

THE IMMEDIATE IMPACT OF THE ENERGY CRISIS WITH SPECIAL
REFERENCE TO NON-OIL DEVELOPING COUNTRIES

by

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INTRODUCTION

This report deals with the immediate effects of the Arab oil embargo, and oil price increase which took place during the fourth quarter of 1973. It discusses briefly the uneasiness of the international systems, seeking to cope with the major changes in individual countries' payments positions, and the massive surplus accruing to the oil exporters; the initial impact on the advanced countries whose economies had been geared to a high use of energy, and were thus prone to inflation, demand-deficiency, unemployment, and problems of maintaining their high standards of living. The report makes a special reference to the plight of the oil-poor developing countries, their fight for survival, and their attempt to replenish their dwindling foreign exchange reserves. The non-oil developing countries (NODs) have been further classified according to their development levels, and dependence on foreign oil. Some forms of aid to these countries have been referred to. The concluding paragraphs show that recovery has been slow and would entail inter-governmental co-operation in overcoming the problems facing the world economy, and in reaching a new equilibrium.

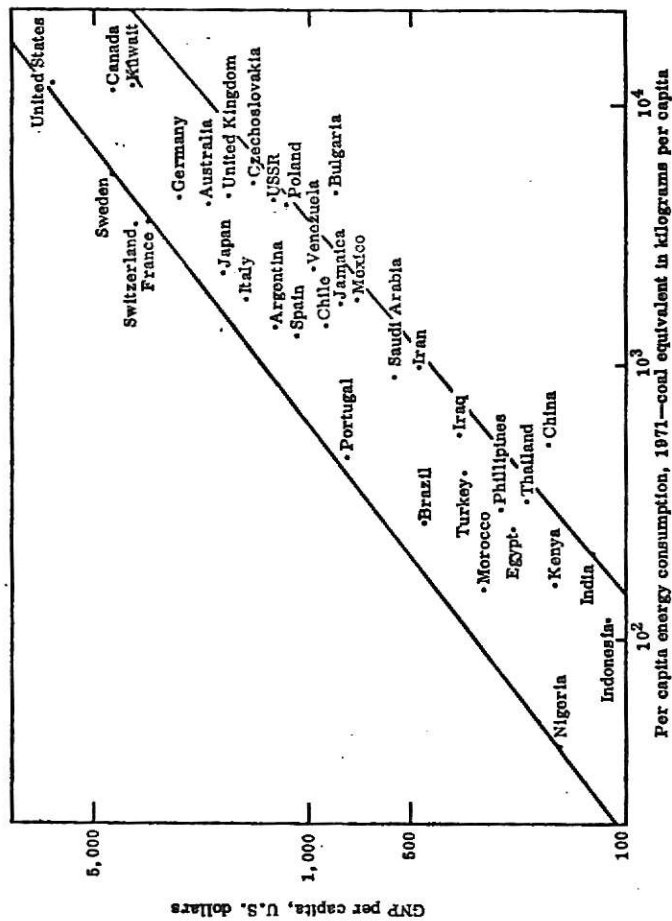
BACKGROUND TO THE ENERGY CRISIS

No event in the period following the second world war had so sharp and pervasive an impact on the world economy as the series of shocks to the oil market that followed closely on the outbreak of the Arab-Israeli war on October 6, 1973. This tragic

renewal of hostilities in the Middle East brought in its wake extremely serious consequences for oil consumers the world over. Abandoning the Teheran and Tripoli agreements, the Arab governments imposed unprecedented increases in oil prices and taxes, and started cutting production. The non-communist world was posed with the urgent question as to whether it could adjust to the new situation at a tolerable cost. For almost a year uncertainty grew and pessimism seemed to feed on itself. How to cope with the economic implications of the crisis became almost overnight the major pre-occupation of governments all around the world.

Man's progress from a primitive stage to the complex industrialized society of today has required an increasing use of non-human energy. To an ever increasing extent, energy has been used to move machines and vehicles of transportation and to provide heat and light for daily living. In fact, the development of human civilization has been closely tied to the degree of energy use per man. The relationship between economic growth and energy consumption is brought out in figure 1 (page 3) in which gross national product (GNP) per capita for selected countries is plotted against their respective per capita energy consumption levels.¹ The pattern observed clearly establishes a strong correlation between economic development and energy consumption.

Relationship between Per Capita Energy Consumption and Per Capita GNP



Source: K. Krishna Prasad and A. K. N. Reddy, "Technological Alternatives and the Indian Energy Crisis," Paper presented at the National Seminar on Energy, Hyderabad, March 1976.

Figure 1.

Crude oil is the most important single commodity in world commerce and in recent years has accounted for over fifth percent by weight of all sea-borne international trade. In many applications there are no substitutes for oil products.² Was it tolerable then, that energy supplies which are indispensable to modern ways of life, should in the future be subject to the will of a small group of exporting countries?

Let us consider what we mean by the term "the energy crisis". It encompasses the long and short term aspect of the supply of non-renewable sources of energy. The sudden change in relative prices of energy and its impact on other prices, the impact of these price changes on the earnings and financial reserves of both oil producing and oil consuming countries, which in turn affect the international system of trade and payments.³

In the history of mankind shortages have often developed and were usually solved by new technology; this new technology involving the use of massive additional quantities of energy in some conventional or new form. This is one of the chief reasons why demand for energy has escalated so rapidly. But now, when the world economy depends almost entirely on fossil fuels for its energy, we are facing a decline in its availability. The supplies and demands for energy are intricately connected in terms of both fuels and locations, so that marginal changes in one part of the system elicit responses in other parts.

The stress on the system became apparent in 1973 and 1974 when world oil prices were raised sharply, intensifying interest in reducing the importing country's dependence on foreign supplies. Events since then bear plain witness to this phenomenon, as well as to the profound influence that government policies can have.

Leaving aside the much publicized role of oil as a political weapon, there were several very legitimate causes which gave rise to the crisis. First was the determination of the oil producing countries to obtain control over the extraction and disposition of their major natural resource, rather than delegate that power to others. In 1960, at a time of surplus production, the oil companies succeeded in reducing posted prices. Irritated by this action and alarmed by the drop in their revenues the producing countries formed OPEC in the same year. Its members were Iran, Iraq, Saudi Arabia, Kuwait, Venezuela, Indonesia, Libya, Qatar, and Abu Dhabi. Secondly, towards the end of the decade there was a shift in the balance between supply and demand, largely as a result of the U.S. becoming an increasingly large importer and also the Japanese market growing considerably. Thirdly, the price level in the big industrial countries had been rising for many years, so the price of industrial products needed by oil exporters had been rising. In other words the value and purchasing power of the oil dollar was gradually

diminishing as a result of this inflation. Arthur Little Inc., which was commissioned by OPEC to study the economics of the oil industry, recommended that oil prices be linked to the price of industrial goods.⁴ The bargaining position of the oil producing countries in 1970 was considerably strengthened by the economic growth in industrialized countries and also by temporary interruptions of piped supplies of Arabian crude oil to the ports of the Eastern Mediterranean and they lost no time in taking advantage of it.

Accordingly there began a significant transfer of economic power from the oil importing to the exporting countries. This shift will continue until such time as the more fortunate oil importing countries can bring into production additional sources of energy to meet their domestic requirements. Many of these countries are not likely to have much room for manoeuvre. In the short term at least, oil exporting countries will be able to exercise considerable control over both the supply and price of oil since its elasticity of demand is low. It is likely however, to be much higher in the long run because of a wide range of substitutes that can be expected to become available.⁵

In September 1973 the posted prices of crude oil were increased by seventy percent following negotiations under the Teheran, Tripoli, and Geneva agreements between the international oil industry and the governments of OPEC.⁶ The quantitative

restrictions on oil supplies were firmly tied to political objectives. Countries friendly towards Israel, especially the U.S. and Netherlands, were formally boycotted. Loopholes and manoeuverings, however, greatly lessened the impact on these countries relative to what OPEC intended. For example, oil shipments to western Europe were received and processed at the port of Rotterdam (in the Netherlands). The countries of western Europe decided to share the burden of the increased oil prices. The U.S. received some oil by way of Europe. The major oil companies involved in oil distribution also helped in reducing the adverse impact on the boycotted countries. The allies of the Arab world were given preferential treatment while the rest of the world was to receive reduced supplies until a settlement of the Arab-Israeli problem was reached. On December 16, 1973 the new price was doubled again. Thus, at the beginning of 1974 the importing countries were faced with crude oil prices three and a half to four times what they had been three months earlier. Taking Arabian light crude as a representative marker, the revenue per barrel for producing countries rose from \$0.90 in 1970 to \$1.27 under the Teheran agreement in 1971, to about \$3.30 in October 1973, and to around \$8.00 in January 1974.⁷

Table 1 (page 8) shows the size of surplus revenue in just that year.⁸

Table 1.

Size of OPEC Surplus Revenues

	1973	1974
OPEC exports (million barrels per day)	28.4	28.4
Revenue per barrel*	\$2.60	\$9.00
Expenditure (imports-goods and services; \$1,000 million)	20.0	23.5
Surplus (\$1,000 million)**	7.00	70.00

* The U.S. dollar is used as the basis for fixing oil prices.

** Surplus is defined as petroleum exports minus current account imports.

IMPACT ON THE INTERNATIONAL FINANCIAL MECHANISM

It was difficult to say whether the oil importing countries and the international monetary system could adjust to the shock of the quadrupling of oil prices without serious economic disruptions. OPEC's surplus means a corresponding payments deficit for the non-OPEC or oil importing countries. The growing burden of oil payments is being felt in terms of inflation, demand, deficiency, balance of payments adversity, and detriment to the standard of living. International financial markets such as the Euro-currency and Euro-bond markets have been undergoing severe stress in seeking to cope with the re-cycling of oil money.

The foreign exchange markets are extremely uneasy because of the serious implications of oil payments for the currencies of the oil importing countries. The international banking community is experiencing a difficult adjustment period in intermediating huge oil money deposits. The international monetary reform was set back seriously by the monetary and financial turmoil caused by oil money flows. It was not even certain as to whether all the main aspects of the new economic situation were sufficiently understood by either economists or policy makers.⁹

The oil price increase brought about major changes in the international payments positions and provoked much public discussion and disagreement about the problems that these changes could pose for the international economy. As a result of higher oil prices, the oil revenue of the eleven major oil exporters that dominate the OPEC, namely, Saudi Arabia, Iran, Iraq, Kuwait, United Arab Emirates, Qatar, Libya, Nigeria, Algeria, Venezuela, and Indonesia, had been estimated by the International Monetary Fund and Organization for Economic Co-operation and Development (OECD) to have increased in 1974 by some 70-75 billion dollars.¹⁰ All the members of OPEC expanded their imports in response to their increased revenue, but the size and speed of this response vary greatly. At one extreme are Indonesia and Nigeria where per capita income is low

and development possibilities enormous. The imports of these countries increase with sufficient rapidity to prevent large and prolonged accumulation of reserves. Although with a higher per capita income, Algeria belongs to this group, as her oil revenues are modest and development expenditures large. At the other extreme lie Kuwait, Libya, Qatar, Saudi Arabia and the United Arab Emirates where per capita income is high and absorptive capacity is low in relation to the size of oil revenues. Although their imports expanded rapidly in percentage terms, these countries will continue to run current account surpluses. In between these extremes lie Iran, Iraq, and Venezuela, being middle-income countries with substantial possibilities for development, but their oil revenues are so large that it would be some years before their current account surpluses can be expected to disappear.¹¹

It has been suggested periodically, and feared in view of these enormous surpluses accruing to the oil exporting countries, that the current level of oil prices threatens some of the importing countries with "national bankruptcy".¹² There are two ways in which this phrase may be interpreted. The notion of insolvency: if an oil importing country were only able to finance the oil imports required for the maintenance of a full capacity level of output by borrowing, and were only able to service that loan by further borrowing, so that it gradually surrendered an ever increasing share

of its assets to the foreign control. In such a situation the country's net worth would tend in the course of time to approach zero, in that the whole of its capital stock would ultimately be owned by foreigners. There is however, no prospect that oil deficits alone will drive some of the oil important countries to national bankruptcy in the sense of insolvency. In the aggregate, oil importers face the prospect of losing title to a proportion of the increment in their capital stock, rather than to a progressive absolute reduction in net worth. They will of course have to make psychological adjustment to a new situation of substantial foreign indebtedness, but this is nothing novel in modern economic history. The possibility remains that there are some individual countries for which the picture of growing impoverishment is accurate. None of the industrialized countries have to borrow a sum approaching the size of its new investment, but some of the developing countries are in a less happy situation. They have to reduce their consumption to increase savings, to step up domestic investment, and reduce their current deficits, or else they face the prospect of a severe slowdown in the rate at which they can accumulate wealth. But their consumption is already often below the subsistence level.

There is however, a second, less dramatic and more possible form of national bankruptcy: the concept of illiquidity. Some oil importing countries would be unable to meet their contractual obligations to the outside world, or more generally, would be faced with an acute liquidity problem. This cannot arise for oil importing countries in the aggregate, since all the important methods by which the members of OPEC receive payment involve their acquisition of some form of claim on one or more oil importing countries. It could however arise for individual countries if the process of financial mediation were to operate in such a way as to deny certain countries adequate access to credit. Again, the threat of illiquidity is greatest for non-oil developing countries.¹³

The question which posed itself then, was whether the financial mechanism would be capable of recycling the oil revenues in such a way as to finance the current account deficits on the part of oil importers. Failure to achieve an appropriate distribution would involve at best a misallocation of resources, and at worst, a major slump or acute liquidity shortage.

Oil payments are made almost entirely by countries drawing on their foreign exchange reserves and transferring foreign exchange to the members of OPEC. The use of primary reserve assets-- gold and special drawing rights (SDR's)---

is minimal and seems likely to remain so in view of the financial sophistication of the oil exporters, the low interest rate on the SDRs, and no interest on gold. Some countries, principally certain developing countries with close ties to the OPEC members and some industrial countries, concluded barter arrangements having lines of credit which avoid or reduce the need for transfers of foreign exchange. But these are not large enough to influence the assumption that most oil payments are made in terms of foreign exchange.¹⁴

Until now, the principal recycling mechanism has been the Euro-currency market. If an oil importer draws on reserves held in a reserve center, while the OPEC members place their new reserves in the Euro-market, the Euro-bank acquires additional funds which can be lent to the oil importers. If public or private sectors in each oil importing country borrow from the Euro-banks, funds equal to the amount of each country's oil deficit, and convert these funds into domestic currency, and if the central banks then place their additional reserves in the reserve center, global reserves will rise by the size of the aggregate oil deficit and oil importers' reserves remain unchanged. No liquidity problems will arise so long as this process continues. There are however, other ways in which the intermediation process could work, and some of these lead to different conclusions. For example, the oil exporters may invest directly in the oil importing countries

rather than in the Euro-currency markets. This decreases the reserves, and thus the lending power of the Euro-market.¹⁴

Where members of OPEC place their increased revenues and whence the oil importing countries draw their reserves, will have some impact on the ease with which the importers can finance their deficits. If the OPEC nations invest in each oil importing country to the full extent of its surplus with that country, no problems would arise because, the importing countries are attracting a capital in-flow in the form of OPEC investment equal to the size of its current deficit with the oil producers. But a majority of the OPEC investments are likely to be directed to the industrial countries. It is gain the non-OPEC, less developed countries which have trouble in matching their current deficits with capital in-flows and/or loans from the Euro-market. However, as long as there is reasonable mobility of capital among the oil importers, including the reserve centers, there is no real danger that a creditworthy country prepared to borrow will face the prospect of an inability to do so as the consequence of a global liquidity shortage. The real danger then is that certain individual countries may cease to be creditworthy and therefore unable to borrow despite the continuing adequacy of global liquidity. An appropriate criteria as to what constitutes creditworthiness is that indebtedness will not grow faster than debt servicing capacity, i.e. the country remains solvent.

Individual countries can certainly hope to meet this criterion provided the current account deficit is appropriately distributed.¹⁵

Playing its role as the foremost international market, the Euro-market has certainly aided the cycle of oil money. To the extent that the Euro-currency market has fulfilled the recycling task, it has helped to reduce the painful adjustment costs of many oil importers in terms of deflationary economic policies, external trade barriers, competitive currency depreciations, and other "beggar they neighbor" policies. But the Euro-market has its limitations as a recycling channel. Being a free, private, financial market, it is a difficult place to borrow money for many poor, developing countries that may carry a low credit rating but are nevertheless in most serious need of oil money. The creditworthiness of a borrower is not necessarily correlated with the welfare effects of the loan in terms of economic efficiency. Also, there is a definite limit to the extent to which the Euro-market can play a recycling role. The task of oil money recycling is simply too big for the market to perform single-handedly, or for that matter, too big for any free market mechanism. The basic problem is that the loans involved are not self-liquidating. Unlike a project loan or a trade credit, a bank loan to finance oil imports belongs to the consumer loan category:

the loan enables an oil importing country to buy oil and consume it. For poor developing countries with low foreign exchange reserves, such consumption loans may have very low repayment priority.¹⁶

There arises therefore, a legitimate role for "lender of last resort" facilities provided under official auspices. There are likely to be countries which periodically have a need for credit from official sources. There is no certainty that banks will not insist upon an inappropriately rigorous standard of creditworthiness. Confidence is also to some extent dependent on psychological attitudes that may not always be entirely rational. Adequate official recycling facilities are therefore an important safeguard for the stability of the system. But at the same time, official recycling facilities too easily made use of could be dangerous. The reason is that it decreases the pressure upon countries, and weakens their determination to achieve appropriate current account targets. Official recycling should not be conducted on particularly favorable terms, and a program offering a clear prospect of pruning back the size of current account deficits to internationally agreed upon target levels should be a condition of its use.¹⁷

There were three major policy initiatives addressed to the problem of financial intermediation during the first half of 1974. The first was the action of the U.S. in abolishing controls over capital outflows. This had the effect of

greatly reducing the importance of decisions by members of OPEC as to where to place their funds, since it meant that a failure by some oil importing countries to attract OPEC investments, directly or through the Euro-markets, could be compensated for by increased borrowing from the U.S. The second initiative was the creation of the IMF "oil facility" following the final meeting of the Committee of Twenty in June, 1974. This facility borrows funds directly from the oil exporters and lends them to those importers with a balance of payments need, up to a maximum determined by a formula that takes into account the increased cost of oil imports, the strength of the country's reserve position, and its fund quota. This facility is of particular usefulness to those countries faced with problems of creditworthiness. The third initiative was the active solicitation of OPEC investments by the International Bank for Reconstruction and Development (IBRD). This can be expected to benefit principally the higher income developing countries.¹⁸

The severity of the problems facing certain countries on account of diminished creditworthiness suggest that, there is need for additional mechanisms to supplement the IMF oil facility. There could be two general patterns with such new mechanisms might follow. One could involve the oil exporters taking equity type investments in the countries involved. This would give investors protection against unforeseeable changes

in the rate of inflation and an expectation of good returns in the long run without adding correspondingly to the medium term indebtedness of the host countries, and thereby impairing their problem of creditworthiness. The second pattern could involve further use of the international financial institutions. The risk of default would thereby be reduced so far as the OPEC lenders are concerned, and perhaps, given the reluctance of countries to incur the disapproval of the whole international community, the risk of default by the borrower would also be reduced. There are a wide variety of organizational forms that could be utilized: the sale of additional IBRD bonds, the issue of additional SDRs (although these would have to bear a sufficiently high rate of interest to make them appealing to the oil exporters as an investment medium), or the expansion of the oil facility as agreed upon by the IMF Interim Committee in January, 1975.¹⁸

IMPACT ON INDUSTRIAL COUNTRIES

Because they operate in such different economic environments, it is helpful to consider the industrial countries and the non-oil developing countries (i.e. the oil importing developing countries), separately, in analyzing the effects of the oil price increase. In the case of the industrial countries the adjustment process can be thought of as taking place in several distinct phases. First, there is an initial phase, during which the large increase in the price of oil raises the general price level, and simultaneously transfers income from consumers

to producers of energy, who in turn accumulate a large fraction of their suddenly swollen incomes in unspent financial surpluses. Second there is a transition phase, in which producers of energy gradually increase their spending out of the higher receipts; oil exporting countries increase their purchases from the importers, and producers of energy within the consuming countries expand their production facilities in response to the higher prices of their products. Third, a final phase, in which the transition is completed, and consumers of energy are fully paying for the higher prices through a transfer of real resources, as reflected in higher exports to foreign producers, and higher resource costs for domestic production of primary sources of energy.¹⁹

Consumers in the importing nations paid more for energy and thus had less to spend on other products. Due to low elasticity of demand for oil in the short run, there can only be a small reduction in quantity demanded and imported, but expenditures go up due to increased prices. Thus, money incomes remaining constant, expenditures on domestic goods and services of non-OPEC countries decline. So the oil price rise results in demand deflation. An offsetting effect is that some part of the extra income of the OPEC countries will be spent on imports from non-OPEC countries. But these imports account for only a small fraction of their increased oil revenues, as their capacity to absorb imports is very limited. These oil producing countries will have to keep their extra proceeds in some form

of assets until their domestic economic activity expands and diversifies enough to absorb in the form of imports, the whole of the savings which these assets represent. The direct deflationary impact on demand stemmed therefore, from the increased saving being undertaken by oil exporters. This direct impact is increased by the usual multiplier effect, which is calculated on the assumption that monetary policies maintain a constant interest rate. This rate is modified by the monetary repercussions of a tax change, these repercussions depending upon the government fiscal policy regarding the use to which the tax revenue is put.²⁰ If it is used to reduce debt held by the public, interest rates will fall and stimulate a rise in spending that will partially offset the initial decline in demand. If it is used to reduce the money supply (example, by paying off debt held by the central bank) interest rates will rise, thereby intensifying the initial decline in demand. In the case of the oil surplus, equivalent to debt reduction in increasing demand, is the increase in oil funds seeking investment outlets. What had happened in effect, was that the world's propensity to save had gone up, owing to redistribution of some towards high savers. To maintain aggregate demand therefore, the extra savings must be matched by extra investment. The OPEC countries must deposit their surplus revenues somewhere, so that for the non-OPEC world as a whole, there results a capital inflow equal to its current deficit with OPEC.

To the extent that these funds are lent out and lead to extra private investment spending, they have a stimulating effect on aggregate demand. The investment opportunities will have increased by the need for oil substitutes; on the other hand, are there sufficient opportunities to absorb the extra savings? It is doubtful as to whether the private sector motivated by profit would invest at a time of economic uncertainty and low profit expectations.²¹ Initially there had been no sharp rise in domestic energy investment. As a consequence sales, output, and employment were reduced in consumer goods industries. Total demand and output fell not only the amount of the initial loss in consumer demand, but still further through the typical cyclical process in which the initial reductions in employment and income cause further decline in demand, output, and jobs. Moreover, the loss of output and income in each country tended to be reinforcing, since each country provides an export market for the others.²²

The more expensive energy decreased the real incomes of oil importers by increasing the costs per unit of output. The sharp increase in the price of oil was passed through to the prices of gasoline, heating oil, electricity, petrochemicals, and other petroleum using products. Prices of domestically produced fuels increased partly or fully in line with imported oil prices. Wage increases accelerated

in response to higher prices, leading to additional price increase in areas outside the energy industries. Cost-push inflation was given a substantial thrust.²³

This brings us to the question of structural changes and the accompanying problems of alterations. The basic reason for these alterations is the changes in relative factor costs due to sudden rise in oil prices. Any oil substitute, for example, coal, will be in high demand; relatively energy intensive goods and services more expensive and its consumption therefore, relatively reduced in favor of lower cost less-energy intensive goods. The implications of these changes could be far reaching. To give an example energy saving forms of transportation, including the bicycle, would receive an impetus; insulation materials will be used more widely, and building standards might change. These shifts will change production and demand patterns, resulting in contraction and unemployment in certain industries, and new jobs and relative boom in other. Countries specializing in energy saving products will gain export markets, while others will have to accept new import burdens.²⁴

IMPACT ON NON-OIL DEVELOPING COUNTRIES

Whereas concerns were raised in the developed world with respect to maintenance of the high standards of living that had been attained in the twentieth century, the oil poor

developing countries of the world were confronted by the question of their survival. For these countries the problems of higher oil prices center chiefly around their impact on foreign exchange earnings and reserves, rather than on aggregate demand. The effect of the oil price increase on developing countries with no oil resources of their own has been far more severe than on the industrial countries for several reasons. Economic growth in most of these countries is heavily dependent on the availability of foreign exchange, which in turn is a major factor in determining their capacity to import capital goods in order to support investment and to generate growth. Non oil developing countries (NOD) have relatively little room for cutting down on oil imports through energy conservation, because most of their oil consumption is for essential productive purposes. On the other hand, advanced countries like the U.S. can cut down on energy consumption merely by lowering thermostats and speed limits. The export markets of the NOD countries shrank due to the oil induced recession in industrial countries. Declining exports thus reduced the foreign exchange earnings, a larger fraction of it being devoted to increasing oil bills, leaving only a smaller amount available for the other imports needed to meet development plans. The rise in the cost of oil has deeply affected the production of fertilizers. Some developing

countries found difficulty in getting adequate supplies of fertilizers and thus were forced to reduce food production. The terms of trade have moved strongly against the NOD countries due to the twin factors of the oil price hike and the subsequent rise in import prices of manufactured goods from the developed world. The World Bank studied forty NOD countries and found an average decline of 15% in their terms of trade between 1973 and early 1975.²⁵ Their trade balances moved adversely, thus impairing their ability to borrow in private capital markets. Besides, the transfer of income from the OECD countries to members of OPEC can affect the flow of concessional aid to the developing countries. In contrast, many industrial countries have been able to compensate for much of the rise in oil prices by increasing their industrial export prices much faster than the oil content of their exports increased in cost. This may be attributed to several reasons. The elasticity of demand for manufactured goods is low. The developing countries need capital goods to promote growth at home, and they have to turn to the industrial countries to meet their demands. Loans given to the developing countries may be tied to the purchase of capital goods from the nation financing the loan. The non-oil developing countries cannot increase the price as their exports by much, as primary products, besides their major export faces competition from abroad and has a high elasticity of demand. The dollar value of world trade grew by forty-five percent in 1974, with only a nine percentage point increase due to higher prices of commodities imported from

the NOD countries. Higher oil prices caused an eighteen percentage point increase, while prices of manufactured goods from industrial countries went up by thirteen and a half percentage points. As a result, the world trade share of the NOD countries decreased from 15.5% in 1970 to 14.3% in 1974. Thus, the burden of OPEC's surplus has fallen more heavily on NOD countries.²⁵

Table 2²⁵

Shares of Developing Countries in World Trade 1950-1970*

	1950	1960	1970	1974
All LDCs** of which:	35.4	26.2	22.2	31.4
1. Oil Exporting countries	7.0	7.0	6.3	16.8
2. Middle Income LDCs	22.4	15.1	13.2	12.9
3. Lower Income LDCs	5.4	3.6	2.3	1.4

Groups are classified according to their 1974 standing.

* in %; based on current US \$ values of Exports.

** Less Developed Countries.

Source: Y.S. Park, Oil Money & the World Economy (Westview Press Inc., 1976), page 153.

The plight of the non-oil LDCs became exacerbated further in 1974 and in 1975 as their volume of exports declined significantly due to the oil induced recession in the industrialized countries. According to an estimate by the OECD secretariat, in 1974 and early 1975 the exports of the non-oil LDCs to the

western industrial countries were cut by \$5.5 billion from what they would have been without the slump in demand from the rich countries; and those to the centrally planned communist countries declined by perhaps \$1.5 billion.²⁵ In contrast, western industrial countries have been able to score a dramatic recovery in their trade balances due to their economic recession as well as a sharp increase in OPEC imports from them. The abrupt oil price increase directly added about \$8.5 billion to the import bills of non-oil LDCs in 1974, and consequently they suffered a combined trade deficit of \$28.0 billion in the year. Table 3 shows the current account balances of these countries.²⁵

Table 3

Current Account Balances of Non-OPEC LDCs*

	1974	1975
Brazil	-6,981	-5,300
Mexico	-2,613	-3,050
S. Korea	-1,879	-2,200
India	-1,400	-1,600
Pakistan	-1,039	-1,125
Peru	- 685	- 950
Malaysia	- 373	- 950
Argentina	245	- 825
Phillipines	- 280	- 825
Taiwan	- 825	- 300
All others	-11,970	-17,100
Total	-27,800	-35,000

* in millions of US dollars

Source: World Financial Markets, Morgan Guaranty Trust Co. of New York, October 20, 1975, page 5.

Developing countries in general, have only a limited range of potential exports that can be raised in volume sufficiently in the near future. Furthermore, non-oil LDCs are dependent on oil for well over half their energy, whereas the developed countries get less than half their energy from this source. So these non-oil LDCs are forced to borrow from abroad to finance the increased trade deficits.

The additional cost of oil for developing countries is larger than the total cost of the food grains that they import.²⁶ Rising prices of food grain had their effect earlier in 1973 when the cost of imported food grains had risen some \$4.5 billion above the level of the preceding year, largely as a consequence of price increases. The fact that the prices of food grains stayed at these high levels in 1974-- in fact, they rose somewhat further on an average--implies that the higher oil price came on top of the already heavy outlays for needed food grains.²⁶ Table 4 (page 28) shows the balance of payments of oil importing developing countries. Since the current account deficit was unusually small in 1973, the net capital inflows proved to be large enough both to finance the gap, as well as to permit an increase of about \$10 billion in foreign exchange reserves. The tripling of the current account deficit in 1974 would have undone this reserve gain entirely had the developing countries not been able to attract

and absorb an additional \$8.3 billion net in medium and long term capital. Although some countries lost their reserves, they as a group were able to maintain their reserve levels. Still, inflation as reflected in international trade prices reduced reserves as a percentage of imports. A substantial part of additional capital inflows in 1974 and 1975 originate in the oil exporting countries. Bilateral contributions, and flows through various multi-lateral agencies in 1974 and 1975 may amount to \$7 billion to \$8 billion on an average compared to \$1.2 billion in 1973.²⁷

Table 4²⁷

Balance of Payments of Oil Importing Developing Countries

<u>Item</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Export of goods, FOB	70.7	101.7	92.7
Import of goods, CIF	77.8	128.5	128.8
Trade Balance	-7.1	-26.8	-26.1
Non Factor Service Receipts (net)	-2.6	- 3.1	- 3.4
Resource Balance	-9.7	-29.9	-29.5
Factor Service Receipts (net)	-0.7	- 1.0	- 2.3
Current Account Balance	-10.4	-30.9	-31.8
Net Medium & Long Term Capital	22.4	30.7	33.4
Changes in Reserves and Short			
Term Capital Movements*	-12.0	+0.2	-1.6

* increases -, decreases +.

Source: W. Tims in "Higher Oil Prices and the World Economy", Edited by E. R. Fried and C. L. Shultze, 1975, The Brookings Institutions, page 181. Citation: IBRD Staff Projections.

Special assistance to the developing countries to overcome their balance of payments difficulties has been forthcoming through several channels. Although OPEC nations have rejected a two tier pricing system as a general solution to the difficulties facing developing countries, some contracts for oil supply have been made at special concessionary prices. Iran, for example, sells crude oil to India and Pakistan on preferential terms. Loans, credit facilities, and deferred payment terms have also been arranged between the Arab oil exporters and other Arab nations which are dependent on oil imports. Venezuela has aided several Latin American oil importers. Ultimately however, the oil importers have to export a much larger quantity of goods and services in order to pay for their oil imports, and to service any associated loans. The principal advantage and purpose of loans is to enable the hard hit economies to continue to operate at a high level capacity, and to create through higher savings and investment, the capacity to produce exports and import substitutes in order to gain the foreign exchange needed to pay for the oil.²⁸

Beyond these general effects on all non-oil less developing countries (LDCs), however, the impact of the oil price increase varies greatly among individual developing countries. There are of course some exceptions. There are those non-OPEC LDCs that on balance have not significantly suffered from the price trends of the past few years, and some may have even benefited from

the general price developments. Some of these countries are self-sufficient in oil, or even export some oil like China, Columbia, Mexico, Peru, Bolivia, and Tunisia. Some benefit substantially from exports of other raw materials whose prices have been increasing like Malaysia, Morocco, Brazil, Bolivia, and Tunisia. Brazil is producing one fourth of her domestic oil needs, has a high potential for hydroelectric power which is very competitive with oil energy. Brazil has large financial reserves and increasing exports. Likewise, we can spot examples of South Korea which exports manufactured goods, and the U.S.'s assistance alleviates her problems, and Argentina which is relatively affluent, her grain and beef exports continuing to do well.²⁸

There are those non-OPEC LDCs which have suffered heavily from economic recession in the industrial countries, as well as from the oil price increases. Countries like South Korea, Hong Kong, Taiwan, and Singapore have been significantly dependent upon their exports to the industrialized countries in developing their economies. In addition, Greece, Turkey, Spain, and Yugoslavia used to benefit from their substantial foreign exchange earnings from tourism and workers remittances, as well as from exports to the industrial world. The economies of these developing countries are affected adversely by worldwide inflation, economic recession, and sharp increases in the price of raw materials, including oil. There is another category which comprises the hard core of seriously troubled LDCs, totalling about forty in number with a combined popula-

tion of almost one billion. Most of these countries are located in tropical Africa, South Asia, and the central American Caribbean area. For this group, the recent series of economic developments caused directly and indirectly by the oil crisis has been overwhelmingly negative. Most of these countries are not only the poorest in the world but also have the most dismal growth prospects for the future.²⁹

The magnitude of the impact of oil price increases on all developing countries depends on the level of development of each country, the degree to which it relies on imported oil for meeting its energy requirements, and the degree to which it participates in international trade. The impact therefore varies particularly when developing countries are grouped by income levels and export structures. Countries exporting oil obviously constitute a distinct group of developing countries; similarly those exporters of other minerals and metals that depend heavily on exports based on natural resources form another distinct group. The remainder are grouped into three categories with per capita income boundaries at \$200 to \$375.³⁰

With respect to both the amounts of energy required, and the kinds used, there are significant differences among these groups of countries. Countries at the lower end of the scale usually have small modern sectors and are lacking in infrastructure; these characteristics tend to be reflected in low

Table 5³⁰

Principal Economic Characteristics of the Three Groups of
Developing Countries, 1968-72.

Group of Countries	1972 pop. as a % of the total	Average annual % growth of GDP. 1968-72	Exports as % of GDP in 1972	Average annual growth of expts. 1968-72 in %	Outstanding public debts per capita, Dec. 31, 1972 in dollars
Oil Exporting Countries	15.8	9.6	26.9	5.0	62.0
Other Mineral Exporting Countries	3.7	4.8	21.9	4.6	119.0
Other Developing Countries according to per capita Income					
Above \$375	21.2	7.1	11.1	7.5	94.0
\$200-\$375	9.3	6.6	19.9	10.2	95.0
Below \$200	50.0	3.5	6.7	1.8	25.0
Total/Average	100.0	6.2	14.2	6.4	55.0

Source: W. Tims, Higher Oil Prices & The World Economy, ed. by
E. R. Fried, and C. L. Schultze (Washington, D.C.: The
Brookings Institution, 1975), page 175.

levels of energy consumption per capita, and by a composition
of use dominated by traditional forms of energy and only
limited amounts of oil. Energy consumption appears to rise

over the scale of development levels, at a rate faster than that of economic growth, and oil consumption, at least when the price of oil was comparatively low, rose faster than total energy consumption. The much higher levels of oil consumption at more advanced levels of development constitute in most cases a claim on foreign exchange resources. This does not necessarily imply however, that oil imports constitute a heavier burden on developing countries at the upper end of the scale, since participation in international trade also increases with higher income levels. The lower income countries may in fact be affected more seriously by burdens of their foreign exchange resources, since their exports and hence capacity to finance imports are small in relation to their national product.³⁰

The middle and higher income countries that have diversified exports are vulnerable to fluctuations of growth in the industrial countries. Prices of their exports may not be affected so strongly as are those of the lower income countries, but fluctuations in the volume of demand for their exports are quite pronounced. For the middle and higher income countries the restoration of normal growth in the OECD countries is of prime importance as the factor that can quickly restore the level and growth of their export earnings. For the lower income countries however, the principal effect of higher oil prices and OECD recession was a major deterioration of their terms of trade, which will take a number of years to recover. Their capacity to adjust in the short run is strictly limited.

Exports, consisting mainly of primary commodities, cannot be increased rapidly, particularly when international demand is weak. Unless adequate net inflows of capital (including the possibility of reduced debt service payments) can be generated, imports must be held down, thus in turn affecting the growth of output and incomes. Capital flows must be geared to the immediate import financing needs of the developing countries. Program aid is therefore preferable to project financing, and rescheduling of debt service obligations is for debtor countries, the most attractive alternative. Within capital flows of the program type, those associated with food and oil need to be mentioned specifically, for the additional capital flows in these forms can be tied to the commodities that account in a large measure for the balance of payments problems of developing countries.³¹

The extent to which developing countries can meet their short term problems through a re-allocation of resources is limited, and especially so for the lower income countries whose economic structures are usually characterized by a lack of diversification. Though conditions have improved due to recovery in industrial countries and resumption of growth in international trade. Many of the developing countries find great difficulty in returning to their original growth path. Their reduced levels of investment in 1974 and 1975 lessened their productive capacity in subsequent years. Those countries that borrow heavily to maintain growth in the short

run take the risk of reducing their ability to borrow later, and thus become more vulnerable to external economic shocks in the future.³¹

In the long run, consideration must be given to the various possibilities for energy substitution, both by switching from imported oil to other primary sources of energy for existing facilities, and by investment in new facilities that generate or use alternative forms of energy. In the short and medium term, substitution possibilities in the developing countries are limited. In the power sector where internal adjustments are the most significant, long lead times for new investment will reduce the scope for substitution over this period; it is only in countries with large power systems that substitution of other primary sources of energy for oil, can reduce the share of oil in energy consumption. It is not likely therefore that the highest cost of imported oil will be offset to any great extent by either conservation or substitution. Investment programs in the developing countries need to be adjusted so that they can accommodate substantial new programs and projects for the future production of domestic energy. Such investments, besides entailing long lead times also tend to be highly capital intensive, and to require substantial imports of machinery and equipment. Before any reduction in foreign expenditures can be realized, these countries must increase their foreign expenditures further in relation to their adjusted investment needs; alternatively they must reduce their imports of goods and services other than oil. But it is difficult to do the latter as most

of such imports are directly associated with the development programs of these countries, and with the maintenance of stable prices on major items of domestic consumption. If capital flows do not increase sufficiently to maintain the volume of imports in relation to a country's growth objectives, development will slow down, and generation of domestic resources for investment will inevitably be reduced. Even maintaining planned levels of investment will therefore be difficult and the accommodation of capital intensive energy related projects will further reduce the resources available for the development of other sectors of the economy. Countries are thus faced with painful choices regarding allocation of the cuts in investment outside the energy sector. Ongoing projects absorb by far the major part of annual development programs of most countries, and the substitution between projects and sectors can be done only at the margin of the program; a shortfall of development finance resulting from reduced growth and higher project costs can in itself lead to further delays, because ongoing projects take longer to complete, thereby postponing the time at which energy substitution projects can be undertaken.³²

The oil price increase has caused a number of previously unattractive energy substitution projects like hydroelectric schemes, coal developments, geothermal energy, and generation of nuclear power, to become economically feasible. In the field of nuclear energy recent developments make it possible to build smaller plants which can still compete with oil fired

generating plants; a number of countries whose medium term energy demand prospects were in the past considered too small for nuclear power now find that this type of energy is an economic possibility.³²

Most equipment and machinery required for energy substitution needs to be procured from the industrial countries, which are embarking on similar projects themselves. Developing countries may therefore experience difficulties in purchasing and taking delivery of such equipment, for they face competition from virtually all nations. Industrial countries will tend to place large orders, generally consisting of large units, for series of equipment deliveries; the orders of the developing countries are usually for single items and smaller units, preferably financed by the supplier by means of concessional credits. This situation, added to the problems of financing energy substitution projects, may increase the time required for significant progress to be made in reducing dependence on imported oil. In view of all these factors, the developing countries are likely to reduce their dependence on imported oil slowly at best, lagging insignificantly behind the industrial countries in this respect. Of course some countries are in a position to develop domestic sources of energy such as coal, oil, and gas, and are doing so.³²

Additional foreign exchange resources can be provided in a variety of ways: increased earnings through producers' arrangements that prove to be successful in raising prices of

exports of raw materials; improved access to overseas markets, particularly for exports of manufactured goods; additional flows of external capital in the forms of grants or loans; or reductions of the cost of debt servicing through re-negotiation of such liabilities. In the short run, use of reserves and short term borrowing may, to some extent, bridge the gap for countries in which such means are available; in the long run, these cannot be relied upon to any significant degree as a way of meeting the additional foreign exchange costs. The developing countries earn more than 80% of their foreign exchange (excluding net capital flows) from exports to the industrial countries. The long term prospects for these earnings are almost entirely a function of demand and price developments in the industrial countries. Supply prospects for primary commodities which constitute a major part of the exports of developing countries can play an important role, particularly when the products concerned are those that developing countries supply in competition with natural or synthetic products from industrial countries. The trade policies adopted by the producers or the consumers of these export goods add another element of uncertainty to those associated with demand, supply, and the effects of international inflation. The amount of foreign exchange required over and above the amount available is so large that serious analysis is hardly required to demonstrate the impossibility of attracting and absorbing such large inflows without impairing creditworthiness and creating

excessive debt service burdens. It inevitably follows that a growth rate of 6% between 1975 and 1980 for NOD countries is not possible if it is to be achieved through capital flows alone. The rate of growth for these countries will probably be moderate, given the amounts of capital available to them and the terms of its availability (assuming no change in their own policies), and depending upon the speed of recovery in the OECD countries. Even with the most optimistic assumptions about growth in these industrial countries, it would be a major achievement if developing countries were to return gradually to a rate of growth again reaching 6% towards the end of the decade.³³

Before the advent of the "green revolution" in the developing world, increases in the consumption of energy were associated primarily with activities in transport, mining, and manufacturing. Since the adoption of new methods of large scale farming, the agricultural sector in most developing countries has also become a growing consumer of energy, both directly and indirectly. When we add to these sectors the demands for energy for residential consumption by a large population (as in the case of India) energy acquires a priority over many other resources essential for economic well being and development. The relatively low prices of oil and its abundant availability in the past few decades gave rise to the evolution and adoption of technologies that depend on petroleum. Hence, even though rapid increases in power and

coal consumption accompany national economic growth, the rate of increase of petroleum consumption has been higher in developing countries in the past three decades.³⁵ Whereas oil demand in the OECD group has climbed only 8% between 1973-78, the non-industrialized countries have raised their demand by no less than 43%.³⁴ Prominent among the latter group are of course, the OPEC countries themselves. In addition, in India, the Fuel Policy Committee indicated that by 1971 approximately one-half of the total commercial energy consumed was in the form of petroleum.³⁵

The consumption of non-commercial sources of energy in developing countries is large, and concentrated in the rural sector which is engaged predominantly in agricultural activities. A change from the use of animal waste and firewood to commercial sources of energy require extension of markets into, and increased incomes within, rural areas; which have been found to take place in regions with modernization of agricultural methods. Modern methods do not therefore, necessarily increase the overall energy consumption, but to cause a shift to commercial sources from non-commercial sources. The unusually large consumption of non-commercial energy in developing countries takes the form of forest fuels, cow dung, vegetable wastes, and one used in large measures is animal energy: mainly bullocks, buffalo, and camel are used for tilling, drawing water, or for the transportation of goods and passengers. These

forms of energy are not used for industrial applications. Animal and human power substitute other energy sources to a substantial degree in rural areas. Their availability in abundance and at relatively low prices leads to the adoption of labor and animal intensive production technologies. The marginal product of labor with such technologies remains low, nevertheless, and can be increased only with corresponding increases in capital and in modern energy inputs. The problem of consumption of non-commercial energy lies not merely in the extensive quantities that are used but also in the inefficient manner in which energy is converted to perform various functions. The efficiency of conversion associated with these non-commercial sources of energy is deplorably poor, and since most of these are consumed without any cost to the consumer, there is little incentive to adopt improved methods.³⁶

The problems posed by consumption of energy in this manner cannot be solved in the short run, given existing institutions and politico-legal systems. Considerable research is being done for instance, on the possibility of fast growing forests, which could serve rural areas with cheap firewood, and which could be constantly replenished. The implementation of plans for large scale introduction of bio-gas plants, using cow dung as the feed stock, is also being widely adopted and advocated by a number of individuals and agencies. Solutions of this type make a impact only after a considerable period of time; in the interim, with the resources, administrative infra-structure and

knowledge available, quicker solutions can perhaps be found in the sphere of commercial consumption of energy. But NOD countries must proceed with research, development and trials for non-commercial energy, which could effectively meet at least a part of her growing energy needs.³⁷

The economic summit held in Bonn during July, 1978 recognized the plight of NOD countries and emphasized on the need for a fresh approach to the problem of industrial recession and unemployment. The basic strategy proposed is that the two groups of nations embraced in the OECD and OPEC should set up a joint organization that would finance a massive program of economic aid to the LDCs. The aid would be in the form of grants rather than loans, on the lines of the Marshall Plan that helped to put Western Europe on its feet after the last world war. The LDCs have been hard hit by the steep rise in oil prices, and it is therefore fitting that some of the surplus oil revenues should be used to nourish their economic recovery. The first priority would be to eliminate their huge balance of payments deficits, which act as a drag on trade. The second would be to help them develop their indigenous energy resources, notably their oil and gas. It is believed that these countries have suitable opportunities for hydrocarbon exploration; and the international oil companies would be willing and able to undertake the search. Some such radical solution is required to "break through the logjam of complacency

which has grown up in respect of the relations between rich and poor countries". The alternative seems to be a further deterioration in the viability of the economic system.³⁸

CONCLUSION

These then were the waves that followed the Arab oil embargo of 1973, and the concurrent price increase in oil brought about by the OPEC cartel. The ripples from this major international development have still not died down, and a look at our economies would lead us to conclude that the effects are likely to be felt for years to come.

The sudden shift in the world's current account balances plunged the OECD nations into deeper recession, which in turn affected the developing countries with little or no oil resources of their own. Taking 1970 as 100, industrial production in the 24 OECD countries as a whole rose to a plateau of 119 in 1973 and 120 in 1974. It slumped to 110 in 1975 but rebounded to 120 in the following year and climbed to 124 in 1977.³⁹ Recovery has been slow, and it is proving difficult to find a new equilibrium between the conflicting needs of restoring price stability and balance of payments on the one hand, and boosting economic growth to reduce unemployment on the other. At the Manila meeting of the IMF and World Bank in October, 1976 there was considerable agreement that the time had come in international financial relationships for a shift in emphasis from the financing of very large payments deficits to the need for countries to adjust their balance of

payments by agreeing to reduce either their deficits or surpluses. However, such a process cannot be attempted without the full co-operation of the oil exporting countries whose aggregate current account surpluses at the end of 1976 reached \$138 billion, compared with a total OECD deficit of \$65 billion and an accumulated deficit of \$79 billion for non-oil developing countries.^{40a,b} The IMF oil facility was terminated in 1976 because it was not intended to do more than cushion the cost of adjusting to a more sustainable balance of payments equilibrium. Generally, this equilibrium has not been achieved, current account balances continue to deteriorate, consumer prices in the OECD area as a whole were rising at an annual rate of 8%, and industrial output expanded only slightly.⁴⁰ Growth in the OECD area is likely to be down to 3 1/4% annually by early 1979, well below 4 1/2%⁴¹ estimated to be needed to prevent unemployment from rising further. The increased flexibility of exchange rates in recent years has not helped the process of adjusting deficits and surpluses as much as had been hoped for. One of the main reasons is that oil exporting countries understandably have not been prepared to accept an adjustment of their exchange rates that would render their fledgling economies uncompetitive and have preferred to accumulate financial assets.⁴⁰

Ultimately, oil consumers have to pay by exporting more goods and services to the producing countries. The greater claim on available goods and services must be met by a check on

internal consumption, unless output can be raised considerably without stoking inflation at home. Any solution aimed at promoting sustained economic growth worldwide would need at least a tacit agreement by OPEC that the advanced and developing oil consuming nations be protected from abrupt and steep price increases, so that adaption to a more integrated world economy can proceed more smoothly. In turn, the OECD countries would have to accept that they cannot continue exporting their inflation in the hope of halting or reducing the transfer of real resources. Otherwise the alternatives are stagnating industrial production and declining living standards everywhere, with all the inherent dangers of political instability.⁴⁰

The OPEC's Caracas conference (December 1977) chose to freeze the crude oil price leaving the marker crude (Saudi-Arabian light) unchanged at \$12.70 a barrel. For exporting countries price policy is of paramount importance. At Caracas in December, at Taif in May, and Geneva in June, Skeikh Yamani (Saudi Arabia's oil minister) argued for price stability, supported by the Shah of Iran. They were anxious not to jeopardize economic recovery prospects in the western world; they also had in mind their country's special relationship with the U.S.⁴² The freeze was accepted, however, reluctantly, by the 13 member governments because the absorptive capacity of the world oil market at present falls short of OPECs preferred level of production. They are acutely aware that demand for

petroleum products in recent years has been sluggish; in 1977 the expansion in world oil demand was less than four percent.⁴³ The basic reasons are slow growth in the world economy, the steep rise in all energy costs, and some success in energy conservation policies. There was a reduced role of OPEC in the 1977 oil output due to a combination of restrained world demand, production ceilings, and a substantial production during 1977 from the North Sea and Alaska. Non-OPEC free world production is held as high as practicable every year to reduce dependence on OPEC. Very broadly OPEC currently accounts for about half of the world oil output, non-OPEC free world for over a quarter and the communist bloc for over one-fifth.⁴⁴ But by common consent this stage of abundance will before long give place to a period in which the potential demand for OPEC oil will surpass the total which the exporting governments are able and willing to supply. Sheikh Yamani has several times referred to the need for modestly higher prices next year, to prepare the way for the price advance which he regards as inevitable in 1980s.

The unspent balances of OPEC revenues, which have constituted a widely publicized threat to the world's financial stability, have been declining as the growth of imports has outpaced the increasing flow of petro-dollars. There is some disagreement about the precise magnitude of these surpluses. The Bank of England estimates that the total fell from about \$56.4 billion in 1974 to \$35.8 billion in 1976 and further to

\$33 billion in 1977. The Morgan Guaranty Trust while agreeing about the down trend, puts the 1976 and 1977 totals rather higher at \$38 and \$35 billion, respectively. In view of the present prospect of oil price stability, and continued slow economic growth, together with a continued rise in OPEC imports, Morgan estimates that the aggregate surplus will be down to \$25 billion in 1978.⁴⁵

The Arab oil embargo and the subsequent price quadrupling was an eye opener for the entire world. The lesson to be learnt is that no matter what the cost of oil may be, it is a resource which is dwindling rapidly. By both conservative and liberal estimates, the world would be void of its oil within the next four decades (at the present rate of consumption). The problem is thus not only one of being able to afford this form of energy, but of the realization that with years to come it would not be available at any price tag. It would be in the best long-term interests of all the nations, especially the high oil consuming industrialized countries, to direct their attention towards developing alternate forms of energy. It is not an impossible task, but one which would require the concerted efforts of scientists, engineers, and technologists.

There are several alternatives presently available in the energy world. Among these are coal, nuclear energy, and solar energy. Each one of these is in plentiful supply and at least one of them, solar energy, has the potential lifetime of the universe. Conversion to the use of coal can be accomplished with

relative ease in industry, locomotive transportation, and the generation of electricity. In order to use coal more efficiently and cleanly, stricter pollution standards must be set. Nuclear energy is a rich source of fuel. However, in order to ensure maximum safety in its usage, research must be directed towards achieving efficient and radiationless energy. Solar energy, nature's gift to mankind, is needless to say the cheapest form of fuel available, with no possible threats of embargo associated with it. Methods to tap and store it are however not very practical at the moment. Presently solar energy is used to heat some homes, and with dedicated research it may soon be possible to store this energy in convenient "cells" for continuous use by automobiles and the transportation industry.

The time has come when the consumers of oil realize that the world's oil is not only expensive but also dripping away at a very rapid rate. The outlook to alternate forms of energy is quite optimistic, and this optimism can be changed to reality by a unified effort of consumers, scientists, engineers, and the governments of industrialized nations.

Winston Churchill once suggested that World War II should be named the unnecessary war. The conflict, he argued, could have been avoided by timely and courageous action. It can similarly be argued today, that with a minimum of foresight matched by will-power, our own generation may be able to avert the mortal danger of sliding into a long and serious energy crisis of worldwide dimensions.

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THE IMMEDIATE IMPACT OF THE ENERGY CRISIS WITH SPECIAL
REFERENCE TO NON-OIL DEVELOPING COUNTRIES

by

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ABSTRACT

Coming on top of chronic inflation and serious commodity shortages, the dramatic increase in crude oil prices towards the end of 1973 subjected the world economy to a severe shock, precipitating the energy crisis. Its repercussions continue to affect the world economy as adjustment policies, both domestic and international, continue to be debated.

In the western world, technological advance was made heavily dependent on cheap and abundant supplies of energy. Transportation, heating, and industry all consumed large amounts of energy. Virtually everyone then, has been affected by higher prices for all types of petroleum products, never mind the increased demand for substitutes and the further twist to the inflationary spiral. Higher oil prices caused a deficiency in demand, as these higher prices reduced real incomes of consumers. Structural changes had to be initiated in a bid to produce less energy intensive products, and energy substitutes.

While the industrialized world was concerned about maintaining their high standards of living, the non-oil developing (NOD) countries of the world were confronted with questions of their survival. Economic growth in these countries is heavily dependent on availability of foreign exchange, because it enables them to import capital goods in order to support investment at home, and thus generate growth. The oil price increase has greatly reduced their foreign exchange reserves, because most of the oil consump-

tion is for essential productive purposes, and hence they cannot cut back on oil imports. Their foreign exchange earnings declined due to the oil induced recession in industrial countries. In most of the non-oil developing countries, agriculture is the major industry; but the rise in oil costs deeply affected the production of fertilizers. Their terms of trade have moved against them. The impact of the oil price rise varies greatly among individual developing countries depending upon their level of development, the degree to which they rely on imported oil, and the degree of participation in international trade. Special assistance has been forthcoming to these NOD countries from international agencies, as well as through bi-lateral agreements. But ultimately they will have to pay in real terms for their oil imports.

The huge revenues accruing to the oil producers have been a major cause of concern; being high savers, with a low propensity to import in the short run, has given them a large balance of payment surplus, and the corresponding deficit for the oil importers. The international financial system has been undergoing severe stress in attempting to recycle the oil money. The other international systems have also been affected, including the foreign exchange markets, the banking community, and the monetary system.

Since World War II we have advanced considerably towards a more open world economy. Mutual co-operation between governments is needed to overcome any crisis of a world-wide nature.