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To date the petroleum industry is second only to the Department of Defense in its stimulation of ocean technology. By the end of 1968, American petroleum companies had invested over 13 billion dollars on the continental shelves of the United States. The development of submersibles, man in the sea, instruments, seismic surveys, mapping and charting, and development of ocean structures and engineering have all been profoundly effected by this massive injection of capital. There are about 16,000 companies in the United States that are either exploring or producing petroleum. Oceanology calls the petroleum industry the only growth industry in the ocean market today.[1] Furthermore, this rapid expansion into the oceans has had important ramifications for the development of viable legal regimes for the world's oceans as well as domestic boundaries, and has, through pollution, the potential to ruin important sources of protein for the human race. It is obviously of interest, therefore, to consider policies which affect offshore oil exploration and development. This paper is confined to analyzing three such economic policies in terms of their effects on the industry, their costs, and alternatives. First, the industry and its role in the demand and consumption of energy needs to be summarized.

An Overview of Petroleum in the U.S.

The Petroleum industry is somewhat arbitrarily divided

into the majors, the top thirty vertically integrated oil companies, and the independents, which include large multi-million dollar corporations, as well as small producers, refiners, and distributors. In 1970, seven of the top twenty U.S. industrial corporations by sales, and nine of the twenty largest by assets were oil companies. Gross assets of the seven largest oil companies amounted to 52.3 billion dollars. Profits of Standard Oil (New Jersey) which by assets is the largest corporation in the world, were equal to the combined profits of General Motors and Ford.[2]

The size of the majors, however, conceals the fact that the independents have traditionally been resposible for important innovations and discoveries in the oil business, particularly in exploration and production. For this reason an important interrelationship exists between the majors and independents. As the oil industry is now concentrating on the more lucrative offshore fields, this pattern is being disturbed. A small independent cannot afford, risk, or aquire the tremendous amounts of capital required for these operations. The majors are therefore becoming increasingly important in exploration and production.

Domestic oil companies also have the world's largest market. The United States consumes 35% of the crude oil produced in the world, compared to Europe which uses 28% and the U.S.S.R. which uses only 12%. We consume 62% of the world's natural gas, compared to Europe which uses 9%, and the U.S.S.R which uses 14%.[3] The development of the natural gas industry in the United

or a reserve/production ratio of 10.7/1. If by 1977 there were no changes in our state of technology, no geological discoveries, and no change in our economic policies, we would be out of oil. Obviously, all these constraints have been altered during the decade. Nevertheless, our reserve/ production ratio continues to drop. Oil reserves have remained relatively constant, while demand has increased steadily. If the United States is to maintain a reserve/production ratio of 10/1, the Department of the Interior forcasts that we will have a deficit of 4 billion barrels by 1980, and an 18 billion barrel deficit by the year 2000.[6]

In solving this deficit, the United States faces a dilemma. The first possibility is that we can import the oil we need. While the United States has a reserve/production ratio of 10/1, the world's is 50/1 and rapid discoveries are increasing that margin. The second possibility is that the United States can rely on domestic production by raising the price of crude oil to the point where domestic production becomes economically justified. In a recent study, The Petroleum Provinces of The United States, the National Petroleum Council has concluded that the potential petroleum resources of this country are immense. While many estimates have been made that are several orders of magnitude apart, this study indicates that there are about 720 billion barrels of oil in place, of which about 180 billion lie on the continental shelf. Other studies have indicated that up to 2 trillion barrels are locked in oil shales, and another 400 billion in tar sands.[7] Assuming that we recover 50% of this

potential oil in place, and that our demand should double to 10 billion barrels a year, we still have enough petroleum to last at least 150 more years.

To summarize, then, the United States faces no real shortage of Petroleum. The question revolves around how much we are willing to pay in order to use our own reserves. In examining the economic policies the government has adopted for the petroleum industry, it is important to view them in this context. I have presented these policies in the chronological order of their development, which is the reverse of their cost to the consumer.

Government Policy and the Oil Industry

a.) Depletion Allowances

Depletion allowances were inacted because extractive industries use up their means of production in the process of production. Depletion allowances are different than depreciation allowances in that they bear no relation to the value of the asset (the producing property), or to the expected life of the asset. A producer may deduct the full value of his depletion allowance as long as he is producing oil.

Under current regulations, a producer may deduct 22% of his gross income as long as it does not exceed 50% of his taxable income. In practice this has amounted to a tax saving to the oil companies of 1,3 billion dollars in recent years.[8] Additionally, oil companies may deduct intangible drilling costs such as contractors fees and services. An examination of oil

company profits in 1969 reveals that Gulf Oil paid 0.8% of its profits in taxes, Texaco 2.4%, and Atlantic Richfield 1.2%. The majors paid an average of 7% of their profits in taxes compared to 42% for all industrial corporations. [9]

It is maintained that this tremendous tax advantage is necessary in order to reduce the risk associated with exploration of new oil fields. Since under existing regulations, an oil company may deduct a depletion allowance on foreign as well as domestic holdings, it is questionable whether this practice stimulates domestic drilling as much as it should. It would certainly provide more of an incentive if it were applied exclusively to domestic holdings.

b.) Market Demand Prorationing

Prorationing is a system of restricting oil production in the United States, ostensibly to insure proper conservation practices are enforced. Historically, these regulations grew out of the chaotic conditions which existed in the oil industry during the depression. The "rule of capture," a legal principle developed by the courts, was interpreted to mean that oil belonged to whoever brought it to the surface. An oil discovery quickly resulted in a frenzy of activity aimed at bringing all the oil to the surface as fast as possible. For geological reasons this created huge wastes, for the ultimate recovery of an oil field is inversely proportional to the rate at which the oil is removed.

In practice, however, prorationing has become a price

setting mechanism. Wells are not allowed to produce at their maximum physical efficiency, but are resticted according to the demand for oil.

States use market demand forcasts prepared by the Department of the Interior in order to calculate the rate of production that will maintain the price of oil. In Texas this is done by the Texas Railroad Commission. The Commission sets the number of days wells cannot produce in the state, and then grants each well an "allowable," which is the number of days a well can produce on these restricted days. Since "allowables" are based on such factors as depth, and well spacing within a field, they have no relation to the capacity of a well to produce. Wells which produce less than 10 barrels per day are not prorated at all.

The theory of prorationing can be illustrated by the supply and demand curves shown above. If equilibrium price per barrel were $2.50, then quantity Q would be consumed. To maintain the current price of about $3.40 per barrel, quantity must be curtailed to Q'. The point is that a lowering of the price of crude oil does not reduce the supply. The

shape of the supply curves needs to be considered to appreciate this fact. Oil production involves heavy investment in fixed assets, but is characterized by low variable costs in actual production. Thus in the absence of resrictions, an efficient producer can cover his fixed and variable costs, even with a price reduction, by simply pumping more oil. For this reason supply curve S_1 tends to be elastic. In other words, a small increase in price results in a large increase in output.

The inefficient producer, however, is unable to cover all his costs at a low price for crude oil because his wells lack the physical capacity to produce at higher outputs. This results in the more inelastic supply curve S_2. In this case, restrictions have been placed on the efficient producers, so increases in output are met by marginal operators who can only operate at high crude oil prices. In effect, market demand prorationing legislates ineficiency into the oil industry.

Prorationing also reduces the incentives to find high capacity wells since their production will be restricted. Instead, the emphasis is placed on deep wells, and low capacity stripper or near stripper wells wich have large "allowables." In a study conducted in 1964, Adelman calculated that 78% of the new wells drilled in Texas were superfluous.10

The Federal government supports prorationing in two ways. The first is the Connally "Hot Oil" Act, which prohibits oil produced in excess of a state quota from moving in interstate commerce. The second is the policy of the government to apply an"allowable,"based upon that of the adjacent state, to wells on the outer continental shelf.

This latter policy has significance for the offshore oil business. Offshore oil wells have been drilled into less risky, and highly productive fields. For the reasons outlined above, these wells would remain an attractive investment even with a reduction in crude oil price, if there were no restrictions on production. There is also no justification for prorationing on the grounds of conservation, since the size and amount of control exercised on government leases precludes poor conservation practices. Proof of this lies in the fact that California has no prorationing system at all, since the productive capacity of the state can be entirely absorbed by the market demand for oil.

c. The Mandatory Oil Import Quota

It can be readily seen that prorationing could not survive if cheap foreign oil were allowed to flood U.S. markets. It is necessary to limit imports so domestic prices can rise above the world price.

The present quota system grew out of conditions that existed in the post-World War II oil industry. Begining in the early 1950's, American oil companies made heavy investments in the Middle East. At this time the world price closely followed the Gulf coast price, consequently imports were small. The tremendoes size and low cost of Middle Eastern reserves prevented this condition from lasting. As foreign crude oil prices dropped rapidly, imports shared a growing fraction of the domestic market. After the Suez crises in 1956, domestic producers raised

the price of crude oil 40 cents, and Middle Eastern and South American imports reached a level that the government considered dangerous for national security. In 1957 a voluntary quota was adopted. However, because quotas were allocated on the basis of how much oil individual companies were importing prior to 1957, those companies with recent foreign investments were at a disadvantage. The failure of the voluntary program lead President Eisenhower to envoke the national security clause of the Trade Agreements Act, and impose a Mandantory Oil Import Quota in 1959. In part the proclamation read:

> "The new program is designed to insure a stable healthy industry in the United States capable of exploring for and developing new hemispere reserves to replace those being depleted. The basis of the new program, like that for the voluntary program, is the certified requirements of our national security which make it necessary that we preserve to the greatest extent possible a vigorous healthy petroleum industry in the United States." [11]

The mandantory import quota is administered by the Department of Interior and the Office of Emergency Preparedness. With the exception of Puerto Rico and the Virgin Islands, the United States is divided into five districts parallelling those used for oil and gasoline rationing in World War II. Quotas are set at 12.2% of the estimated production for a given year. However, since the volume of imports is in many cases a political question, the Department of Interior has lowered its estimates of production when they have been"too high."

There are several exemptions from the quota. Mexico is granted an overland exemption, but negotiations with Pemex, the

national oil company of Mexico, have resulted in a voluntary restriction on imports of 30,000 barrels per day. A Canadian overland exemption was cancelled by President Nixon in 1970. Additionally, risidual oil is allowed into districts I through IV, and number 2 heating oil is allowed into New England. [12]

It is important to consider how import licenses are allocated since they represent a clear windfall to the refiner who can obtain one. Generally, licenses are allocated on the historical basis of what the company was importing prior to the initiation of the voluntary quota. There is also a sliding scale which allows the smaller refiner to import a greater amount of oil. While companies are not allowed to sell their import licenses, they are allowed to trade them for oil. Small refiners who are at some distance from a shipping port may find it advantages to trade their licenses to a major company, who, in turn, can import oil from one of its overseas operations. In several recent years the total amount of imports allowed have not been used.

To appreciate the effect of the quota on the domestic oil market it is necessary to compare the world and domestic prices for oil.

	Middle Eastern	Louisiana Gulf Coast
Wellhead price	$1.43	$3.04
Freight	.74	.45
Gathering price	-	.14
Tariff	.10	-
Dockside Price (East Coast)	2.27	3.63

Source: The Oil Import Question

Without the quota, U.S. wellhead price would be equal to the world dockside price less domestic freight and gathering charges or $1.68. (This represents what the price would have been in 1970) Future changes in the world and domestic prices depend on several variables. World freight rates will continue to go down with the advent of the new generation of supertankers, but the OPEC may demand higher prices. Domestic prices are likely to rise if we continue to rely on U.S. reserves.

It is difficult to measure the precise cost of the quota to the American economy. The Cabinet Task Force on Oil estimated that the cost of the quota to the consumer was 5 billion dollars in 1969.[13] This figure represents the difference between buying oil on the world market and the domestic market. This 5 Billion dollars is essentially an oil company tax, which on a per capita basis is $24.

The oil industry maintains that this money is returned to the American public in the form of stock dividends, state taxes, royalies, and other payments. While this is true, the income redistribution is unequal. Revenues accrue to the five oil producing states, resulting in the non producing states paying a higher share of the cost of the quota. Rhode Island pays $32 per capita and Vermont pays $45.[14] Roughly 90% of the stock dividends are paid to 10% of the population.

There are other economic costs as well. A high price for oil, maintained as it is by prorationing, allows inefficiency in the industry. Capital and other resources are attracted to the industry that would not be employed without high prices. More

energy entensive techniques of production are not used.

The justification for these economic costs and the continuation of the quota falls into five general categories: national security, balance of payments, the future world price of oil, the loss of labor, and the need to stimulate domestic exploration. Each of these arguments deserves careful consideration.

The national security requirements of the United States are the most frequently cited arguments, as well as the legal justification for the quota. National security has basically two components. The first is that we should not become overly dependent upon foreign sources that are located in politically unstable areas. The second is the need for a secure supply of oil in case of an actual conflict. In discussing this latter requirement, it is necessary to conceptualize the types of conflicts that might involve the United States.

The most likely conflict is the limited, guerrilla war such as we are now fighting in Viet Nam. A conflict of this nature is not likely to produce a serious oil supply problem. As evidence, over 90% of the oil used in Viet Nam comes from the Persian Gulf states, even though they have repeatedly objected to our policies.[15] There was also no supply problem during the Korean War.

While a conventional, non-nuclear war -- such as World War II is an unlikely event, there are several alternatives to having an import quota. Conversion from civilian to military uses, stockpiling, and rationing are all possible. Canadian,

Mexican, and other hemispheric reserves are easily as secure as our own reserves, yet thaey are restricted under the present quota. It is also worth-while to observe that the concentration of refining and production facilities in this country makes them excellent targets for sabotage and stratigic bombing. Import quotas have done nothing to solve this problem.

If the United States becomes involved in a nuclear war, oil will play a minute role. Since nuclear weapons are likely to be directed against population centers rather than industrial complexes, there would be an excess capacity of oil production after such a conflict.

The Six Day War in the Middle East in 1967 is a good test of the effectivess of the import quota. For ten days after the conflict all production from Middle Eastern and North African fields ceased, and normal production did not resume for three months. The fact that U.S. production increased by 12% is claimed by the petroleum industry to be proof of the wisdom of maintaining the quota. It is questionable whether U.S. oil did in fact save the day for Europe and Japan. It should be noted that the Middle East conflict was of short duration, occurred during the summer months when there was a smaller demand for oil, that Iran did not go along with the boycott, and an excess tanker capacity existed that could bring the oil around the Cape of Good Hope. If any of these factors had not been so after the Middle East conflict, there would have been acute supply problems.

It is also informative to look at the bottlenecks that developed as the U.S. industry expanded production. Transportation

and pipelines from Canada proved to be inadequate since the quota had restricted Canadian imports. Refining capacity became the most important limiting factor, however, and it can be shown that the quota was responsible for this. The quota, by maintaining a high price for crude oil, reduces the margin between a refiner's costs and the price of the finished oils he markets. A low price for crude oil increases the margin and thus acts as an incentive for companies to become refiners. Additional refiners mean excess capacity which can be used in an emergency. Since the major oil companies control both the refining and production phases of the oil business, high crude oil prices have little effect on their business. The majors prefer high crude prices because it tends to drive out potential competitors.

To summarize, it is doubtful that the quota has been, or will be necessary for our national security. By relying on our domestic reserves we are fastly depleting our own low cost fuel resources. If we imported oil and only relied on domestic reserves during an emergency, we could meet our national security objectives at a fraction of the cost.

The second justification for the quota is that our balance of payments deficit would grow if we imported our oil. The Cabinet Task Force on Oil estimated that if the domestic price of oil were allowed to fall to $2.50 per barrel, 42% of our oil would be imported, and there would be a balance of payments deficit of 1.3 billion dollars a year by 1980. However, this study does not consider that industries such as petrochemicals,

which alone have generated a budget surplus of 1.3 billion dollars a year, would become more attractive on the international market. Additionally, as capital would be diverted away from the oil industry with lower crude prices, some of this money would be invested in industries which are net exporters. These effects must be considered in order to make a comprehensive evaluation of the true balance of payments deficit.

The third argument for the import quota is that the United States can not be sure that the world price for oil will not go up. The basis for this argument, which has been given more credence in recent months, is that an international cartel, such as OPEC, will monopolize the world's reserves of petroleum and force a price rise. This presupposes that there is going to be close co-operation among all the producing states. With the current rate of exploration in the world, the number of countries who will become petroleum exporters is rapidly increasing. Control will prove to be difficult at best. In order to raise the price for oil, world production of oil will have to be restricted under some system of prorationing. The temptation for individual countries to break these restrictions will be strong. Furthermore, there is no international equivalent of the Connally "Hot Oil" Act that will force compliance.

The whole process of oil negotiation is going through a period of flux. In the past, a small number of oil companies owned almost exclusively by the United States and Great Britain, have dealt with the oil producing states directly with no consultation with the consuming states themselves. It is

impossible to believe that countries with powerful economic sanctions, such as West Germany and Japan, will allow their vital interests to be decided in this way in the future.[16] Companies in the Middle East have already expressed interest in having other countries make investments in their operations simply to share the risks. As OPEC runs into stiff bargaining power, it is questionable how far they can raise their prices.

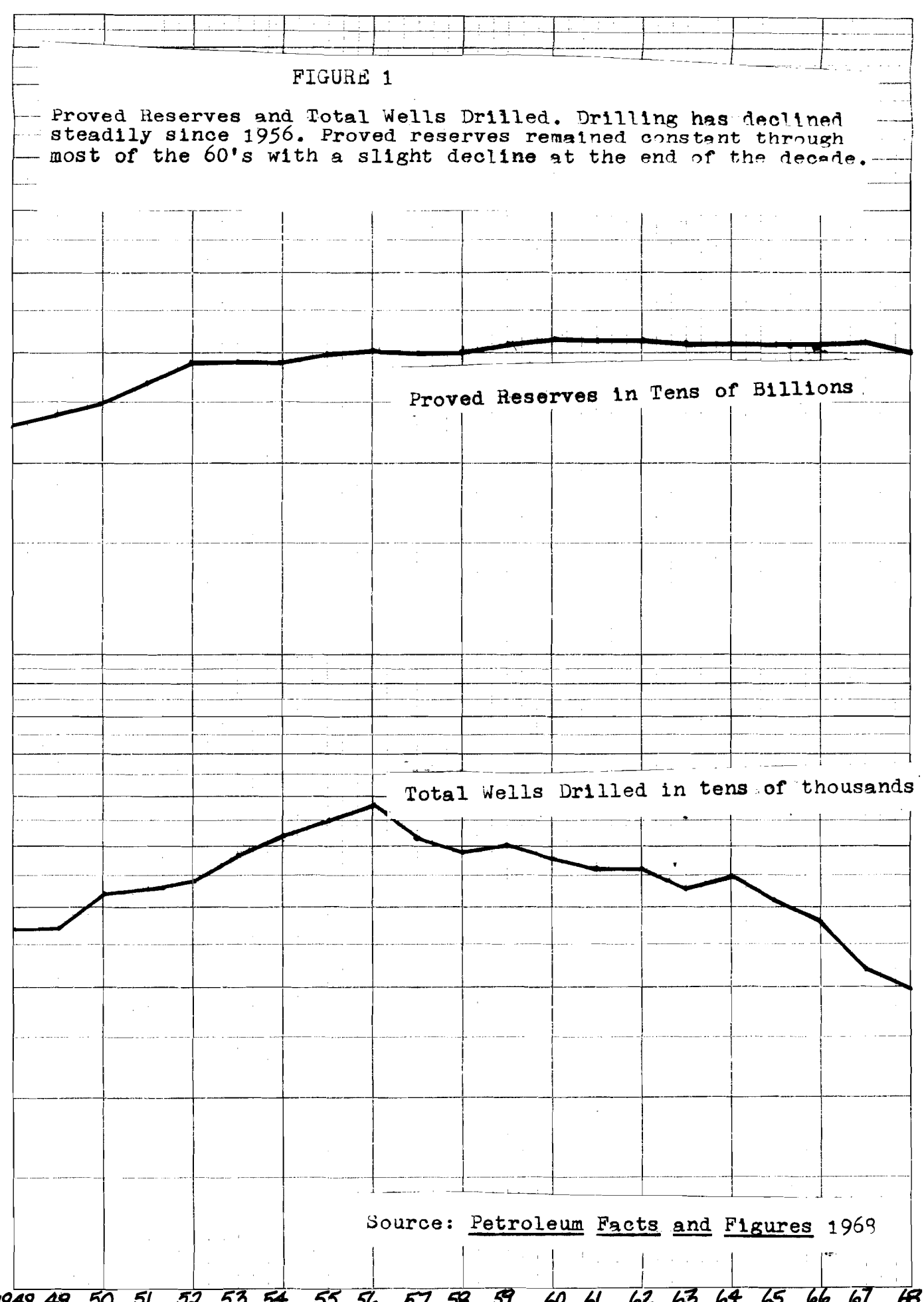
A final consideration is that the U.S. price would remain a ceiling that could not be exceeded by imports. Without prorationing, this price could be considerably lower than that now prevailing in domestic markets.

The fourth argument in favor of maintaing the quota is that the domestic industry would be so crippled that there would be a massive loss of jobs. It is maintained that over 1.2 million jobs would be directly affected.[17] This is absolute nonsense. In the first place, there would be no loss of jobs at all in the refining and marketing sectors of the industry. In fact these sectors would actually be likely to grow, resulting in an increase in jobs. In the second place, the production sector of the business, which would be adversly affected, lost over 50,000 jobs in the decade between 1959 and 1969.[18] Present employment in this sector is about 270,000. It is pointless to argue that the American consumer should pay 5 billion dollars a year in order to keep these people employed. Furthermore, it has been estimated that there would only be a 5% loss of production without the import quota.

The final argument for the Mandantory Import Quota is that

FIGURE 1

Proved Reserves and Total Wells Drilled. Drilling has declined steadily since 1956. Proved reserves remained constant through most of the 60's with a slight decline at the end of the decade.



Source: Petroleum Facts and Figures 1968

it is necessary in order to stimulate domestic drilling and exploration. A cursory glance at figure 1 will show that domestic drilling has steadily declined in the United States. Since an adequate understanding of this also involves the effectiveness of government policy, the two need to be considered together.

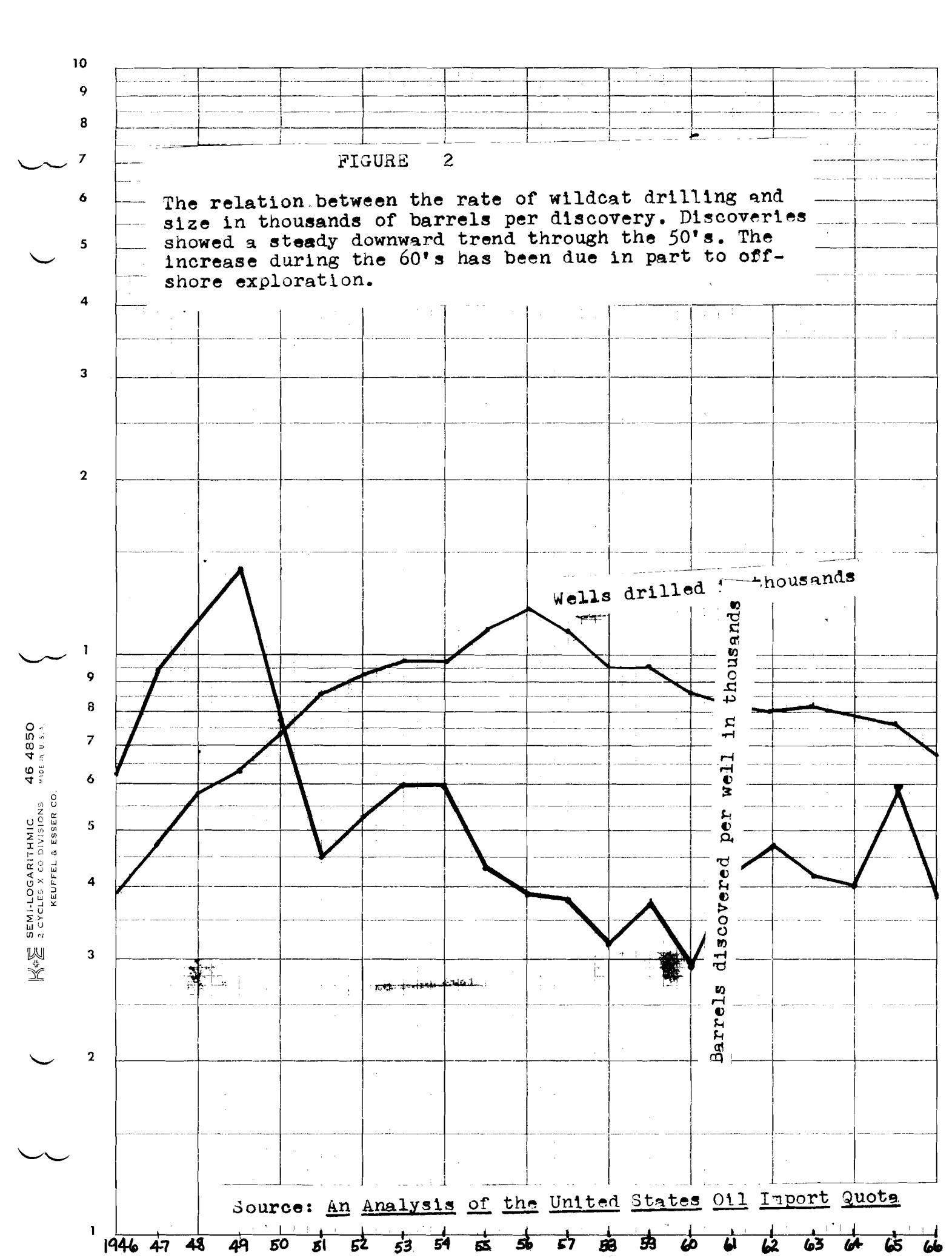
Domestic and Offshore Exploration- A Changing Pattern

To analyze the reduction in domestic drilling, the decade prior to 1956 needs to be examined. (see figure 2) Between 1946 and 1956 wildcat drilling tripled, increasing from 4,000 to 12,000 wells. At the same time, however, the size of the crude oil discovered per well dropped. The five year average discovery per well between 1946 and 1950 was 388 thousand barrels per well. Between 1951 and 1955 the average discovery was 522 thousand barrels per well. By 1960 the average discovery per well had dropped to 315 thousand barrels per well. Obviously, the tremendous increase in exploratory drilling did not achieve its objective of finding new reserves. Total drilling more than doubled during the period from 1946 to 1956, reserves increased by less than a third.

Not surprisingly, oil companies began to lose interest in domestic exploration. Investors felt that all the large, easily accessable pools in the United States had been discovered. This attitude has manifested itself in two ways. First, capital expenditures have been shunted away from production and directed into different sectors of the business such as petrochemicals.

FIGURE 2

The relation between the rate of wildcat drilling and size in thousands of barrels per discovery. Discoveries showed a steady downward trend through the 50's. The increase during the 60's has been due in part to off-shore exploration.



Source: An Analysis of the United States Oil Import Quota

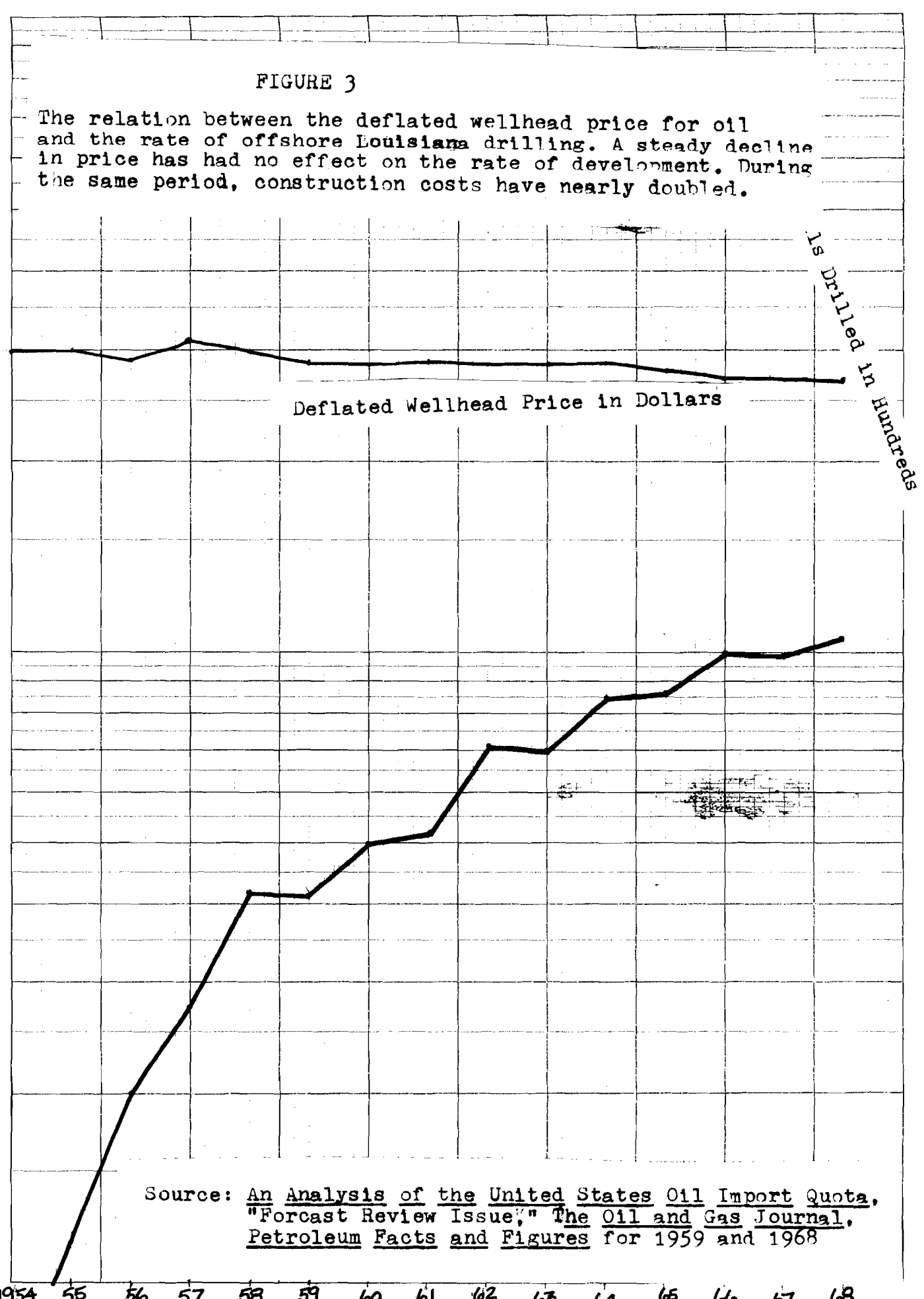
In 1962, 73% of all capital expenditures by oil companies were for exploration and production, but by 1967 this had declined to 56%.[19] Secondly, oil companies have saught less risky areas for development. In this context, offshore oil has become an attractive investment. While drilling costs are much higher offshore, and increase rapidly with depth, Barrel yield per foot drilled has been five times greater than onshore. A combination of geological knowledge and a decade of technological advancement combined by the late 50's to make offshore oil an attractive investment. The disappointing results onshore, rather than the domestic price for oil, were responsible for the rapid development of offshore oil production.

A comparison of the deflated average wellhead price of crude oil and the rate of offshore development (figure 3) indicates that a declining price has caused no reduction in the rate of offshore development. In 1957 the average wellhead price was $3.12 a barrel. In 1968 the deflated price, based on the Wholesale Price Index, was $2.70 a barrel. Yet during this period offshore drilling quadrupled.

Not only has a declining price of oil had little impact on the offshore industry, but there is good evidence that import quotas, depletion allowances, and prorationing are unnecessary to stimulate development. Venezuela accounts for 47%, and the Persian Gulf 30% of all the offshore wells in the world, and at wellhead prices that are in some cases half the domestic wellhead price.[20] The offshore business is expanding at 18% a year worldwide, compared to 8% for onshore. The world price

FIGURE 3

The relation between the deflated wellhead price for oil and the rate of offshore Louisiana drilling. A steady decline in price has had no effect on the rate of development. During the same period, construction costs have nearly doubled.



Source: An Analysis of the United States Oil Import Quota, "Forcast Review Issue," The Oil and Gas Journal, Petroleum Facts and Figures for 1959 and 1968

has acted as an adequate incentive for worldwide development, why is it not adequate for the United States oil industry?

An answer to this question leads to the ultimate contradiction in U.S. oil policy. Import quotas and depletion allowances are provided as incentives for domestic exploration, but production is prohibited for environmental reasons. Decisions to halt lease sales on the outer continental shelf of Louisiana, to prohibit further expansion of drilling in the Santa Barbara channel, and to hold up construction of the Alaska pipeline are indicative of the contradiction in our policies. This is not to suggest that we should not adopt strict environmental laws, but it makes little sense to provide incentives when we are not going to allow them to be used. Once again, it is the consumer who bears the ultimate cost.

Alternatives and Conclusions

Given the excessive cost and poor performance of government incentives to the oil industry, it is necessary to consider alternative policies. The Cabinet Task Force on oil recommended that a tariff substituted for the import quota. It was stipulated that the tariff would be gradually reduced and frequent review would be mandatory. The salient difference between a quota and a tariff is that revenues from imports do not accrue to refiners lucky enough to get import licenses, but to the Federal Government. The Cabinet Task Force proposal did not consider the wisdom of maintaining prorationing and depletion allowances.

The best alternative to present government policy is

actually a potpourri of proposals. The first is stop prorating efficient wells and allow supply and demand to determine the equilibrium market price. The second is to allow free trade in oil, or at least free trade with Western Hemisphere countries. The third is to stockpile oil in amounts sufficient to satisfy our needs during an emergency. Two economists at the University of Wisconsin, Mead and Sorensen, have completed a study that estimates the price of storing a one years supply of oil above ground to be about 2 billion dollars.[21] More recently, West Germany has experimented with techniques of storing oil in underground cavaties that has proved to be far cheaper. The fourth is to abolish depletion allowances, or at least to bring them into line with other extractive industries, and to abolish them on foreign holdings. The fifth is that we should adopt environmental laws that are consistant with our objective of finding petroleum. The sixth, and last proposal, is that should the rate of domestic exploration fall to what the government considers a dangerous level, then the goverment should either directly subsidize exploration or else do its own. In this context it is surprising to know that it was actually the U.S. Navy, not private industry, that discovered the tremendous oil reserves on the North Slope of Alaska.

No attempt has been made to assess the political reality of legislating any of these proposals. If the reception of the relatively mild Cabinet Task Force proposal is any indication, opposition will be fierce. The arguments in their favor are true, this weakness not withstanding. Import quotas, depletion

allowances, and market demand prorationing have not met their stated objectives. It is time the American consumer became aware of the costs of our present oil policy, and what can be done to change it.

FOOTNOTES:

1. N.P. Ruzic, "Oceans of Opportunity," Oceanology, Feb, 1972, p. 35.

2. "Fortune Directory of the 500 Largest Industrial Corporations," Fortune Magazine, May 1971, pp 170-173.

3. Panal Reports of the Commission on Marine Science, Engineering, and Resources, Volume 3, Marine Resources and Legal-Political Arrangements for Their Development, p. VII-193

4. G.F. Barrows, International Petroleum Industry (Volume ?), p. 208.

5. Various predictions of demand have been made, as might be expected. Those quoted are the Department of Interior. See Petroleum Resources Under the Ocean Floor, pp. 89-90.

6. Again, this depends on how you do your arithmetic. If one assumes that we will continue to discover about 3.5 billion barrels/in new reserves a year, which has been the average in the past, then our deficit will be far greater. Figures quoted are taken from Future Petroleum Provinces of the United States, p.111.

7. Barrows, op. cit., p.210

8. Senator Proxmire in the Oil and Gas Journal, Jan. 15, 1972

9. Robert H. Haverman, The Economics of the Public Sector, pp 131-133.

10. J.C. Burrows and T.A. Domencich, An Analysis of the United States Oil Import Quota, p. 67.

11. Cabinet Task Force on Oil Import Control, The Oil Import Question, p. 195.

12. Regulations on imports have been changed slightly over the past year. See the New York Times, p.41, col. 5, Nov. 6, 1971.

13. Ibid,p.22.

14. Ibid.,p. 27.

15. House of Represenatives, Subcommittee on Mines and Mining of the Committee on Interior and Insular Affairs, Report on the Oil Import Question, p. 25.

16. W.D. Smith, "Oil, Fuel for Discord?" The New York Times, Sec.3, p.1, Feb. 27, 1972.

17. House of Represenatives, op. cit. p. 18.

18. Ibid., p.24.

19. Future Petroleum Provinces of The United States, p.113

20. Class Notes, Dr. Alexander,,Oct. 22, 1971.

21. Mead and Sorensen, "A National Defense Petroleum Alternative," The Congressional Record, vol. 117, no. 67, pp S 6509.

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