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PAPER #6: THE NON-OIL PRODUCING DEVELOPING COUNTRIES

by

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OUTLINE

SECTION I

1. The first section of the paper will define the scope of the paper; our typology will be based on the overall energy policy options, broadly defined, of groups of developing countries. On that basis, we will analyze the issues and options for three case types:

(i) developing countries which are marginal oil and gas producers with the potential for continued self-sufficiency, exports, and even deficits depending on domestic policies and trends (Egypt, India, Colombia);

(ii) oil deficit middle income semi-industrialized countries (Turkey, Brazil); and

(iii) oil deficit low income agricultural based countries (Central America, West Africa).

It is our contention that the issues and options facing countries which are described by the above types are very different. Thus, for countries in group (i) the basic issues is one of demand management; e.g., options may exist to control domestic consumption, and even to generate a marginal exportable surplus for balance of payments purposes. Equally, domestic trends could push these countries into a deficit position. For group (ii) flexibility is limited due to the demands of a more advanced stage of industrialization, and the concomitant heavy dependence on imported energy stock. Policy options are constrained by these import needs. The need for private capital flows to finance imports will continue to grow. Group (iii) countries also face difficult balance of payments problems in the wake of rising energy prices, with limited financial ability to manage deficits. In addition, due to relatively low levels of industrialization, a high percentage of energy needs continue to be met through traditional sources. The medium

term structural shock therefore may be less; however, the implications for longer term growth may be more severe. In these countries, alternative energy source development will be important as a medium and longer term solution to energy deficits. We would like to note that as with any typology not all NODCs will be exactly described by our cases.

SECTION II

2. The second section will discuss the linkage between the international energy "crisis" as described in Scenario II, and the above case types, outling the major domestic financial and developmental issues. Our concern will be to describe the macroeconomic implications, in terms of two major variables: first, balance of payments constraints and second, domestic resource allocation as it affects income growth, economic structure, and development expenditures and equity considerations. We do not anticipate preparing new quantitative projections of the above factors for our case types or individual countries as this work has been completed elsewhere and is outside the scope of this paper. Rather, we will focus on the broad outlines of the problem and the policy implications. We will argue that all oil deficit developing countries will face obvious growing current account difficulties as a result of the increased costs of imported energy. The implications of such a trend include:

(a) overall slow-down in the ability of developing countries to borrow in international capital markets;

(b) and ever growing need to press for the expansion of exports or suppress imports.

Such efforts may run directly counter to developed countries efforts at protectionism which may develop due to similar pressures. In terms of domestic issues, growth rates in the developing countries will be adversely affected. Domestic policies will be affected by the politics of immediacy/scarcity. The need to export will influence patterns of internal resource allocation. Government policies designed to address equity considerations may be constrained by more immediate revenue considerations and demands. Possible negative effects of a mini-recession in the developing countries will be different than those experienced in the developed countries. Unemployment rates in OIDCs are in general high and will continue to be high; more important will be the impact of declining government revenue available for development and welfare purposes.

SECTION III

3. Section III will analyze the main energy policy issues for each case type, citing general examples from illustrative countries. For each group we will pose key questions meant to describe a major issue:

(a) For group (i), countries which maintain a precarious energy balance are faced with a policy option; given high international petroleum product prices and growing demand, will governments attempt to control the growth of internal energy demand in order to maximize both the volume and value of

exportable surplus? There are two elements to such policy: first, the overall dampening of the expansion of domestic demand and second, a substitution of lower value energy product alternatives for higher value exports. In addition, governments will be faced with the need to both closely monitor and control domestic demand even in cases where exports are not an option in order to avoid possible deficit/import requirements. Domestic price policy for products will be the most important instrument in this context.

(b) For group (ii), the overwhelming question will be how to sustain and finance imports of required energy needs, industrial feedstock and consumer goods, These countries will exert pressure on the international trade and financial system. The demand for capital flows will continue as will problems of repayment of existing debt (Turkey). Access to developed countries' markets for their exports will become increasingly important (Brazil). Case (ii) countries could benefit most from the development of industrially suitable alternative energy technologies including biomass, nuclear and synthetics;

(c) For group (iii), the main issue will be how to develop commercially feasibly alternative energy sources which would be suitable for power generation, cooking/processing and transportation, while managing the medium term balance of payments crisis brought on by rising imported energy costs. In addition, these countries also face an "alternative" energy crisis, as traditional fuel sources become scarce and expensive (deforestation).

Solar?

SECTION IV

4. In Section IV we will attempt to outline the constraints which the oil deficit developing countries face in addressing energy issues. The coverage will be limited to the energy issues (ref. Section III) and not the overall economic issues detailed in Section II. We feel that the constraints to action can be categorized as follows:

(i) Financial: including lack of capital for investment in new, alternate, or even domestic oil and gas development, and the shortage of foreign exchange for technology imports.

(ii) Resource: prospects for major oil and gas development are limited, and there is little commercial interest in developing the small or rather limited potential which might exist. (Linkage to the financial constraint (i) particularly for oil and gas exploration.)

(iii) Technology: for alternate or new sources there is little actual progress to date in moving from the laboratory to the market shelf. For oil and gas? (See issues, e.g., small-scale refineries, product mix issues? Distribution issues? Other?)

(iv) Planning: LDC response to the energy problem is hampered by a general lack of data and overall energy assessments; by a shortage of skilled manpower in energy assessments; by a shortage of skilled manpower in energy planning; and by an inadequate institutional framework capable of linking planning and forecasting to decision making processes.

SECTION V

5. Our concluding section will assess the impact of these issues and trends on developed countries. Our conclusion will be that as oil deficit LDCs constitute only a small percentage of world energy trade, they will not be dominant actors from the point of view of overall energy supply/demand. There will be a growing pressure for market access by OIDC's exports and certain OIDCs will present difficult financial situations. However, it is also in the political domain that the OIDCs will present serious concerns to the industrialized countries due to the possible domestic instability and pressures which national energy policy decisions and options may create in these countries in the decade to come. Slower growth in income, reduced resources for investment often for sectors with equity considerations, possible attempts to control domestic demand, priority given to export sector, may all cut into development and equity gains of the past years. Structural adjustment may be difficult and politically painful. In an age of rising development expectations, the political management of these issues will take place in increasingly volatile situations. It is therefore in both the economic and socio-political context that high priority must be given to the resolution of the energy policy problems of the oil deficit developing countries.

(2)

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I Adjustment Process of Japanese Economy to the First Oil Crisis.

1. Japanese Economy before the First Oil Crisis

To understand the peculiarities of adjustment to the first oil crisis, one ought to take many factors, unique to the Japanese economy, into consideration. The following are the most crucial of all.

(1) After the miracle 1960's with an average 10% per annum economic growth the trend toward lower growth started at the beginning of the 1970's. This transition, bringing with it a sharp reduction of capital investment, unavoidable large demand/supply gap and a large current account surplus, without any other turbulance, was burden enough to the Japanese economy.

(2) As a result of the high growth of the 1960's, the size of the Japanese economy had become second only to that of the United States among non-communist countries by the beginning of the 1970's. Despite the low-posture foreign policy of Japan, it has been inevitable that even a slight fluctuation of the Japanese economy exerts a large influence over other small countries. Yet the Japanese did not properly understand what other countries expected Japan to do under the changing conditions of the international economic system.

(3) Before the first oil crisis Japan was taking part in the synchronised upturn of the economies of the major OECD countries and the economy was at the climax of an upturn of 22 successive months when the oil crisis came. The government continued to follow a lax monetary policy out of its concern about the deflationary effect of the "Nixon Shock" in mid 1971. The rate of increase of M2 in 1971 was 24%, 24.7% in 1972 and between January to October 1973, M2 was running at over 20% p.a.. The Japanese economy, therefore, has already been heading for the explosive inflation of 1974.

2. Japanese Adjustment Process

The real issue of the first oil crisis was not a cut in the quantity of oil supply but an unprecedentedly rapid price rise and an intolerable

crisis situation created by a latent fear that Japan's oil supply would end.

The oil crisis imposed an internal shock to the system in the form of a 350% price hike and the adjustment to it means the process of regaining new equilibrium for the system which was severely disordered. As a consequence of this oil price hike, four major disequilibria were introduced; (1) extremely high inflation, (2) large balance of payment deficit, (3) very low economic growth and (4) high unemployment. The economy was forced to recover from this disorder, (often called a trilemma or stagflation) and restore the equilibrium on these four fronts. Although all countries had to aim basically at the same target, the Japanese adjustment process has been regarded as a rather smooth and sucessful one. The characteristics of the Japanese adjustment process can be summarized as follows:

First, Japan sought to achieve the four policy targets one by one; a step-by-step approach was followed instead of seeking a simultaneous solution to more than one target.

Second, although these four problems came to the Japanese economy virtually simultaneously, a step-by-step approach to economic policy meant that equilibrium was tried to be restored first in inflation, then in the balance of payments, then in growth and finally in the labour market, matching with the order of the length of response delay of each variable.

(1) When the first oil crisis came in 1973, the Japanese government perceived this as a problem of inflation rather than of employment or of anything else. The Japanese government, therefore, concentrated on anti-inflation policies to the virtual disregard of the other three difficulties.

One of the underlying factors for this choice was the fact that the first conspicuous symptom of the oil crisis was an extremely high rate of inflation, which came to be call Kyoran Bukka (inflationary craze). It was particularly traumatic because sharp price rises were accompanied by

panic buying resulting in sudden shortages of goods like washing detergent and toilet paper. As a result the social and political considerations for calming down this explosive inflation were more important than the purely economic ones.

In addition, the Japanese economy had already been gathering a great deal of inflationary momentum in the period before the oil crisis. Even without oil price increases, it would have required drastic treatment to reduce future inflation.

Fortunately, fears of unemployment were mitigated by the Japanese employment practice based on life long employment and seniority wage system. Thus, the fourth target of diminishing unemployment could be left aside until a later stage of the adjustment process.

As a result, the Bank of Japan took very stringent monetary policy measures with a 2% rise of official discount rate to 9% at a stroke and restraint on private bank lending through tight window guidance.

With the stringent money supply policy, the working of the competitive market mechanism carried out the process of calming down the inflation. Bargaining on price between suppliers and users of raw materials and components became tough. An upstream sector could only pass on to downstream sectors a part of the production costs, caused by the oil price hike, the proportion depending inversely upon the level of excess supply in each sector.

Nevertheless, the effect of the tight monetary policy on wage rates was delayed, which continued to increase by 26.2% 1974, consequently the corporate sector was forced to bear the initial burden of adjustment through a sharp reduction of profit between 1973 and 1975.

As the rate of unemployment rose gradually, the labour market began to behave in accordance with the Philips curve. Thus, after 1975, the wage increase showed a marked moderation.

(2) The second target to be aimed for, which is balance of payments,

was achieved as inflation calmed and economic growth fell sharply. Reflecting the sharp decline in industrial activity imports reduced sharply in real terms in 1974 and 1975.

On the other hand, exports kept increasing partly because of the weakening of the yen and strong export drive due to the emergence of excess supply in Japan and ever-growing non-price competitiveness. The current account turned to surplus in 1976 which sharply increased in 1977 and stimulated protectionist sentiment on both sides of the Atlantic. There is no doubt that the adjustment process in this sphere did bring about an excessive improvement.

(3) During the struggle against inflation the Japanese economy experienced negative economic growth in 1974, for the first time since the end of the war. In 1974 and 1975, exports were the only buoyant factor in the economy. Until 1978 the autonomous demand, i.e. capital investment and private consumption, did not play an important role. Between these two periods the demand factor which was dominant was public investment. The expenditure on public works was kept low in 1974 and 1975, but after inflation had receded, it was massively increased from 1976 onwards. As a consequence the Japanese economy grew rapidly during 1976, 1977 and 1978 at 6.5%, 5.4% and 6.0% respectively. These rates, however, were slightly lower than the levels expected by other members of the Summit meetings.

(4) In contrast to the rather smooth achievement of the other three targets, the employment situation has kept deteriorating. The unemployment rate climbed continuously from 1.3% in 1973 to 2.2% or 1.24 million unemployed in 1978. Employment related indicators for 1978 did not recover to 1973 levels. This deterioration is partly explained by the refraction of growth trend.

The adjustment process to the oil crisis from 1974 to 1978 took place relatively smoothly, but at the cost of a deterioration in employment in manufacturing.

II Structural Changes under the First Oil Crisis.

The first oil crisis led not only to the repeatable and reversible changes discussed in the previous section but also to structural changes of a non-repeatable and irreversible nature which have changed the initial conditions for Japanese economy in the 1980's as it is faced with a new round of oil crises.

Following are the major changes in the 1970's which would influence the course of development in the 1980's.

1. Refraction of the Growth Trend

Since the beginning of the 1970's it has been fashionable amongst some Japanese to talk about the refraction of the growth trend of Japan and the end of the miracle 1960's.

The oil crisis made the refraction of the growth trend a reality instead of assumption. The reduction of the expected growth rate has been confirmed by surveys of businessmen's sentiment, but was given an official seal of approval by the reduction of target growth rate in the governments's medium term economic plan which is often used by corporate planners. The 5 year plan of the Miki Government in 1976 reduced the target rate to 6.25% from the Tanaka government's 9.4%. Then, in 1979, the Ohira government's seven year plan set 5.7% target for the years to 1985.

A reduction of growth trend is accompanied by a negative accelerator effect. As a consequence, private investment has dropped substantially. The downward shift in the medium term growth rate delayed the recovery of capital investment because of persistence of excess capacity.

2. Changes of Industrial Structure

The change of industrial structure since 1973 can be characterized as follows:

(1) The share of manufacturing industries decreased and the share of total production and employment of the tertiary industries increased significantly.

(2) Raw and intermediate materials supply industries such as steel and aluminium, decreased in importance whilst processing industries such as machinery and pharmaceuticals became relatively larger.

(3) Emergence of structurally depressed industries and their adjustment and restructuring.

The whole process of change in the industrial structure can be interpreted as movement from high energy consuming economy toward a more energy conserving and more energy efficient system at the expense of a painstaking adjustment process in structurally depressed industries. This change in itself shows the highly adaptive and flexible nature of Japanese economy to new situations.

3. Changes in the Employment Structure

(1) The manufacturing sector reduced the number of regular workers by 10 per cent. As the economy began to recover from the middle of 1978 this decline came to the end. And yet, Japanese companies have maintained a very cautious attitude to recruitment of regular workers and when the economy picked up again they tended to rely on increase of the hours worked by regular workers and to increase the number of part-time workers, particularly of women.

(2) The Philips curve shifted upward because of a rise in inflationary expectations as shown in Figure II-1. However, the basic relationship between the unemployment rate and the rate of wage increase has been undisturbed, and has been returning to that obtained before the oil crisis.

(3) Adjustment also brought about a change in qualitative aspects of Japanese employment. Among the Three Sacred Treasures of the Japanese employment system, pressure for the abandonment of the lifetime employment system has been eased at the cost of the seniority wage system whilst the third treasure, company trade unions, were left unaffected. The absense of job opportunities for old and middle aged employees outside their present employment has meant that the threat of unemployment is taken very seriously by these people leading to their ready acceptance of even modest increases in wages. The introduction of new employment schemes, such as a selective

retirement scheme, will exert influence on the distribution of income between the old and middle aged employees and the younger.

(4) A brighter aspect on the employment front is the increasing importance of tertiary industries which are relatively labour intensive. This partly explains why the problem of unemployment did not become serious in Japan, despite the sharp deterioration of the manufacturing sector. In the late 1970's, of those made redundant by secondary industry, as well as school leavers, were absorbed by the tertiary sector.

4. Changes in Fiscal Structure

The public sector played an important role in sustaining economic growth in the absense of private capital investment. In this process public finances underwent a significant structural change:

(1) The size of public expenditure in proportion to gross national product increased substantially.

(2) The share of central government expenditure devoted to debt servicing is increasing rapidly.

(3) Due to the increasing social welfare spending and stagnant tax revenues because of persistant recession, the government deficit has risen. Public sector borrowing has increased significantly and the proportion of the national budget financed by bond issues now amounts to nearly 40%.

The large public deficit is of more than cyclical nature. The slow down of increase in tax revenue, continuing increases in social welfare spending due to aging of the population and increased debt services are the factors which contribute to the structural nature of budget deficit. New sources of revenue are needed unless a drastic rationalization of public spending is implemented. However, the result of the general election in the autumn of 1979 suggests that the option of increasing taxes, whether direct or indirect, to reduce the budget deficit, is politically limited.

5. Changes in Energy Demand and Supply Structure

74 per cent of total primary energy is satisfied by oil in Japan and 88 per cent of all energy is imported. It was natural, therefore, that after the

first oil crisis strenuous efforts have been made in Japan to increase the level of efficiency of energy use, hence it was not a totally wasted five years.

Imports of crude oil declined slightly from 238 million tons in 1974 to 230 million tons in 1978, despite the fact that GNP has grown on average 5.1 per cent. The total final energy demand increased at an average annual rate of 1.2 per cent between 1973 and 1977 though GNP increased at 3.7 per cent, so that the energy demand elasticity to GNP was only 0.32 in 1973-77 in contrast to 1.17 between 1965 and 1970. The oil consumption per unit of GNP fell by 14.2 per cent during 73-77 period. West Germany and France reduced this index by 14.3% and 18.9% respectively but the reduction in the United States was only 1.9 per cent for the same period. In 1973, Japan was the largest importer of oil in the world, but now Japanese oil imports are only 67 per cent of those of the United States.

The following factors are cited as responsible for improved oil efficiency of Japan.

(1) Japanese companies, especially in high energy consuming industries such as aluminium, steel, cement, sheet glass and pulp and paper have achieved considerable economy in the use of energy.

(2) Efforts are also being made by the manufacturers of consumer durables such as TVs, air-conditioners and cars to improve the energy efficiency of their products. The average fuel efficiency of Japanese 1600cc cars was improved by 33 per cent from 9.6 km/litre to 12.8 km/litre between 1975 and 1978, according to 10 mode running tests by the Ministry of Transport.

(3) Japanese economic system as a whole adapted to the high relative price of energy through a decrease in the importance of manufacturing, especially energy consuming, raw-material-related industries, and a dramatic increase in the importance of the low energy consuming tertiary sector, especially service industry.

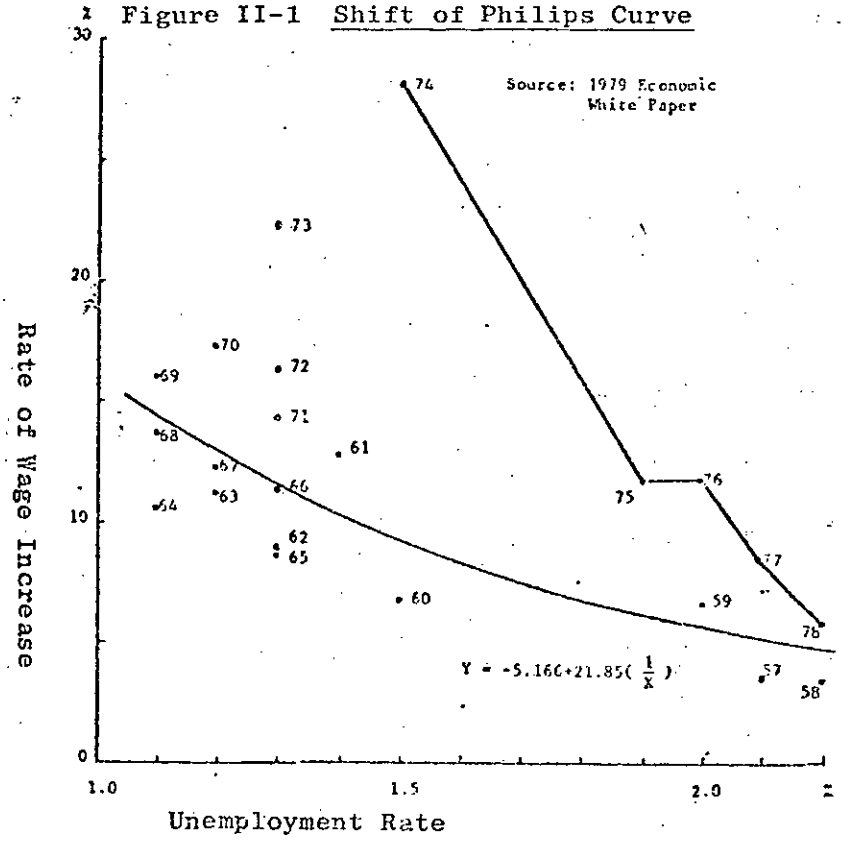
Japanese Government is also endeavouring to improve the energy situation through the Sunshine Project on new energy development and Moonlight Project

aiming at long term conservation.

However, there are some worrying aspects on the Japanese energy scene. First, although the energy efficiency of the industrial sector has much improved, the efficiency in the transport sector has changed little in the last few years and the energy consumption per unit of income of the household sector is increasing at almost the same pace as the period before the first oil crisis.

More significantly, the most worrying is the change in the structure of the supply of crude oil to Japan. Reflecting the changing structure of the world oil market, which was triggered off by the Iranian Revolution, the share of Majors oil decreased dramatically in 1979. In the second quarter of 1978, 68.1 per cent of crude oil was supplied by the Seven Sisters but by the second quarter of 1979, this figure decreased by 11.6 per cent points to 56.5 per cent. This reduction caused by the application of force majeure clauses must be compensated by other sources, if not, the Japanese economy will suffer from a genuine oil supply shortage. Japanese general trading companies, Sogo Shosha, tried to fill the gap, as a result, DD and GG oil increased by 12.3 per cent to become 31.7 per cent of Japanese supplies. This seems to have significant implications for the cost of oil and the stability and reliability of the supply of oil.

Figure II-1 Shift of Philips Curve



III. Limit to the Oil Crisis.

1. Classification of the Oil Crisis

The Iranian Revolution and succeeding political turmoil in the Arabian peninsula and the northern tier suggest that the world oil market will be turbulent during the 1980's. In order to identify the type and magnitude of oil crises one must have a comprehensive taxonomy of them.

Oil crises have two dimensions. (see Table III-1). The first is the form in which the crisis presents itself shown vertically. This may be related to oil production, production capacity, distribution or price. The other axis is related to whether the policy of OPEC countries is the cause of the crisis or not.

2. Arithmetic of an Oil Supply Crisis

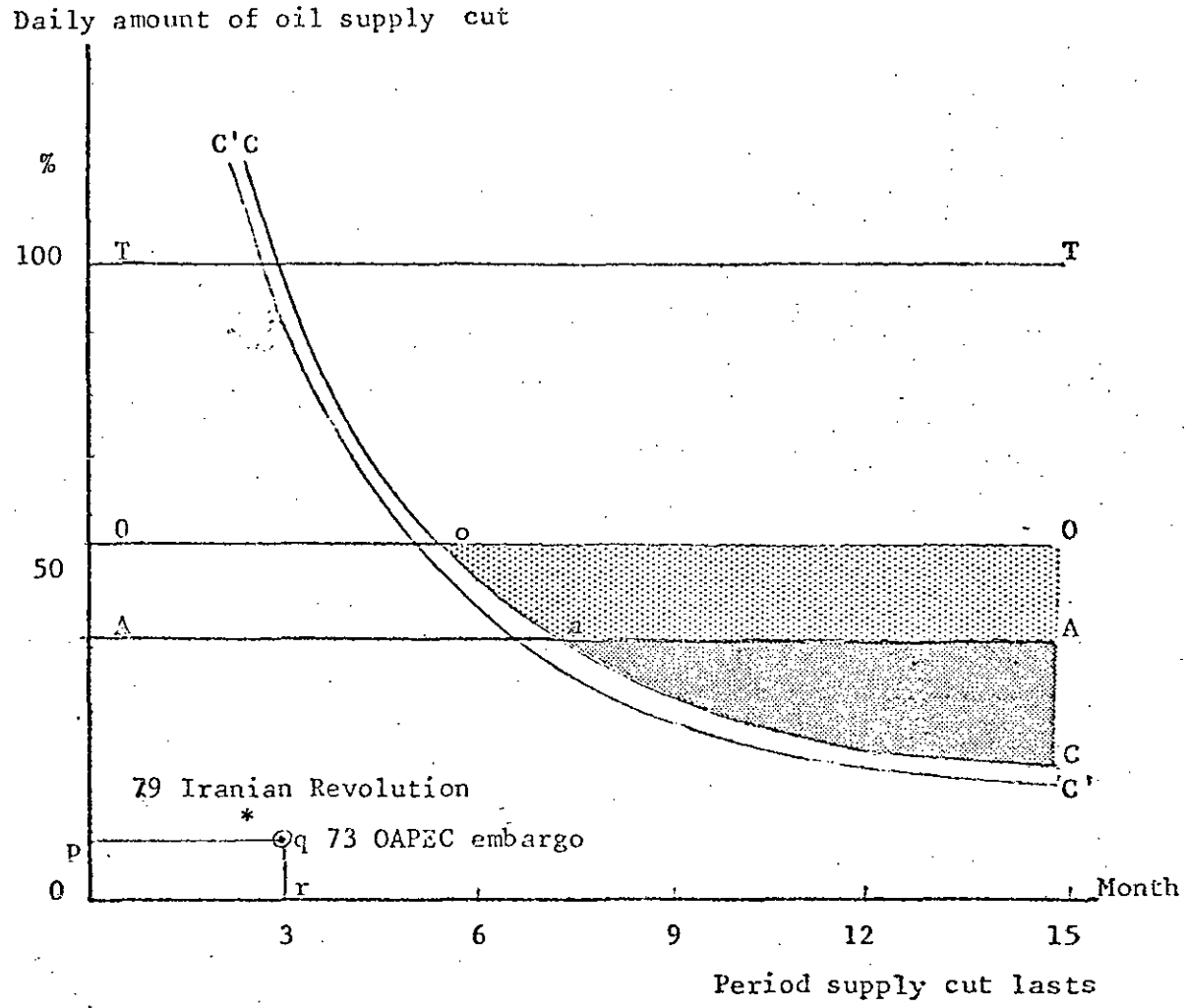
The most important question, in considering Type A crises, is whether oil supply will be totally suspended or not. If this fear became reality, consumer countries must ultimately either: (1) increase energy efficiency or (2) increase their energy supply from non OPEC sources, or, (3) reduce economic growth or perform some combination of the three. However, the pressure for these actions will be reduced if consumer countries build up oil stocks. The bargaining position of consumer countries vis-a-vis OPEC has been strengthened since the first oil crisis by the increase of stockpiles (targeted at 90 days use) and the emergency sharing system among the 20 member countries of the International Energy Agency. Japan, at the time of the first oil crisis, had an oil stockpile of merely 49 days, but now the private sector and government stockpile together is running at more than 100 days. The resilience of consumer countries to supply cuts through holding oil stockpiles for a given magnitude of crisis, is analysed in Figure III-1.

For each level of oil stockpile the length of time that change in oil consumption can be resisted depends upon the extent and length of the oil supply cut. The parabola CC indicates the combinations of amount by which oil supply is cut and the period the cut lasts which a 90 day oil stockpile can offset

Table III-1 Classification of Oil Crises

	(X) Independent from the policies of OPEC.	(Y) Caused by deliberate policies of OPEC countries.
(A) Oil Production related	1. Technical fault, accident. 2. Natural disaster (earthquake, cyclone). 3. Strike, sabotage, guerrilla activities. 4. Domestic, political and social turmoil (revolution, intestine war). 5. War (bilateral, multilateral).	1. Pro rata production control organized by the OPEC secretariat. 2. De facto production control conducted by individual country independently. 3. Production geared only to domestic needs 4. Oil embargo as 'oil weapon' strategy.
(B) Oil Production Capacity related	1. Limitation of recoverable reserve of oil. 2. Destruction of production capacity by sabotage, revolution, war etc. 3. Decline of production capacity by lack of appropriate maintenance. 4. Natural depletion of existing production capacity.	1. Suspension of, or constraint on investment in the expansion of production. 2. Suspension of, or constraint on, oil field exploration activities. 3. Freezing a part of production capacity.
(C) Oil Distribution related	1. Major incident at port facilities and on tanker routes (Hormuz, Malacca) 2. Guerrilla activities, war in port facilities and on tanker routes.	1. Suspension or cut of supply of DD oil and GG oil.
(D) Oil Price related	1. Wild change of price in the spot market. 2. Increase of "hidden cost" or "additional cost" to official price.	1. Sharp price rise in real terms. 2. Drastic manipulation of real price of oil to disturb the development of alternative energy.

Figure III-1 Effectiveness of 90 days Stockpile



(1) Daily amount of oil supply cut is measured by the percentage of total domestic oil consumption of IEA member countries plus France expressed in barrels per day.

(2) Line 00 and Line AA move upward or downward every year. This figure is drawn using the numbers for 1976.

(3) Here, the stockpile is 90 days of effective oil stockpile.

without any reduction in oil consumption. The area to the right of CC is the crisis zone which represents cuts which the stockpile cannot totally cover. However in reality the crisis zone is not the whole area to the right of CC. So long as non-OPEC oil can be secured we can disregard the area above the line OO which indicates the share of OPEC oil in total oil supply. If we believe it is only the Arab member countries of OPEC which pose a real threat of a supply cut, the crisis zone is further reduced to the double shaded area below line AA which represents the Arab oil exporters share of total supply.

In retrospect, the 1973 OAPEC embargo (plotted as ⊙ on the chart) is far from the crisis zone if we had had 90 days stocks. In the same manner, the supply disruption of 1979 caused by the Iranian revolution, which was equivalent to the loss of the whole production of Iran, 5.5 mbd, for two and a half months (plotted as * in the chart) can seem to be about the same level of crisis as 1973. If it is supposed that this supply cut continues further, it will take 2 years to eat up the whole 90 days stockpile of consumer countries. However, examination of these two cases does not assure us that we can always manage a supply crisis. We have only examined once-for-all crises, but not a succession of supply crises.

In a once-for-all crises consumer countries reduce oil stock by the area of the rectangle opqr. The line CC shifts downward in proportion to opqr to a new line C'C'. This shift widens the crisis zone. In order to keep the area of the crisis zone constant, consumer countries must shift the line C'C' back towards CC, i.e. build up stocks once more.

However, if crises come in quick succession, stocks cannot be replenished and C'C' shifts down further, and the crisis zone is further widened. This is the most serious crisis and will continuously weaken consumer countries' resilience to further crises.

This is the reason why type X (non-OPEC generated) crises must be distinguished from type Y (OPEC generated) crises. We do not expect type X

crises to occur successively, they are normally once-for-all. But in the case of type Y crises, producer countries could deliberately deploy this successive crisis strategy.

So far only type A-X and part of A-Y crises have been discussed, but the analysis can be extended to all types. In the interests of brevity, however, I shall only present here the main conclusions of the analysis.

(1) 90 days stockpile of oil is a very effective measure against oil supply crises.

(2) Whether the producing countries are hostile to consumer countries or not is crucial. If friendly, most of the potential crisis can be managed by using a part of the stockpile. If a hostile relationship prevails, the crisis may not be once-for-all, but could be successive. A successive crisis situation seriously undermines the resilience of consumer countries to supply cuts.

(3) As long as the cut is limited to the production of a single country, it is unlikely to lead to an absolute oil supply shortage.

(4) Potentially, the most serious case is the war among more than two large oil producing countries. Therefore, paying for political stability in the Middle East is an important assurance against an absolute oil supply shortage.

(5) It should be emphasised that consumer countries should calmly analyse the magnitude of the crisis and avoid panic reactions.

(6) The limitation of recoverable reserves of oil certainly exists but this problem will not be serious in the coming decade.

(7) If OPEC coutnries follow conservationist policies, it is certain that demand for OPEC oil will come dangerously near to the production capacity of OPEC sometime in the 1980's.

(8) the notional gap forecast by IEA of 10 mbd in 1990 and 28 mbd in 2000 must be filled up by the accelerated development of alternative sources of energy and energy conservation at a faster pace than IEA presumes, unless the world accepts the ultimate solution of lower economic growth. If the gestation

period of energy development is on average, 7 years, by not making a decision now we are faced with a supply crisis in 1987.

(9) The adjustment by consumer countries to the changing oil distribution system due to the decreasing role of Major oil companies, should be made carefully. Even if consumer countries make this transition smoothly, increased shares of DD and GG oil will give wider room for manoeuvre to OPEC countries.

3. Limit to Oil Price Change

The emergence of 'additional cost' such as signature bonuses and key money and the increased size of the spot market inflates and increases the volatility of the oil payment bill for consumer countries. However, the effect of additional costs on the oil payments burden should not be overemphasised. For example, if the share of spot oil is 10 per cent, and the spot price is running 15 dollars per barrel higher than contract oil, it only raises the average price by 1.50 dollars per barrel. These type D-X crises are relatively manageable, although they have important balance of payments implications.

The more representative type D crisis is a sharp increase in the real price of oil. In theory, the upper limit of the price increase is the cost of alternative sources of energy. The more the real oil price is allowed to rise by consumer countries limiting the repercussions of the oil price rise on their domestic inflation, the faster the price of oil approach to the cost of alternative energy. Detaching the oil price increase from the rise of general prices and thus raising the relative price of oil is very important in setting limits to increases in the price of oil themselves.

The floor price of oil is as important as the ceiling price, because it indicates the extent to which OPEC countries can lower the price of oil to undermine the viability of alternative sources of energy. This floor price is determined by the revenue required by the majority of OPEC countries to sustain an acceptable minimum standard of living. This is further complicated by uncertainty over what OPEC countries might do when they recognize that large scale development of alternative sources of energy in consumer countries is

inevitable, yet seek to take advantage of the long gestation period of investment in alternative energy. In the short run, OPEC can impose virtually any price it wants. If this is the case, international politics may be the only means to solve this problem.

IV. Japanese Economy in the 1980's and beyond under Energy Constraints.

The 1970's was the period when the Japanese economy was exposed to many fundamental problems, none of which was solved. The 1980's will be the period when Japan will be forced to respond to problems such as (1) energy, (2) distribution of income both domestically and internationally and (3) defence and national security. In analysing the perspectives of the Japanese economy in the 1980's, it may be necessary to look at the decade in two stages, because the early years of the 1980's have already been reserved for adjustment to, and recovery from the second oil crisis.

1. Stage I - Adjustment to the Second Oil Crisis

The Iranian revolution has brought about several changes in the world oil market, such as (1) decreasing role of Majors in the distribution of oil, (2) increased importance of spot market, DD oil and (3) collapse of the normal pricing system. The addition to the oil bill of consumer countries is larger this time than in the first oil crisis. However, in contrast to 1973, this time the price has increased in a series of sharp steps through 1979.

One should recognize that this time the oil crisis hit the Japanese economy at a far more favourable stage of the business cycle than in 1973.

(1) This time the business cycle was in the early stages of an upturn rather than at its peak.

(2) The rate of inflation was decelerating and the money supply well controlled.

(3) The labour market has weakened despite a short-lived upturn in 1979.

Assuming that another 'oil crisis' of this scale will not recur within three years, we expect that the adjustment process of the Japanese economy to the second oil crisis will be characterised as follows:

(1) There has been no panic because of the step-by-step nature of the increase in oil prices and the experiences of the first oil crisis.

(2) Although the rate of inflation in Japan is accelerating at present it will be contained by tight monetary policy. The Bank of Japan, in company

with other central banks, is following the precepts of monetarism. M2 has been controlled within the range of 10.7 to 12.7 per cent increase year on year and the target will be further reduced.

(3) Because of the structure of the labour market, a Philips curve seems to have worked in Japan in the past. Tight monetary policy will ensure that inflationary expectations will be contained and that the Philips curve will not shift upwards. As a result, wage increases will remain moderate as exemplified by an expected 8% increase in the 1980 Spring Offensive.

(4) This time the initial lead to recovery given by exports will be weaker and shorter lived.

(i) Because all industrialized countries have tightened monetary policy simultaneously during 1979, a synchronized world-wide recession will occur in 1980, leaving little room for Japan to take advantage of expanding overseas markets.

(ii) Since Western industrialized countries increasingly followed protectionist adjustment to the first oil crisis, there is a temptation for this tendency now to be strengthened.

(iii) Excess capacity in Japan is smaller than before as a consequence of the adjustment of the Japanese economy to the reduction of its trend. Thus the export drive will be dampened.

(iv) Internal disturbances in OPEC countries, such as the Iranian revolution and the seizure of the Great Mosque, may lead to a slowdown in development projects which will reduce opportunities for Japanese exports.

(5) The role of public works spending in sustaining the initial export-led recovery will be less important than after the first oil crisis. This is because the government will be preoccupied with reducing the budget deficit.

(6) Because of poor export prospects and a trend for higher imports, the current account will remain weak. The need to finance this proposition will increase pressure for more internationalization of Japanese money and capital markets.

(7) The signs of strain on Japanese employment practices, which emerged in the last cycle of adjustment, will be further enhanced.

2. Stage II - Towards an Oil Crisis Free Economy.

1) Three Types of Approach for Energy Problem Solving.

Our analysis of the nature of oil crises leads to three types of approach by consumer countries to a solution of the energy problem. (see Table IV-1).

(i) Crisis Management: Here the fundamental solution of the energy problem is regarded as impossible. An oil crisis is accepted as fate and hence the most appropriate policy is to minimize the damage to the Japanese economy, should a crisis occur. The first priority of national energy policy is placed upon crisis management measures in a narrow sense consisting of:

(1) Keeping the oil stockpile at a high level and,

(2) preparing emergency measures such as restraint upon gas and electricity consumption and a petrol rationing scheme.

(ii) Structural Adaptation: This policy aims at increasing the countervailing power of consumer countries vis-a-vis OPEC. This approach requires strong government intervention to shift resources into energy, especially oil, saving uses, and into the development of alternative energy sources. This implies replacing expensive energy by relatively less expensive factors, such as capital, technology and skilled labour.

(iii) Political Action: The third approach is based upon the belief that the source of oil crises is the hostile relationship between OPEC and consumer countries. Improvement of this relationship, and the establishment of an acceptable agreement on the stable supply of, and reasonable return from oil, should, therefore, be the ultimate objective of energy policy. This approach aims at removeing type Y crises (OPEC generated) through collective political actions of consumer countries. Several measures have been suggested, varying from massive economic and technical assistance through the development of an institution for collective bargaining on oil prices between IEA and OPEC to a military threat.

Table IV-1

Profile of Three Types of Approach for Energy Problem Solving

	(I) Crisis Management	(II) Structural Adaptation	(III) Political Actions
1. Type of Approach	-Preparing only for minimizing damage to the economy when a crisis occurs.	-Inducing the substitution of scarce energy resources by relatively abundant factors, capital, technology, middle & older aged experienced manpower.	-Establishing agreement between consumer countries & OPEC on stable supply of oil & reasonable revenue.
2. Measures	-Stockpiling. -Emergency measures	-Energy conservation -Development of new sources of energy. -Institutional development for this purpose.	Political action to remove the hostile relationship. -Massive economic & technical assisatnce. -Institutional development for collective bargaining of oil pricing between IEA & OPEC. -Military threat.
3. Nature of Approach	-Internal adjustment to external crises.	-Internal adjustment to external crises	-External solution to external crises.
4. Time horizon of the measures	-Short lead time -Immediate effect	-Long lead time -Taking long time to have effect.	-Discontinuous -Taking little time to have effect.
5. Perception of the Energy Problem	-Energy problem is one of the relatively important problems but not the most important.	-Energy problem is the most important problem. Even the whole 1980's should be reserved for the period for the economy to cope with it.	-Energy problem is a political problem and it is a problem of an international nature.

2) Implications for the Japanese Economy.

The recovery from the second oil crisis will be marked by the emergence of the Crisis Management approach in Japan. The oil stockpile is now (early in 1980) running at more than 100 days level. What is required is a sound consensus in both government and the private sector the oil stockpile is not merely a buffer stock for smoothing a short-term fluctuation in price but a contingency reserve to secure the long-term security of the economy. The Japanese government is reported to be formulating emergency measures including a petrol rationing scheme. Therefore, before the next oil crisis occurs, Japan will have completed the measures necessary for Crisis Management.

The future of Japan will be very different depending upon whether Japan regards Crisis Management as the ultimate measure against the energy problem or whether such an approach is accompanied by other policies. If the former is the case, the Japanese economy in the 1980's and beyond will be characterized as follows.

(1) As the world economy grows, so will the demand for oil, and the demand and supply situation will become tighter. Before long, the real price of oil is raised by OPEC. The economies of consumer countries again fall into recession, which is synchronized and is accompanied by tight monetary and fiscal policy to control inflation. The cycle begins once inflation is brought under control and economies are again reflated. The long term trend of the business cycle will be constrained by the oil supply ceiling. In addition, this cycle of oil crises adds a new dimension to the normal business cycle which will overwhelm the normal stock adjustment and capital investment processes.

(2) Given a sufficient oil stockpile and emergency measures, panic will be avoided. Persistant pursuit of monetarist policy will ensure inflation being controlled.

(3) Japan must keep bearing the burden of heavy oil payments. To cover this, Japan must increase exports, which may lead to a cycle of protectionism. In these circumstances, further international cooperation on energy is unlikely.

(4) The greatly increased amplitude of Japanese business cycles will jeopardize longstanding employment practices as the periodic visit of crises requires the employment structure to become more elastic in the short term. However, the fact that these crises will become more intense in time, will increase pressure on the employment practices that traditionally have enabled Japanese industry to smoothly adjust its structure.

(5) Structural change will accompany the controlling inflation and the upturn of the economy. This will increase the problem of the distribution of income between various groups. Hence this scenario implies that the source of crisis will be discharged from the economic sphere into the political arena.

(6) Increased uncertainty brought about by these turbulant conditions, will retard long range planning by companies, the government and even consumers. As a result, the Japanese economy may suffer a further reduction in its growth trend.

The development of Japanese economy under this assumption in which the resources devoted to preventing an oil crisis are kept to a minimum, will be dominated by the cyclical visitation of oil crises. There will be a subdued and stagnant mood about the economy and society. Relying on merely Crisis Management, therefore, should not, and will not be the option for Japan, although it is inevitable that she will enter the 1980's with such a policy.

A more constructive attempt to attain an oil crisis free economy is the Structural Adaptation approach.

(1) This approach requires a determined government initiative to enhance the countervailing power of Japan and other consumer countries vis-a-vis OPEC. The government induces capital investment in, and sets up an institutional framework for substitution energy and energy conservation. The private sector is expected to respond sensitively to the high relative price of oil.

The greater this surge of investment, the less serious will be the future oil crises. Once the total amount of oil saving is perceived by OPEC as a threat to its future, the power of this approach to reduce OPEC bargaining strength

will increase exponentially.

(2) To make this approach possible, a strong domestic consensus that the fight against oil crises is the most important objective in the 1980's must be established. In addition, the policy requires strong international cooperation among consumer countries. After all, saving of oil by individual countries can be easily nullified by increased consumption by others.

(3) The development of new frontiers will expand employment opportunities which will mitigate to some extent, at least, the deteriorating employment prospects. This approach involves greater use of the experience and expertise of older workers, and so may reinforce traditional Japanese employment practices.

(4) OPEC countries may disrupt this policy by a large, sudden reduction in real oil prices once oil energy substitutes have been formed. In these circumstances consumer countries may have to impose a tax/subsidy system to equalize the price of oil to the cost of alternative sources of energy. The same system could also be employed when the difference between the cost of non-oil energy and the oil price has decreased but not to the extent that the private sector is justified in investing in alternative energy sources and in conservation.

(5) The crucial problem in taking this approach lies in the transition from the period of Crisis Management to the time when the threat to OPEC posed by Structural Adaptation measures is such that OPEC adjusts its policies.

(i) From an energy economist's point of view, monetarism implies means allowing an increase in the price of oil when an oil crisis occurs, so narrowing the gap with substitute energy costs. Monetarism will, therefore, accelerate Structural Adaptation. However, strong government intervention which is a pre-condition for a Structural Adaptation programme, contradicts the free market world of monetarism.

(ii) Increased uncertainty brought by the potential threat of oil crises, will keep the saving ratio of Japan at its traditionally high level. However, because the economy cannot provide good investment opportunities there will be

an excess supply of capital. The Structural Adaptation approach aims at employing this capital dramatically, and it implies delaying the full internationalization of the Japanese capital market.

On the other hand, in the world of Crisis Management which involves cyclical visits of protectionism as well as oil crises, the pressure on further internationalization of the Japanese capital market will be strong.

In order to undertake the transition from Crisis Management to Structural Adaptation, a new paradigm of economic policy which links these two different dimensions will have to be established.

Japan will not be able to take any initiative under a Political Action approach. It is unlikely that Japan will entirely change its traditional low posture foreign policy and quickly restore the asymmetry between economic and military power, although symptoms of change can be detected. Therefore, in the earlier part of 1980's, this option is not open to Japan.

However, this does not necessarily mean that other Powers, politically more influential, will not be tempted to take hawkish Political Action. An oil crisis is caused by increased politicization of the oil economy by OPEC. Consumer countries have endeavoured to cope with the problem so far only by mobilizing economic instruments. However, in time, excessive politicization of the oil economy could lead to the politicization of means to solve the oil problems.

If this Political Action approach is attempted by other countries, Japan will be affected by the impact of this action, not only on Japanese oil supplies, but also on international relations in general. Japan will be forced to support such action probably only indirectly. The more hawkish is the action, the higher the risk of a supply cut and a price increase. The vulnerability of the Japanese energy supply structure will make Japan try to stay out of trouble.

However, should this action be taken by others, its economic implications for Japan are enormous:

(1) The extent to which Structural Adaptation has been achieved in Japan when Political Action is taken is crucial. The worse is the bargaining position

of consumer countries taking political action in terms of their relative dependence upon OPEC oil, the more hawkish that action will be and the more difficult and costly it will be to maintain any equilibrium that is attained with it.

Japan will never be in a position to promote or participate directly in Political Action in the early stages of its Structural Adaptation. However, in later stages, in which the resilience of the Japanese economy to an oil crisis will be greater, a higher degree of commitment by Japan to Political Action of a relatively doveish nature is likely.

(2) The economic benefit of Political Action is the stability of supply and price of oil and not cheap energy. As a sweetener for OPEC cooperation, it is likely that the real price of oil consumers pay will have to rise, so that the balance of payments burden will be higher than it would otherwise be.

(3) This approach will accelerate the development of oil resources otherwise exploited much later in the century. The solution to the oil shortage is regarded as the further development of oil not of oil substitutes. However, it does not solve the long term problem of the absolute limit of oil resources and this approach could advance the date at which this limit becomes a pressing problem for Mankind.

In conclusion, the likely course of development of the Japanese attempts to attain an oil crisis free economy will be as follows. In the beginning of the 1980's, it is unavoidable for Japan to rely upon the Crisis Management. But before long, the consensus will emerge among Japanese that mere Crisis Management is far from desirable. Then, undergoing the difficult transition period, for the navigation of which creative economic policies as well as strong government and a responsible private sector are needed, the Structural Adaptation approach will be accepted. At an even later stage, Structural Adaptation will be accompanied by doveish Political Action.

No matter which approach is taken, international cooperation and solidarity among consumer countries is necessary to cope with the common problem of future

oil crises. After all, the energy problem is global by nature, and naturally requires international collective action for its solution.

3

Janaury 1980

Tentative outline of W. D. Nordhaus,
"Energy Policy and Economic Growth:
Past Performance and Prospects for the Future"

The basic purpose of the paper is to examine the linkage between the energy market and overall economic activity. Considerable attention is given to recent behavior in both areas, as well as to developing an analytical view of how the interaction takes place. The central question is an analysis of the effects of alternative energy policies on overall economic performance. The four policies are: laissez-faire, aggressive energy taxation, slowing economic growth, and efficient pricing. Policies are evaluated in a small aggregate empirical model of the industrial (OECD) countries.

The following outline gives a rough idea of what I intend to pursue over the next few months. It is unlikely that everything will be accomplished, but a good deal surely will.

1. Introduction

Outline the perspective taken here; why energy is an important macroeconomic question.

2. Historical Review

a. Review broad trends in energy market and macroeconomic performance, focusing on break in 1973.

b. Energy market--mainly oil.

--demand: outline evidence of responsiveness of energy demand to price and income, motivating its very great importance lays in response to price.

--supply: chart trends in oil market, reviewing particularly recent CIA study. Discoveries, pool size, U. S. funding rate. OPEC conservationist tendencies. Outline views on OPEC as cartel and projections of OPEC prices from different studies. Outline the view of OPEC held here.

c. Macroeconomic impacts. Survey briefly earlier work on the subject--Jorgenson and associates, CONAES, several macroeconomic studies.

3. Perspectives on policies

a. Outline the major options for energy policy:

1° Laissez-faire (decontrol with no taxes or subsidies and no curb on macroeconomic activity).

2° Curb economic growth to slow energy demand.

3° Energy sector policies (curb imports, tax energy use, or, through price controls, subsidize imports).

4° Break up cartel to return oil price to efficient level.

b. Discuss historical policy actions in U. S. to see how they correspond to each of these.

4. Modeling the effectiveness of policy

Present the results of a small econometric model of the OECD economic and oil market through which effects of alternative policies can be estimated. The components are

a. The macroeconomic model (8-10 aggregate equations for OECD).

b. The energy sector (basically a 3-5 equation model of the oil market).

c. What are the objectives of economic policy. Macroeconomic policy response (how policies do or do not accommodate inflation).

d. Alternative energy policies (quantifies those policies outlined in 3 above).

[It is not envisaged that the gory details of the econometric estimation will be presented in the paper. Either summary equations, or charts will be used instead. Depending on time constraints, it may be possible to separate U.S.from the rest of OECD.]

5. Quantitative estimate of the effects of alternative energy policies

Uses the econometric model outlined in 4 to estimate the effects of alternative policies on:

--The energy sector

--Macroeconomic performance

--Real incomes

For these, we again focus on OECD countries.

6. Conclusions

Drawing upon the analytical and empirical work here, conclude about:

--The most likely future course of energy and macro-economic events.

--The possible risks given the nature of potential shocks.

--How alternative energy policies might affect the future. Here we will draw conclusion for both the U.S. and OECD.

(4)

3 January 1980

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'Energy and Global Security'

Paper 4: Macroeconomic and structural implications - Western Europe
(provisional outline)

(It is assumed that the basic world energy situation and outlook will be dealt with in Paper 1, aspects of world trade, payments and investment in Paper 7, the socio-political future of Western Europe in Paper 10, and global views on political implications - cohesion/disruption and the balance of power - in Papers 11 and 12. This paper therefore does not discuss these aspects in detail; however, brief mention of them may in some cases be unavoidable.)

1) 'Western Europe' is a convenient concept for a chapter heading - but not for much else. The macro-economic and industrial structures of the score of independent countries - and even those of the four major countries - are different.

2) Equally different is their endowment with energy resources and, consequently, their energy policies.

3) The existence of the European Communities has so far not changed much this situation of divergence; there has been no lack of honest attempts to achieve significant harmonisation - particularly in the area of energy policy - leading, however, to the recognition and better definition of the national differences (minor steps forward being the exception) rather than to the formulation of an EEC policy. Reforming the industrial structure has been another objective; but although there has been some modest progress, commercial and trade policy alone appears to have come up to the high early expectations.

4) The first step, therefore, is the 'mapping' of Western Europe, starting with the main structural indicators which demonstrate the differences.

5) Some of the European countries rely very heavily on imported oil or other energy, others less so, and again others hardly at all (though this situation may change after 1985). It is therefore important to see the extent to which existing domestic energy sources, with the likely additions, may be able to cope with foreseeable demand and vice versa, as well as the order of excess requirements to be covered by imports - still assuming availability.

6) This is a tentative forecasting exercise which will be based on the individual countries' own plans, supplemented possibly by estimates. A further important point is a breakdown by the main types of primary energy (oil, coal, gas, primary electricity). It will also require the critical examination of the European countries' nuclear programmes, with special regard to anti-nuclearism (referenda, etc.).

7) What is energy used for? Again, differences among countries are large and it is probably a minimum requirement to compare them, indicating the pattern of final use in industry (possibly separating the iron and steel industry), transport, other sectors, as well as non-energy use.

8) Energy requirements of the various branches of industry show large variations and any shortage of energy supplies may have correspondingly varying effects on their operation. A crude ranking of industries by specific (per unit of output) energy requirement - from input/output tables - would help in the later phases.

9) The scenarios for the 1980s expect a "minor shortfall" of energy supplies in 1985, gradually rising to appreciable proportions by 1990 and the gap would be widening rapidly as from then onwards. In fact, however, there may be a large number of possibilities in the vexed and rapidly changing energy world. (Indeed, a considerably modified IEA view in the near future would not be at all surprising - for a number of reasons, mainly on the supply side.) At this point, therefore, decisions have to be made on a number of aspects; following the 'guidelines' these are:

- the time horizon,
- economic growth as proxy for demand,
- the energy/GNP coefficient
- domestic energy production,
- the availability of imported energy supplies.

10) Time horizon: the next decade, discussing the mid-1980s in more detail (and considering 1985 as a shorthand for the mid-eighties rather than a concrete calendar year) and the end of the decade (1990 - representing crudely the period 1989-1991). Prospects beyond that will only be hinted at.

11) Economic growth: the 'guidelines' proposals are probably on the high side (3.4% a year); the suggestion is 2½-3% a year for Western Europe. (If OECD's estimates concerning the effect of oil price increases on GDP are to be believed, and if the likely future oil price is taken into account, even 2½-3% may be over-optimistic.)

12) Energy/GNP coefficient: the 'guidelines' expect a 'reduction to 0.8'; as a general rule the reduction is accepted. It is not easy to see the extent of the reduction (i.e. to 0.8 but from what? - presumably from about 1.0). Furthermore, the past record of the various countries in Western Europe has been different and thus a more detailed treatment of this aspect is probably unavoidable; some countries may already have a coefficient below the 0.8 target. (The 'ratio' is in fact a misnomer: the indicator in question used to be called the energy/output coefficient.)

13) Domestic energy production: the prospects, as reflected by the countries' plans or programmes (see above), obviously have to be re-assessed in the light of the changed energy situation.

14) Imported supplies: it seems very unlikely now that the 38 mbd (and Saudi Arabia's 15 mbd) will be reached, as foreseen by the 'guidelines'. (A surprise-free scenario is supposed to exclude pleasant surprises as well!) The three West European scenarios will therefore be based on the following assumptions:

(a) As compared with estimated W. European demand for crude oil imports, no more than minor, almost marginal, shortfall of OPEC (plus other producers') oil by 1985, becoming considerable by 1990. This, basically, is the IEA scenario given in the 'guidelines'. (By now, this seems very unlikely. It is worth including it at all?)

(b) Considerable shortfall already by 1985, of the order foreseen for 1990 in (a) above. (If the quantities foreseen by OPEC for production in 1980 are maintained to 1985 this already means a considerable shortfall.)

(c) Some major calamity of whatever nature and origin, reducing available OPEC supplies to 50 per cent of the 1979 level, occurring some time in the 1980s.

(d) In order to avoid complicating the scenarios even further it will be assumed that the natural gas supplies planned will indeed be available but there will be no access to additional quantities under cases (a) and (b) above. In the 'catastrophic' scenario (c) the natural gas quantities from OPEC would also be cut by one half.

(e) In view of the special connection between some West European countries and the USSR as a supplier, the European East-West oil/gas trade will require brief consideration; this should include the Polish coal trade, as well as the future of the energy flows between the USSR and the other East European CMEA countries on the one hand, and between the USSR and Western European countries on the other.

(f) Insofar as coal import requirements of Western Europe are concerned, it is assumed that in scenarios (a) and (b) above the quantities needed will be available; in case (c) there may be difficulties in two respects: the major problem will be that equipment and appliances cannot be rapidly converted to the use of coal, whilst the second question will be the availability of coal on a much larger scale since output in the main producing areas cannot be suddenly expanded beyond rather narrow limits.

15) In assessing the macroeconomic impact of the scenarios in paragraph 14 above, there are two aspects to be considered: price and physical availability. Although interconnected, they nevertheless require separate discussion. Prices will go up (in real terms) even in the most favourable case (a) but of course they will increase much more in the other two basic cases. As in the past, the gradually - but probably very significantly - increasing oil prices will affect output, and fuel

inflation, in Europe. In cases (b) and (c), however, there will be additional difficulties which are - certainly in case (c) - unlikely to be automatically regulated by the price mechanism; these will stem from the physical shortage of oil, and of energy in general. It is indeed unlikely that in the case of a severe scarcity ever rising energy prices will not be supplemented by compulsory measures of various force, possibly going as far as physical allocation.

16) The impact of higher prices may be tentatively estimated on a macroeconomic basis. Of course, any such estimate will be hazardous. In any case, it would be an advantage if the guidelines could be amplified by assumed future prices (or price ranges) in order to ensure some uniformity in this side of the various contributions. It will be more difficult to go one step further down: to the level of the energy-using sectors. The reaction to higher prices cannot be the same everywhere, especially not if the oil price becomes excessively high. This aspect, however, becomes more important in the case of real scarcity - whether or not the latter results in some kind of allocation system.

17) In case of more serious, and especially catastrophic, scarcity, the developments in the various European countries may be different, depending on their degree of self-sufficiency in energy. Although it can be assumed that the pressure on energy producers by non-producers will be heavy within Europe (and particularly within the EEC), the outcome of this political manoeuvring will only be to reduce the differences in endowment and not to make them disappear. Thus, in most European countries any serious cutback of imported oil and gas supplies will require difficult decisions in many areas towards the middle or the end of this decade, affecting all major sectors as well as the way of life of the average citizen.

18) There will be many problems to be solved; only some of them can be discussed and even those not more than rather superficially. In the area of industry the emphasis will be on reducing activities that are heavy users of energy; this, however, is easier said than done since most countries would wish to retain some capacities, for example for making steel or other bulk base materials. It is conceivable that under normal conditions market forces, by way of sharpening international competition, would sort out the most efficient producers; the likelihood, however, is that if a scarcity of severe proportions occurred, there would be no time left for market forces to work themselves through and intervention might follow. Energy saving would take precedence over labour-saving: energy scarcity and abundance of labour will be the parallel resource problems, with opposite signs! Every single country will attempt to concentrate on relatively energy-free activities - especially on processing and services; this process is unlikely to happen in any harmonised manner and the scramble may take considerable proportions, quite possibly leading to shortages of some (non-energy) materials. In the transportation sector, private transport will be hampered by lack of fuel and the past gradual dismantling of the public (rail and road) transport system will be painfully felt. The private life of Mr or Mrs Average Citizen would not escape either: their mobility will be affected, as will the comfort of their home: bicycles and warm clothing will be in great demand. So will any energy-saving device (e.g. insulation materials) applicable in the home, on the road or in industry - creating new productive activities and contributing to structural changes.

19) The most important branch of the economy towards the end of the decade or in the 1990s will be that producing - or conserving - energy in any conventional or new form. It may be the nuclear industry, if the present technology can be further developed and the ecological opposition overcome. It may be the coal industry if new methods of coal-mining and processing technology can be implemented. It could be industries producing equipment for capturing renewable energy from solar, etc. sources on a large scale (or even on a small scale but using improved

technology) or any new form of energy, such as alcohol from sugar for motor fuel, as already carried out in Brazil. Research and development into all these, and other, directions will be of prime importance (see below).

20) In the longer run (i.e. beyond the end of this decade) there is clearly a need for new energy sources _if_ the present lifestyle in Western Europe is to be maintained. The 1980s will be a period of transition. The development of new sources of energy - and we obviously need sources supplying energy in large quantities - will take 20-30 years; therefore efforts to solve the future energy problem of Europe must be strengthened and more resources ought to be concentrated on research and development in this area. It is hoped that this may bring about the desired result. However, if no solution can be found soon, West European lifestyles will be very different in the more remote future, taking an eventual shape towards which the 'catastrophic' scenario only indicates the first steps.

– c'è troppo [illegible]
– relazione fattori esterni
e fattori interni –

Robert B. Stobaugh
2/29/80
"Energy and Global Security"

Outline

PAPER I: THE BASIC ENERGY SITUATION

I. Statement of current static picture and brief historical review, including impact of 1973 -1974 and 1979 price increases.

Consumption, supply, and net imports and exports of each energy form will be given.

A. OECD

1. United States
2. European (Economic) Community
3. Japan
4. Other

B. OPEC

C. Developing non-OPEC

D. Centrally planned economies

E. Total world

II. Review of IEA estimates for 1990 and 2000

A. Demand

1. OECD
2. OPEC
3. Other developing countries
4. Net CPE
5. Total

B. Supply

1. Oil

a. OPEC

b. Other developing countries

c. OECD

2. Natural Gas

3. Coal

4. Hydro/geo/solar and other new supplies

5. Nuclear

6. Total

C. Basic assumptions

1. Crude oil prices

2. Economic growth

3. Price elasticities short run

4. Price elasticities long run

5. Energy-gdp ratios

D. Conclusions

1. The IEA estimates show a notional gap of 3.3 mbd in 1985, 9.5 mbd in 1990, and 28 mbd in the year 2000.

2. The IEA suggests several methods of closing the gap including increased energy production, and/or lower GNP and/or greater energy conservation.

III. Probable variations in the IEA estimates of energy supplies. (Each of the major variables listed under II will be discussed.)

The IEA shows primary energy demand of 84 mbdoe in 1976, growing to 190 mbdoe by the year 2000. (I obtained mbd by multiplying mtoe by .02.) Their base case shows 162 mbdoe of supplies in the year 2000; hence the notional gap of 28 mbdoe. They further show a possible change in supplies that would result in an additional 37 mbdoe for a total of 199 mbdoe. The IEA does not show the possible changes in the base case that would indicate a lower supply rather than a higher supply.

My preliminary analysis indicates that it is possible that supplies might fall short of the IEA base case by as much as 49 mbdoe, that is output in the year 2000 might be 113 mbdoe instead of 162 mbdoe and the notional gap might be 77 mbdoe instead of 28 mbdoe. Even if supplies are not as low as 113 mbdoe my preliminary analysis indicates surely they will not be as high as the 162 mbdoe IEA base case. (The 113 is equivalent to an energy growth rate of 1.4 per cent per year.)

The implications of a notional gap of 77 mbdoe are quite staggering. If this production level should actually occur, then there are two ways to close this notional gap. If the energy-gnp ratio is not improved over the number shown in the IEA estimates (.84 from 1979 to 1985, .83 from 1985 to 1990, and .67 from 1990 to 2000) then gnp growth would be 1.7% per year between now and 1990 and 2.1 percent from 1990 to the year 2000. (These numbers were obtained by dividing the energy growth rate of 1.4 percent by the IEA estimated energy-gdp ratios.) In round numbers this would mean that instead of economic output doubling between 1979 and the year 2000 it would rise only 50% therefore the world would be 1/4

poorer in the year 2000 that it would otherwise be. (I've used the term world but in fact the economic growth rate and the energy-gdp ratios are only for the OECD.) The loss in 1979 dollars would be about 3 trillion dollars.

The only way of closing the notional gap of, of course, would be to improve the energy-gdp ratio. To achieve the economic growth rates indicated by the IEA (3.5% between 1979 and 1990 and 3% between 1990 and 2000) the energy gdp ratio would have to be .4 between 1979 and 1990 and .47 between 1990 and the year 2000.

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OPEC, Mexico and the Industrialized World: Oil Diplomacy in the 1980s

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1. If I seem somewhat cautious about sticking my head over the parapet to survey the terrain of the coming decade, it is because the oil industry is no respecter of forecasters. As late as 1973, there were corporate economists who saw 1985 in terms of Saudi Arabia's producing around 26 million barrels a day (b/d), Iran 13 million, Kuwait 6 million, with further Iraqi and Nigerian
N1 contributions of 5 million a piece (Note 1). This optimism about productive capabilities was enough to persuade some well-respected commentators that OPEC could be broken and the price of crude be reduced to the Dollar-a-barrel
N2 range (Note 2).

2. This optimism was very much a relic of the intellectual climate of the 1960s, when oil was cheap and, for some of the Majors, the problem was having
N3 too much Middle Eastern oil - not too little (Note 3). Since the mid-1970s, however, we have all been becoming more pessimistic about likely oil production levels in the 1980s. This pessimism rests partly on a growing awareness of the technical limitations on what a country like Iran could actually produce should its political leaders ever permit it again to produce flat out. Partly, though, there is a growing awareness that a number of oil-producing countries are likely to produce at well below their theoretical capacities, for reasons which range from 'high' politics (a dissatisfaction with attempted settlements of the Palestinian issue) to a simple calculation that oil prices are best kept high by keeping oil production low. It is this mixture of political and technical factors which makes projections of the 1980s a hazardous business. However, a Conventional Wisdom is emerging. OPEC production in 1980 is likely to fall by one to two million b/d over 1979 levels. At best, it might then rise by 1985 to 5½ million barrels a day above the mid-1979 level of 31.6 million b/d
N4 (Note 4). At worst, it is now conceivable that OPEC's total output will never
N5 exceed 1979 levels again (Note 5). Is such pessimism over-drawn? Are there any conceivable policies of the industrialized world which might make the slightest difference to future production levels?

3. Before looking at the situation in individual Third World oil-producing countries, we need to consider the range of issues which are engaging OPEC members. Unless we do this, we can run into the trap of thinking that their actions are motivated by a single factor—the desire to maximise their revenues from oil, whatever the damage which might be done elsewhere in the world. In fact, their motives are much more complex than this, and the industrialized world's policy makers must take this into account.

4. Above everything else, AIC (Advanced Industrial Country) readers should realise that OPEC members have, over the last couple of years, increasingly started to question where the oil industry should fit into their national development strategies. The logic of this debate is persuading the planners and other technocrats that their optimum strategy is to leave more oil in the ground than AIC consumers might like (OPEC sources refer to this as 'conserving' oil, which is rather confusing since energy 'conservation' within the AICs means cutting back on the use of energy, not on its production). However, this is not just a debate among technocrats. The fall of the Shah and its aftermath have shaken the leaders of the other Middle Eastern oil-producing states, and, apart from concluding that AIC allies like the US cannot be counted on to prop up regimes which are in extremis, they have generally drawn the lesson that over-rapid industrialization and modernization must pose a serious challenge to traditional regimes currently controlling much of Middle Eastern oil. Hence, both rulers and technocrats are now united in sensing that there are good domestic reasons for not allowing their oil to be produced at its maximum potential rate.

5. A selection of recent statements by policy-makers within and around OPEC should indicate how the concept of production-limitation is now firmly embedded within the oil-producers' rhetoric:

'I envisage that the production policies of OPEC countries will be attuned to the requirements of their economic and social development .....As such the process of economic development cannot conceivably be completed in a short period during one, two or three five-year plans...this process will occupy the better part of a century.....'

N6 (Sheikh Ali Khalifa al-Sabah, Kuwaiti Oil Minister (Note 6)).

'...it is in the best interest of OPEC countries to follow prudent oil production policies, which should not be determined by the sheer needs of the world energy markets...they should not be residual energy suppliers during a transitional period in which they may lose their entire oil resources before they are able to develop their national and regional economies!' (Dr Ali Attiga, Secretary-General of OAPEC

N7 (Note 7)).

'The overwhelmingly predominant motive for the imposition of (production) limitations in all of the countries where they exist is to stretch out the country's resources over a period of time which at present appears to be long enough to allow for transition to other forms of economic activity and national income.' (Francisco Parra, ex-

N8 Secretary-General of OPEC (Note 8)).

These are by no means the only recent statements along these lines to come from OPEC circles, but they give an idea of one way the debate within the oil
N9 producers is going (Note 9).

6. There will be readers from the AICs who remain convinced that these are self-serving arguments designed to cover a base concern with keeping oil prices as high as possible with a semi-respectable Developmental cloak. Such scepticism can blind one to real problems which are troubling the leading oil producers. For one thing, Saudi Arabia, Kuwait, the United Arab Emirates (henceforward the UAE) and Iraq are currently producing oil at rates which give them an income they cannot totally spend. One Chase Economics analyst suggests that Saudi Arabia may be running a $12.5 billion current account surplus in 1979; Kuwait $12.25 billion; Iraq $9.25 billion; and the UAE $5.4
N10 billion (Note 10). These are sums which cannot be invested in their domestic economies without risking severe inflationary (and other social) tensions; if they are invested abroad, they run the risk of being devalued by declines in key currencies such as the Dollar or, even, of being blocked by AIC action. It is hardly surprising that the Saudi Minister of Finance recently told the joint IMF/World Bank annual meeting at Belgrade: 'It would be naive to pretend that a continuous erosion of our financial resources through inflation
N11 and exchange depreciations could not evoke reactions.' (Note 11). In these circumstances, one can understand people in the oil producing world who question whether they should run up rapidly-eroding financial surpluses merely to maintain the AICs with the level of oil supplies to which they have become accustomed.

7. Alongside these financial and developmental issues, there is a series of worries which can perhaps be described as involving 'Good Husbandry'. Everyone accepts that oil is a wasting asset, so there is a growing debate about the optimal rate at which production should run in order to get the best long-term returns from fixed reserves. Future generations are not going to thank current policy-makers should the latter permit the draining of oil reserves without the slightest thought of whether they can be replenished.

8. This is a debate which is growing in intensity as the oil producers realise how fast the reserves-to-production ratio has been falling. By OPEC calculations, this ratio was 135 years for Middle Eastern oil producers in
N12 1957; by 1978, that had fallen to 47 years (Note 12). By most standards, this is still a generous margin, but the oil producing governments are only too aware that OPEC members such as Iran, Venezuela and Algeria may well

have reached their peak oil production levels. Again, the Middle Easterners know that their 'published proved' reserves have barely inched ahead since 1973, from 350 billion barrels to 370 billion in 1978. This inevitably leaves them feeling somewhat insecure.

9. Now, it is likely that the oil producers' pessimism is overdrawn. For one thing, there is at least one very important country (Saudi Arabia) which has a strong self-preserving interest in not being forced to announce major new additions to its oil reserves. Secondly, the whole industry has been in transition from the early 1970s, and the new National Oil Companies have not yet fully taken over the exploration role now largely vacated within the OPEC world by the Majors. Accepting that there are a number of qualifications
N13 about the value of the 'drilling density' concept (Note 13), there is around a 15:1 ratio between the relative drilling activity found in the AICs and
T1/N14 the OPEC countries (see Table 1). The ratio between the AICs and the non-OPEC developing countries is even more one-sided. Ultimately, though, we should not get too bogged down in such technicalities. What matters is that the oil producers perceive that they are allowing their oil to be produced rather faster than may be wise. In the words of OPEC's Deputy Secretary-General: 'The urgency of oil conservation in the OPEC area stems from the fact that depletion rates are the highest in the world. The lifespan of its oil reservoirs is continually and dramatically shortening as a result of the fast depletion of oil reserves, without such a depletion being counter-balanced by new commensurate net additions of recoverable oil reserves.'
N15 (Note 15)

10. It is arguments like these which sustain the 'Young Turks' (to use
N16 Sheikh Yamani's term (Note 16)) within the oil-producing world. We have already seen the emergence of national ceilings on oil-production--: Kuwait
Q1 in 1972; Abu Dhabi and Qatar in 1977; Saudi Arabia in 197 ; and Iran in 1979. Some of these ceilings have already been lowered since they were first formulated (as in Kuwait's case). However, if the arguments for production limitation gain ground, then we will probably see further reductions in them, with a resultant impact on the world's supply-demand balance.

11. Ultimately, though, the events of 1979 have reminded us that political turmoil may be just as important as economic calculation in rendering our projections obsolete. We can all draw up lists of countries under stress from over-rapid industrialization and from religious and nationalist tensions. Inter-Arab tensions will never be far from the surface as long as key countries

like Saudi Arabia are torn between their commitment to the Arab cause in Palestine and their need for a working relationship with a United States bent on following a diplomatic policy which, perhaps inevitably, leaves the majority of the Arab World dissatisfied. Then, there is the possibility of wars and terrorist activities which could cut off oil supplies from the Persian/Arabian Gulf for at least a short period. Might domestic pressures force an unwise US military adventure in the region? What about the Russians? Can we guarantee that a violent struggle for political change in Southern Africa might not spill over to affect the production policies of a country like Nigeria?

12. This paper, then, will examine the most likely production policies which the leading oil producers will follow in the 1980s. It will look at the chances of radical breaks in these policies. It will conclude with an examination of policies which the AICs might follow either to persuade the oil producers to be more generous in their production policies, or to avoid some of the worst 'downside' risks we can envisage.

The Middle Eastern Oil Producers

.....Saudi Arabia

13. Saudi Arabia is the country whose political stability and oil-production policies will set the tone for the development of the world economy during the 1980s. The indications are that the country's policy-makers will not enjoy this burden, and that they will limit Saudi production to lower levels during this decade than the AICs would like.

14. The upper technical limits to Saudi production in the mid-1980s will depend on two sets of considerations. Firstly, there is the surprisingly vexed question of how much oil is likely to be produced from the existing productive facilities. The problem here is that there is still some doubt as to how much oil they could actually produce now on a sustainable basis. As late as Spring 1979, it was generally assumed that the Kingdom could choose to produce at around 11.8 million b/d. In fact, one day in December
N17 1978, production actually reached 12 million b/d (Note 17). However, there is a growing consensus that production at those sort of levels would lead to irreparable damage to the Saudi fields and, since we are dealing with fields like Ghawar (68 billion barrels reserves) and Safaniyah (25 billion), which are so enormous that their performances are individually important to world oil output, no-one is inclined to take any risks. In the short-run, there is

an apparent need to step up routine development work to stop a steady reduction in the Kingdom's upper sustainable rate (now sometimes thought to be closer
N18 to 9.5 million b/d, than 10.5 million (Note 18)).

15. There have been two reports which have signalled a changing perception of Saudi Arabia's productive capabilities. The first of these was the report
N19 from the US Senate Foreign Relations Committee (Note 19) which suggests that the 9.5 million b/d level probably represents the Kingdom's long-term sustainable productive capacity. A higher rate of 12 million b/d might be sustainable for 15-20 years before irreversibly declining. Attempts to push productive capacity up toward the 16 million b/d mark would shorten the period such peak
N20 production could be sustained. The CIA have supported this analysis (Note 20).

16. The Saudi authorities are reportedly angry with such analyses and have by no means dropped plans to expand productive capacity. However, the scale of their ambitions has been drastically reduced--and there is no guarantee that such plans will be preserved should the conservationists ever win the upper hand. Currently, it is being left to the Aramco consortium to finance capacity increases out of its own profit margins, which thus adds a further element of uncertainty into the equations.

17. The key point here is that it will take a political decision within Saudi Arabia to authorize the investments which will make higher sustainable production rates possible in the mid-1980s. If they do give approval, then there will be inevitable time-lags. In the optimistic mid-1970s, Aramco assumed it might increase productive capacity by a million b/d per year. In our current cautious mood, we should assume that the Saudis are unlikely to authorize capacity increases in steps of more than one million b/d at a time, and, even then, that they would prefer to see the investment made relatively slowly. So, we can assume that the current sustainable production rate is somewhere in the 9.5-10.5 million b/d range. We can also assume that, unless told to the contrary, Aramco will continue with its plans to raise this to the 11 million b/d range, but that this expansion will take a couple of years to materialize. Decisions to bring capacity up to the 12 million b/d range are unlikely to be taken in time for that capacity to be reached by the mid-1980s.

18. However, the chances are quite high that no further expansion at all takes place in the immediate future. For one thing, the official 8.5 million b/d production ceiling is gaining in symbolic importance. Admittedly,

it has been consciously breached in 1979, but should demand fall in 1980, then Saudi production could fall below the ceiling with the chance that political opinion will harden against ever producing above it again except in extreme circumstances.

19. Given the nature of Saudi decision-making, it is pointless for outsiders to make firm predictions about the way things will go. All we can do is lay out the factors which may affect future decisions one way or another.

20. The first thing to stress is that the Saudis have proved anything but the 'low absorbers' which many western observers still see them as being. The Kingdom is in the middle of a massive programme to provide the basic infrastructure needed in a modern state. There are major plans for industrial
N21 investment which have not yet got into top gear (Note 21). An awareness of the country's vulnerability to predatory outsiders has inevitably led to heavy expenditure on the military sector, which currently accounts for about a third of the national budget. National security considerations have encouraged the Saudi leadership to be even more outward-looking, and to provide a variety of neighbouring states (Bahrain, Oman and the Yemen Arab Republic) with varying degrees of financial support. Entwined with purely security considerations is the fact that the Kingdom is the spiritual centre of Islam, which thus involves the Leadership with the Palestinian issue and with further-flung events such as the Moroccan-Algerian tensions over the Western Sahara. Once again, Saudi money is involved.

21. We thus have a country whose import propensity for both goods and
T2 services has proved relatively high (see Table 2) and which is enmeshed in a series of regional and religious entanglements involving further expenditures of money. We can thus understand how the Saudis were forced to dip into their reserves during 1978 and early 1979 when their oil revenues actually ran
N22 behind their overall commitments (Note 22). This means they managed to spend the income from an average 8.3 million b/d priced at $12.64 (for Arabian Light).

22. However, we are now in a different world. For the first nine months of 1979, Saudi production was running at just under 9.2 million b/d, and was being sold at $18 per barrel--a price which would inevitably be raised before the end of the year. The Chase Economics Group estimated that the Saudi
Q2 payments surplus should run to $12.47 billion in 1979 ((readers: there's
N23 some ambiguity as to whether this is in 1977 dollars)) (Note 23). Higher prices in 1980 should more than compensate for any cutting back of production

levels toward the symbolic 8.5 million b/d level.

23. It is impossible to be certain about how powerful such expenditure pressures will be on policy-makers in the mid-1980s, because so much depends on the speed with which Saudi out-goings continue to increase. Since 1973, these have risen by around 50 percent per annum in nominal terms. However, commonsense tells us the rate must fall below this in the 1980s and, indeed, Saudi imports of goods and services during 1977 and 1978 did fall to around a 33 percent annual growth rate. Showing caution, we must accept that this rate will fall still further, even if it does not do so precipitately. After all, what we know of the Third Development Plan, which starts in 1980, suggests that the Saudis are thinking in terms of earmarking $200 billion N24 to developmental expenditure over 1980-85 (Note 24); the tempo of military spending is at least being maintained; and the major investments in the industrial ports of Jubail and Yenbo have yet to reach their peak.

24. I would therefore predict that Saudi Arabia's financial outgoings will grow into the mid-1980s at somewhere between 15-30 percent per annum. This means that, at one extreme, the Kingdom could live with current prices in 1985 as low as $24 per barrel, on the assumption that outgoings grow at the slowest rate, and oil exports run at 11.5 million b/d. At the opposite extreme, we could see them trying to keep oil prices at $76 per barrel, should outgoings increase at 30 percent per annum and should they try keeping exports T3 to 8.5 million b/d (see Table 3 for other variants). It is too soon to decide which end of this spectrum is most likely to come about, but the picture clearly is one which shows that the pressures on Saudi Arabia to develop some combination of higher oil production and increased prices should not be discounted. If one forecees situations in which there is considerable resistance to higher prices, then the Saudis might have to increase production in order to maintain their revenues at pre-determined levels.

25. However, even though we need to be aware of the expenditure pressures on the Saudis, we should beware of over-stressing them. For one thing, whenever the Kingdom does again come close to spending its annual oil revenues, it will have more strategies open to it than merely increasing oil production. It could eat into its financial reserves (currently in the $70 billion region). It could push for higher prices. It could slash spending.

26. It is this last possibility which should send a shiver down the spines of world's policy-makers, for we are expecting the Kingdom to continue on a

virtually unprecedented importing spree. On 1978 figures, only ten non-communist countries were importing more; the Kingdom was importing more than Austria, Denmark, Norway or Sweden--and had very nearly over-hauled the Swiss
N25 (Note 25). Admittedly, the population ranges of these countries are comparable with that of the Saudis, but we have to ask ourselves how sure we are there might not be a reaction to such import-dependence in a country which is so new to industrial life. The chances have to be put quite high--particularly after the events in Mecca during November 1979.

27. Having sounded this note of caution, we should point out that there are technical constraints against the Saudis dropping production too far below the 8.5 million b/d target. For one thing, Saudi export plans for Natural Gas Liquids (NGLs), assume that oil production will be higher than 8.5 million b/d, and that the current 65:35 light-to-heavy crude ratio will be maintained
N26 (Note 26). Again, as negotiations progress with potential foreign partners in industrial joint ventures (petrochemical complexes et al), it is becoming clearer that the crude entitlements which will go with such investments will
Q3 cumulatively involve some (( )) million b/d. This is not a massive amount by Saudi standards, but will form a series of firm commitments which will reduce the downward flexibility that the Saudis have. (These projects also utilise gas, so they are again linked with oil production policies--in so far as Saudi gas is of the associated kind.)

28. Taking these economic and technical considerations into account, it will prove surprising if the current Saudi leadership drastically cuts oil production rates during the 1980s, without severe political aggravation from the AICs. Instead, we would expect production to hover within the 8.5-9.5 million b/d region for at least the early part of the decade, with a reasonable chance that it will be raised gradually toward the 10.5 region: The current regime has shown itself responsive to world economic needs in the past, as when it tried to undermine the high-price policy of the rest of OPEC in the first half of 1977, and as when it increased oil production in 1979 to soften the impact of Iranian shortfalls, while keeping prices significantly below those charged by the other producers. Of course, this moderation will not satisfy everyone in the AICs, but given the constraints within which Saudi policy makers work, these have been relatively generous rather than restrictive policies. Their 'generosity' however could prove fragile and needs constant nurturing.

T3 .....Iran (Table 3)

29. Only a fool would try to predict Iranian political developments during the coming decade, though we can make some guesses. It is perfectly possible that the fundamentalist Khomeini regime will stay in the saddle for most of the 1980s. However, it is likely to be a relatively weak one, pitting religious zeal against various centrifugal forces within Iranian society (minority religions and nationalities). On its current showing, it is unlikely to be a technologically sophisticated administration, which means the AICs can ignore the possibility of certain Iranian policies which might otherwise be desirable for the world economy (i.e. steadily increasing Iranian crude exports). Should the regime of Khomeini and his followers be overthrown, it is likely that Iranian instability will continue for a while. However, even if a forceful new regime did establish itself, it would most likely shape its policies in the light of the anti-Americanism (perhaps general xenophobia) which is currently in the ascendant. Economically, this means that it is extremely unlikely that any Iranian regime will want to bring back significant numbers of foreigners to help in oil production. In any case, even if a regime in Teheran did so decide, it is unlikely that the oil-field workers in Khuzestan would accept such a decision. Economic nationalism is now running very deeply within Iranian society.

30. It is extremely difficult to see any circumstances over the coming half-decade in which Iran will be producing much more than 4 million b/d on a sustained basis. The reaction against the Shah's policies of producing at full output runs extremely deep. Official policy seems to have crystallised round an export ceiling of 3.3 million b/d, with domestic consumption in
N27 1978 running at just over 600,000 b/d (Note 27). If this export ceiling is altered, it is more likely to be lowered, not raised.

31. As far as westerners are concerned, it is now generally believed that Iran will prove technically incapable of producing more than about 4 million b/d in the mid-1980s, unless substantial further investments are made in the oil fields in the immediate future, but that decision is one that would involve bringing in more expatriate technicians than public opinion in the oilfields is likely to accept. We should perhaps be a bit cautious about such beliefs since many of the people currently denigrating Iranian oil technology were either close to the former regime or else may be westerners blinded by the 'Suez pilots' syndrome--the belief that the technical capabilities of non-'westerners' are close to zero. However, there are grounds for suggesting that some pessimism is justified in this area.

Throughout the autumn of 1979, there were persistent rumours (stoutly denied
N28 by NIOC officials (Note 28)) that Iran was having considerable difficulties in meeting its production targets. One of the industry 'bibles', Petroleum Intelligence Weekly, resolutely maintained that production was running half a million b/d below the 4 million b/d target during much of the July-September
N29 period (Note 29). Secondly, there is general agreement that the Iranian oil-fields were in growing need of substantial gas injection even before the Shah fell. However, one of the very first decisions taken by the Khomeini/Bazargan administration was to stop the ambitious gas reinjection programme which was just starting to gain momentum. This programme aimed to enhance Iran's recovery factor from 18 percent of oil-in-place to 25 percent. Its scrapping is not, by itself, sufficient to justify writing Iran's sustainable productive capacity down from a pre-revolutionary 7 million b/d to 4 million b/d in the 1980s. However, decisions like this and the expulsion of most skilled expatriate workers will mean that the upper limits of the ageing
N30 Iranian oilfields must be assumed to be steadily declining (Note 30).

32. Clearly, however, what matters is not the technical debate but the simple political decision about what production level will give Iran the revenues needed to maintain the economy at a chosen level. The scrapping of the Shah's nuclear and military plans has clearly left the new regime with a lot of leeway, particularly with oil prices rising so fast during 1979. The intention is apparently still there to complete a number of the industrial projects which were under construction when the Shah fell, but even if such completion is carried out fairly smartly (and the lingering debate with Japan over the last bits of the Iran-Japan Petrochemical Company project raises questions about that), there is little sign that there will be a serious programme of industrial investment to follow on through the 1980s. The expenditure pressures, therefore, are likely to come from some increase in military expenditure should troubles with the Kurds and, perhaps, the Iraqis grow. Mostly, though, the pressures will come from the import bills needed to keep a population of 35 million reasonably satisfied. These pressures should not be underestimated, since food-imports in the last days of the Shah were eating up the income from 1 million b/d of exports. Admittedly oil prices have risen sharply since then, but this is a reminder of how economic efficiency within one part of the Iranian economy has been translated into substantial imports.

33. It looks as though Iranian import volume may have fallen by half during 1979. We should probably assume that it will not regain 1978 levels until

around 1985. If this is the case, then there should be no real economic pressure on the country's rulers to do more than maintain current export levels and the real price of its crude exports. What has to be watched, though, is the growth of the country's own domestic consumption of oil products. Assuming that this grows at the rate it was under the Shah (is that now a realistic assumption?), then Iran could be consuming nearly 1.5 million b/d
N31 in 1985, and nearly 2 million b/d in 1990 (Note 31). Inevitably this growth will squeeze the amount available for export, and, at this point, the technical constraints on total oil production become extremely important.

34. Clearly, the chances of Iranian oil exports falling below hoped-for levels are much higher than the chance of significant expansion of the current export ceiling during the 1980s. Policy-making in Iran is likely to remain erratic as far as economic issues are concerned. The Iranians might, for instance, decide to cut exports back strictly so as to earn no further financial surpluses which are exposed to the kind of financial retaliation which the US launched during the November 1979 Embassy-siege affair. On the other hand, the ethnic and religious situation in the Khuzestan oilfields is complex and at any time could lead to disturbances which might severely restrict oil production. In addition, one can easily envisage situations in which Iraq feels tempted to intervene in this area for its own purposes.

35. All-told then, the downside risks are high, and it is extremely difficult to see how the current Khomeini regime can be influenced in its oil-production policies by conventional diplomacy. Probably the most that can be hoped for is to cool the temperature between Teheran and Washington, on the assumption that implicit bargaining about oil production policies can be resumed sometime in the 1980s.

T4 .....Iraq (Table 4)

36. Of all the oil-producing countries under review, Iraq is the most enigmatic and fascinating. Decision-making is highly centralized and difficult to penetrate. The level of its rhetoric in oil matters is high, though it is somewhat belied by its actual production policies. The CIA argues that this country is likely to cut production levels in the early
N32 1980s to below its 1978 level of 2.5 million b/d (Note 32). This would seem to put too much weight on a few ministerial speeches and to ignore a number of underlying factors which are likely to lead to slow, but steady increases in Iraqi productive capabilities. Unless the regime of Saddam Husain falls and is succeeded by the kind of political and social unrest seen after the

1958 revolution (or in contemporary Iran), Iraq should be OPEC's second largest exporter of oil during most of the 1980s.

37. There is general acceptance that proved and potential reserves in Iraq will permit considerable expansion of production over the next couple of decades, if that is the policy chosen by the authorities. Production has been rising steadily during the 1970s and estimates put it for the first three quarters of 1979 at between 3 and 3.4 million b/d--some 50-70 percent
N33 up on 1973 levels (Iraqi secretiveness makes estimates inevitable) (Note 33). There are some apparent problems with its older fields, but there are still
N34 some production increases to be got from a field such as Kirkuk (Note 34). In addition to this, a $2 billion development programme has recently been approved for the Majnoon field, which has been discovered by the Brazilian state company Petrobras and has estimated reserves of 7 billion barrels, making it one of the few new 'super-giants' available for development in the non-communist world ((study group: this conflicts with BP's claim that no
Q4 supergiants have been discovered since 1968: are the Iraqis exaggerating?)). The intention is that this field should start flowing at 350,000 b/d by 1983,
N35 rising to 700,000 b/d at a later stage (Note 35). The fact that such developments are being authorized is hardly a sign of a country determined to restrict production at all costs.

38. On the other hand, there are few indications that serious foreign exchange problems will emerge in the 1980s to encourage Iraq to speed up oil production, should the AICs start showing some resistance to high oil prices. Available statistics suggest that Iraq's foreign assets had risen to $7
N36 billion by 1977 (Note 36) and it has only entered international financial markets for an occasional loan. What we can see of the country's imports suggests they are running at about a third of the levels sucked in by Saudi Arabia, despite the fact that the Saudi population is around half that of Iraq's. This is a picture of a leadership which is keeping its consumers relatively deprived of consumer and luxury goods, and which has chosen not to go for forced economic growth if that entails importing significant quantities of expatriate workers. It is possible, then, to argue that, even if imports grow about 15 per cent a year in real terms, this country will still run a comfortable surplus on its international transactions in the mid-1980s.

39. In these circumstances, we should not discount Iraq's freedom to hold production down, but its policy-makers will probably focus on getting the maximum political mileage out of increasing oil exports. This means that

the western oil companies will be squeezed on the Palestinian issue (as was happening during 1979) and, where companies cannot comply, oil which might have gone through their channels will be diverted to companies and governments willing to take a more positive line on this issue.

40. In a roundabout way, it is the political dimension which should give the AICs most encouragement about Iraqi oil developments (unless the current regime is engulfed in a tide of Shiite fundamentalism). The Iraqi leadership wants to play a significant regional role, but it has to worry about potential disruption from its Iranian neighbour (be this through the Kurdish problem or through heightened Shiite awareness). On the other flank, it is being out-spent by the less populous Saudi Arabia and thus has a strong motive for increasing oil revenues to buy a more important diplomatic stature than it now enjoys. The Iraqi strategy could be to invest ever more heavily in armaments or to spread more financial assistance round to potential allies in the region or within the Third World in general.

41. Finally, we should remark on the distinctive political links which Iraq possesses. Relations with the Soviet Union, for instance, have always been complex, but, should the USSR seriously start needing to buy Middle Eastern oil, then Iraq would probably be one of the first countries it would approach. Secondly, the Brazilian connection reflects Iraq's interest in improving its relations with the Third World. Thirdly, Iraq has shown considerable skill in forging links with the more peripheral members of the 'western' camp--such as France and Japan. This means that Iraq is involved in a more complex web of relationships than are many other of the oil producers. Although Iraq's possession of oil means it will have a strong hand in all these relationships, there will be inevitable reverse obligations which will make Iraq think twice before taking actions which will affect the whole range of its customers.

T5 .....Kuwait (Table 5)

42. Kuwait is likely to prove a quintessential 'low absorber' during the coming decade. The problems do not concern the potential availability of oil in this country, but rather surround the capabilities of the one million population (under half Kuwaiti) to absorb the revenues which would be generated if oil production is maintained at 1979 levels or even increased. The chances that an oil ceiling of 1.5 million b/d will be imposed and maintained are relatively high, thus keeping off world markets perhaps an extra million b/d of oil which Kuwait could produce if it so chose.

43. Kuwait virtually floats on reserves of oil which are confortably double those of the United States. In 1972, the country was producing 3 million b/d--a rate which could have been easily sustained. However, a domestic reaction grew against such production rates, and a ceiling was first
Q5 imposed in 1972 (2.3 million b/d??), and this has gradually been made more stringent. By 1975, it was down to 2 million b/d, and we now have clear warning that it is likely to be brought down to 1.5 million b/d in the near
N37 future (Note 37). In fact, the Kuwaitis interpreted their ceiling with some generosity in 1979, allowing production to rise to the 2.3 million b/d mark. However, their sustainable capacity has been falling sharply since they have felt little need for serious expenditure on petroleum development.

44. There are likely to be few pressures from the expenditure side, which cannot be met by rises in the oil price and, perhaps, a gradual relaxation of the 1.5 million b/d ceiling sometime later on in the 1980s. By Middle Eastern standards, Kuwait embarked on oil-led development relatively early in the game, thus its basic infrastructure is well advanced for the region and does not need massive further investment. In addition, being a city-state, its infrastructural needs are less complex than those of its larger neighbours like Saudi Arabia, with the result that its infrastructural expenditures will plateau considerably earlier. Demand for consumer goods will inevitably grow more slowly in coming years. In fact, it is only in the defence field, where Kuwaiti expenditure has been low, that it is possible to see a sector where national spending might rise in a major way. My guess though, is that an explosion of defence expenditure is unlikely, unless a war breaks out in the region.

45. All this suggests that there is scope for a dialogue between Kuwait and an industrialized world, which would obviously be happier if Kuwait were considering producing at higher rates in the 1980s. As with the Saudis, there are two aspects to this potential production increase. Firstly, there is the question of whether Kuwait can be persuaded to raise its ceiling above 1.5 million b/d (assuming that this is imposed in 1980). Secondly, whatever the decision about the ceiling, the industrialized world would be delighted if it could persuade Kuwait to step up investment to increase its maximum sustainable capacity. At least, this would give the world a greater safety margin in future crises like the 1979 Iranian one.

46. Given the extent to which Kuwaiti infrastructure relies on associated gas, it is unlikely that it would ever be tempted to cut back below the

1.5 million b/d level (though the development of non-associated gas could make some marginal difference). However, persuading the Kuwaitis to move in the opposite direction will be difficult, since expansion of its production is not demonstrably in its immediate interests. In times of crisis, its leadership can be influenced by arguments about the necessity to maintain oil production, but, in general, it is less influenced by a concern for the well-being of the world economy than the Saudis (i.e. despite its healthy financial situation, it has generally been quite hawkish in OPEC's price debates). Again, the leadership is acutely conscious of the Palestinians who make up an important minority within the country, and it will always find it difficult to be generous to AICs which are seen as being hostile to the Palestinian cause.

47. At the same time, there is a feeling that Kuwait is seeking to play a more important diplomatic role within the Middle East and OPEC circles. Its financial reserves give Kuwait an importance greater than its population would justify and, in certain areas, the Kuwaiti leadership can move without resentment where the Saudis, with their massive wealth, cannot. Obviously, Kuwait is always going to be insecure on the military front, and there is some scope for discreet AIC diplomacy there. However, Kuwait's growing diplomatic assertiveness may well strengthen its independence from the Big Powers. If its oil production policies can be influenced, it will be within a Middle Eastern, not Industrialized World, context.

T6 .....United Arab Emirates (Table 6)

48. On paper, this is another low-absorbing country with a population around Kuwait's level of one million people. It continues to run a relatively healthy balance on current account though, like the Saudis, it ran into deficit in 1978 (once one takes capital transactions into account). The big contrast with the Kuwaitis is that the UAE has been an active borrower on the Eurodollar market for much of the 1970s, though it was only in 1977 that borrowings went over the one billion Dollar mark.

49. No clear production policy is emerging for the 1980s. Neither Sharjah (20,000 b/d in 1978, and falling) nor Dubai (365,000 b/d) are in a position to make much difference to overall production levels. They both need the money and would expand production if they could--but technical limitations mean that Sharjah's production should fall, while Dubai's should remain on a plateau through the early 1980s, after which it should start falling too.

50. The key is Abu Dhabi, which is now the financial lynch-pin of the federation. On the one hand, it has some technical problems with existing fields which have led it to cut its allowable production ceiling in 1980
N38. by 110,000 b/d (Note 38). This cut is indicative of a very cautious approach to oilfield management, and this might suggest that Abu Dhabi will join the conservationists within OPEC who want to restrict production. On the other hand, Abu Dhabi is still pushing ahead with a $2.7 billion project to develop the Upper Zakum field, and this expanded capacity should come on stream in 1981, building up to 500,000 b/d in 1983. There is some talk that further development of this field could eventually add 1-1.2 million b/d to Abu Dhabi's capacity.

51. On balance, then, the UAE's productive capability is likely to rise during the early 1980s, though this is no guarantee that it will actually try producing at the maximum sustainable rates. The competitive element between the constituent members of the federation may well determine that investment in prestigious, expensive (but not necessarily economic) ventures continues to bloat the import bills. However, a lot depends on Abu Dhabi's developing role within the Federation. Should the UAE break up, then the pressures on Abu Dhabi to produce more crude might well be reduced, though it would still presumably want to get a return on its Upper Zakum development. On the wider stage, the UAE plays a relatively low-key role and is probably the country which is most likely to take its leadership from Saudi Arabia. Even if the relationship can be exaggerated, there have still been major occasions such as the 1977 two-tier price system in OPEC, where the UAE has aligned its policies closely with that of the Saudis. This should probably give the AICs encouragement that the current leadership within the UAE may well continue to prove responsive to the needs of the world economy. Whether the generation of technocrats below the current leadership would be so generous is more of an open question.

.....Qatar and the Saudi-Kuwaiti Neutral Zone

52. Between them, these two sources have a productive capacity of around 1.2 million b/d. It is unlikely that major new reserves will be discovered in them. The most probable out-turn is that they will sustain their current levels of production into the 1980s, with no significant rises or falls in production.

Africa

T7 .....Libya (Table 7)

53. Somewhat to the surprise of many people, Libya will probably expand its productive capabilities during the 1980s. This is despite the fact that Colonel Qadafi was threatening in June 1979 to stop all oil exports for up to four years. It is also despite the fact that oil production has been falling since it reached a peak of 3.3 million b/d in 1970 and, since 1977, has run at just over the 2 million b/d mark.

54. The CIA has produced the most pessimistic analysis; the country's five-year plan for petroleum development is behind schedule, at least in part because of the inefficiency of the state company; new development work will do little but compensate for declining production from older fields, and
N39 productive capacity may well decline between now and 1985 (Note 39). On the other hand, there is now clear evidence that the Libyans are positively encouraging new exploration by foreign companies. In October 1979, the Libyan oil minister announced the initialling of thirteen new production-sharing exploration contracts with a variety of companies. Clearly, Major Jalloud is being optimistic when he talks of the possibility of doubling production
N40 by 1985 (Note 40), but the exploration rate does seem to be picking up speed again.

55. Obviously, one has to be slightly cautious about such developments. It is, to put it mildly, disconcerting when the country's president talks of shutting off oil exports for several years, but, then, there is plenty of evidence that Libya's militant rhetoric often disguises a fair amount of pragmatic decision-making in the economic field (a significant number of foreign companies came through the 1970-75 period without being totally nationalized). A further factor urging caution is its 2.6 million population which is not large enough to force development at all costs.

56. On the other hand, Libya's leaders have launched genuinely ambitious development plans, aimed at transforming society by the year 2000. They are pushing ahead with industrialization, without waiting (like the Saudis) for foreign partners to get involved. In addition, Colonel Qadafi is following an ambitious foreign policy which has involved him in brinksmanship with Egypt and in (allegedly) helping finance the development of an 'Islamic nuclear bomb' in Pakistan. There is no sign of any debate in Libya about the correctness of such policies, so it seems safe to conclude that there

will be steady pressure on the leadership to maximise oil revenues. In this context, we should note that Libya has not yet entered international eurobond or euroloan markets, so that it is unlikely that it will substitute heavy borrowings on such markets for either price rises or increased production.

57. Finally, we should note the growing integration of the Libyan and West European economies. There is a certain amount of politics behind this, as the Libyans are starting to reward countries like West Germany and Italy which are seen as 'sound' on the Palestinian issue by diverting oil away from American markets towards them. Increasingly, though, Libya is developing exports of gas, refined oil products and petrochemicals whose natural market is Southern Europe, thus adding an economic interdependence to the growing diplomatic links.

T8 .....Algeria (Table 8)

58. There are few question-marks about Algerian policies. The intention is to maintain and (if possible) expand oil production which is currently running at close to its 1.2 million b/d of sustainable capacity. Growth will come from the steady expansion of gas exports which Algeria's quite large gas reserves will make possible.

59. On the technical side, no one seems to be expecting major new oil finds within the country, and the planners are assuming that oil production has roughly reached a plateau and should start declining sometime in the mid-1980s. Since the country's 18 million population will be an increasing market for refined oil products, the exportable surplus may decline relatively fast in the late 1980s. However, gas reserves are sufficiently large for the planners to be expanding productive capacity ten-fold by the mid-1980s, and a large part of this output is already committed by signed contracts.

60. There would seem to be low chances of a significant deviation from this projection. The country's leadership successfully handled the political transition after the death of President Boumedienne in early 1979. Its main political worries concern Morocco and the Western Sahara, but the Moroccan leadership seems much more vulnerable to setbacks in this dispute than does the Algerian one. At the same time, the country is having to borrow heavily on international markets—not just to finance imports but to cover investments within the oil and gas sector. All the pressures will be on raising income from hydrocarbon exports.

61. Belying the Algerian leadership's championing of radical Third World causes, is the fact that about half the country's high quality crude has been exported to the United States. However, as with Libya, there is a deliberate effort to diversify customers, but the increasing emphasis on refineries, petrochemical plants and gas exports will reduce the country's flexibility in the future. It is noticeable that Algerian attention within the gas sector has turned from the United States to West Europe, and the laying of a gas pipeline from Algeria to Bologna in Italy is a sign of the increasing integration of Algeria into the West European economy. As with Libya, this should increase the country's sensitivity to the needs of its customers.

T9 .....Nigeria (Table 9)

62. It is quite likely that Nigerian oil production will ease itself up during the 1980s from the 2.2 million b/d which seems to be the current level of sustainable production (though, for a good part of 1979, it was running at close to 2.4 million b/d). However, there are political uncertainties surrounding internal Nigerian politics and the impact that conflict in Southern Africa may have on Nigeria's relationships with various customers such as the US and Britain.

63. The technical situation is that Nigeria has probably been straining its small, short-lived oil fields by producing at extremely ambitious levels during 1979. To maintain or increase production levels in the 1980s, the Nigerians need to devote considerable effort to secondary recovery and water-oil separation efforts, and they also need to stimulate a major exploration effort both on and offshore. On the exploration front, they have taken steps to throw open all unallocated acreage, onshore and offshore, and toward the end of 1979 there were signs that some companies were being
N41 attracted in (Note 41). On the enhanced recovery front, adequate investments are not being made. Being perhaps a bit uncharitable, it would appear that disorganization within Nigerian policy-making circles was holding action back in both these key areas---and this may be the critical factor which will determine productive capabilities in the mid-1980s.

64. With a huge population (around 80 million) and an import-per capita ratio of one-fortieth of that sustained by the Saudis, there is clearly need for any income which can be gained from oil exports. However, one has to be doubtful if these pressures will be turned into a coherent, consistent oil policy during the early 1980s. Compared with countries like Venezuela and

Algeria, which have a well-developed tradition of economic nationalism, Nigeria has not yet developed a consensus about the exact role which foreign investment should be given in a key sector such as petroleum. This consensus will take time to develop and will doubtless be affected by the fate of the new civilian administration which is trying to establish itself.

65. In addition to purely domestic considerations, Nigerian oil policy is likely to be influenced by foreign policy as well. The nationalization of BP's interests demonstrates that the development of the political struggle in Southern Africa will, to some extent, determine with which foreign partners Nigeria is willing to deal. At the same time, Nigeria has regional aspirations and will want to use oil to consolidate its position as the leading power in West Africa. Should its leadership prove sophisticated enough, it may well have wider ambitions. There are already signs that it is concentrating on building up state-to-state sales within the Third World. Inevitably, all this will lead to some discrimination against the 'West' as customer and provider of technical services.

Latin America

T10 .....Venezuela (Table 10)

66. There are a number of similarities between the positions in which Venezuela and Algeria find themselves. They have moderately large populations (13 and 18 million respectively), an oil sector which has reached a plateau thus forcing the development of less easily exploitable hydrocarbons (Orinoco heavy oil and Algerian gas reserves). Both are relatively nationalistic in the ways they are handling such developments, and both have been borrowing heavily on international markets.

67. Venezuela's oil production peaked at 3.7 million b/d in 1970, but has since declined so that its sustainable productive capacity is now around 2.4 million b/d. Following a comprehensive nationalization of the oil industry, the country's exploration effort has been steadily increasing, with particular attention being given to the shores off the country's 3,500 kilometre coastline. There have been encouraging hydrocarbon discoveries (particularly one large gas find off the Paria Peninsular), which should at least allay Venezuelan fears that by the mid-1980s they will not have enough light oil even to satisfy their domestic demand. The geologists, though, are pessimistic and suggest that the chances of major new oil finds are unlikely, though the gas prospects are good. Whatever they do find as this

exploration effort develops will be unlikely to affect Venezuelan production policies during the 1980s.

68. The most important event during this decade is likely to be the initial development of the Orinoco heavy oil belt, which may hold between one to two trillion barrels of oil. There are a number of technological problems to be overcome, but Petroven is planning to spend $3.5 billion to
N42 develop production and refining capacity of 125,000 b/d by 1988 (Note 42), with hopes of producing between 500,000 and one million b/d by the year 2,000. Whatever one thinks of the cost estimates (and the initial $3.5 billion sounds remarkably little given the novelty of the problems which will have to be overcome during the initial phase), this whole programme is an indication of the kind of 'frontier' technologies which all oil producers are going to have to come to terms with as their readily producible oil reserves run down. Few countries have this kind of heavy oil belt in reserve, but other countries will be seeking to develop equally exotic ways of maintaining their hydrocarbon-production profiles at reasonably high levels into the 1990s and beyond. Already, in the Venezuelan case, one can see the emerging role that the international oil companies are playing as advisers to the national oil company, Petroven, which is charged with developing the new resources. Clearly, the development of heavy oils is one area where the expertise of the national oil company will rapidly catch up with and, in many cases, outstrip the expertise of the traditional multinationals. Increasingly, one suspects, the Venezuelans will have lessons to teach other parts of the world where heavy oils have to be developed--an instance of the way technological interdependence in the 1980s and beyond will not be the one-way street from the AICs to the Third World as has been the case in the past.

69. What is less clear is just how much emphasis Venezuelan planners will put on increasing imports, and thus increasing the pressures on them to maximize oil production. On the surface, the picture is clear. The Venezuelans have been in current account deficit from 1977, and may even have run in the red in 1979. Their international borrowings have increased heavily since 1976, and their external debts had reached the $12 billion mark by mid-1979. As I write (in November 1979) there is a clear reaction to what is now seen as the over-rapid industrialization drive of the post-1973/4 years. The Herrera administration, which took power in spring 1979, is looking askance at the state-led attempts to diversify the economy away from oil into industries such as steel. The complaint is not so much with the strategy but with the alleged inefficiency with which it was being carried out. Almost inevitably,

the industrialization momentum will be slowed. At the same time, the removal of official price controls in 1979 has led to a sudden upsurge in inflation which has heightened social and political tensions within the country. In the short run, it is not clear what these developments will mean for future economic plans, but they may make the leadership more cautious about over-rapid expansion of the economy. However, it seems most unlikely that worries over the non-oil economy will lead to a relaxation of the drive to develop the hydrocarbon sector. The kind of fundamental problems which have been emerging may well have been caused by a long-term over-reliance on the oil industry. However, in the short-term future, politicians will still find it easier to overcome social tensions against a background of rising, rather than static, oil revenues.

70. Against this more-of-the-same background, there will be some more subtle developments. Firstly, there is going to be a major switch from light to heavy crudes, which will inevitably cause some upheaval in the lighter parts of the oil trade. Secondly, it is clear from the country's renegotiation of its post-nationalisation supply and service contracts with the international majors, that Venezuela is determined to continue with diversifying its customers and technical suppliers. This does not mean that the majors are likely to be cut off from all Venezuelan oil (as could happen in the case of any newly-radicalised Middle Eastern oil producer), but it does mean that Venezuela is playing its part in squeezing the majors out of their oil-trading roles. Thirdly, Venezuela is like Nigeria in wanting to play an important regional role, and it is not accidental that it has been one of the OPEC countries which has consistently stressed the oil producers' obligations to the oil-deficient LDCs. In fact, Venezuela is extremely interestingly placed, with neighbours which vary from one of the most industrialized Third World countries, Brazil, to some of the poorest countries in the world, the Caribbean micro-states. Finally, it is worth suggesting that Venezuela will be watching with interest any US moves to develop a North American energy market or wider free-trade area. Whatever the practicalities of such initiatives, there is a growing strand of American opinion which believes the US could gain from them. The Venezuelans will watch with somewhat jaundiced eyes since, as late as 1972, they were proposing a hemispheric arrangement with the US, but were firmly rebuffed
N43 (Note 43). Even though Venezuelan opinion has since become more nationalistic on oil matters, it would clearly be ridiculous for the US to ignore Venezuela in any future consideration of regional energy arrangements.

T11 ....Mexico (Table 11)

71. Whatever figure Mexican reserves ultimately settle around, this is one country which will clearly be increasing its oil production through the 1980s. 'Conventional wisdom' within the industry suggests that this country will step up production from around 1.5 million b/d at the end of 1979 to
N44 about 3.3 million b/d in 1985 and 5 million in 1990 (Note 44). If one is an optimist, one can argue that what has happened in Mexico during the 1970s, is an indication how ever-increasing oil prices, combined with growing technical competence on the part of national oil companies and Third World planners, can uncover a lot of new oil. However, the pragmatist in one must point out that policy-makers have to plan for what is likely, not what is possible. So, for the moment, we must assume that the Mexican discoveries are a flash in the pan, and that the institutional upheaval which has taken place in the oil industry during the 1970s has not prevented similar interesting discoveries elsewhere in the world (my personal guess is that it has).

72. Clearly, there is still considerable controversy about what the Mexicans are actually discovering. The state of the debate can be illustrated by the discussion about the reserves of the Chicontepec Field. Pemex estimates that it will be able to recover 17.6 billion barrels, from reserves-
N45 in-place of 106 billion barrels (Note 45). This is a claim which has been received with some derision by a number of non-Mexican experts--though there is no way of verifying how many of them have had adequate access to the
N46 data off which Pemex is working (Note 46). Clearly, even on Pemex' admission, this is an extraordinarily complex field which would involve the drilling of 16,000 wells--i.e. slightly more than the total number drilled in Mexico during the whole period from the nationalization of the Mexican industry in 1938 through to 1978. It is not yet clear that the Mexicans are using the same standards for estimating reserves as outsiders.

73. However, whatever the truth behind such a debate, we are clearly seeing a major expansion of the proved reserves within Mexico. That most pessimistic observer of the international oil scene, the CIA, is willing to concede the discovery of two possible super-giant fields (the A.J. Bermudez
N47 complex and one possible offshore find) (Note 47). Conservative US experts concede that, by the end of the 1980s, proved Mexican oil reserves should total between 30-60 billion barrels--i.e. from about the current position of the USA to that of Iran or Kuwait (these latter two are currently the countries with the third and fourth biggest oil reserves in the world).

If the US can currently be producing 8.5 million b/d off its depleting reserves, then there is no doubt that the Mexicans could be aiming as high as that in the 1990s--if they so choose.

74. ....and there's the rub. The Portillo administration has set a target of 2.25 million b/d production by the end of 1980, with no firm commitment beyond that date. There is an implicit commitment to rise to 2.5 million b/d in 1981/82, but, after that, there will be a new President, and the Mexicans have a tradition of not committing their successors to fixed targets in a sector as important as this. All one can say is that Pemex has been pushing production up at least on target, and there has been some consideration of actually raising export goals and thus necessitating a raising of production levels as well.

75. On mechanistic assumptions, there should be little doubt that subsequent Mexican administrations will continue to push production steadily upwards. We are dealing with a population of some 66 million which has only very recently showed some signs of growing less than its recent 3.2
N48 percent annual rate (Note 48). The country is heavily indebted and, in 1978, was the largest borrower of eurocurrency bank credits in the world
N49 (Note 49)--a position it has maintained in the first nine months of 1979. At the same time, oil revenues are still relatively insignificant, only reaching the $1 billion mark in 1978--a year in which the country's institutions borrowed nearly $8 billion on international markets.

76. It is possible to argue that, despite all this, the Mexicans will develop their oil extremely cautiously. For one thing, the Mexican economy is highly diversified by the standards of OPEC's members (of which Mexico is, of course, not one). It has healthy exports of manufactures, and a particularly buoyant services sector (tourism and ever-growing remittances from legal and illegal emigrants to the USA). The opposite side to this argument is that the Mexicans have traditionally run a highly-protected economy, which they will, under US pressure, probably start to liberalise in the very near future. Inevitably, manufactured imports will be sucked in rapidly in the early years of such a programme. Another argument for Mexican caution is that its planners are scared of running into the oil-led inflationary boom which Venezuela is allegedly facing. Clearly, they are right to look at Venezuela, but, as we've seen in the preceding section, oil is a minor part of Venezuelan ills. What Venezuela and Mexico do have in common is the problem of liberalizing economies which have hitherto

been kept relatively restricted. Increasing oil revenues should give the politicians more flexibility in handling such problems.

77. Fundamentally, though, there is the question of whether the Mexican leadership can satisfy the demands of its large population. Inevitably, some of the questioning of the Established Order which has been taking place in the countries immediately to the south of Mexico must feed back into Mexican society. If one adds to that the kind of heightened political debate which is found in some of the other oil-producing states elsewhere in the world, then we could see Mexico's long-established political institutions challenged for the first time since the Revolution. If oil production is deliberately held back, it will be because Mexico's elite feels it is moving into uncharted waters and needs time to assess what reefs lie ahead.

78. Whatever the Mexicans do decide to do, they will clearly not make any particular decision because that is what the United States happens to want. The history of US-Mexican relations has been too tense to permit this kind of bargaining. Currently, the Mexicans are setting a limit to the proportion of their exports which they are willing to sell to the United States. Like the Venezuelans and a number of the other oil producers, they are deliberately diversifying their customers, even if this means that they lose some income, since the USA is the logistically logical destination of Mexican exports. So, the Mexicans will gradually become more involved with the West European and Japanese markets with whom they should be able to have a less emotionally-charged relationship than with their Northern neighbour. Finally, Mexico became a spokesman for Third World issues under the former Echeverria administration, and his successor President Lopez Portillo has continued this tradition by making important proposals within the energy field to the UN General Assembly. This would indicate that Mexico is again potentially susceptible to the energy problems of the energy-deficient LDCs. All-in-all, the 1980s will be an eventful decade for the Mexicans. The more their leaders enter it talking of Saudi-style reserves, the harder they will find it to restrict future production to levels they might find safest for the country's political institutions. It could therefore be that the world will get increased oil and gas exports from Mexico, at the expense of growing political tensions within Mexican society.

The Range of Problems

79. The oil producers are not going to set us a unified set of problems. Saudi Arabia is not the same kind of society as Venezuela, which, in turn, differs markedly from Indonesia. Anyone who fails to appreciate the complexity of the range of problems the oil producers are likely to throw up will react too rigidly, and will almost inevitably walk into avoidable crises--some of which will actually have been caused by the AICs. So, to guide the second half of this paper, which will be looking at AIC policy options, here is a list of kinds of problems which could affect international oil markets in the 1980s.

....Wars

80. It is probably beyond the scope of this paper to consider the chances of US-Soviet struggles for oil. However, the fact that oil reserves have been clustered so heavily in the Middle East means that oil production is vulnerable to another Arab-Israeli war, particularly should it involve Saudi Arabia more directly than in the past (and the fact that the Saudis have been arming themselves so rapidly since 1973/4 will increase Israel's temptation to attack Tabuk or the oilfields in any future conflagration). Then, sticking to the Middle Eastern region, there is the possibility that neighbours will fight, perhaps directly destroying oil production facilities, perhaps interfering with oil flows from third countries, or perhaps leading to long-term political destabilization in one or both of the combatants. Without thinking too hard, one can raise questions about future Iranian-Iraqi, and Iraqi-Kuwaiti relations. Then, the radicalism of the PDRY means that there will always be the chance of a war with any combination of North Yemen, Saudi Arabia and Oman. Elsewhere in the oil-producing world, there are Egyptian-Libyan tensions which could get more dangerous as Egypt's financial situation improves as its oil production increases, and as it can, at last, divert troops away from its Eastern front. Further along North Africa, Algeria's relations with Morocco have been very strained over the Western Sahara issue; a war would be more likely to destabilise the Moroccan, rather than Algerian leadership, but the impact on oil-production cannot be discounted.

81. Without putting an exact probability on any of these events, the chances are clearly high enough that contingency planning has to be carried out. Any sort of war around the Persian/Arabian Gulf would cause at least the kind of chaos in world markets we've seen in 1979--and would

probably be worse.

.....Political Collapse

82. Events in Iraq after the 1958 revolution and in Iran after the fall of the Shah abundantly prove that the collapse of traditionalist regimes is likely to be followed by a period of considerable social and political convulsion. Inevitably, oil production policies will be affected. It needs very little intelligence to point to regimes such as those in Saudi Arabia, Kuwait and the UAE which are going to have to be extremely politically sophisticated if they are to survive the 1980s in their present form. In particular, the fates of these regimes are so intertwined that radical change in one would quite probably lead to a chain reaction amongst the others. However, radical political change is not just a possibility in the case of the traditionalist oil producers. The current Iraqi regime is extremely narrowly based, and no one can be confident about political developments in Indonesia and Nigeria during the coming decade.

.....Nationalism and Religious Fundamentalism

83. Once again, events in Iran remind us of the rise of fundamentalist Islamic values in the oil-producing world, which are anti-materialistic and--perhaps not inevitably--anti-western. This has already had an effect on oil flows and, even if it does not lead to the overthrow of other regimes, it will inevitably make them more cautious, and this will feed back into lower production rates. There is, however, a less obvious angle to this problem. We do not just have to worry about conscious political decisions to restrain production, we will also be affected by the indirect effects of a country's decision to use less foreigners in the oil fields, or to make its national oil company try to do without little or no help from foreign companies. The effects of over-zealous economic nationalism can be insidious. Failures to carry out adequate exploration or maintenance can slowly sap a country's productive capability without any conscious decision having been taken to cut it.

.....Selective Embargoes

84. The problems here hardly need spelling out. The OAPEC oil embargo of 1973/74 was quite effective, and we must assume that any replay would work better. One would expect the instructions given oil companies about destinations would be increasingly detailed, and the threats of retaliation against companies redirecting non-affected crude to embargoed destinations might become serious. However, the 'classic' 1973/4 embargo is not the only

form this problem may take. The experience from a country such as Iraq is that the contractual restrictions on oil companies as to which markets they can supply have become tough enough that the US companies risk offending American law if they comply. We should also note that Southern Africa is now joining Palestine as an issue which is sufficiently emotive to trigger oil embargoes. Already, many OPEC countries forbid the sale of their oil to Zimbabwe/Rhedesia and South Africa. Nigeria's expropriation of BP should remind us that we are getting close to the stage where Nigeria, at least, may refuse to sell oil to companies or countries which are seen to be supporting White South Africa.

.....Production Limits: Economic Motives

85. This issue has been covered at some length earlier in this piece. We are talking both of decisions to conserve oil reserves for technical reasons, as well as because economies are unable to absorb the relevant oil revenues. However, production limitation takes two forms: there is the decision to produce at less than productive capacity, and there is the decision not to increase such capacity. AIC policy-makers need to take both forms into account.

.....Technical Restructuring of Oil Markets

86. The final problem to which we should pay attention is that oil producing governments are increasingly trying to specify the types of oil they are willing to sell, and the types of customer to whom they will sell. Cumulatively a number of individual decisions at the national level may have a major impact on global trading patterns. As far as types of crude are concerned, both Saudi Arabia and Venezuela have policies which force customers to take an increasing proportion of heavy (traditionally less attractive) crudes along with light ones. The Saudi policy currently is that customers have to take light and heavy crudes in a 65:35 proportion, and they will almost certainly switch to a 50:50 formula in the 1980s. This will be an irritant to refiners round the world, but such decisions reflect the fact that the world has been proportionately over-consuming the lighter crudes and such steps are merely trying to lead the way to an era in which heavy crudes will become ever more important. One variant of this policy of tying conditions to the sale of desirable crudes will come as the refining and petrochemical capacity of the oil producers builds up. Should these products be commercially unattractive, the oil producers will try to insist that purchasers of crude should also take a certain amount of products.

87. As well as being more assertive over the kinds of products they are willing to sell, the oil producers are also getting more choosy about the clients they sell to. There is, for instance, a significant move to diversify away from the international majors, as can be seen in the re-negotiations of contracts currently taking place in Venezuela and Libya. In neither case are the majors going to be ejected, but there is a conscious effort to deal more directly with ultimate customers. Sometimes, this will involve entering state-to-state deals with energy deficient LDCs; at other times, it will mean dealing directly with non-governmental clients in countries like Japan and Germany which have traditionally been supplied by the majors in their oil-trading role. This can be motivated partly by a desire to reduce one's dependence on companies which have, in the past, been too dominant for political tastes. Partly, though, the motivation may be to forge links with industrialized countries other than the United States and, to a lesser extent, the UK since they have been so dominant in the oil producing world in the past. However, whatever the motives, this diversification of customers has gathered pace in 1979. Shell argues that over 2 million b/d was taken out of traditional marketing channels during this year and put into more-or-less formal
N50 state-to-state deals (Note 50). Another estimate suggests that more than a quarter of the west's oil imports now move through such non-
N51 traditional paths (Note 51). In descending order of magnitude, it is Japan, France, Italy, Spain and Turkey which have been most active in signing such direct deals. The more such deals proliferate, the more AIC policy-makers must question the effectiveness of defensive measures such as the International Energy Agency's Emergency Allocation Scheme which rests heavily on the ability of the international oil companies to divert
N52 oil supplies within their corporate networks (Note 52).

AIC Policy Responses

.....Carrot or Stick?

88. All discussions of the AICs' future diplomatic relations with the oil producers must start with accepting some blunt truths about the 1980s:

-given likely supply restraints during the 1980s, it is unrealistic to think of 'breaking OPEC'.

-the AICs cannot force any individual oil producer to produce at full choke.

-the act of trying to bully oil producers into increasing production is likely to be counter-productive: potentially friendly

regimes may be destabilised and succeeded by relative chaos.

-no single AIC has such a monopoly of money, food, industrial or military technology that it can blackmail any producer into increasing production for more than the short time needed by the producer to find alternative suppliers.

-it is extremely unlikely that any combination of AICs can be put together with a sufficient combined share of such factors that they can, as a group, blackmail a producer into changing its preferred policies.

-however irritating and, occasionally, humiliating it may be, the AICs should base their policies on persuasion, not on force or blackmail.

-none of the above should be taken to rule out the use of force should another Great Power threaten to use it to grab oil supplies; or should an oil-producing regime invite military aid to repulse an external threat which it might otherwise be unable to handle.

89. What we need is a decade of extremely low-key, subtle and multi-facetted diplomacy. The AICs should abandon the use of rhetoric toward the leading oil-producers, while understanding that this restraint will not necessarily be reciprocated. Clearly, there will be occasions when the oil producers will be best treated as a group (i.e. as OPEC) or as sub-groups (i.e. the traditionalist oil producers on the Gulf). However, not too much hope should be rested on such multilateral approaches. Instead, a lot of the most useful effort will go in fine-tuning diplomatic relations with each individual oil producing state. Sometimes the best approach will be a bilateral, inter-governmental one; at other times, relations will best be left to non-governmental bodies such as private companies. None of this means that AICs should stop planning for crises such as wars or extreme political provocation by given oil producers. What it does mean is such measures should very much be matters of last resort. In the past, Teddy Roosevelt made sense when he said: 'Speak softly and carry a Big stick'. In the coming decade, there will be nothing wrong with the soft-speaking, but sticks will be out. It will be an era in which the AICs will need to tailor incentives to the specific needs of each oil producer. Carrots, not sticks, are what the decade will be all about.

.....AIC Goals

90. Before discussing various incentives which might be offered to

producers, we should first be clear exactly what the goals of the AICs should be. They should seek:

1. to persuade the leading oil producers, either singly or collectively, to maintain generous production levels, and, where this is technically possible, to increase them.
2. to persuade those oil-producers in a position to do so to increase their productive capacity, even if they do not intend to utilize this fully on a sustained basis.
3. to persuade the oil-producers to moderate their oil-pricing policies.
4. to persuade as many oil producers as possible to show productive flexibility in times of industry crisis.
5. to identify and work with (as closely as is wise) those regimes in the oil-producing world which can be persuaded to modify their oil policies in the interests of the world economy.
6. to remember the interests of western consumers and, if it is possible, to play off oil producer against oil producer to drive down prices. However, such a policy should not be adopted if it endangers goals 1, 2 and 4.

Potential AIC Incentives

.....Regime maintenance

91. Of all the potential incentives the AICs can offer governments to produce oil reasonably generously, the most ethically and politically suspect is for the AICs to offer understandings that they will back particular oil-producing regimes if they run into trouble. If the AICs are not careful, they end up supporting thoroughly discredited regimes which, when they do fall, are succeeded by regimes which must inevitably be hostile to ostentatiously-close friends of the fallen leadership. There is also the very real danger in some parts of the world that it is positively dangerous for a regime to be seen to be too friendly toward certain AICs--in which case, too enthusiastic backing for a regime may actually be self-defeating.

92. Clearly, the regimes whose falls would apparently matter most to world oil consumers would be the conservative oil producers round the Arabian/Persian Gulf. The chance that the Saudi regime might be replaced by a regime which settled for production around the 4-5 million b/d level is, to put it delicately, profoundly disturbing. In contrast, there are

a range of middle-ranking OPEC members (Libya, Venezuela, Algeria and Iraq) where it probably does not matter greatly who is in power, because we would expect oil policies to remain substantially the same.

93. In these circumstances, perhaps the single biggest step which can be taken to improve the domestic survival of the traditional Middle Eastern oil producers is to refrain from putting too much pressure on them to follow oil policies which leave them uneasy. Let them set production ceilings, even if these leave the world market a bit tight for crude. Let them develop their own positions on Middle Eastern matters, even if these continue to be hostile to the Camp David approach. Certainly, let them become more nationalistic in economic matters if that helps them buy off domestic criticism. To put it bluntly, let them distance themselves from the United States, and from any other AIC which gets too strident in demanding higher oil production from OPEC members.

94. Clearly, such advice could be embarrassing for the world economy if it leads to a lowering of oil production levels through the 1980s, but such embarrassment is probably inevitable. The risk of oil-production being badly affected by political change round the Gulf is quite high, and the AICs have to ask themselves whether they might be increasing the chances of such change by making politically risky demands of the system. At the very least, all AIC policy-makers should ask themselves whether they are not putting proportionally more pressures on the oil policies of Middle Eastern OPEC members than they have put on those of countries like Norway (why hasn't it opened up its northern waters more rapidly?), Britain (couldn't it be persuaded to try for a more ambitious export policy by the mid-1980s?) or Mexico (if it is getting US trade benefits from not being a member of OPEC, shouldn't it be showing a bit more generosity in its pricing policies?). If the AICs are operating a diplomatic double-standard in being much more circumspect with key non-OPEC oil producers, then AIC policy-makers must ask themselves whether such a double-standard (however unintentional) does not indicate that serious political strains may be being created within the OPEC world by unrealistic ambitious demands.

95. The question of providing Middle Eastern oil producers with help against external aggressors is a vexed one. In general, it would be fair to say that the AICs would be happy if some 'over-the-horizon' fire-fighting force could be developed in a sufficiently acceptable form that

threatened oil-producers were able to call on it for help (as Kuwait
Q3 called for British help against Iraq in 196 ; and as Zaire, in Africa, was able to call on French, Belgian and Moroccan troops in 1978). On the other hand, in the current febrile atmosphere within the Middle East, no political leader is going to risk his neck by calling for the creation of such a force--particularly since it still seems that part of American public opinion favours taking over Middle Eastern oil fields, whether the
N53 local authorities call for US aid or not (Note 53). However, since we are looking up to a decade ahead, it should not be beyond the wit of diplomats to come up with some Gulf Security Pact or some multi-national intervention force which is eventually politically acceptable (and re-assuring) to key oil producers.

96. However, there are controversial elements to any offer from AICs to maintain oil producing regimes. There is the perennial debate about what policy one should follow on selling arms to a part of the world which
N54 is already so insecure--but this is a relatively well-worn issue (Note 54). One of the newer controversies is where a Human Rights policy should fit into oil diplomacy, since there are not many democracies among the leading OPEC members. There are voices who still argue that oil is too important to be put at risk by demonstrations of liberal 'bleeding-heart' consciences, and they sometimes go on to blame the fall of the Shah on the pressures that President Carter put on him to liberalize. On the other hand, there is the argument (which I support) that one of the lessons from the Shah's fall is of the dangers which come from the AICs' identifying themselves too closely with leaders whose position is ultimately indefensible. Clearly, it would be crazy for AICs to be scouring the Gulf states for frustrated democrats and disgruntled technocrats. On the other hand, it must be made clear that no leaders of oil producing states can expect backing at all costs if they have lost the ability to adjust to the changing social and political forces below them. Perhaps a lesson can be drawn from recent events in South Korea. In this case, the US authorities made a clear distinction between their support for the country's general lines of development, and their qualified disapproval of an unyielding autocrat. President Park was killed without triggering a radical break in South Korea's general political orientation. Other autocrats might learn a lesson from this.

97. It would be a mistake if the foregoing paragraphs are read as a plea for the AICs to concentrate primarily on maintaining the conservative

Gulf rulers in power as long as it is decent to do so. Quite clearly, though, we have to come to terms with a much wider political spectrum of oil-producing countries than these, and the cumulative modifications which can be won in the latter's oil policies may be just as important as the changes which might be winnable from the conservative Gulf producers. On the other hand, it is difficult to see any of the non-Middle Eastern oil producers being particularly susceptible to offers of security assistance from the AICs. The Algerians, Venezuelans and Nigerians probably do not see any external threat which really worries them (Morocco in Algeria's case?). Possibly only the Indonesians, who view Vietnam's adventures in South East Asia with some alarm, are going to be very receptive to offers of security assistance and, even here, the worries would be more about the potential destabilisation of other ASEAN members, rather than of Indonesia itself.

.....'Just' Solutions to the Palestinian Issue...and to Southern Africa?

98. It is probably not worth the AICs (read 'the USA') bullying Israel into an 'even-handed' Middle Eastern settlement, if it is assumed that this will encourage the moderate Arab states to increase oil production above their self-imposed ceilings. On the other hand, whatever the rights and wrongs of the Palestinian issue, steady, visible pressure on Israel is a damage-limiting policy option which should be considered in the context of the coming decade.

99. The reason for rejecting the simplistic arguments for tilting toward the Arabs is that the analysis in the first half of this paper suggests that many of the Arab oil-producers have strong domestic reasons for not pushing production capacity up too fast. On the other hand, as long as the Arab and other Islamic oil producers are unable to accept the solutions agreed between Israel and Egypt, then we are going to be left with an important force for instability within the Middle Eastern oil-producing world. We are dealing with regimes which have to be very sensitive to religious opinion around them, and the less satisfactory Israeli concessions are to mainstream Islamic opinion (which is obviously moving in a more fundamentalist direction), then the more uncertain of themselves the oil-leaders will be. At worst, inadequate (in Arab eyes) settlement of Israeli-Palestinian disputes could be one of the final straws leading to the serious destabilization of regimes. At best, such an 'inadequate' state of affairs will lead to oil regimes widening the perceived distance between them and those AIC powers which are held to be

responsible for getting Israel into line. Thus, the fact that the Middle Eastern oil producers were united in their rejection of the Egypt-Israeli peace treaty should be taken seriously, even if it is possible to point to subsequent strains in this rejectionist front. The Saudis were subsequently persuaded to breach their 8.5 million b/d ceiling at least in part because they were persuaded that the US would keep the pressure on Israel to behave generously toward the Palestinians. Assuming that they are disappointed with what has been delivered, then it is less likely that they will be persuaded to behave moderately (i.e. step up oil production; try to moderate OPEC price increases) in future crises. It is this range of cooperation which is put at risk should key AICs be seen to be condoning Israeli intransigence, with the real possibility that lack of a defensible settlement will lead to the destabilization of key regimes in the region with almost inevitable traumatic results for the world economy. We should, however, forget the idea that a satisfactory settlement will lead to Middle Eastern oil producers suddenly dropping their reservation about increasing oil production. The arguments for production-limitation do not turn round this single issue.

100. This is one of the key issues where the extremely visible involvement of the USA in Middle Eastern politics is as much a liability as an asset. Certainly, if Israel is ever going to be persuaded to take diplomatic risks, it is American support and pressure which will be the key. On the other hand, should anything go wrong with the US-Israeli relationship (say, the US loses its nerve for domestic electoral reasons: Israel just remains intransigent), then there is a real risk of a chain-reaction into the Arab oil-producing world, where regimes that are seen as being pro-American will come under strain.

101. Since we are thinking a decade ahead, it is possible to argue that the stability of the oil-producing world would potentially be improved by the West Europeans and Japanese consciously developing a role as friendly critic of US policies toward the Middle East. Assuming there is not much disagreement between the US and the EC about what kind of overall
N55 settlement is desirable in the Middle East (Note 55), there is plenty of scope for disagreement about tactics, particularly given the fact that the strength of the Jewish electorate in the United States may mean that there will be years at a time in which it is politically impossible for the USA to launch serious initiatives in this area. In these circumstances there would seem to be no harm if Europe and, perhaps, Japan became more active

lobbyists for the Arab viewpoint within the Middle Eastern debate (this assumes that the Israeli cause is well defended within the United States). At the very least, it should mean that, supposing there is a period of deadlock or worse over the Palestinian issue, there would be alternative blocs within the AICs which would not be seen as fundamentally being within the Israeli camp. Clearly, the USA will not be happy with the development of West European or Japanese initiatives in this area, but these would add diplomatic variety to an issue where the diplomatic choices are currently too stark for the political health of the Middle Eastern oil region.

102. The AICs should also consider their attitudes toward political change in Southern Africa. In the past, they have assumed that this is an area which, having little oil of its own, is irrelevant to the fate of the oil industry. They have drawn confidence from the fact that a company like Gulf, once thought badly endangered through its relationship with the Portuguese colonial regime in Angola, has managed to maintain its position even under such a radical post-Independence regime as the MPLA. However, there should be little grounds for complacency. There has been considerable controversy over the disclosures about the role western oil companies played
M56 in supplying the rebel Rhodesian regime in the 1960s and early 1970s (Note 56). Nigeria's nationalization of BP's assets was closely tied up with Britain's perceived unwillingness to take a tough line with White dominated regimes in Southern Africa. Most OPEC members now ban the sale of their oil to South Africa, and there is a real chance that, should the negotiations over Namibia go wrong, the United Nations will declare an oil embargo on South Africa.

103. Clearly, each AIC will have its views on how important the Southern Africa issue will be for international oil markets. Nigeria is certainly going to be involved and there can be little doubt that its oil policies will discriminate between friendly and hostile AICs on this issue. However, it is difficult to see other oil-producing countries determining their production levels as a direct or indirect result of developments in Southern Africa. On the other hand, should the situation slip into major bloodshed, (surely the most likely outcome?) one can see oil embargoes on South Africa being broadened to discriminate against countries which are somehow seen as being too closely involved with the white regime. Finally, companies with large visible subsidiaries in South Africa will be vulnerable to retaliation elsewhere in the oil producing world - inevitably this will involve some of the international majors who are already under pressure

elsewhere in the system.

.....Accelerated Conservation

104. Moving on from overtly political 'carrots', there are a range of more technical actions which AICs could use as incentives for the oil producers to behave relatively responsibly. Arguably, the first technical step which should be taken is, very visibly, to step up AIC commitment to cutting back oil demand. Clearly, there is a defensive aspect to this: the lower world oil demand is, the less pressures there will be on the oil price, and the less traumatic will years like 1979 be when leading oil-producers decide to produce at well below their potential. However, there are more positive arguments to be made for putting increasing symbolic weight on energy conserving measures. If we accept the analysis that the AICs are straining the political loyalty of those oil-producing regimes which have stepped up production in the wake of the 1979 Iranian crisis, then we should be aware that they are now implicitly arguing that there should be two sides to such decisions. If the leading oil producers are asked to court political unpopularity by increasing oil production, then the leading oil consumers should be equally bold in taking positive steps to reduce consumption. This is a theme which has been particularly stressed in Saudi statements this year. To take the views expressed by Sheikh Yamani in two recently published interviews:

> 'We increased our production. We did our part. It is now your turn to do something. .....I think we are losing control over everything. This is due to high consumption and the loss on control of the Rotterdam market and the spot market. The consumers are responsible for that. You have to do something about it before it is too late. ...I don't think the question is one of increasing supply. The question is one of reducing consumption drastically so that you, the consumers, can correct the balance.....I direct blame neither at OPEC nor the oil companies for the energy crisis. It is the consumer that is to blame.' (Note 57).

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105. Such arguments will irritate many in the AICs, who will be tempted to respond that the efficiency of their energy and oil usage has been steadily improving since 1973 (Note 58)--but this is to miss the point. All this steady progress counts for little if there is immediate squabbling over symbolic goals set at meetings like the July 1979 Tokyo Summit. The point is that symbols matter in the era we have entered. We are not trying to convince the Yamanis of the world with technical arguments, we are trying

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to influence the partly- or ill-informed within the oil producing world who are convinced that their 'noble' hydrocarbons are being gratuitously frittered away by irresponsibly self-indulgent western consumers. To allay the suspicions of such people, symbolic acts are important.

106. Clearly, this is not to argue that the AICs should stop the slow improvement of their existing energy policies. It is, though, to argue that the AICs should do more foreward thinking for the next year when we face a crisis like that of 1979. The principle of cutting back oil imports by a given percentage within a short time (as the IEA members accepted in the Spring of 1979) may be a necessary commitment which has to be made before one even starts trying to persuade key oil producers to step up production above their politically-safer, preferred ceilings. Next time round, these commitments must be strong enough to stick, in contrast to 1979 when the majority of governments lacked the will to enforce them.

.....Asset Maintenance

107. Money is obviously going to remain one of the strongest carrots for most of the oil producing states, but we will clearly continue to be faced with the problem of asking some regimes to produce oil at higher levels than they believe is economically necessary. In these circumstances, only the blindest AIC citizen would deny that amassing unspendable currency reserves is an unattractive option for the oil producers. At the very least, such reserves are inexorably eroded by apparently endemic global inflation. At worst (in the oil producers eyes), their overseas assets can be grabbed by key AICs like the United States in re-runs of the great US-Iranian money war of late 1979. It is not enough to point to the exceptional circumstances behind this latter dispute, and it has raised a whole series of questions which had better not have been asked.

108. Clearly, though, there should be continuous thought given throughout this decade to ways of reassuring reluctant producers that building up overseas assets is not a bad economic and political alternative to leaving oil in the ground. This is a debate which has been rattling round world financial circles for some years now but is none the less pressing for all that. One new aspect which must now be taken into account is the demonstration of US financial counter-measures against Iran. This indicates that the EC and Japan might each consider developing their own indexed-assets schemes for deployment at some future stage when some oil producers might be interested in modifying their production policies as part of an

explicit or implicit bargain. This development of regional schemes is particularly important if we decide that any conceivable indexed security at the global level would be vulnerable to aggressive legal challenges from an aggrieved, leading AIC.

109. Again, we should spend the decade refining our policies toward the oil producers' equity investments in AIC companies. There is something distinctly wrong when Kuwait, one of the countries with a chronic surplus problem, feels it should limit equity purchases to minor stakes (around 2-3 per cent) in western companies, as a result of the public hostility
N59 triggered when it tried making larger purchases around 1974 (Note 59). However, where it has been possible for oil-producers to take significant equity stakes, the quality of the companies available for such penetration have left a great deal to be desired. Can we really be sure that Middle Eastern and North African exposure in financially troubled companies such as Krupp, Montedison, Commenwealth Refining or, to a lesser extent, Fiat will not lead to at least one financial disaster which will scare off further investments from the oil producing world? Should not AIC governments be preparing public opinion for the fact that asking oil producing states to produce at relatively high rates entails giving them a good-quality home for their money? Only Italy currently seems to accept the logic of the new position, but then is this an economy one would really advise fledgeling international investors to start with? Should we not instead be thinking of encouraging oil producers to take minority stakes in companies like BP and Exxon?

.....Technology and Information

110. The fact that the AICs are the fount of most advanced technology is not a very potent bargaining card, though it is one which, with a bit of imagination, could be strengthened. For one thing, Ayatollah Khomeini's example shows there may well be periods in which key countries are led by people who believe they can turn their backs on western technology. In any case, there are very few technologies where it is not possible for a rich oil-producing country to acquire them by shopping around among the AICs and, increasingly, the so-called 'Newly-Industrializing Countries' such
N60 as Taiwan or South Korea (Note 60). When Saudi Arabia can deal with Taiwan for a fertilizer factory, with Japan for its desalination needs and with South Korea for a lot of its construction work, we should clearly forget about arguments that such oil-producing states can be kept in line through their technological dependence on AICs such as the United States. It is

even possible to extend this argument into the military field. Clearly, any Middle Eastern country wanting planes and missiles to rival those of Israel will still depend heavily on the USA or the Soviet Union. However, if the worry is internal security or disputes with neighbours (other than Israel), then virtually all needs can be satisfied from West European sources or, even, in part, from a country like Brazil.

111. This does not mean we should completely write off the technology card. Clearly there is an area around oil and gas production where interests of oil consumers and producers are very similar. There has been a period of some years in which many OPEC members have placed little stress on what we have earlier called 'Good Husbandry'. Exploration efforts have been half-hearted; efforts to enhance the recovery rate from existing fields have been routine; among the 'high absorbers' there has not always been an aggressive assessment of the opportunities high oil prices have given to developing non-traditional energy resources. However, it would be fair to say that much of the debate within OPEC circles about production-limitation reflects a growing awareness that such issues now require constant and urgent consideration.

112. In these circumstances, it should certainly be possible for international energy companies to capitalize on their experiences on the technological frontiers of energy production. Here, AIC policy-makers should watch developments in Venezuela--a country without some of extreme emotional reactions to foreign oil companies seen in other oil producing states such as Mexico--and which is consciously trying to 'fine-tune' the contracts under which such companies supply technologies and skills not possessed in Venezuela. I would argue that the relatively unemotional, calculated bargaining going on there is the model towards which most other OPEC members will more or less steadily approach. If I am right, then the AICs should do all they can to sharpen the awareness of oil-producing governments that it really is possible to get access to corporate technology on terms which do not inevitably offend national susceptibilities. The other side of the coin is that some AIC policy makers need to accept that service contracts will play an ever-increasing role in the industry, and that this need not add to instability in the industry.

113. More thought needs to be given to the role that AIC governments might play in the technology field. Certainly, there are bilateral, inter-governmental opportunities as instanced by the US-Saudi agreement to cooperate

on the development of solar power. Such opportunities are obviously open for exploiting by any AIC government which is distinctively active in some energy field and which can identify oil-producing states interested in the same area. On a multilateral basis one can identify the general AIC push into enhanced recovery techniques and into synthetic fuels--areas which are of growing interest to many of the oil-producers as well. In the longer-run, one suspects that the AICs' growing experience with energy conservation techniques may prove interesting to oil producing states who, for all their lectures to the AICs about curbing such usage, seem to be proving profligate energy consumers in their own right (though clearly starting from a much
N61 lower base) (Note 61). It is therefore important that AICs devote some time to identifying those research-intensive areas in which both they and the oil producers have common interests. It may not be possible to draw on such areas to launch diplomatic initiatives specifically calling on the oil-producers to raise production levels. But, on the other hand, any action which improves enhanced recovery technology will inevitably allow the high-absorbing oil producers a chance of increased production from a given set of reserves, thus benefitting both sides. We shall come back to this idea a few pages further on.

114. In the years immediately following the 1973-4 oil price explosion it was possible to put some substance into the Euro-Arab Dialogue by having detailed discussions on projections of industry developments in Petrochemicals
N62 and oil refining (Note 62). The fact that there were people on both sides of this exercise who found it useful, should not blind us to the growing ability of OPEC and other Third-World oriented bodies to do increasingly sophisticated projections on their own without calling for AIC help. However, there will always be areas in which there will be benefits from joint efforts, and there have been suggestions that a joint producer-consumer consideration of the future energy outlook could be one area
N63 offering scope for such cooperation (N63). This is not the sort of area which offers either side any potential leverage on the other, but no harm can come from identifying the common ground in perceptions of the future and one can hope that such efforts would at least help to avoid simple miscalculations (such as under- or over-estimating the extent to which energy conservation measures really can replace the need for steadily increased oil production).

.....The 'NOPEC' Card

115. The Energy-Deficient Developing Countries (EDDCs) are going to be

relatively worse affected by the 1979-80 oil price rises than by the 1973-4 ones, since they entered 1979 with considerably higher debts. Relieving the plight of these countries is thus becoming more, rather than less, urgent. Although the following comments may imply a somewhat cynical use of the EDDCs' plight, nothing should be taken to argue that the AICs should not be helping the EDDCs independently of any joint efforts that the AICs might enter into with the oil producers.

116. There is no doubt that the oil producers are vulnerable to the charge that their price hikes hit the EDDCs relatively harder than they do the AICs, which at least have some waste built into their energy usage. The non-Middle Eastern oil producers will know this because they are an integral part of regional Third World groupings: Venezuela cannot forget its Latin American and Caribbean neighbours, nor can Indonesia divorce itself from the needs of ASEAN. The Arabs have found themselves under increasing pressure from the African states who, through the Organization of African Unity, have shown themselves more and more unwilling to follow the Arab line on Middle Eastern matters. On an even wider level, OPEC members are finding it more difficult to keep discussion of oil policies out of fora like UNCTAD and the Group of 77.

117. However, OPEC still has the Third World fairly well under control. For one thing, the aid performance of OPEC members is proportionally more generous than that of the AICs. Secondly, most OPEC members have gone to considerable lengths during 1979 to see that EDDCs have had their supplies maintained and, in many cases, there have been undisclosed price discounts and, in the Iraqi case, loans to compensate for increased oil prices. Thirdly, OPEC members still champion most of the causes dear to the heart of the Third World in General, so that, whatever the intra-Third World tensions on oil matters, the AICs are still seen as common adversaries on most other economic issues. Perhaps the state of OPEC members' thinking is best exemplified by Iraqi proposals for a joint OPEC-AIC effort to compensate the EDDCs for the combination of higher oil prices and of
N64 inflation exported from the AICs (Note 64). OPEC members really do not believe that they contribute much to world inflationary levels, and they do not see why they should be expected to carry the blame for the bulk of the ills of the Third World.

118. This proposal for an AIC-OPEC fund is almost certainly a non-starter. Whereas most OPEC members could probably be persuaded to accept some version

of it, it is difficult to see any AIC agreeing to join. But this should not stop the AICs thinking of ways of identifying aspects of the EDDCs' plight where a common approach might be politically acceptable. The generally positive reaction which the World Bank has won from both sides for its decision to step up lending in the energy sectors of the EDDCs clearly indicates where this policy search should go. It is in the interests of the AICs that more reserves of oil and other energy sources should be discovered within the Third World. At worst, the lucky LDCs will speedily develop any discovered resources since, almost by definition, these will be high absorbing countries. At best, some more 'Mexico's' or 'mini-Mexico's' will be discovered--and, though not promising miracles, the World Bank is generally bullish about the potential for oil and gas discoveries in the
N65 non-OPEC Third World (Note 65). It should however be possible to generate initiatives which go beyond the mere oil exploration stage. For instance, the EDDCs have potential sources of energy which deserve more technological attention, so, should the idea of AIC-OPEC collaboration in the energy-research field be developed, then it would be a small step to involve the EDDCs as well (in fact OPEC would probably insist on their inclusion anyway).

.....Market Access

119. As the OPEC members continue to industrialize, they will develop an ever-increasing flow of hydrocarbon-based exports (petrochemicals and refined oil products to start with: energy intensive products like steel and aluminium
N66 in the longer-run). As I've argued elsewhere (Note 66), there will be a temptation for the AICs to be obstructive but, should the AICs accept that the oil market is likely to be dangerously tight in the 1980s, they might consider giving some understandings to key oil producers about the treatment such products will be given when they start to flow in significant quantities in the later 1980s. This will mean opening some industrial policy debates to oil-linked considerations, and this should happen sooner rather than later. For instance, the current dispute in petrochemical and textiles about the competitive advantage which the US is gaining over the EC industry through its access to cheap gas, is virtually identical with the debate which will come when Middle Eastern gas-based products emerge. Some countries like Japan seem resigned to persuading their industrialists to adjust to this development by taking part in the relevant projects in the oil-producing world. In West Europe, more advance thinking is needed about how Brussels might react to demands that it assure oil producing states of unfettered future market access.

120. We should also bear in mind the growing importance of the gas trade for OPEC members. It seems difficult to believe that, should there be serious oil production shortfalls in the 1980s, available gas supplies will not be snapped up instead. However, there are countries like Kuwait with LPG (Liquefied Petroleum Gases) plans for which they have not yet found the necessary number of future clients. At the very least, AICs should think through the implications of OPEC's greater stress on gas. At the extreme, AICs should assume that oil producers will increasingly insist on keeping oil production down to levels permitting the disposal of most of the associated gas. Anything which can be done to dispose of such gas will thus dispose of one barrier to raising oil production.

.....Oil Pricing Mechanisms

121. One recurring complaint from OPEC's members is the fluctuating value of the Dollar and the eroding impact of global inflation on oil prices. The proposed remedies have ranged from the Geneva 'basket' of currencies to a series of progressively planned increases aimed at covering the effect of inflation and dollar fluctuation, along with the explicit goal for the mid-1980s of moving the oil price steadily toward parity with the price
N67 of alternative energy sources (Note 67).

122. Once again, this is a relatively well-worn debate which will undoubtedly recur throughout the 1980s. It is, of course, possible for AIC policy makers to scoff at the desirability of such steps. The damage which might be done to the Dollar if oil transactions were denominated in other currencies will remain, though this will presumably decline rapidly as a serious consideration during the 1980s? How does one define the alternative energy sources whose price should determine that of oil? How can one set future prices when we are extremely unclear how much oil is likely to be available during the decade under even the most favourable assumptions? In any case, the argument goes, OPEC is perfectly capable of unilaterally adjusting crude prices, so why the need for any automatic indexing?

123. Against this, one can argue that the unpredictability of upward oil price movements is an important factor in destabilising world economic growth. Allowing inflation to erode the value of oil prices merely means that when the compensatory jump comes, it does so in a much more fevered, unsettling jump than if there was some mechanism for automatically (semi-annually?) adjusting the price of marker crudes to take world currency and inflation movements into account. Clearly, in a year like 1979, no

mechanistic system would have worked with open market prices so far above those of official marker crudes. But one can debate whether OPEC members' dissatisfaction with the falling real value of oil prices over the preceding years may not have been a contributing factor to the somewhat frenzied reactions to the events of this year. If one accepts that there is cause-and-effect at work here, leading from eroding oil prices, to OPEC over-reaction, to over-deflationary responses by AIC economic policy makers, then one might want to at least indicate to OPEC members that the world economy might perform better if they attempted to raise oil prices by regular installments, rather than making major adjustments once every three or four years.

.....'Club' Membership

124. The general argument behind this paper is that we should try to maintain diplomatic relations between the AICs and the leading oil producers on as relaxed a level as possible. This does not mean that either side stops arguing its case, but it should mean that it is possible to fashion creative compromises which would be impossible in times of confrontation. The AICs can obviously help this process along by treating the oil producers' preoccupations courteously rather than by rejecting them out of hand. One important further step, though, is gradually to involve the leading oil producers in international circles which have traditionally been the preserve of the AICs. Thus, given the importance of the Saudis to the world financial system, it was only commonsense to give them an Executive Directorship of the IMF, in recognition of the fact that Saudi Arabia has become one of the Fund's two largest creditor members. Again, we should approve the fact that the IMF's Interim Committee is now willing to permit OPEC's Secretary
N68 General to attend at least some of its discussions (Note 68). Mexico has been encouraged to join the GATT, and there are some indications that Saudi Arabia may do so as well during the next couple of years.

125. We should approve all such steps, even if they will not necessarily lead to decisions to set more generous oil production policies. We should note, though, that most attention has been paid to coopting Saudi Arabia in this way. Perhaps the time has come to think more about similarly involving the next tier of high-surplus oil-producers---Kuwait, Iraq and the UAE. Clearly, any initiatives will have to be tailored to the specific interests of each country but, for instance, given Kuwait's generally constructive role in using its oil surpluses, it probably deserves some symbolic recognition. At the very least, the AICs should treat such

countries with respect by notifying them of major financial developments at least as fast as they notify other AICs (the fact that the Saudis have been informed of imminent US financial actions even before major West European powers seems to show a defensible order of priorities).

A Residual Role for Defensive Measures?

126. In putting most of the emphasis on developing incentives and rational arguments to persuade OPEC members to follow generous oil policies, I am not suggesting we should totally reject more negative pressures. What I am suggesting, though, is that gratuitous confrontation and abrasive diplomacy are likely to be counter-productive and lead to the very mean-spirited production policies we are trying to avoid.

127. It is, however, still important for the AICs to insist on taking some defensive measures, such as the building up of strategic stockpiles and the fine-tuning of Emergency Allocation programmes. Of course, OPEC members will perceive these as being aimed primarily at them, but events since the Shah's fall in Iran demonstrate that there will continue to be unplanned events in the oil-producing world against which the oil-importing world has every right to take precautions. If the AICs want to put a positive gloss on such steps, they might point out that such steps would be less necessary should key oil producers (these ought to include Britain and Norway) install surplus productive capacity which could be brought into action under agreed circumstances--a bit like the existing IEA emergency allocation scheme which is to be triggered under clearly defined conditions. Clearly, there would be plenty of difficulties in defining the circumstances under which an emergency would be declared and in deciding who would finance the necessary capacity construction. It might, however, be possible to bring in innovative financial incentives as part of any package--i.e. oil produced during a formal emergency would be paid for in some inflation-proofed asset.

128. Much more controversial is the question of how much effort the AICs should put into strengthening their bargaining position with OPEC members on routine pricing decisions. The AICs should never forget the need for some such strengthening, since the OPEC members are a classic oligopoly (note, not 'cartel') faced with numerous, weak and divided customers. Like all oligopolies, it will require super-human restraint on the part of the producers if the interests of the consumers are not to be badly affected. In the past, the international oil companies were big and powerful enough to act as effective counterweights to the incipient producing-government

oligopoly, so that the AICs did not have to worry too much. Today, the situation has changed. Certainly, there are still some economic advantages to be gained from the sheer scale of the purchasing needs of companies like Exxon. On the other hand, these are private companies faced by sovereign, sometimes irrational governments. No company needs reminding of the companies which have been arbitrarily ejected from countries such as Libya and Nigeria. The international oil companies currently see their role as maintaining workable relations with the leading oil-exporting countries. This means there is a limit to how aggressively they will seek to exploit divisions within the OPEC ranks.

129. Consumer governments are no stronger counterweights. Many of them are poor EDDCs, for whom oil supplies are almost a matter of national survival. The supply of oil is more important to them than its price. Even when we move to governments as powerful as those of Italy and France, they prove half-hearted negotiators since they are as interested in opening up export markets in the oil producing world as in minimising the prices they are willing to pay for crude.

130. The time, however, is not ripe for a major attempt by the AICs to improve their bargaining power as consumers. Their immediate needs should be to encourage the OPEC members to develop stable production policies and it will only be during the 1980s that both sides will see whether there is enough supply flexibility for the AICs to start bargaining harder. Clearly there is a lot that the AICs can do to improve future supply flexibility--they can encourage the development of Third World resources, improve the efficiency of their own energy usage and seek to increase their production of non-traditional energy sources. Ultimately, though, the AICs will probably have to wait to see how energy markets develop. This does not mean that a major oil importer like the United States should not consider suggestions such as that by Adelman for launching an import ticket system (though the economic gains currently are probably outweighed by the diplomatic
N69 hostility such a scheme would draw from the oil-producing world) (Note 69). Again, quite clearly, the AICs are well advised to push ahead with their plans for registering oil imports, since this should, in future crises, give their governments rather more leverage over their more panicky members and over the increasing number of end-user companies which have suddenly been forced into world markets by the rapid curtailment of the international marketing role of the traditional majors. Any intra-AIC collaboration to limit prices paid on the open market will marginally reduce the importance

of spot market signals to OPEC that the time has come for another round of oil price hikes.

131. However, until we get a clearer sense of the medium-term political stability of key OPEC producers and, once that is settled, a better understanding of what their production policies are likely to be, major AIC initiatives on the price front would probably be mistaken.

Institutions

132. In the second half of this paper, there has been relatively heavy analysis of the various incentives the AICs might offer the oil producers in return for more generous oil policies during the 1980s. This has left relatively little space for a discussion of the institutions through which initiatives might be launched. This apparent lack of institutional coverage does not matter too much, precisely because all options have to be left open until we see how the 1980s develop. We should not yet be spending too much time in deciding that certain initiatives should be launched through given institutions. The AICs should be aware of the full range of incentives with which they can play, and should sit back and respond to developments within the oil producing world with initiatives specifically tailored to the evolving circumstances.

.....Global Approaches: North-South Dialogues and the United Nations

133. There are consistent efforts to get energy matters discussed at a global level. The Conference on International Economic Co-operation (CIEC or the 'North-South Dialogue') was an interesting first attempt to put energy issues into a wider context but came to an inconclusive end in June 1977. Despite its apparent failure, it did at least mark an important step forward in the process of integrating leading oil-producers into the world financial
N70 'club' (Note 70).

134. The AICs have little to gain from a re-run of such an exercise. Formal and informal links with OPEC members are steadily improving, and the key stumbling-block remains--OPEC members are determined not to sit down at any table to negotiate about their production and pricing policies. They see these as matters of national sovereignty, with the result that any global exercise in which OPEC is involved will remain of marginal interest to AICs. This is not to say that positive results cannot be gained from the proposed UN conference to be held in 1981 on New and Renewable (Energy?) Resources. For instance, the idea of some UN International Energy Institute is consistently

being floated. Initially, this was proposed by Secretary-General Waldheim, but it was dropped as a result of OPEC's suspicions that oil prices would be brought up under its auspices. More recently, this idea was floated again
N71 by Mexican President Lopez Portillo (Note 71). Whatever the initial reaction to such a proposal, there is a great deal of logic behind it. As argued earlier, there is a crying need for some research-oriented institute which will concentrate on problems concerning the EDDCs, OPEC members and the AICs. The AICs should probably give any such proposals a good welcome. It would be logically complementary to the work the World Bank is starting to do in the energy area, and could very easily be made to be complementary to the existing research effort of the International Energy Agency. In general, though, it is difficult to get too excited by proposals for throwing energy matters into the United Nations. If the Group of 77 insists on further global talks to discuss energy in the same breath as the usual range of North-South issues, the AICs should only go along if they sense that the leading OPEC members are enthusiastic.

135. It is probably far too soon to be proposing specific OPEC-OECD talks on anything except the most general issues. Before entering such talks, OPEC would have to be willing to see itself as deliberately turning its back on wider Third World interests and, in any case, the OECD is not geared up to coordinate such a Dialogue. On the other hand, one can see functional issues which might encourage OPEC-OECD links sometime in the future. OECD's IEA affiliate would be a logical partner in discussions about energy research and about long-term energy projections; similarly, should the problem of excess capacity in the refining and petrochemical industries become serious, one can see OPEC holding discussions within relevant OECD industrial working parties (though UNIDO shows signs of becoming quite a useful agency for the early identification of capacity problems in industries such as petrochemicals and fertilizers).

Regional Approaches

136. Most substantive issues will probably be discussed in less neat institutional frameworks, with both regional and bilateral approaches being used. Institutionally, this will be messy, but if the end result is to modify oil production policies in more generous directions, that is all which should concern us.

137. It is not accidental that the Euro-Arab Dialogue, despite setbacks, continues to be discussed. In its original form, it was probably running

out of steam even before the Egyptian-Israeli peace treaty gave it a coup de grace. Although there were some quite useful discussions in the industrialization area, serious questions have to be asked about whether the Arab League was the right partner at the Arab end and about the level
N72 of people involved (Note 72). There are signs that some Dialogue between the EC and some grouping of oil producers is going to re-emerge. Initial soundings between the EC Commission and OPEC's Long-Term Strategies Group proved somewhat abortive thanks to differing perceptions about the value of
N73 newspaper publicity (Note 73). However, Kuwait and France have been actively promoting the idea of a meeting between the EC and the Arab Gulf states: there is still uncertainty on the Arab side as to which countries might get involved, and, on the European side, of what positive outcome might be
N74 expected (Note 74). Given the relatively closer economic ties of the Arab oil producers to West Europe rather than other trading blocs, there is a strong logic behind attempts to strengthen the links across the Mediterranean and down the Gulf. However, within the context of trying to improve the oil-trading environment during the 1980s, there are other grounds for encouraging such developments. For one thing, as argued earlier, it is desirable that the oil-producers open dialogues with groups of AICs which can act as alternatives or counterweights to the USA. Secondly, there are a series of technical issues from energy forecasting to discussion of market access which are suitable for regional discussion. Used imaginatively, it is not difficult to think up some proposals for building on the initial Euro-Arab Dialogue's discussions about technological cooperation between the two blocs.

138. It is more difficult to see what might develop in the Western Hemisphere. Clearly, the US will continue talking to Mexico and Venezuela. What is less clear is whether some North American or Western Hemispheric energy market is feasible. The need for the Mexicans (and Canadians) to prove their independence from the United States runs very deep, and the Mexicans probably have a confidence in their indigenous political stability and technological capabilities which is stronger than that found among Middle Eastern oil producers. In particular, Mexico's willingness to join one of the International Energy Agency's research projects is an indication that it may play an increasingly important role as an oil producer with feet in both the Third World and AIC camp. In certain areas (such as trade diplomacy), the US has been showing growing sophistication in its relations with Mexico; what has to be proved is whether Washington can consistently tread the delicate path through the minefields of anti-Yankee nationalism both in

Mexico and Venezuela.

Intermediaries

139. Mention of Mexico's potential half-way role, should remind one of other countries which might develop such roles. Two which spring to mind are Britain and Norway, whose oil reserves may give them some role as honest brokers between the two sides. Perhaps too much can be made of such arguments, but the Norwegians have been quite active in this area, holding a Norwegian-OAPEC seminar in the autumn of 1978. Clearly, links are growing between the national oil companies of Britain and Norway and those of various OPEC members, but it is still too early to see what the long-term importance of such countries may be--as it is equally too soon to see what role the French and Italians will play with their relatively great willingness to dissociate themselves from American positions on the Middle East.

Conclusion

140. In general, although there are dangers that the AIC camp will fall to pieces in an orgy of competitive direct deals with the oil producers, there are positive grounds for encouraging individual countries or regions to develop their own distinctive relationships with the oil producing world. As long as direct deals either add to the absorptive capacity of the oil producers or encourage the additional production of oil which would not otherwise have been forthcoming, then there is a net gain to the world economy. It should be to everybody's benefit that the oil producers diversify their economic and diplomatic relations. However, there may be costs involved in such diversity. Competition between states may lead to a too easy acceptance of high marginal prices, which may play havoc with the mainstream price structure. In times of crisis, the kind of oil-sharing arrangements which have been formally accepted by the AICs since the 1973-4 crisis could fall to pieces, with each country involved in direct deals refusing to put 'its' oil in the communal pool for reallocation (and here, France's unwillingness to join the IEA is clearly unhelpful). Competition may lead to a totally reckless disregard of special interests (say, those of Israel) which are seen as standing between individual AICs and available sources of oil. So, given such dangers, it is important that bodies like the EC play a role in this broadening of oil-related relationships, in that it should help keep the potentially irresponsible AICs a bit closer to responsible paths. Letting the oil producers play off the USA, the EC and Japan is probably beneficial to the long-term interests of the AICs in general. Letting them play off every AIC against every other is probably not. The secret will be in drawing and maintaining the dividing line where AIC tensions move from being creative to destructive.

NOTES

1. SOCAL figures of June 1973, cited in Church Report (Report to Sub-committee on Multinational Corporations of the US Senate Committee on Foreign Relations) Multinational Oil Corporations and US Foreign Policy (Washington: US Government Printing Office) p.722.

2. M.A. Adelman has had this dollar-a-barrel projection hung round his neck, though I cannot find an exact reference. Much to John Kenneth Galbraith's amusement, Milton Friedman also went on record in 1974 predicting that the increases in the price of crude oil after the 1973-74 oil crisis could not be sustained, and that the OPEC Cartel would collapse (New York Review 27 September 1979, p.3).

3. Louis Turner, Oil Companies in the International System (Hemel Hempstead: Allen and Unwin/RIIA, 1978), p.55.

4. OECD Economic Outlook (July 1979), p.60.

5. Robert Belgrave, cited in Petroleum Intelligence Weekly, 8 October 1979, p.7.

6. 'Conceptual Perspective for a Long-Range Oil Policy', Middle East Economic Survey (Supplement), 17 September 1979, p.3.

7. 'Crossing the Energy Bridge', Middle Eastern Economic Survey (Supplement), 15 October 1979, p.11.

8. 'OPEC Oil: Recent Developments and Problems of Supply', Middle East Economic Survey (Supplement) 24 September 1979, p.3.

9. See also Ali M. Jaidah, 'OPEC Policy Options', Middle East Economic Survey (Supp.) 15 October 1979, pp.15-20: Fadhil J. Al-Chalabi, 'The Concept of Conservation in OPEC Member Countries', ibid. pp.21-31.

10. Middle East Economic Survey, 24 September 1979, p.ii.

11. Middle East Economic Survey, 8 October 1979, p.7.

12. Al-Chalabi, op.cit., p.23.

13. 'This type of statistical analysis makes no distinction between the relative oil potential of different sedimentary basins, which cover a very wide range, and is also open to subjective judgement as to what is the size of the prospective area in any country.' This means that the relatively low density in OPEC countries can be due to the extremely favourable conditions there, such as the existence of particularly large individual fields (D.G. Fallen-Bailey, and T.A. Byer, Energy Options and Policy Issues in Developing Countries (Washington, D.C.: World Bank Staff Working Paper No. 350, 1979), pp.31, 34.

14. Fallen-Bailey, op.cit., p.34, citing Grossling.

15. Al-Chalabi, op.cit., p.23.

16. Financial Times, 23 October 1979.

17. Financial Times, 23 March 1979.

18. International Herald Tribune, 9 November 1979.

19. Church Report (US Senate Foreign Relations Committee), April 1979 (?).

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21. Louis Turner and James M. Bedore, Middle East Industrialization (London: Saxon House, 1979).

22. New York Times, 11 June 1979.

23. Financial Times, 20 September 1979.

24. Dr Ahmad Al-Tuwaijri, Bulletin of the Committee for Middle East Trade (No. 4, July 1979), pp.30-2.

25. International Financial Statistics.

26. Petroleum Intelligence Weekly, 19 November 1979.

27. Middle East Economic Survey, 8 October 1979, p.5: F.A.R. Kadhim and A. Al-Janabi, 'Domestic Energy Requirements in OPEC Member Countries', Supplement for OPEC Seminar (Vienna, 3-5 October 1979) p.26.

28. Middle East Economic Survey, 22 October 1979, p.7.

29. Petroleum Intelligence Weekly, 12 November 1979, p.11.

30. Fereidun Fesharaki, 'Politics May Compel Slash in Iran's Oil Exports', Petroleum Intelligence Weekly (Supp.), 24 September 1979: 'Iran's Energy Picture after the Revolution', Middle East Economic Survey (Supp.), 3 September 1979.

31. Fesharaki, op.cit. (PIW), p.3.

32. CIA, op.cit., p.5.

33. Petroleum Intelligence Weekly, 12 November 1979, p.11: International Energy Statistical Review, 22 August 1979, p.1.

34. Financial Times, 26 March 1979, p.22.

35. Middle East Economic Survey, 15 October 1979, p.6.

36. Dr Odeh Aburdene, First National Bank of Chicago, cited in The Times, 16 November 1979.

37. Financial Times, 26 June 1979.

38. Middle East Economic Survey, 19 November 1979, p.e.

39. CIA, opt.cit., p.50.

40. International Herald Tribune, 30 August 1979.

41. Petroleum Intelligence Weekly, 8 October 1979, p.11: 14 May 1979, pp.4-5.

42. International Herald Tribune, 9 August 1979.

43. Franklin Tugwell, The Politics of Oil in Venezuela (Stanford: Stanford University Press, 1975), p.135.

44. A variety of sources.

45. Financial Times, 30 August 1979.

46. Los Angeles Times, reprinted in International Herald Tribune, 19/20 May 1979.

47. CIA, op.cit. pp.74-6.

48. International Herald Tribune, 6 November 1979.

49. World Financial Markets, October 1979, p.16.

50. Petroleum Intelligence Weekly, 8 October 1979, p.8.

51. Economist, 3 November 1979, p.57.

52. See Turner, op.cit. pp.179-186 for a discussion of the role played by the oil companies under the International Energy Agency.

53. This issue is dealt with in some depth by Valerie Yorke, Arabia and The Gulf in the 1980s (forthcoming Chatham House Paper): James E. Akins, OPEC Actions: Consumer Reactions 1970-2000 (Paper to OPEC Seminar, Vienna, 3-5 October 1979).

54. See Yorke, op.cit.

55. See Yorke, op.cit.

56. Martin Bailey, Oilgate: The Sanctions Scandal (London: Hodder & Stoughton, 1979).

57. Middle East Economic Survey, 5 November 1979, p.1: 22 October 1979, p.6.

58. OECD Economic Outlook, July 1979, pp.56-65: Oil Crisis....Again? (London: British Petroleum, September 1979), pp.8-12: This improvement can also be inferred from OPEC's Annual Report, 1978, pp.63-65.

59. Personal communication from Zuhayr Mikdashi.

60. Louis Turner et al, The Newly-Industrializing Countries (forthcoming Chatham House Paper).

61. Kadhim and Al-Janabi, op.cit.

62. Turner and Bedore, op.cit., pp.110-6 et passim.

63. David Howell, Towards a New Interdependence (statement to OPEC Seminar, Vienna, 3-5 October 1979), p.3.

64. Tayeh Abdul-Karim, OPEC: Challenges of the Present and Strategy for the Future (OPEC Seminar, Vienna, 3-5 October 1979), pp.5-6: this idea has also been put forward by Peter R. Odell and Luis Vallenilla, The Pressures of Oil: A Strategy for Economic Development (London: Harper & Row, 1978).

65. Fallen-Bailey and Byer, op.cit.

66. Turner and Bedore, op.cit.

67. Nordine Ait Laoussine, 'Structural Changes in the World Oil Market', Middle East Economic Survey (Supp.), 8 October 1979.

68. IMF Survey, 15 October 1979, pp.313-4.

69. .....

70. Louis Turner and Audrey Parry, 'The Next Steps in Energy Co-operation', The World Today, March 1978, pp.89-99.

71. New York, 27 September 1979.

72. Turner and Bedore, op.cit., pp.110-16, et passim.

73. 16 July 1979, p.9.

74. Petroleum Intelligence Weekly, 1 October 1979, p.4.

TABLE 1

OIL EXPLORATION DRILLING DENSITY, 1976

	Petroleum Prospective Area (Million Sq. Miles)	Drilling Density (No. of wells per thousand sq. miles of petroleum prospective area)
World(1)	30.5	109
Industrialized Countries	9.0	290
(of which US)	(3.1)	(780)
Non-OPEC Developing Countries	12.9	7
(of which Oil Importing)	(8.6)	(5)
OPEC Countries	4	20

(1) Does not include centrally planned economies.

Source: Note 14

TABLE 2

COUNTRY: SAUDI ARABIA

POPULATION (m): 7-8 INDIGENOUS (%): 70 G.N.P. ($ b): 55.8 (1977) 58.2 (1978?)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES ($ b):		OIL RESERVES (b bbl):
1973	7.3 (7.6)(2)	73	7.0 (7.3)(2)	73	8	165.7
74	8.4 (8.5)(2)	74	7.9 (8.2)(2)	74	31.2	
75	7.0 (7.1)(2)	75	6.6 (6.9)(2)	75	28.0	GAS RESERVES (t m^3):
76	8.5 (8.6)(2)	76	8.0 (8.4)(2)	76	36.6	2.7
77	9.2 (9.2)(2)	77	8.6 (8.9)(2)	77	41.4	
78	8.3 (8.3)(2)	78	7.7 (8.1)(2)	78	38.9	
79	(9.2)					Reserve: PRODUCTION Ratio ( ) (Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):		CURRENT ACCOUNT:		BORROWINGS ($ b): INTL BONDS	LOANS	OVERALL BALANCE:	
1973	5.2	73	2.2	73 -	Neg	73	1.6
74	8.1	74	23.0	74 -	-	74	17.9
75	12.5	75	13.9	75 -	-	75	8.8
76	21.5	76	13.3	76 -	-	76	3.7
77	28.0	77	12.8	77 Neg	.1	77	.8
78	(37.0)	78	3.9	78 -	(.1)	78	-8.9
79		79	15.6	79		79	2.7

CUMULATIVE FINANCIAL RESERVES

1973	4.6 - Sama's Foreign Assets.(1)
74	19.9
75	39.0
76	51.2
77	59.2
78	58.5
79	$66 bn US Treasury Paper + Bank Deposits(2)

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION:	10.5	
HIGHEST-EVER PRODUCTION	:	9.2 (1977, 9)
ESTIMATES FOR 1980	:	8.5-9.5

		OIL PRICES ($)								
OIL REVENUE FROM: ($ bn)		20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports:	(8.5)	62.1	77.6	93.1	108.6	124.1	139.6	155.1	170.6	186.2
---25% cutback:		46.7	58.4	70.1	81.8	93.4	105.1	116.8	128.5	140.2
---Possible 1985 Exports:		76.6	95.8	115.0	134.1	153.3	172.5	191.6	210.8	230.0

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 79.2 ($ bn)

15%: 113.2

20%: 159.1

25%: 220.5

Sources: See Appendix

(1) I.F.S.

(2) Includes Share from Neutral Zone. (?)

TABLE 3

COUNTRY: IRAN

POPULATION (m): 35.2 INDIGENOUS (%): - G.N.P. ($ b): 75.1 (1977)

OIL PRODUCTION (m b/d):	EXPORTS (m b/d):	OIL REVENUES ($ b):	OIL RESERVES (b bbl):
1973 5.9	73 5.4	73 5.7	59.0
74 6.1	74 5.5	74 20.9	
75 5.4	75 4.9	75 19.2	GAS RESERVES (t m^3)
76 5.9	76 5.3	76 22.8	14.2
77 5.7	77 5.0	77 23.6	
78 5.2	78 4.5	78 21.8	
79 (2.9) 3.3(12.79)			

Reserve: PRODUCTION Ratio ( ) (Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):	CURRENT ACCOUNT:	BORROWINGS ($ b) -INTL BONDS	-LOANS	OVERALL BALANCE
1973 6.6	73 .2	73 Neg	.7	73 -.1
74 10.4	74 12.3	74 -	.1	74 7.0
75 18.2	75 4.7	75 -	.2	75 .1
76 22.1	76 4.6	76 Neg	1.4	76 .4
77 22.9	77 5.1	77 .1	1.2	77 3.4
78 (20.0)	78 1.1	78 (Neg)	1.1	78 -.7
79	79 5.7	79 ( )	(-)	79 3.9

CUMULATIVE FINANCIAL RESERVES

1973	1.0
74	6.8
75	7.6
76	7.6
77	10.1
78	9.3

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION	:	4.5
HIGHEST-EVER PRODUCTION	:	6.1 (1974)
ESTIMATES FOR 1980	:	3.0-3.5 (MEES 3.12.79. p.1)

	OIL PRICES ($)								
OIL REVENUE FROM: ($ bn)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (3.0)	21.9	27.4	32.9	38.3	43.8	49.3	54.8	60.2	65.7
--25% cutback:	16.4	20.5	24.6	28.7	32.9	37.0	41.1	45.2	49.3
--Possible 1985 Exports:	29.2	36.5	43.8	51.1	58.4	65.7	73.0	80.3	87.6

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%:	42.8 ($ bn)	No Growth:	20.0
15%:	61.2	5% :	29.5
20%:	86.0		
25%:	119.2		

Sources: See Appendix

TABLE 4

COUNTRY: IRAQ

POPULATION (m): 12.3 INDIGENOUS (%): G.N.P. ($ b): 16.0 (1976) 18.3

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES ($ b):		OIL RESERVES (b bbl):
1973	2.0	73	1.9	73	1.9	32.1
74	2.0	74	1.9	74	6.5	
75	2.3	75	2.1	75	8.2	GAS RESERVES (t m^3)
76	2.4	76	2.3	76	9.1	
77	2.5	77	2.2	77	9.5	.8
78	2.6	78	2.4	78	10.8	
79	(3.4)					

Reserve: PRODUCTION Ratio ( ) (Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):		CURRENT ACCOUNT:		BORROWINGS ($ b): -INTL BONDS	-LOANS	OVERALL BALANCE:	
1973	1.6	73	.8	73 -	-	73	.7
74	4.7	74	2.6	74 -	-	74	1.9
75	5.9	75	2.7	75 -	.5	75	-.5
76	n.a.	76	3.7	76 -	-	76	n.a.
77	n.a.	77	4.5	77 -	-	77	n.a.
78	n.a.	78	5.6	78 -	(.2)	78	n.a.
79		79	9.1	79 -	(-)	79	n.a.

CUMULATIVE FINANCIAL RESERVES

1973	1.3
74	2.7
75	2.3
76	4.0
77	5.8
78	n.a.

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION: 3.8
HIGHEST-EVER PRODUCTION : (3.4) (1979)
ESTIMATES FOR 1980 : 2.7 ? (MEES 3.12.79)

		OIL PRICES ($)								
OIL REVENUE FROM:	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (2.5)	18.3	22.8	27.4	31.8	36.5	41.1	45.5	50.2	54.8
--25% cutback:	13.9	17.3	20.8	24.3	27.7	31.2	34.7	38.1	41.6
--Possible 1985 Exports:	26.3	32.9	39.4	46.0	52.6	59.1	65.7	72.3	78.8

1985 Income needs assuming annual incremental needs (1975-85) of:

10%: 15.3
15%: 23.9
20%: 36.5
25%: 54.9

Sources: See Appendix

TABLE 5

COUNTRY: KUWAIT

POPULATION (m): 1.3 INDIGENOUS (%): 45 G.N.P. ($ b): 12.6 (1976) 13.9

OIL PRODUCTION (m b/d):	EXPORTS (m b/d):	OIL REVENUES ($ b):
1973 2.8 (3.0)(2)	73 (2.8)(2)	73 3.0
74 2.3 (2.5)(2)	74 (2.4)(2)	74 9.3
75 1.8 (2.1)(2)	75 (1.9)(2)	75 7.8
76 2.0 (2.1)(2)	76 (2.1)(2)	76 9.2
77 1.8 (2.0)(2)	77 (1.9)(2)	77 9.1
78 1.9 (2.1)(2)	78 (2.1)(2)	78 9.6
79 (2.3)		

OIL RESERVES (b bbl): 66.2

GAS RESERVES ($t m^3$) 1.0

Reserve: PRODUCTION Ratio ( ) (Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):	CURRENT ACCOUNT:	BORROWINGS ($ b) -INTL BONDS	-LOANS	OVERALL BALANCE:
1973 n.a.	73 1.2	73 -	-	73 1.1
74 n.a.	74 6.1	74 -	-	74 5.6
75 3.3	75 5.9	75 -	-	75 3.9
76 4.4	76 6.7	76 -	-	76 3.1
77 6.3	77 4.6	77 -	.1	77 4.9
78 6.3	78 6.5	78 (.6)	(.2)	78 2.4
79	79 9.8	79 -	(-)	79 5.7

CUMULATIVE FINANCIAL RESERVES

1973	.4(1)
74	1.2(1)
75	1.4(1)
76	1.7(1)
77	2.5(1)
78	2.0(1)

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION:	2.5
HIGHEST-EVER PRODUCTION :	3.0 (1972)
ESTIMATES FOR 1980 :	1.5 ? (MEES 3.12.79)

OIL PRICES ($)

OIL REVENUE FROM: ($ bn)		20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports:	(1.5)	11.0	13.7	16.4	19.2	21.9	24.6	27.4	30.1	32.9
--25% cutback:		8.0	10.0	12.0	14.1	16.1	18.1	20.1	22.1	24.2
--Possible 1985 Exports:		14.6	18.2	21.9	25.6	29.2	32.8	36.5	40.2	43.8

1985 Income needs assuming annual incremental needs (1978-85) of:

10%: 13.5 ($ bn)

15%: 19.3

20%: 27.1

25%: 37.5

Sources: See Appendix

(1) The IFS figures are totally misleading about Kuwaiti reserves.

(2) Includes Neutral Zone.

TABLE 6

COUNTRY: U.A.E.

POPULATION (m): 1 INDIGENOUS (%): 25 G.N.P. (Ø b): 12.93 (1977)(GDP) 10.81

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES (Ø b):	
1973	1.5	73	1.5	73	1.7
74	1.7	74	1.7	74	6.2
75	1.7	75	1.7	75	6.7
76	1.9	76	1.9	76	8.1
77	2.0	77	2.0	77	9.1
78	1.8	78	1.8	78	8.7
79	(1.8)				

OIL RESERVES (b bbl): 31.3

GAS RESERVES ($t\ m^3$): .6

Reserve: PRODUCTION Ratio (_____) (Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) (Ø b): (1)		CURRENT ACCOUNT:		BORROWINGS (Ø b): -INTL BONDS		-LOANS	OVERALL BALANCE:	
1973	n.a.	73	n.a.	73	-	.3	73	n.a.
74	n.a.	74	3.6	74	-	.2	74	2.0
75	3.6	75	2.9	75	-	Neg	75	1.5
76	4.5	76	3.3	76	-	.1	76	2.2
77	6.1	77	4.1	77	Neg	1.1	77	.4
78	6.3	78	3.4	78	-	.7	78	-.6
79		79	5.9	79		(.4)	79	1.9

CUMULATIVE FINANCIAL RESERVES:

1973	.1
74	.4
75	.8
76	1.7
77	.7
78	.6

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION: 2.5
HIGHEST-EVER PRODUCTION : 2.0 (1977)
ESTIMATES FOR 1980 : 1.7 (Technical) (MEES 3.12.79, p.2)

	OIL PRICES (Ø)								
OIL REVENUE FROM: (Ø bn)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (1.7)	12.4	15.5	18.6	21.7	24.8	27.9	31.0	34.1	37.2
--25% cutback:	9.5	11.9	14.2	16.6	19.0	21.4	23.7	26.1	28.5
--Possible 1985 Exports:	16.1	20.1	24.1	28.1	32.1	36.1	40.2	44.2	48.2

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 13.5 (Ø bn)
15%: 19.3
20%: 27.1
25%: 37.5

Sources: See Appendix

(1) Not strictly comparable with other countries.

TABLE 7

COUNTRY: LIBYA

POPULATION (m): 3.0 INDIGENOUS (%): G.N.P. ($ b): 17.5 (1977)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES ($ b):		OIL RESERVES (b bbl):
1973	2.2	73	2.2	73	3.5	
74	1.5	74	1.5	74	7.2	24.3
75	1.5	75	1.5	75	6.1	
76	1.9	76	1.9	76	8.4	GAS RESERVES (t m³):
77	2.1	77	2.0	77	9.8	.7
78	2.0	78	2.0	78	9.6	
79	(2.1)					

Reserve: PRODUCTION Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME ($ b):		CURRENT ACCOUNT:		BORROWINGS ($ b): -INTL BONDS	-LOANS	OVERALL BALANCE	
1973	3.2	73	.1	73 -	-	73	-1.1
74	5.4	74	1.8	74 -	-	74	1.7
75	6.4	75	-.1	75 -	-	75	-1.6
76	6.3	76	2.4	76 -	-	76	1.0
77	7.7	77	2.9	77 -	-	77	1.5
78		78	2.9	78 -	-	78	1.4
79		79	6.0	79		79	4.5

CUMULATIVE FINANCIAL RESERVES

1973	1.8
74	3.0
75	1.9
76	2.8
77	4.0
78	3.2

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION	:	2.1
HIGHEST-EVER PRODUCTION	:	3.3 (1970)
ESTIMATES FOR 1980	:	2.0/2.1

	OIL PRICES ($)								
OIL REVENUE FROM: ($ bn)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports:	14.6	18.2	21.9	25.6	29.2	32.8	36.5	40.2	43.8
--25% cutback:	11.0	13.7	16.4	19.2	21.9	24.6	27.4	30.1	32.9
--Possible 1985 Exports:	16.1	20.1	24.1	28.1	32.1	36.1	40.2	44.2	48.2

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 17.1 ($ bn)

15%: 24.5

20%: 34.4

25%: 47.7

Sources: See Appendix

TABLE 8

COUNTRY: ALGERIA

POPULATION (m): 18.5 INDIGENOUS (%): G.N.P. ($ b): 19.4 (GNP: 1977) 15.4 (GDP: 1976)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES ($ b):		OIL RESERVES (b bbl):
1973	1.1	73	1.0	73	1.5	6.3
74	1.0	74	.9	74	4.5	
75	1.0	75	.9	75	4.1	GAS RESERVES (t m3):
76	1.1	76	1.0	76	4.5	3.0
77	1.2	77	1.1	77	5.7	
78	1.2	78	1.1	78	6.1	
79	(1.2)					

Reserve: PRODUCTION: Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):		CURRENT ACCOUNT:		BORROWINGS ($ b): -INTL BONDS	-LOANS	OVERALL BALANCE:	
1973	2.8	73	-.4	73 Neg	.3	73	-.6
74	4.7	74	.2	74 -	-	74	.6
75	6.8	75	-1.7	75 Neg	.5	75	-.3
76	6.8	76	-.9	76 .1	.6	76	.6
77	8.9	77	2.3	77 .2	.7	77	-.3
78	(8.9)	78	-.6	78 .7	2.6	78	1.7
79		79	-.4	79 (.1)	(1.7)	79	1.9

CUMULATIVE FINANCIAL RESERVES:

1973	.9
74	1.4
75	1.2
76	1.7
77	1.6
78	1.7

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION	:	1.2
HIGHEST-EVER PRODUCTION	:	1.2 (1977-9)
ESTIMATES FOR 1980	:	1.2

OIL PRICES ($)

OIL REVENUE FROM: ($ bn)		20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports:	(1.1)	8.0	10.0	12.0	14.1	16.1	18.1	20.1	22.1	24.1
--25 % cutback:		6.0	7.5	9.0	10.5	12.0	13.6	15.1	16.6	18.1
--Possible 1985 Exports:		7.3	9.1	11.0	12.8	14.6	16.4	18.2	20.1	21.9

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%:	19.0 ($ bn)
15%:	27.2
20%:	38.3
25%:	53.0

Sources: See Appendix

TABLE 9

COUNTRY: NIGERIA

POPULATION (m): 80.7 INDIGENOUS (%): G.N.P. (£ b): 33.8 (1977: GNP) 24.7 (1975: GDP)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES (£ b):	
1973	2.1	73	2.0	73	2.9
74	2.3	74	2.2	74	9.1
75	1.8	75	1.7	75	7.3
76	2.1	76	2.0	76	9.4
77	2.1	77	2.0	77	10.6
78	1.9	78	1.8	78	9.0
79	(2.4)				

OIL RESERVES (b bbl): 18.2

GAS RESERVES (t m3): 1.2

Reserve: PRODUCTION: Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) (£ b):		CURRENT ACCOUNT:	
1973	3.7	73	-
74	5.1	74	4.9
75	9.0	75	.1
76	11.1	76	-.3
77	13.7	77	-.9
78	14.5	78	-1.9
79		79	-1.1

BORROWINGS (£ b):

	-INTL BONDS	-LOANS
73	-	-
74	-	Neg
75	-	-
76	-	-
77	-	-
78	-	(1.0)
79		

OVERALL BALANCE	
73	.1
74	5.1
75	.2
76	-.4
77	-.8
78	-1.9
79	-1.1

CUMULATIVE FINANCIAL RESERVES

1973	.5
74	4.6
75	4.8
76	4.5
77	3.5
78	1.5

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION: 2.4
HIGHEST-EVER PRODUCTION : 2.4 (1979)
ESTIMATES FOR 1980 : 2.15 (MEES 3.12.79, p.2) (Technical)

		OIL PRICES (£)								
OIL REVENUE FROM: (£ bn)		20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports:	(2.15)	15.7	19.6	23.5	27.5	31.4	35.3	39.2	43.2	47.1
--25% cutback:		11.7	14.6	17.5	20.4	23.4	26.3	29.3	32.1	35.0
--Possible 1985 Exports:		17.5	21.9	26.3	30.7	35.0	39.4	43.8	48.2	52.6

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 31.0 (£ bn)
15%: 46.4
20%: 62.4
25%: 86.4

Sources: See Appendix

TABLE 10

COUNTRY: VENEZUELA

POPULATION (m): 13.1 (1978) INDIGENIOUS (%): G.N.P. (Ø b): 35.8 (1977)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES (Ø b):	
1973	3.5	73	3.2	73	4.3
74	3.1	74	2.8	74	10.3
75	2.4	75	2.1	75	8.3
76	2.4	76	2.1	76	8.7
77	2.3	77	2.0	77	9.1
78	2.2	78	1.9	78	8.7
79	(2.3)				

OIL RESERVES (b bbl): 18.0

GAS RESERVES (t m^3): 1.2

Reserve: PRODUCTION: Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME (Ø b):		CURRENT ACCOUNT:		BORROWINGS (Ø b): -INTL BONDS		-LOANS	OVERALL BALANCE	
1973	4.2	73	.9	73	Neg	.1	73	.6
74	6.0	74	5.9	74	-	.1	74	4.5
75	7.6	75	2.4	75	-	.2	75	2.7
76	9.2	76	.9	76	-	1.2	76	.1
77	12.8	77	-2.1	77	.4	1.7	77	-.2
78	14.7	78	-4.5	78	.6	2.1	78	-7.9
79		79	-3.9	79	(.1)	(6.3)	79	-7.3

CUMULATIVE FINANCIAL RESERVES:

1973	2.0
74	5.3
75	7.6
76	7.4
77	6.8
78	5.0

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION: 2.4
HIGHEST-EVER PRODUCTION : 3.8 (1970)
ESTIMATES FOR 1980 : 2.2 (MEES 3.12.79., p.2)

	OIL PRICES (Ø)								
OIL REVENUE FROM: (Ø b)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (2.0)	14.6	18.2	21.9	25.6	29.2	32.8	36.5	40.2	43.8
--25% cutback:	11.0	13.7	16.4	19.2	21.9	24.6	27.4	30.1	32.9
--Possible 1985 Exports:	Same as 1980 potential.								

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 31.5 (Ø b)
15%: 45.0
20%: 63.2
25%: 87.6

Sources: See Appendix

TABLE 11

COUNTRY: MEXICO

POPULATION (m): 66.9 INDIGENOUS (%): G.N.P. ($ b): 72.6 (1977) (GDP)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):	OIL REVENUES ($ b):		OIL RESERVES (b bbl):
1973	.6	73	73	-	
74	.6	74	74	.1	
75	.8	75	75	.5	
76	.9	76	76	.4	GAS RESERVES (t m^3):
77	1.1	77	77	.9	
78	1.3	78	78	(1.7)	
79	(1.4)				

Reserve: PRODUCTION: Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME) ($ b):		CURRENT ACCOUNT:	BORROWINGS ($ b): -INTL BONDS	-LOANS	OVERALL BALANCE:
1973	9.4	73	73 .1	1.2	73
74	9.4	74	74 -	1.5	74
75	10.5	75	75 .1	2.2	75
76	10.8	76	76 .4	2.0	76
77	9.8	77	77 1.3	2.7	77
78	13.4	78	78 .6	7.2	78
79		79	79 (.3)	(7.6)	79

CUMULATIVE FINANCIAL RESERVES:

1973	1.1
74	1.2
75	1.3
76	1.1
77	1.4
78	1.5

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION:
HIGHEST-EVER PRODUCTION : 1.5 (1979)
ESTIMATES FOR 1980 :

	OIL PRICES ($)								
OIL REVENUE FROM: ($ bn)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (1.0)	7.3	9.1	11.0	12.8	14.6	16.4	18.2	20.1	21.9
--25% cutback:	5.8	7.3	8.8	10.2	11.7	13.1	14.6	16.1	17.5
--Possible 1985 Exports:	14.6	18.2	21.9	25.6	29.2	32.8	36.5	40.2	43.8

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 28.7 ($ bn)
15%: 41
20%: 57.6
25%: 79.9

Sources: See Appendix

TABLE 12

COUNTRY: INDONESIA

POPULATION (m): 143 INDIGENOUS (%): G.N.P. ($ b): 44.4 (1977)

OIL PRODUCTION (m b/d):		EXPORTS (m b/d):		OIL REVENUES ($ b):	
1973	1.3	73	1.2	73	1.6
74	1.4	74	1.2	74	5.2
75	1.3	75	1.1	75	5.3
76	1.5	76	1.3	76	6.0
77	1.7	77	1.5	77	7.3
78	1.6	78	1.4	78	7.4
79	(1.6)				

OIL RESERVES (b bbl): 10.2

GAS RESERVES (t m^3): .7

Reserve: PRODUCTION: Ratio ( )(Years)

IMPORTS (MERCHANDISE, OTHER GOODS, SERVICES & INCOME ($ b):		CURRENT ACCOUNT:		BORROWINGS ($ b): -INTL BONDS		-LOANS	OVERALL BALANCE	
1973	3.8	73	-.5	73	-	.2	73	.3
74	6.9	74	.6	74	-	.4	74	.7
75	8.2	75	-1.1	75	-	1.6	75	-2.1
76	9.7	76	-.9	76	-	.5	76	.6
77	11.0	77	-.1	77	-	.8	77	1.0
78	12.6	78	-1.0	78	Neg	1.1	78	.0
79		79	2.2	79	( )	(1.1)	79	3.3

CUMULATIVE FINANCIAL RESERVES:

1973	.7
74	1.2
75	.5
76	1.3
77	2.1
78	2.0

OIL PRODUCTION (m b/d)

1979 SUSTAINABLE PRODUCTION: 1.6
HIGHEST-EVER PRODUCTION : 1.7 (1977)
ESTIMATES FOR 1980 : 1.5 (MEES 3.12.79., p.2)

	OIL PRICES ($)								
OIL REVENUE FROM: ($ bn)	20	25	30	35	40	45	50	55	60
Potential 1980 Oil Exports: (1.3)	9.5	11.9	14.2	16.6	19.0	21.4	23.7	26.1	28.5
---25% cutback:	7.3	9.1	11.0	12.8	14.6	16.4	18.2	20.1	21.9
---Possible 1985 Exports:	Same as 1980.								

1985 Income Needs assuming annual incremental needs (1978-85) of:

10%: 27.0 ($ bn)
15%: 38.6
20%: 54.2
25%: 75.1

Sources: See Appendix

(7)

Abstract

Paper 8 Implications for Socio-Political Future: Japan

Joji Watanuki

1. "Level"factor and "time" factor of energy problems

Thinking about possible consequences of continuing and chronic energy problems for socio-political future of Japan, two factors of energy problem seems to bring quite different consequences. One is the "level" factor, meaning degree of "under-supply" of oil by oil-producing countries. Japan cannot stand for total stopage of import of oil for long. But on the other hand, Japan can absorb rise of oil-price by better performance of her economy, coupled with her more resilient society and competent bureaucratic politics. However, it is not certain how Japan can cope with under-supply problem below the total stoppage of oil-import and above mere rise of oil-price. Another factor is the "time," necessary for developing alternative energy. Time factor is more crucial to Japan, with her rather slow but steady response of bureaucratic politics and her still persisting inertia of passive role in international arena after WWII period.

2. A not so unhappy scenario

Assuming that oil-supply would not be cut totally except short period not extending a couple of month, and under-supply should not become a serious one in coming decade, we can imagine the following scenario. Saving energy was achieved considerably first by industry through motivation of cost-cutting and improved technology, followed by less use of private automobiles and lowering down the heating by reviving traditional Japanese values and ways of life emphasizing simple life and frugality. Development of alternative energy is enhanced and achieved by throwing an unprecedent sum of government fund into this field beginning from 1980 fiscal year. In spite of the rise of oil-price, Japanese economy could grow 4 to 5% steadily, thus providing enough employment not only to newly entering labor force but also to older labor force facing difficulties under present Japanese system of early retirement. Government could afford more expenditures in developing alternative energy, increasing social welfare, and upgrading Japan's international activities. Moreover, Japan's ever developing universities supply increasing number of skilled personnel not only to domestic industry and administration, but also to various international demands, contributing to fill the gap between Japan's gigantic economic position and meager international activities. To add to this, as the scenario goes, rising demand for decentralization and participation would proceed congruently with stimulating various small scale alternative energy projects such as solar heating, and geothermal energy plants, etc. and etc.

3. Some ominous signs

There are a number of factors which will threaten the above scenario. First of all, if the economy cannot create enough employment both for young people and older, that will result in serious social disorder. Skillful reorganization of life-long employment and seniority wage system is esential not only for keeping Japanese industry efficient but also for maintaning Japanese social order based on that system.

Problem of social welfare depends partly to the degree of success of creating employment for those older, early retired people. Japan is to be a rapidly aging society in terms of population composition, which will generate increasing demands for social welfare. With the limitation of governmental financial resources, in order to cope with these demands, Japan has to develop a system of social welfare of her own type.

The role of traditional values of simple life and frugality is not so clear. The "industrial value" emphasizing better material living has been strengthened during past high economic growth period and is persisting so far. Actually, energy consumption for home-use and transportation has increased even after 1973 to now, although still the level of energy consumption for home-use in Japan is about one forth of the U.S. and about half of West-Europe and the increase after 1973 has been very gradual. In case of energy consumption for transportation also, continuiing increase of ownership of private automobiles has been a pushiing up factor for gasoline consumption, although shorter mileage and more efficient consumption ratio of fuel/mileage have been pushing down factor, resulting in rather modest increase of total consumption of gasoline since 1973. However modest, increase is increase.

Among alternative energies, nuclear power generation has become a point of issue. The attitudes of general public to nuclear power generation

is more favourable in comparison with those in the U.S. According to a opinion poll conducted in Japan and in the U.S. simultaneously, the ratio of response saying that we should shut down nuclear power generation plants is 7.5% in Japan, whereas in the U.S. 22.1%. However, positive attitudes approving to have more nuclear generation plants is 34.8%, and remaining 46% are rather lukewarm, just wanting to keep status quo (in Japan). (The Yomiuri Shimbun November 28, 1979). There are groups of specialists opposing nuclear power generation. And the largest opposition party, Japan Socialist Party has been against nuclear generation.

Japan's bureaucratic sectionalism has been famous of its efficiency and devotion in promoting its interests within the jurisduction of each ministry. Energy is under the jurisduction of Ministry of International Trade and Industry (MITI), which has shown a sense of mission in getting more budget in energy development. However, transportation is under Ministry of Transportation, and road construction is under Ministry of Construction. Effective energy policy should be linked with overall transportation policy. Who makes and implements this kind of linked policies under Japanese bureaucratic sectionalism?

As for political leadership, even at the period of solid LDP majority rule, Japan's Prime Minister who was at the same time the president of the majority party, LDP, was in weaker position than that of British Prime Minister, because of faction-riddden nature of LDP and Japanese custom of group concensus. Now, LDP's majority has become so thin and will remain so in 1980s.

Last but not the least, Japan might have a "danger of success" or "danger of isolation due to her success." It seems that both Japanese government and industrialists are more concerned with quantitity of available oil, rather than price, or not to speak of total supply in the world. to Japan To some degree, it is understandable, because of Japan's total dependency to imported oil. However, since enrgy problem is a global problem, and Japan, as an economic giant, should be more concerned with global security. If Japan alone should succeed somehow survive and thrive the period of higher and higher oil-price, then it will mean the dancer of isolation, from other advanced industrial countries and developing countries suffering from high priced oil.

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ATLANTIC INSTITUTE PROJECT ON "ENERGY AND GLOBAL SECURITY"

PAPER 9 : Implications for the Socio-Political Future of Industrial Societies :-
The United States

I. Role of Economic Growth

A. Solution to the crisis that afflicted industrial societies in the 1920s and 1930s

B. Resolution of internal conflicts

C. Harmonization of goals with other industrial societies

D. Cheap energy - and cheap oil's - contribution in the 1950s and 1960s

1. Oil regarded almost as a free good
2. An instance, auto buyers and manufacturers in U.S. in 1960s concerned about many factors - initial cost, styling, performance. Not fuel efficiency.

E. Unwillingness to face the fact of a fundamental change

F. Era of energy stringency : poses main challenge to fundamental stability and functioning of American economic, political and social system, at least as currently constituted

II. Consequences So Far

A. Inflation

B. Reduced growth

C. Premature obsolescence of behavior patterns and capital stock

D. Income redistribution

1. Regional conflict
2. Those who can and those who cannot pass through costs
3. Sectoral transfer
4. Conflict over price

E. Effects on producers

1. Loss of markets
2. Investment problems
3. Protectionist impulses

F. Political immobilism and bitterness

1. Disagreement over nature of problem and goals
2. Rapid economic adjustment called for in a system not very responsive
3. Search for a villain
4. Fragmentation of authority
5. Question

a) How much systemic ?
b) How much circumstances - Watergate, Nixon ?

III. Critical Issues : Is A Sufficient Process of Adjustment Possible ?

A. In essence - to much greater levels of energy efficiency - decoupling

B. Buy time

C. Goal : negative energy growth

D. Race with time - increasing energy stringency

IV. Condition Of Greater Energy Stringency

A. Likely scenarios : 1970s as prelude and preview

B. Possible reasons

1. Process of readjustment insufficient
2. Time continues to be telescoped

a) Rapid price hikes
b) Interruption and uncertain supplies
c) Political change and conflict involving oil producers

V. Social And Economic Consequences : Sharp Discontinuities

A. Stagflation

1. Low growth, no growth
2. High inflation

B. Monetary instability and depreciating dollar

C. Industry

1. Problem of premature obsolescence - need to accelerate capital investment, but difficulty of access to and competition over capital
2. Loss of markets
3. Insecurity of production line
4. Failures
5. Chronic weakness of certain key sectors
6. Export of production
7. Utilities

D. Unions - shift from seeking share of growing pie to highly protectionist stands - both domestically and in terms of trade policies

E. Social patterns

1. Effects on living patterns
2. Mobility and transportation

F. Continued erosion of savings

1. Speculative society
2. Permanent flight for certainty - or quick returns - on investment

G. Effects on attitudes

1. Bitterness and suspicions
2. Reduced expectations : loss of confidence in the future
3. Increased tensions among social groups
4. Sense of betrayal

VI. Political

A. Low Growth, inflation and redistribution will promote social and political conflict

1. Regional
2. Sectoral
3. Over goals : energy versus environment

B. Immobilism - inability of effective political response

1. Competing claims
2. Inability to meet problems
3. Beyond several levels of government
4. Fragmentation of authority

C. Search for quick fixes

1. Protectionism
2. "Miracles"
3. Nationalism

D. Erosion of social welfare

1. Budget-cutting
2. Hostility
3. Relation to shifting demographics

E. Vulnerability of system to demagogues

1. Easy solutions
2. Political "reforms" of the 1970s already undermined stability of political system

VII. Can This Energy Future Be Managed Better ?

A. Underlying problem

1. End to American exceptionalsim
2. This kind of dependence (oil) new in American history with its reverberations
3. U.S. buffeted by world economy in way more familiar to other OECD countries, but unfamiliar to U.S.

B. Process of adaptation possible

1. Urgency could be reduced by significant technological breakthrough - not prudent to assume
2. More likely - urgency increased : would be overwhelmed on other side by events and stringency outrunning adaptation

C. Nature of adaptation

1. Move much more rapidly to higher degrees of energy efficiency
2. Changes in behavior, practices - and substantial acceleration of investment
3. The issue - can apparent penalty be turned into an opportunity for economic renewal - higher productivity of energy

D. Requires shift in public and élite opinion

1. Acknowledgement of reality of situation

   a) of dependence and its cost
   b) of major security problem

2. End to search for villains
3. End to expectation of technological fix and miracles
4. Key principles

   a) much greater flexibility in relation of energy use and GNP than most thought
   b) conservation as a source of energy
   c) opportunity, not penalty

E. Target area

1. Liquid fuels
2. Transportation

F. Methods to accelerate

1. True prices - that internalize danger
2. Regulations
3. Incentives
4. Access to capital
5. Close information gap
6. Delivery system

G. Sober thought - race with time - effort may prove inadequate