denied at its conferences in the Spring and Summer of 1965 that it was trying to control the total production of its member countries.

The United States' prorationing policy has been used as a justification for the control of world crude oil production; in fact, it has set a pattern according to which world oil production may be controlled.[62] Furthermore, global prorationing is a reaction to the restriction of production in the United States. This may be seen from the fact that in the Fifth APC (March 1965) it was recommended that unless the production and supply policy in the United States was to change in favor of a more competitive system (which would require the elimination of percentage depletion, of market demand restrictions imposed by the states, and of import restrictions imposed by the Federal Government), international prorationing would be an indispensable self-protection policy to confront the "chaos which is now prevailing in the world petroleum production."[63]

Historic occurrences—the Achnacarry agreement and supplementary "As is" agreements[64]—also indicate undeniable, if not causal, relations between the conservation and prorationing policies in the United States and those in the OPEC countries. As a prominent petroleum economist has observed:

> The impact of prorationing upon competitive positions is probably not the only important feature of conservation policy. What mattered most apart from the aspect of technology was the fact that only with a certain degree of production could the U.S. be fitted into the world-wide structure of the oil industry. Conservation was the missing link which had to be forged.[65]

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[62] One of the examples of this pattern is the following address by the participants of the United Nations International Seminar of 1968:

"One of the wealthiest and most powerful countries in the world has been so concerned with this question of preserving its natural resources for future generations and for future emergencies that it has established in the various regions within the nation, a system of prorationing which ensures that various wells do not produce on an average more than a certain number of barrels per day." *See* D. H. N. Alleyne, *The Spectrum of Government Involvement in the Administration of Petroleum Affairs*, United Nations International Seminar on Petroleum Administration No. 68-45777, Lecture No. 7, at 9-10 (Trinidad, Apr. 16-27, 1968).

[63] M. Iskandar, *World Oil Surplus in Relation to United States Imports, Depletion and Prorationary Policies*, 5th APC (Organized by the Secretariat General of the League of Arab States, Cairo, Mar. 16-23, 1965).

[64] This agreement is a classic example of global control of the world oil by International Oil Companies. The machinery employed by these companies was one of the most effective systems of controlling world petroleum. In pursuance of its monopolistic production policy the "As is" grant adopted the following rules: Policy of industrial resources; production control through a quota system; violation of over and under trading regulations; zonal division of market; pooling transportation facilities and administrative freight rates; method of effecting exchange of supplies; pooling concession areas; and pricing of crude oil. *See* FEDERAL TRADE COMMISSION, INTERNATIONAL PETROLEUM CARTEL, submitted by the Sub-committee on Monopoly of the Select Committee on Small Business, 82d Cong., 2d Sess. (1952) (also known as the FTC Cartel Report).

[65] P. FRANKEL, ESSENTIALS OF PETROLEUM 11 (1946).

Establishment of a scale of production in the United States to fit the world production scale was not the only "missing point." Increasing interests which the developing oil exporting countries have shown in crude oil output was even a more important "missing point" in the world system of production. These countries have endorsed the United States' notion of conservation-prorationing. In their conferences and organizations they have intellectualized the conservation-prorationing notion to the extent that global prorationing has been presented as an international conservation system and as a program vital to their economic planning.[66]

Thus, it may be concluded that no thorough and realistic study of crude oil production control in the OPEC area can be made without an understanding of differences between a genuine conservation system and a prorationing scheme. Arriving at such an understanding presents difficulties which are created by the complexities resulting from the multiple ownerships of the petroleum reserviors in the United States and the different legal systems adopted by producing states. Yet, successful concerted production control in the United States and the OPEC area is the most effective measure through which the price of oil could be maintained above the competitive level. On the other hand, adoption of a scientific conservation system in the United States would considerably raise the efficiency of national oil in competing with OPEC oil and thus would be useful in shaping a "security oriented" oil policy. In the OPEC area, adoption of conservation measures would serve the interests of the developing oil producing countries in terms of their effective use of petroleum for their economic developments.

Distinction Between Prorationing and Conservation

Two basic justifications have been advanced for production programming: Price of crude oil and conservation. In several APC meetings it has been asserted that excess production in the exporting areas is the cause of lower prices, and above and below ground waste. It follows that a system of production policy, similar to the one found in the United States, would be a cure for both lower prices and wasteful production.[67] This, however, is a misrepresentation of

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[66] *See* President H. Boumedienne's speech delivered at the opening of the 20th OPEC Conference. OPEC Bulletin No. 5, at 4 (1970); address by President Caldera of Venezuela at the inagural ceremony of the 21st OPEC Conference. OPEC Bulletin No. 1, at 4-6 (1971); Sixth APC, *supra,* note 56, at 1-47(A-4) and No. 6, at 1-20; OPEC Res. IV.33.

[67] OPEC Res. IV.33. *See also* D. H. N. Alleyne, *supra,* note 62, at 9.

both prorationing and conservation concepts. The origin of such confusion is not from OPEC or APC, but the United States.

One such misrepresentation is found in a recommendation made by the American Petroleum Institute, claiming that the purpose of prorationing is "improvement in the conservation of oil and gas." The Institute has recommended that:

1. The basic principles of alocation among pools . . . should be observed, and

2. A definite basis for equitable allocation among pools should be formulated by each producing state.[68]

The American Petroleum Institute also recommended that the states implement certain suggestions which would aid in the "solution of the intricate problems of conservation and allocation."[69] Even the Interstate Oil Compact Commission (IOCC) has confused the single unitization measure, which includes inter-field competition, with various forms of prorationing in which the production is limited and the price is kept artificially high.[70] According to the IOCC regulations, the goals of conservation may be achieved by eliminating:

1. Physical waste, as that term is generally understood in the oil and gas industry;

2. The inefficient, excessive, or improper use, or the unnecessary dissipation of reservoir energy;

3. The inefficient storing of oil or gas;

4. The location, drilling, equipping, operating, or producing of an oil or gas well in a manner that causes, or tends to cause, reduction in the quantity of oil or gas ultimately recoverable from a pool under prudent and proper operations;

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[68] AMERICAN PETROLEUM INSTITUTE, PROGRESS REPORT ON STANDARDS ALLOCATION OF PRODUCTION WITHIN POOLS AND AMONG POOLS 12 (by the Special Study Committee and Legal Advisory Committe on Well Spacing and Allocation of Production Practice, Division of Production, Dallas, Texas 1942).

[69] *Id.* at 13.

[70] Of course the IOCC has emphatically denied any intention to fix the prices of crude oil in the United States. To be sure, Article V of the Oil Compact provides: "It is not the purpose of this Compact to authorize the states joining herein to limit the production of oil and gas for the purpose of stabilizing or fixing the price. . . ." The same kind of denial has come from the members of the Texas Railroad Commission. The following testimony of a member of the Commission is an example:

Representative Mack—"Would you care to express an opinion as to why the price of oil was increased in the last few weeks?"
General Thompson (for the Commission)—"Why?"
Mack—"How would you explain the increase in the price of fuel and oil in the last few months?"
Thompson—"We have nothing to do with price. We are forbidden to consider economics. . . . I know nothing about price." Petroleum Survey, *Hearings before the Comm. on Interstate and Foreign Commerce*, H.R., 85th Cong., 1st Sess., 187 (Feb. 5, 1957).

5. The production of oil or gas in excess of
   a) transportation or marketing facilities,
   b) reasonable market demand . . . .[71]

The first four points are conservation measures which would be aplied under a sound unitization policy. The fifth point, that of limiting production to estimates of market demand, aims at price maintenance, not conservation.

The confusion of conservation with prorationing is not limited to the regulatory agencies in the United States. Both OPEC and APC consider[72] prorationing to be an integral part of conservation measures because, as was stated in the Sixth Arab Petroleum Congress, "rules requiring ratable take within a reservoir seem, beyond question, essential to end gross waste in oil production which evoke the need for conservation."[73] According to APC economists, conservation means maintaining the following principles and setting limitations for their exercise:

1. Spacing: restriction upon the number and location of wells;
2. Drilling operations: regulation of drilling and well completion practices;
3. MER: restriction of production to the maximum efficient rate;
4. Proration: allocation of production between separately owned tracts within a common source of supply;
5. Ratios: limitation of production in excess of an established gas-oil and water-oil ratio;
6. Volumetric withdrawals: restriction of production of gas, oil, or water to prevent excessive localized withdrawals.[74]

Point four of the Arab Petroleum Congress is comparable to point five of the Interstate Oil Compact Commission in which both deliberately confuse the question of conservation and prorationing. Both the IOCC and APC have suggested that the goal which market demand prorationing is intended to achieve is "to prevent both above ground and below ground waste of oil."[75]

The confusion between prorationing and conservation, and the general belief that prorationing prevents economic waste, may

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[71] INTERSTATE OIL COMPACT COMMISSION, A FORM FOR AN OIL AND GAS CONSERVATION STATUTE § 1.1.1. (Oklahoma City 1959).

[72] Neither the OPEC nor the APC has made an official pronouncement to equate conservation with prorationing. The general trend in these organizations, however, (particularly in the APC) has been toward such equation.

[73] Sixth APC, *supra*, note 56, at 11.

[74] *Id. at* 12.

[75] *Id.* at 11. *See* W. ROGERS, A STUDY OF CONSERVATION OF OIL AND GAS IN THE U.S. (IOCC 1964).

provoke an emotional appeal in the countries in which the concessionaires do not, and need not, apply market demand prorationing.[76] Passivity of oil companies in controlling production has been interpreted as an extravagance on the part of these companies in exploiting the natural resources of the developing countries while "conserving" the resources of their own home states. President Houari Boumedienne of Algeria speaking at OPEC's Twentieth Conference is a case in point. He attacked the United States, which applies very strict rules "to the conservation of their own natural resources while looting and wasting those of underdeveloped countries."[77] It was for this reason he stated that a "positive aspect of OPEC's work" would be global prorationing.[78]

OPEC's position with respect to conservation and prorationing is somewhat different from that of the Arab spokesmen. OPEC has made at least "a conceptual distinction" between prorationing and conservation. Despite the emphasis that OPEC has traditionally applied to production control as a waste prevention measure, it has also developed a modern model of conservation that the IOC's should adopt in their concession agreements. OPEC's model was revealed in the "Declaratory Statement of Petroleum Policy."[79] This document[80] provided *inter alia* that:

> . . . hydrocarbon resources are limited and exhaustible, and that their proper exploitation determines the conditions of the economic development of Member Countries, both at present and in the future;
> . . . .[81]
>
> Resolves . . . that Operators[82] shall be required to conduct their operations in accordance with the best conservation practices, bearing in mind the long-term interests of the [exporting] country.[83]

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[76] Indeed, according to the view of some of the leaders of exporting countries, prorationing has become a divine duty to implement "the social justice." See the speech of President Caldera of Venezuela on the opening of the 21st OPEC Conference. OPEC BULLETIN No. 1 (1971).

[77] OPEC BULLETIN No. 5 (1970). President Boumedienne did not mention the United States in his speech, but since, of the "rich countries" of the world mentioned in his address, the United States is the only one with comprehensive prorationing regulations, it could be deduced that his main target was the U.S. *See also* Middle East Economic Survey No. 37 (Supp. July 10, 1970).

[78] OPEC BULLETIN No. 5 (1970).

[79] For an analysis of the Declaratory Statement, *see* F. PARRA, OPEC: PRESENT AND FUTURE ROLE, Continuity and Change in the World Oil Industry 135 (Middle East Research and Publishing Center, Beruit 1970); Middle East Economic Survey No. 29 (Supp. May 16, 1969).

[80] For the text of "Pro-Forma Regulation for the Conservation of Petroleum Resources," *see* OPEC, SELECTED DOCUMENTS OF THE INTERNATIONAL PETROLEUM INDUSTRY, 1968, at 388-99 (Vienna 1969).

[81] The other parts of this important resolution deal with the mode of development, participation, relinquishment, posted prices, limited guarantee of fiscal stability, renogotiation clause, accounts and information, and settlement of disputes. OPEC Res. XVI.90.

[82] OPEC has defined the word operator in this context as a concessionaire who

To this end, OPEC's Secretariat prepared a "Pro-Forma Regulation for the Conservation of Petroleum Resources" which was approved by the OPEC Conference in November 1968.[84] The "Pro-Forma Regulation" is a comprehensive guide for member countries regarding exploration, exploitation, storage and transportation of petroleum. It does not, however, include provisions regarding the adoption of a uniform production policy by OPEC countries nor the establishment of global prorationing.

The Pro-Forma Regulation of OPEC is a constructive work which embodies the basic principles of conservation for its member countries. And contrary to similar procedures adopted by the regulatory agencies in the United States, the Pro-Forma Regulation does not incorporate conservation principles with those of production control and market demand prorationing; it presents a distinct conservation policy.

The Pro-Forma Regulation—a conservation guideline—has received little formal attention in the OPEC countries.[85] Instead, attention has been focused on formulating global market demand prorationing. OPEC's resolutions and some of the producing countries have not hesitated to repeat that oil is a "wasting asset,"[86] whereas other natural resources such as agriculture and forestry are reproducible and expandable. This theme was surely a source of confusion between conservation and prorationing. The same theme in the United States has been used to justify state prorationing as well as depletion allowances.

In both the United States and the OPEC area production programming has been defended on the ground of conservation of natural resources. This allegation has enjoyed a considerable emotional appeal on both sides. Interestingly, the Arab and Venezuelan spokesmen and the United States regulatory agencies behave alike by adroitly confusing, if not distorting, the concept of conservation with that of prorationing.

A point of distinction seems inevitable. It is one thing to prevent waste by eliminating, or reducing, the intra-field competition,

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holds 'current and in effect' contracts and concessions "providing for the exploration for and/or development of any part of the hydrocarbon resources of the country concerned." OPEC Res. XVI.90.

[83] OPEC Res. XVI.90.

[84] OPEC Res. XVII.93.

[85] Only Venezuela has fully incorporated OPEC's "Pro-Forma Regulation for the Conservation of Petroleum Resources" in its conservation laws. *See* Decree No. 1316 of Feb. 11, 1969, in OPEC, SELECTED DOCUMENTS OF THE INTERNATIONAL PETROLEUM INDUSTRY, 1969, at 1-14 (Vienna 1970).

[86] OPEC Res. IV.33 and XVI.90; OPEC BULLETIN No. 5, at 4 (1970); OPEC BULLETIN No. 1, at 4 (1971).

drainage and rate of decline in producing wells, and another to control the production and thus the price by preventing output above the going market demand. Physical and economic waste may be eliminated under the regime of unitization, but, in the words of Professor Eugene Rostow, "beyond that there is no plausible reason for not allowing market forces to determine the scale of output."[87]

The deliberate confusion of conservation with prorationing has as its purpose the prevention of competition. In the OPEC area and the United States, conservation has been used as a camouflage for price control.[88] It is, however, beyond question that even the best and most efficiently administered prorationing policy cannot achieve anything approaching the goals of conservation. In the petroleum industry, both domestic and international, any degree of conservation which is attained by proration plans is incidental to the primary purpose of most of them, which is profitable returns above the competitive level on the inflated cost structure.[89]

Because of the deliberate confusion of prorationing with conservation, many interested, though sometimes conflicting, groups (in the United States, Latin America, and Arab countries)—the APC, OPEC, IOCC, and API—advocate production control other than the MER standards. Such production control, however, should never be confused with scientific conservation. The principal features of conservation differ from those of prorationing. An effective conservation policy involves the application of scientific spacing procedures; of artificial, secondary or supplementary recovery; methods for the maintenance of pressure; storage of gas in underground formations; application of sound oil field engineering and economic principles; prevention of natural gas from burning or from escaping into the open air in excess of the amount necessary for the

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87 E. ROSTOW, *supra*, note 35, at 122.

88 *See* IOCC GOVERNOR'S SPECIAL STUDY COMMITTEE, A STUDY OF CONSERVATION OF OIL AND GAS IN THE UNITED STATES 128 (Oklahoma City 1964). For the impact of prorationing upon prices, *see* OIL CONSERVATION, *supra*, note 30, at 237-60; A. KAHN, *supra*, note 41, at 58; P. Davidson, *Public Policy Problems of the Domestic Crude Oil Industry*, 53 AM. ECON. REV. 97 (1963); J. McKIE & S. McDONALD, *Petroleum Conservation in Theory and Practice*, 76 Q. J. ECON. 98 (1962); A Kahn, *The Depletion Allowance in the Context of Cartelization*, 54 AM. ECON. REV. 286 (1964); M. Adelman, *Efficiency of Resource Use in Crude Petroleum*, 31 S. ECON. J. 104, 107 (1964); A. KAHN & M. DE CHAZEAU, INTEGRATION AND COMPETITION IN THE PETROLEUM INDUSTRY 429-49 (1959).

89 *See* Walter J. Nead's testimony, *Hearings before the Subcomm. on Anti-trust and Monopoly of the Comm. on the Judiciary*, U.S. Senate, 91st Cong., 1st Sess., S. Res. 40, *The Petroleum Industry*, pt. 1, at 80-2 (Mar. 12, 1969); A. KAHN & M. DE CHAZEAU, *supra*, note 88, at 150-1; A. Kahn, *The Combined Effects of Prorationing, The Depletion Allowance and Import Quotas on the Cost of Producing Crude Oil in the United States*, *supra*, note 41, at 58-9.

efficient operation of the well; and, in short, efficient utilization of oil and gas to be produced.[90]

The distinction between prorationing and conservation lies on these premises. Application of the above mentioned measures are necessary to prevent intra-field competition. In doing so, production might indeed be controlled and adjusted to maximize utilization of underground reservoirs. Thus, control is only incidental to prorationing and varies according to the reservoir structure.[91] To the contrary, prorationing is *per se* control of production.

Per se control suggests that the motivation behind cut back in production is not a conservational one, but is for the purpose of increasing prices. In the summer of 1970 the Libyan government applied a series of production cuts which reduced the Occidental Oil Company's output from 800,000 barrels per day to 485,000 barrels per day.[92] The cut back was applied to the entire Oasis group[93] which are at present responsible for thirty-one percent of Libya's total production.[94] The explanation of the government for the cut back orders was that the concessionaires did not base their production upon conservational measures and did not extract crude oil "in proportion to capacity."[95] The company denied the government's allegation. No evidence for the parties' claims and counter claims was made public. No documentation existed to prove or disprove the respective allowables (of the company or of the government) as good oil practice. In the Fall of 1970 Occidental had virtually restored its previous daily production, but only after paying the government's requested price increase totaling $70 Million. There was no longer a claim by the government regarding the wasteful production on the part of the company. Occidental continued to produce in "excess capacity"—conservation requirements of Libya, notwithstanding.

The Libyan example indicates that in existing international relations, no automatic correlation between *per se* production control and conservation should be expected. Furthermore, the aims of conservation will not necessarily be fostered by a *per se* produc-

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[90] *See* F. Rouhani, *The Legal and Economic Framework: Section 1 Concessions, Exploration Leases, Production and Conservation Legislation*, No. 68-42343, Lecture No. 8, at 19 (United Nations Inter-regional Seminar on Petroleum Administration, Trinidad, Apr. 16-27, 1968).

[91] *See* J. Bain, *Rostow's Proposals for Petroleum Policy, Eugene V. Rostow, A Reply*, 57 J. POL. ECON. 55, 68 (particularly page 56) (1949).

[92] Petroleum Intelligence Weekly 1 (July 20, 1970).

[93] The Oasis Group is composed of Continental, Marathon, Ameradon-Hess and Shell.

[94] Petroleum Intelligence Weekly 1 (May 25, 1970).

[95] *Id.* at 2 (July 20, 1970).

tion control; they may indeed be damaged. In the United States such damage occurs because the efficient wells are compelled to produce below their capacity in order to make room for inefficient ones. The experience may not be so different in the international arena where the efficiency of fields vary from country to country, and area to area. When the efficiency of these fields is curtailed by production control, a visible cost is imposed upon the world community. The penalization effect of *per se* control takes place no matter who applies it (the governments or the international oil companies). From this point of view there is no difference between U.S. and international prorationing.

Prorationing measures influence the cost of production in two ways. First, the general economic efficiency is reduced under the prorationing system. When competitive forces are active, low cost producers will pre-empt the market, prices will be regulated by cost, and investment will be directed "toward channels where it can most effectively increase production in response to consumer demand."[96] In effective prorationing where there is an agreement between the producers to restrain their production to a fixed and prearranged amount, the low cost producers will not have an opportunity to pre-empt the market. To the extent that these producers will not produce, the high cost producers are able to produce. The second cost effect of prorationing is the interest cost of assets tied up in the reservoir. Under prorationing the difference between the actual value of oil in the ground at present, and the discounted value of the same oil in the future is increased.[97]

It may be said that in the United States, prorationing reduces wasteful production which is inherent in producing fields with multiple ownership, and therefore prevents "excess production." This logic is incorrect because beyond the "Rule of Capture," excess production does not exist. Once the wasteful production of the Rule of Capture is prevented, the interplay of market forces should determine the rate of production.

Even if excess production was acceptable in the United States where multiple ownership of reservoirs exist, it is not tenable in the OPEC area. In OPEC countries the state is the owner of the "unitized" tracts and therefore, conservation justifications for prorationing in the United States—though invalid *per se*—are not applicable in the OPEC area. There are only a few areas within the OPEC community where multiplicity of ownership exists (e.g., the Neutral Zone— Saudi Arabia and Kuwait,[98] and the submarine areas—Saudi

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[96] OIL CONSERVATION, *supra*, note 30, at 115.

[97] H. LUBELL, *supra*, note 42, at 102.

[98] *See* Agreement Between the State of Kuwait and the Kingdom of Saudi Arabia

Arabia and Iran).[99] In these areas the reservoirs belong to the governments having jurisdiction over them. In this situation it is not market demand prorationing which can provide maximum utilization of these co-owner reservoirs but a sound conservation policy to prevent physical and economic waste. An agreement among the governments involved would be necessary to determine spacing, drilling and exploitation practices. For example, the offshore agreement in October 1968 between the governments of Iran and Saudi Arabia stipulates certain measures with respect to boundary lines[100] and prohibition of drilling within a specified radius.[101] It goes on to state that governments

> shall ensure that the companies operating under its respective authority shall not carry out operations that may, for technical inconsistency with the conservation rules . . . be considered harmful to the oil and gas reservoir in the [specified] area.[102]

This provision to utilize the efficiency of the common reservoir between Iran and Saudi Arabia is a conservation measure, in that it serves the purpose of efficiency. Beyond that there is no logical reason to control production for conservation.

PRORATIONING IN THE OPEC AREA

A Brief Outline

The counterpart of United States prorationing is production programming in the OPEC area. Similar to the United States, the reasons for production programming in ten large exporting countries of the world are said to be based on the concept that oil is a "non-renewable asset"[103] and therefore, its production should be controlled by the member countries or by an international agency.[104]

Regarding the Partition of the Neutral Zone, (generally known as the Partition Agreement) July 7, 1965 and Supplemental Agreement Approving the Median Line of the Saudi-Kuwaiti Neutral Zone (officiated Jan. 25, 1970). Text, Middle East Economic Survey No. 32 (June 5, 1970 Supp.). *See also* Royal Decree No. M-28, dated 12 Dhul Al-Qa'dah 1389 (Jan. 19, 1970), published in OPEC, SELECTED DOCUMENTS OF THE INTERNATIONAL PETROLEUM INDUSTRY, 1969, at 143-44 (Vienna 1970).

99 Agreement Concerning the Soverignty over the Islands of Al-Arabiyah and Farsi and the Delimitation of the Boundry Line Separating the Submarine Areas Between the Kingdom of Saudi Arabia and Iran. Text, OPEC, SELECTED DOCUMENTS OF THE INTERNATIONAL PETROLEUM INDUSTRY, 1968, at 368-70 (Vienna 1969).

100 *Id.* arts. 2, 3.

101 *Id.* art. 4.

102 Letter from Ahmad Zaki Yamani, Minister of Petroleum of Saudi Arabia, to Dr. Manouchehr Eghbal, chairman of the Board of the National Iranian Oil Company, Oct. 24, 1968. Middle East Economic Survey No. 23 (Apr. 4, 1969 Supp.). This letter is a complimentary part of the agreement between Iran and Saudi Arabia.

103 OPEC Res. IV.33.

104 The idea of establishing an international agency in the OPEC area for the purpose of market demand forecast was introduced for the first time by Venezuela in

The real reason behind adoption of production control, as in the United States, is the price motive. Unlike the United States, the proponents of global prorationing have not disguised the pricing motive of production control. It has been repeatedly asserted by the producing countries that their economic development depends on oil and therefore, pricing of crude oil is extremely vital to their future economic plans.[105]

In the eleven years since the producing countries banded together, OPEC has grown considerably in stature and experience, and "has proved itself a force to be reckoned with in the international oil business."[106] This growth is leading OPEC to shift its price motives from one of applying rather ineffective political pressures upon the International Oil Companies to one of applying effective economic restraint upon the world production system. A study of OPEC's recent resolutions shows that the organization has realized that it is extremely difficult to establish and maintain the price level, which it claims should exist in the international oil industry, without effective international prorationing, i.e., control of supply.[107] Indeed, it would appear that one of the main purposes underlying the establishment of OPEC's Economic Commission was to make a realistic study of the world petroleum supply and to consider the possibility of implementing international production programming.

OPEC is not the only regional organization which advocates crude oil prorationing. Even prior to OPEC's formation, the Arab Petroleum Congress (APC) had been trying to achieve price stabilization and production control, and it had been advocating that the producing countries should exercise their right of sovereignty to accomplish their production goals. It was in pursuit of these goals that a systematic prorationing policy, recommended in the Second and the Sixth APC, and a resolution regarding the relinquishment[108]

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the Third Arab Petroleum Congress. *See* A. Parra, *Oil and Stability* (a paper delivered at the 3d APC, organized by the Secretariat General of the League of Arab States, Alexandria, 1961).

105 The OPEC countries have paid more attention to the price of crude oil for the purpose of their economic development than any other aspect of the operation of the oil industry in their countries. There are, however, fundamental issues involved in modern concession agreements which are extremely important. These issues are related to the very modality of a concession agreement and the subjects that such agreements should cover. *See* T. Farer, *Economic Development Agreements, a Functional Analysis* (a paper delivered at the U.N.I.T.A.R. Conference on International Law in Accra, Ghana, Jan. 14-21, 1971) .

106 Petroleum Press Service 42 (Feb. 1966).

107 For the impact of production control upon international oil prices, *see* P. FRANKEL, OIL, THE FACTS OF LIFE 30 (1962).

108 ARAB PETROLEUM CONGRESS, RECOMMENDATIONS OF THE SEVENTH ARAB PETROLEUM CONGRESS Rec. 2 (organized by the Secretariat General of the League of Arab States, Kuwait, Mar. 16-22, 1970).

of oil producing areas by the IOC in the Seventh APC, gained the emphatic approval of its member countries.[109] Inasmuch as three founding[110] and four regular members[111] of OPEC are also members of the APC, there exists a common interest between these two organizations with regard to production policy; therefore, it should not be surprising if in the future they adopt similar policies with respect to prorationing.

The prorationing policy recommended in the Second and Sixth APC is, in terms of its exactitude, more definite than the experimental production program of OPEC; it is actually a formalized one. This policy is, with some exceptions, more or less similar to the policy implemented in the United States. One significant difference is to be found in the justifications given for prorationing. In the United States, the following clichés are offered to justify prorationing: conservation, prevention of waste, protection of correlative rights, and the myth that "price rise[112] is incidental to prorationing."[113] These justifications are used as a camouflage for price control. On the other hand, both OPEC and the APC admit that pricing is at least as commanding a motivation for prorationing as is conservation. For example, in the Sixth Arab Petroleum Congress some members insisted that a "pragmatic solution" to the world's unused capacity "makes it a must for exporting countries to adopt export restrictions by imposing an international prorationing system, as the sole avenue for keeping prices from any decline that leads to deterioration of price per unit."[114] Indeed, the Sixth APC witnessed no prorationing proposal in which price increase or price stability was not mentioned as a justifying factor.[115]

The ultimate goals of OPEC, with regard to prorationing, are not very different from those of the APC. In fact the very first reso-

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109 *See* OPEC, *Progressive Relinquishment Under OPEC Declaratory Statement of Policy of 1968* (a paper presented at the Seventh APC, Kuwait 1970).

110 These members are Saudi Arabia, Kuwait, and Iraq.

111 These members are Algeria, Libya, Qatar, and Abu Dhabi.

112 General Thompson, Chairman of the Texas Railroad Commission, has emphatically stressed that "we have nothing to do with price," and that "we are forbidden to consider economics. . . ." J. HARTSHORN, *supra*, note 22, at 21. See also General Thompson's statements, *supra*, note 70.

113 State v. Associated Oil Co., 211 Cal. 93 (1930); Danciger Oil & Refining Co. v. R.R. Commission of Texas, *supra*, note 27, at 839.

114 Sixth APC, *supra*, note 56, at 14.

115 Even Abdulhady Taher, the Governor of Saudi Arabia's General Petroleum and Mineral Organization (PETROMIN) who has not adhered to the idea of international prorationing, suggested in the Sixth APC meeting that prices of world oil should be "administered," by a collaboration between the International Oil Companies and the exporting countries. The price agreements of February 1971 between the IOC and the Persian Gulf producers has proved that Mr. Taher has not been wrong in his anticipations. *See* A. Taher, Sixth APC, *supra*, note 56, at 25; A. Taher, OPEC Seminar, *supra*, note 2, at 267.

lution of OPEC referred to the fact that the member countries cannot remain indifferent to price problems. This resolution affirmed the determination of OPEC to "study and formulate a system to ensure the stabilization of prices by, among other things, the regulation of production."[116] To date, OPEC has made two attempts to regulate the production of international petroleum: First, the "Transitory Production Programme," attempted in 1965, ending in failure; and second, "Joint Production Programming" to begin in 1972.

OPEC's Transitory Production Programming

In the first year following its formation, OPEC concentrated on the question of prorationing as a means for achieving its economic goals.[117] OPEC's early resolutions (implicitly)[118] and its architects (explicitly)[119] advocated international prorationing of production by means of an "international compact."[120] It was not until July 1965[121] that OPEC, in the face of compelling pressures,[122] announced its Transitory Production Programme. The Conference said in part that:

> With a view to counteracting erosion of crude and product prices; considering that one of the contributing factors to the deterioration of crude and product prices is the unrestricted competitive use of the excess producing capacity . . .
>
> . . . .
>
> resolves
>
> 1. to adopt as a transitory measure a production plan calling for ra-

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116 OPEC Res. I.1.

117 D. HIRST, OIL AND PUBLIC OPINION IN THE MIDDLE EAST 108 (1966).

118 ". . . [M]embers shall study and formulate a system to ensure stabilization of prices by, among other means, the regulation of production with due regard to the interests of producing and of the consuming nations. . . ." OPEC Res. I.1(3).

119 The reference is to Sheik Tariki of Saudi Arabia and to Perez Alfonzo of Venezuela, both eminent and influential Ministers of Petroleum in their respective countries at the time they engineered OPEC.

120 *See* Middle East Economic Survey (Sept. 23, 1960).

121 Despite all the arguments in the APC meetings, and the resolutions of OPEC, no affirmative step was taken by OPEC to establish a viable production policy: The basic reasons for OPEC's inactive position in establishing a uniform production program were (a) the disparity in production policies between the member countries, and (b) OPEC's preoccupation with the "expensing royalty." The first obstacle was apparently modified by a qualified understanding among the member countries. The second problem was resolved by OPEC's success in establishing a uniform expensing royalty system throughout the member countries (except Libya). *See* note 21, *supra.*

122 These pressures were from different directions: First, from Venezuela which had adopted a limited production policy even before OPEC was established; second, from international oil spokesmen such as Abdullah Tariki and Dr. Alfonzo (who were the Ministers of Minerals and Petroleum from Saudi Arabia and Venezuela respectively, at the time of the formation of OPEC); and third, from the public in some Arab countries which were advocating planning of supply as an effective means "to the companies' cartelized lifting arrangements." *See* G. STOCKING, MIDDLE EAST, A STUDY IN POLITICAL AND ECONOMIC CONTROVERSY 385 (1970).

tional increases in production from the OPEC area to meet estimated increases in world demand; and

2. to submit a production program to the Governments of Member Countries for approval.[123]

OPEC's prorationing plans, when formed, were not concerned with the already established rate of production in its members' countries, but rather dealt with scheduling any increase in the rate of production with respect to the world market demand.

To implement its instructions, which are analogous to legislative acts, the OPEC Conference formulated a production program for a trial run of twelve months. This program was to work as follows. A base year was established for the purpose of estimating changes in demand for petroleum and petroleum products in OPEC's markets. Then a calculation of the percentage rise in demand in OPEC's markets was made based upon the base year. From this calculation allowables with regard to the increase in demand were set for each OPEC country. Each member's original, unprorated production (production in the base year) was added to the allowable in order to determine the total production permitted for each member in the given year. The target-percentage increase was, therefore, allocated among the individual OPEC countries. In the last three months of each twelve month period the OPEC producing countries were to instruct their concessionaire companies "not to produce more than enough to bring the yearly percentage increase up to the amount allotted under the finally revised programme."[124]

Table 1 illustrates the mechanism of this experimental prorationing system. The first two columns indicate actual production. Column three indicates the actual percentage increase over the base year in a given period. The last column, however, is a given one. It represents the percentage change of production allocated to each member country for the given period. The table compares each OPEC member's production for the second half of 1965, i.e., the first half of the experimental twelve month period, with its production for the corresponding period in 1964, and it compares the percentage increase of each OPEC member's production during the first half of the experimental period with the target set for each member's growth during the given period by the production program. It is to be noted that the purpose of the production target for each member under the program was to regulate the production of that member so that the total would not exceed the absorptive capacity of the market.

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[123] OPEC Res. IX.61.

[124] J. HARTSHORN, *supra*, note 22, at 334.

TABLE 1[125]
OPEC's TRANSITORY PRODUCTION PROGRAMME
(Thousand Metric Tons)

	July-Dec. 1964	July-Dec. 1965	% Actual Change	% Planned Increase[126]
Kuwait	58,080	57,600	−0.8	+6.5
Saudi Arabia	50,790	53,800	+5.9	+12.
Iran	43,560	50,300	+15.5	+17.5
Iraq	31,350	32,500	+3.7	+10.0
Qatar[127]	5,150	5,230	+1.6	+32.0
Venezuela	89,770	91,770	+2.2	+3.3
Libya	23,320	30,300	+30.0	+20.0
Indonesia	12,570	12,250	−2.5	+10.0
Total OPEC	315,590	333,750	+6.1	+10.0

The ultimate aim of OPEC's Transitory Production Programme was stated by the Organization in the Sixth Arab Petroleum Congress of 1967. In this Congress, the paper delivered by OPEC announced that the Transitory Production Programme had been designed with the object of "eliminating some of the inherent causes of price instability, namely, the excessive competition made possible by the prevailing surplus producing capacity."[128] It is, therefore, beyond question that the underlying factor behind the attempt by OPEC to "program" its crude oil was an oligopolistic effort to "stabilize" the price of international petroleum.

Aside from the inclusion of price among its justifications for prorationing, both OPEC and various APC participants have resorted to the same rationalization for restricting production as have the advisory and regulatory agencies (e.g., Bureau of Mines, Interstate Oil Compact Commission and Texas Railroad Commission) and private interests (e.g., API and owners of marginal wells) in

[125] Petroleum Press Service 43 (Feb. 1966).

[126] OPEC's planned increase in production:

	(Thousand Barrel Daily) 1965-66	1966-67
Iran	304	304
Saudi Arabia	254	290
Libya	210	210
Kuwait	147	147
Iraq	125	125
Venezuela	115	115
Qatar	67	50
Indonesia	48	48
OPEC Total	1,270	1,289

Source: Petroleum Press Service 244 (July 1966)

[127] The figures for Qatar are rather misleading. The thirty-two percent target increase was intended to take account of the anticipated increase in this country's production due to Shell's offshore production.

[128] OPEC, *Collective Influences in the Recent Trend Towards the Stabilization of International Crude and Product Prices*, Sixth APC, *supra*, note 56, at 9.

the United States. There is, however, one additional justification for prorationing made by some technocrats in the OPEC area. In essence, it has been argued that all large scale petroleum exporting regions fall into the category of economically underdeveloped countries. These countries are characterized by a total dependence upon one commodity. Thus, the fact that petroleum is the principal source of income for the OPEC countries "leaves these countries no alternative, in their efforts to stabilize their economic foundations . . . but to adopt a policy of conservation of resources, which would have the effect of stabilizing crude oil prices through prorationing."[129] The economic predicament of the developing countries has been used as a justification to curtail the production of international petroleum. According to this line of reasoning, prorationing of petroleum cannot be justified in countries such as the United States and perhaps Venezuela, where the "principal source of income" is not entirely dependent upon one commodity. Yet these two countries have applied very stringent controls over their production of crude oil. Furthermore, the predicament of the underdeveloped OPEC countries, on which the whole case for external control over production is grounded, is temporary, and consequently prorationing must be eliminated as soon as the economic situations in these countries are improved.

OPEC's Joint Production Programme for the Seventies

The Transitory Production Program of 1965-1966 was an experimental plan to be applied for a specified period of time in the OPEC countries. For reasons which will be enumerated later, Transitory Production Programming was not successful in increasing the prices of crude oil. Following this failure, the prevalent view was that there would not be any future attempts toward production programming by OPEC. However, OPEC's renewed attempts in late 1970 to study and adopt a global production program clearly indicates the fallacy of this idea. Indeed, some of the leaders of the exporting countries have firmly supported OPEC in establishing a global prorationing policy. In his inaugural speech at the OPEC Conference in December 1970, President Rafael Caldera of Venezuela manifested an emphasis on production programming:

> We believe in the need for [production] programming—for planning, for rational, sound and logical planning so as to understand the future changes of consumption . . . [It may] lead us to a better understanding of what the future holds for us.[130]

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[129] M. Joukdar, *Petroleum: Supply, Demand, Production Controls and Price Cuts*, al-Bilad (Saudi Daily), Aug. 10, 1959.

[130] OPEC BULLETIN No. 1, at 5.

Venezuela's Minister of Mines and Hydrocarbons was more explicit on planning for production. Speaking on behalf of the Government he, like the proponents of prorationing in the United States, emphasized the detrimental effect of surplus producing capacity. A global production program was held to be the solution. He emphasized that:

> [F]or long-term solutions to the ever-present danger of the surplus producing capacity adversely affecting prices, we should continue our studies in the search for a rational device to programme production increases in our countries.[131]

Production programming has also been advocated by other chiefs of OPEC states.[132]

The first step for a global production policy in the Seventies was taken by the OPEC Conference of June 1970. OPEC charged its Economic Commission to study the feasibility of adopting a production plan for the period of 1971-75.[133] According to this plan the increases in production will be based upon a schedule to be accepted by the member countries. It is emphasized within the OPEC community that the focus of this program is not to restrict production and not to create an artificial shortage of oil supplies. Rather, the objectives of this production program are "to rationalize and coordinate future increases in oil production by the OPEC members in such a way as to relate such increases to the growth of world demand and prevent the deterioration of prices."[134] If there were still any doubts regarding OPEC's intention to establish global prorationing, they should be eliminated by OPEC's pronouncement at the Caracas Conference in December 1970. In this Conference OPEC resolved:

> 1. to form a Standing Committee of high ranking representatives of each Member Country that shall hold its first meeting at the Headquarters of the Secretariat before the end of January 1971 with a view to determining the relevant factors that must be taken into account for the formulation of a definite and realistic Joint Production Programme for Member Countries for the period beginning in 1972 . . . .
>
> 2. to instruct the Secretary General and the Economic Commission to maintain under continuous study all developments which may affect the objectives pursued by the Joint Production Programme and to report to the above Committee and to the Conference.[135]

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131 *Id.* at 7.

132 *See, e.g.*, President H. Boumedienne's inaugural speech at OPEC's Conference of June 1970. OPEC BULLETIN No. 5, at 4 (1970).

133 OPEC Res. XX.112.

134 Middle East Economic Survey No. 36, at 1 (July 3, 1970).

135 OPEC Res. XX.121.

Thus, through the Caracas resolution, OPEC entered a new stage in 1971 with a definite intention to establish a production program starting in 1972 for the countries which supply eighty-five percent of the world production outside the United States and the Soviet Union.

The foregoing discussion indicates that contrary to the Transitory Production Programme of 1965, OPEC is deploying its resources to establish a "definite" and "realistic" joint production program. This production program is in its embryonic state and nothing has been disclosed about its mechanism. However, many of the problems discussed below which explain the reasons for the failure of the early Transitory Production Programme, are also applicable to the Joint Production Programme initiated by the Caracas Doctrine.

PROBLEMS OF GLOBAL PRODUCTION PROGRAMMING

Conflicting Interests Between the IOC and OPEC Regarding Production

The inevitable conflict of interests occur between the International Oil Companies and OPEC in determining the allowables of a producing country. OPEC and the IOC may apply different criteria when determining allowables. In deciding the allowable of a country the IOC applies in part the "off-take" mechanism and the "diversification" policy as criteria.[136] These two elements are not, and need not be, considered here in detail but are the bases of understanding the possible future conflicts between the IOC and OPEC policies.

The International Oil Companies use the off-take mechanism as their own form of "production programming" in the producing countries. In a given country (e.g., Saudi Arabia), a concessionaire, which is an operating company (e.g., Aramco), is composed of several International Oil Companies (e.g., Texaco 30%, Mobil 10%, Standard Oil of California 30%, and Standard Oil of New Jersey 30%). The total production in a concession area is determined by the IOC according to the arrangements—termed off-take agreements—made among them, by which current output could be lifted by the operating company. The off-take by an International Oil Company (e.g., Standard Oil Company in the Aramco Concession) is not necessarily determined by the percentage of investment in the concession (30%), but by variables such as refinery capacity, refinery needs, transportation and storage facilities and particularly

[136] For more details, *see* E. PENROSE, THE LARGE INTERNATIONAL FIRM IN DEVELOPING COUNTRIES: THE INTERNATIONAL PETROLEUM INDUSTRY 150-72 (1968).

the contractual obligations of the International Oil Company. The total production in a concession area will be affected by these variables and by the off-take agreements among the co-owners of a concession agreement.

Diversification is related to the production policy of the International Oil Companies based upon several factors, not the least of which is their own security of supply. These companies do not rely upon one source of supply no matter how economically attractive it might be. Particularly as a result of lessons learned from nationalization of the oil industry in Iran, the companies pursue a diversification policy so that they will not have to bend to the pressure of one producing country. Pursuance of a diversification policy is certainly an important factor in determining the total production of a concession area.

It is beyond any doubt that in determining the production share of a country the International Oil Companies apply both diversification and off-take mechanisms. On the other hand, the precise mechanism to be used in the future by OPEC for production programming is not known. During the Transitory Production Programme, OPEC did not reveal the criteria for determining its allowables. According to one source, the target rates in the first and second years of the experimental prorationing period were mostly "based upon forward production estimates submitted by the International Oil Companies to their host governments."[137] That is to say, in the Transitory Production Programme OPEC used the same production schedule that the International Oil Companies have traditionally applied in each producing country, i.e., one based upon considerations of off-take agreements and diversification policy. This method of programming failed, but the Joint Production Programme, perhaps for the next decade, is now being formulated and the question of determining the allowable of each producing country—as complex as it is—has to be faced.

Will OPEC in its Joint Production Programme once again follow the rate of production established by the International Oil Companies? OPEC's economic goals, for the most part, are different from, if not in conflict with, those of the International Oil Companies. It is doubtful that OPEC can achieve its economic goals by applying the production schedule which was created for, and fitted to, the special production policy of the International Oil Companies. How can the OPEC production schedule be identical to that of the Internationals when the latter companies are seeking a diversified

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[137] Petroleum Press Service 43 (Feb. 1966).

production system, whereas OPEC's production will be limited to the OPEC area? These two production schedules—OPEC's and the IOC's—cannot be identical since OPEC would determine a member's allowables irrespective of the IOC's marketing obligations, whereas the Internationals' production schedule is based upon the off-take agreements. Internationals from the United States have to determine their production policy in such a way as to not blatantly go against the United States' antitrust laws, whereas OPEC need not act within these laws. Obviously, different production policies adapted to these specific demands are needed.

In scheduling their production, the American International Oil Companies must adjust their operations according to the United States' import regulations. Does OPEC have such restrictions? These regulations limit the importation of oil from the OPEC countries to a compulsory import quota (Mexican and Canadian oil are exempted from quota restrictions).[138] How can OPEC's production schedules be consistent with those of the IOC, when the International Oil Companies will produce less whenever they pay higher royalties (an example of such being Venezuela)? OPEC's allowables for its members are supposed to be determined irrespective of the royalty arrangement between that member and her concessionaire company. Finally, since the formation of OPEC, Venezuela has continuously complained of the surplus production in international markets. This surplus oil is claimed to be the result of the application of the production schedule determined by the International Oil Companies. Assuming that OPEC was able to establish the allowables of its member countries, a basic question would remain: Will member countries with restricted allowables be able to limit their respective IOC concessionaires from additional production?

The complexity of issues in reaching a production allowable for a country is evident from the above discussion. It is clear however that although there is a basic commonality of interest between the International Oil Companies and OPEC in production control, OPEC's determination of allowables for an individual producing country should be consistent with its own goals and be substantially different from the determination of allowables made by the IOCs. Consequently, the Internationals' production schedule for individual countries will not be applicable to OPEC's production program. Unless OPEC wants to get results opposite to its interests, OPEC should not apply them in its prorationing scheme.

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138 Adjusting Imports of Petroleum and Petroleum Products into the United States, Presidential Proclamation No. 3279, as amended, § 1(a) (4). *See* THE OIL IMPORT QUESTION, *supra*, note 38, at 1-17.

Rate of Production

An important factor for success in prorationing is the conformity of producing countries to the production rates prescribed by the regulatory agencies. In establishing an allowable for a country, OPEC has to take into consideration factors such as the historical conditions (past performance of the producing area), the present reserve capacity, the demand situation (with regard to specific gravity), and the social and economic needs of both the producing and the consuming countries.[139] These factors are not easy to determine. For example, by taking the simplest factor into account, the demand for crude oil of a particular gravity, the difficulty of production programming becomes visible. If a demand for a particular gravity increased at a faster rate than had been envisaged by OPEC, will the member which can supply the crude oil of that gravity be willing to restrain its production? Will other members allow the discordant member to produce at the expense of the entire OPEC community? The experience with the expensing royalties[140] clearly indicates that the answer to the question should be in the negative. In 1967 the International Oil Companies and OPEC based the royalty payment schedule (in part) upon the gravity of the crude oil.[141] This solution put countries such as Libya, with light gravity oil, at a disadvantage. Thus, Libya expressly declined to join other OPEC members in accepting the agreed royalty formula.[142]

Determination of the "fair" rate of increase for each producing country during the time of OPEC's Transitory Programme was almost impossible, considering the ever presence of some of the above mentioned problems. Table 1, page 31, indicates that with two exceptions, the actual percentage increase in production fell short of target rates during the first half of the production program. The aggregate increase for all of the OPEC countries was slightly more than six percent, whereas an increase of ten percent was planned. If OPEC's objectives were to control the rate of production, Table 1 would be encouraging. It could also be argued that the pattern of each member's growth rate in the second half of 1965 was broadly in line with that fixed at the OPEC Conference and thus OPEC was successful in controlling the production in each producing country. This would

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139 For more details on problems involved in allocation of allowables among the member countries, *see* J. Vafai, 2 The Changing Structure of the International Petroleum Industry: A Lexo-Economic Analysis, *supra*, note 5, at 733-62.

140 *See* note 21, *supra*. *See also* OPEC, *OPEC and the Principle of Negotiations* 19 (a paper presented by OPEC at the Fifth APC, Mar. 1965).

141 For the relationship between "gravity differential" and royalty, *see* Middle East Economic Survey (Jan. 12, 1968); Petroleum Intelligence Weekly 8-9 (Jan. 16, 1965).

142 Petroleum Press Service 45 (Feb. 1968); OPEC BULLETIN (Feb. 1968).

be true if OPEC had a world-oil monopoly, but it does not. In the absence of such a monopoly, the production growth rate of a member country which falls behind the growth rate of world demand would be indicative of the fact that the oil companies have obtained oil elsewhere, at the expense of OPEC countries, by exercising a diversification policy. OPEC was fully aware of this fact and, indeed, it was in search of ways to adjust its production growth without causing price diminishment,[143] so that such growth would correspond to the increase in the growth rate of world demand. Unless OPEC can exercise some control over non-members' production, its program will have the effect of expanding rather than restricting production.

Diversity of Interests Among OPEC Members

An additional reason for difficulties in prorationing oil in the OPEC area is to be found in the production policy of non-founding members. These countries are new producers and their "historical factors"[144] are not significant; therefore at times it may not be economically feasible for them to be bound by the average rate of increase determined by OPEC, since the base to which this increase is to apply is relatively small. Libya, which has become an oil producer only recently—1958—(compared to other OPEC countries), is a case in point. This country, with a profuse reservoir, reportedly exceeded the scheduled increase established by OPEC's Transitory Production Programme and refused[145] to accept the principle of production programming.[146] Hence, this country pursued an independent course in order to obtain its "fair share" of the world market. Libya employed price cutting to attain its share, even in the face of OPEC's production programming, which became a major factor in

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143 "The Conference, considering that the unsatisfactory rate of increase of production in those Member Countries cannot be ascribed to the lack of outlet for their crudes in the international market; further, considering that such manipulation of production by the oil companies concerned is contrary to the national interest of these countries;
resolves,
that should these rates of growth not be improved to satisfactory levels during the year 1966, full support of all OPEC members shall be given to efforts by the countries concerned to safeguard their legitimate national interests." OPEC Res. XI.73.

144 Consideration of historical factors means simply that the amount of oil produced in the past is to be a criterion for future allowables.

145 The Oil Minister of Libya, Mr. Kabasi, in expressing his government's reaction to OPEC's Transitory Programme indicated that: "So far as Libya is concerned there is no production limit, none imposed, and we never accepted one. . . . Libya plans to go ahead to develop production until it reaches maturity." Petroleum Intelligence Weekly 6 (Aug. 30, 1965).

146 For the reaction of other Arab countries, *see* G. STOCKING, *supra*, note 122, at 387.

upsetting OPEC's goal of price stability.[147] It is possible that by their recent membership in OPEC, Abu Dhabi and Algeria will pose the same problem for this organization. Regarding the fact that these countries' historical factors are more limited than those of Libya, the difficulties in controlling their production by OPEC become obvious.[148]

A successful implementation of OPEC's production program would require that major OPEC producers allow, for newcomers and potential entrants into the world oil markets, a disproportionate share of the growing world demand.[149]

Political Obstacles

The members of OPEC can be broadly classified into two political groups: (a) the OPEC members which are inclined to use oil as a political weapon for collective interests; and (b) the members which are basically concerned with their own national interests. In the first group is Libya, Algeria and Iraq. In the second group is Iran, Saudi Arabia, Kuwait and Indonesia. Venezuela may be classified into both categories. The dichotomy of the policies between these two groups can easily be recognized. An example is the 160 mile Israeli pipeline (from Eilat to Ashkelon)[150] which was constructed in 1970 and which takes crude oil of "some unknown source" to the Mediterranean. While the Arab members of OPEC condemned the pipeline, and guaranteed that the destined consumer would not receive the oil, its throughput in 1970 was initially 20 Million tons.[151] It is reportedly known that the crude oil is supplied from Iran to the pipeline.[152] Furthermore, Iran maintains bartered agreements with Romania, Czechoslovakia, Hungary, Bulgaria and Poland. The supplementary agreement between Iran and Rumania provides for 14.5 Million barrels of Iranian crude oil being exported to Rumania in 1971. This oil "is believed to go through the trans-Israel pipeline."[153]

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147 Once Libya reached a level of production comparable to the other major OPEC producing countries, it proceeded at a more sober pace and correspondingly the pressure of Libyan oil on the world market was reduced.

148 Abu Dhabi is virtually without established "historical factors." It was not until July 1962 that oil was exported for the first time from Umm Sharif and not until December 1963, from Murban. OPEC BULLETIN (Oct. 1967).

149 J. HARTSHORN, *supra*, note 22, at 347.

150 Petroleum Press Service 126 (Apr. 1970).

151 Middle East Economic Survey No. 5, at 7 (Nov. 27, 1970).

152 *See, e.g.*, Petroleum Press Service 109 (Mar. 1971). In an interview with the Beruit Daily, al Hayah on July 28, 1968, Mr. Yamani, Saudi's Minister of Petroleum and Mining, mildly denied that Iran participated in the trans-Israel pipeline, on the basis of Iran being a "muslim sister country." Middle East Economic Survey No. 40, at 9 (Aug. 2, 1968).

153 Petroleum Press Service 109 (Mar. 1971).

The general policy of Iran regarding the amount of annual production in the country is another example of the dichotomy of policy within OPEC member countries. Venezuela has consistently applied a limited production policy, while Iran has followed the policy of maximum production. Both countries expect that the International Oil Companies will follow their respective policies. Thus, there is an intrinsic obstacle to OPEC's Joint Production Programme which seems very hard to overcome. First, the interests of these two political camps would have to be reconciled. It seems that the countries in the first category would be more amenable to Joint Production Programming than the latter countries. Second, the interests of the Arab members of OPEC would have to be reconciled with those of Venezuela at a time when Western Europe, the "natural market" of Arab exporting countries, is not protected against non-Arab supplies. In June 1967, when the Suez Canal was closed, the malleability of a joint production policy among the OPEC members became obvious. While the Middle Eastern members of OPEC (except Iran) reduced their exports, the Venezuelan and Iranian production rate increased. In fact, after June 1967 OPEC admitted that the Suez crisis had caused Venezuela to "utilize its surplus-producing oil capacity."[154] As in any cartel situation, these latter countries preferred to increase their production and violate the code of "cartel ethics" where their national interests did not coincide with the interests of the cartel.

Other Problems

The issues discussed above are by no means an exhaustive enumeration of problems of OPEC's Prorationing Policy. Rather, the discussion represents only a brief mention of difficulties related to the administrative process of global prorationing.

A myriad of problems in Joint Production Programming remain which are neither mentioned nor considered in the preceding discussion. These problems may be broadly divided into two segments.

First, technical problems require consideration in calculating the allowables of member countries, such as the crude oil gravity, the rate of decline of oil wells, the allocation of allowables for a new member, special allowables for discovery wells, regulations regarding "over-trading" and "under-trading," and reservoir capacities in the member and non-member countries.

Second, and far more significant, are the problems of economics.

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[154] OPEC BULLETIN 3 (Sept. 1967). *See also* Petroleum Press Service 251 (July 1967).

These include: Elasticity of demand in crude oil and products; impact of vertical integration upon prorationing; the degree of protectionism in Europe of indigenous sources of energy; competitive sources of energy (coal, shale oil, tar sands, electricity, nuclear energy, natural gas); energy trends in consuming countries; surplus capacity; economics of scale in refining; cost analysis (conventional cost studies, user cost, cost of production below MER, user cost of unitization, comparative costs in four main production regions of the world—the United States, Venezuela, the Middle East and North Africa); price analysis (effect of prices on excess production capacity, impact of U.S. Gulf prices upon the prices in the OPEC area, repercussions of the Suez Canal closure on the c.i.f. prices).[155]

The complexities of these problems need not be stressed here. Neither OPEC nor any member country has made a thorough study of these issues.[156] Nor are there any definite answers for the many economic problems mentioned.[157] Yet understanding these complex problems is a *sine qua non* for success of OPEC's ambitious Joint Production Programme. Thus the first task of OPEC is an economic one. Economic understanding is the test of OPEC's strength.

CONCLUSION

The International Petroleum Industry has been subject to fundamental changes in the past decade. These developments are basically the reflection of the extraordinary value of oil as the single largest source of energy, and of economic consciousness of the large exporting countries of the world—constituting OPEC—supplying eighty-five percent of the petroleum outside the United States and the Soviet Union. The predominant concept emerging from this myriad of developments is production programming by the oil producing countries rather than the International Oil Companies. The Arab and Venezuelan spokesmen have urged that oil is no longer a raw material subject to the negotiation of vested interests—"it is a matter of justice."[158] Despite this conceptualization, the inspirational and justificatory sources of production programming are pre-

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[155] For an analysis of some of these problems, *see* J. Vafai, *supra*, note 5, at 733-1172.

[156] Before adoption of the Transitory Production Programme, Arthur D. Little, Inc., was assigned to make a comprehensive analysis of profits and prices in the international petroleum industry. The study has never been disclosed but G. Stocking believes that Arthur D. Little's study recognized "serious obstacles to international prorationing." *See* G. STOCKING, *supra*, note 122, at 382.

[157] For an added view on some of these problems, *see* K. SAYEGH, OIL AND ARAB REGIONAL DEVELOPMENT 190-244 (1968).

[158] Address by President R. Caldera of Venezuela at the Inaugural Ceremony of the 21st OPEC Conference. OPEC BULLETIN No. 1, at 4 (1971).

dominately evident in the prorationing systems prevalent in the United States. In fact, in both the United States and the OPEC area, production control has been defended on the grounds of conservation of natural resources, and national and financial security.

The reasons traditionally offered in defense of the prorationing regime in the United States cannot be employed to justify a global prorationing system in the Middle East, North Africa, Venezuela and other OPEC areas. Neither the legal clichés (e.g., multiplicity of ownership) nor the economic slogans (e.g., social optimum) habitually adopted for prorationing in the United States are applicable in the OPEC area. Even if the justifications for prorationing made in the United States were applicable in the OPEC area, the endemic problem still remains: Prorationing in the United States *per se* is a non-conservation system. This system is in effect a camouflage to formulate those motivations far beyond, and alien to, conservation and efficiency. Indeed, in the petroleum industry, on both the national and international levels, the degree of conservation which is attained by production control is incidental to the primary purpose of it, which is motivated by price. Such motivation in the OPEC area has emerged as a path toward long-awaited economic development.

The recently intensified controversies over the pricing[159] and percentage[160] of crude oil between the International Oil Companies on the one hand, and OPEC countries on the other, is an indication of the nationalistic goals of the OPEC countries to forge ahead on the course of industrialization through higher prices.[161] Paralleling

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159 These controversies are temporarily diminished by the Teheran and Tripoli agreements of February 15 and April 2, 1971 respectively. The Teheran agreement between the twenty-two international and independent oil companies on the one hand, and six governments—Iran, Iraq, Saudi Arabia, Kuwait, Abu Dhabi and Qatar —on the other provides for the following price agreement:

(a) Thirty-three cents a barrel increase in posted prices;
(b) Two cents increase in settlement of freight disputes;
(c) Upward adjustment of posted prices for heavy crude oil;
(d) An extra cent a barrel increase to the 31° (Iranian heavy, Abrabian mediam and Kuwait) and 6 cents increase in Basrah crude;
(e) Elimination of the royalty allowances (the gravity differentials related to expensing royalties);
(f) Regular increase in posted prices until 1975 to adjust to the inflationary increase in manufacturing products consumed by the oil producing Persian Gulf countries.

This agreement does not apply to crude oil piped from Iraq and Saudi Arabia to Mediterranean terminals.

160 The Caracas Resolution of December 1970 calls for a break in the traditional 50/50 tax arrangements, i.e., an increase of producing countries' tax share from fifty percent to fifty-five percent. After protracted negotiations between the IOC and the Persian Gulf producing countries, the former accepted the new tax system in February 1971. *See* note 21, *supra*.

161 Although the historic agreement between the International Oil Companies and

the time honored economic theory, the Caracas Resolution of December 1970 declared that production control by the OPEC countries should be a substantial factor in maintaining high prices.

To implement this motivation, OPEC has created a mandate to establish a Joint Production Programme for its members. The numerous economic and political obstacles (some of which have been discussed in this article) will pose serious difficulties for the success of this mandate. If the mandate is successful, the world will witness the most effective cartel for its needed energy in the Seventies.

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the OPEC members of the Persian Gulf has been generally described as a triumph for the producing countries, such "triumph" is not without repercussions upon the Joint Production Programme. According to the agreement the contractual parties have agreed not to increase the posted prices of crude oil (except within the framework of the agreement) for a period of 5 years. As was noted, one of the fundamental purposes behind the control of production was price increase. Does not this price stabilization agreement between the IOC and the Persian Gulf Producing Countries off-set the purpose of Joint Production Programming?