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ENERGY AND ECONOMIC DEVELOPMENT

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The paper sets out to examine the impact of energy crisis on the world economy in general and the less developed countries (LDCs) in particular. To clearly and fully understand the economic problems confronting LDCs in the era of energy shortage, it is necessary to formulate a general structural theory of economic development. A more comprehensive multidimensional indicator of economic development should also be constructed to measure the industrialization of the LDCs under study.

1. INTRODUCTION

Since the world economy is currently beset by a runaway inflationary recession as caused by the energy crisis, a correct understanding of the economic problems confronting the LDCs will be able to help us formulate a effective policy that can build a new international economic order. Admist the hostility and confusion resulted from the oil embargo which is used by OPEC as a weapon against the Western industrial powers, such a task is by no means easy. To correctly appraise the dimension of economic plight of LDCs and the OPEC countries, a general structural theory of economic development has to be formulated. A more comprehensive multidimensional indicator of economic development should also be constructed. With such a new theory of economic development and a new measure of industrialization, the following questions can be unequivocally answered:

- (1) To what extent has the development effort of the non-OPEC LDCs been frustrated by the energy crisis? What should be done to help them?

- (2) Are the OPEC countries achieving a more rapid rate of economic development because of their huge oil surpluses? Is OPEC stable as an oil cartel?⁷ Are their oil surpluses properly allocated?⁸

The impact of energy shortage on the rich industrial powers shall also be briefly discussed in passing. The thesis of the paper is that energy shortage increases international political instability as well as reduces the rate of growth of the world economy and thus hurts the general welfare of all nations in the long run, even though the OPEC countries with their huge oil surpluses seem to be the winners at this time.

2. ENERGY AND INTERNATIONAL STABILITY

In international economics and politics, oil is an important ecopolitical commodity. It has the attributes of a commodity whose ever expanding demand is not satisfied by the dwindling supply. According to various studies, the peak of oil production is around 1990 in a scenario of high growth and high-energy-price. In a slow-growth and constant-energy-price scenario, the oil supply would

meet demand until 2004.¹⁰ In other words, the world has 10 to 25 years to come up with new energy alternatives and successful conservation efforts. In the meantime, oil would dominate the international relations between the consuming and producing countries because oil is a vital necessity in our life and the lack of it would paralyze our modern civilization.

The energy shortage compounded by the uneven distribution of proven oil reserves would intensify the international conflicts when the production of oil declines in either 1990 or 2004. The conflicts that can arise from the current energy crisis are quite similar to the combination of factors that touched off World War I: increasing population pressures, rising demand for resources, rapid technological and economic growth, and high levels of armaments. As the oil production falls off, the possibility of oil-induced wars increases in all combinations: (1) between consumers such as the United States and the Soviet Union, (2) between consumers and producers, (3) between producers like Iraq and Iran.¹⁷

First of all, let us investigate the possible causes of conflicts between oil producing countries like Iraq and Iran. If the oil reserves of Iran were depleted before the economic development programs are completed and a self-sustained economic growth is achieved, Iran might be tempted to annex the oil fields of her weaker neighbors such as Kuwait, Bahrain, Qatar, Oman and the United Arab Emirates. To stop such kind of aggression, Iraq could be drawn into a major war with Iran. Currently, the oil riches amassed by Iran are not evenly distributed. To curb any political unrest that might be caused by high unemployment, an increasing amount of oil surpluses is used in acquiring armaments in maintaining internal stability. Thus the political situation in the Middle East is more explosive than ever before because of the formidable military power of OPEC.

In 1960, the base price of a barrel of oil was \$1.8. In June, 1979, it increased to \$18. The increase in the cost of energy sends violent repercussions all over the world. The price hike increases the cost of energy by \$230 for an American family per year from \$737 to about \$1,000. This will reduce the purchasing power of an American family. The general decline in consumption will cause the aggregate demand for goods and services to fall. In the Keynesian framework, the rate of unemployment is going to rise as the aggregate demand declines. A study by the Depart-

ment of Treasury reported that the energy shortage is hurting the health of the American economy. The job loss of American workers shall be 250,000 by the end of 1979 and an additional 550,000 by the end of 1980. In more than one way, the high price of oil, set by OPEC, has alarmed some people. One writer discusses the ways to break up OPEC.¹¹ A novelist goes as far as predicting incorrectly the crash of the American economy due to the cashing in of petrodollars.⁹ Some Americans are afraid of diplomatic and political dependence on OPEC. If an oil embargo severely hurts American economy, the possibility of American attempts to take over the oil fields in the OPEC countries exists.²² Such attempts might ignite a major war.

An oil-induced war between consuming countries like the United States and the Soviet Union is possible when the Soviet Union loses her oil self-sufficiency in 1985 according to a CIA forecast.⁶ If the Soviet Union tries to subvert and then conquer one of the oil producing countries in the Middle East, a major war between superpowers is imminent.

The advent of the computer age makes it possible for many scholars to simulate and forecast the impact of energy supply on international stability. The purposes of some of these forecasting models are: (1) to determine the effects of international policies of oil supply and price, (2) to identify the impact of alternative production and price policies of producers on the consumers, and (3) to identify the intensity of conflict likely to arise from different policies. In short, global conflicts and the use of force become more probable if there is no international policies designed to regulate: (1) the exploration and utilization of scarce resources, (2) fair economic exchange between producers and consumers, and (3) equitable economic growth and development politics for all nations. (Choucri, Ross and Meadows, 1976)⁵

3. ENERGY AND ECONOMIC DEVELOPMENT

Energy shortage has caused a worldwide inflationary recession. In analyzing the impact of energy shortage on the world economy, nations can be divided into the following three categories:

- (1) the rich industrial powers such as the United States;
- (2) the LDCs without oil like Taiwan and the Phillipines; and

(3) the LDCs with oil like the OPEC countries.

3.1. Energy and the Rich Industrial Powers

The high price of energy as caused by the cartelization of oil producing countries is playing havoc with the health of the U.S. economy. The oil price hike pushes up the rate of inflation which taxes away the purchasing power of average consumers. The falling aggregate demand as caused by declining consumption demand presages a recession and a high rate of unemployment in the U.S. A high rate of inflation in the U.S. will make American goods more expensive than foreign imports. This will increase American imports and decrease U.S. exports. Hence, the trade deficits of the U.S. have rapidly increased. The U.S. Department of Treasury and the private commercial banks of the U.S. have been relentlessly creating a multiple expansion of the money supply in paying for these deficits. The foreign dollar claims on the U.S. have rapidly increased from \$78 billion at the end of 1969 to \$373 billion in the middle of 1978. The inherent danger of inflation in this huge U.S. deficit and its risk of leading to a collapse of international monetary system is called the second horn of the Triffin Dilemma.¹⁸ In short, the high unemployment and low production in the U.S. could adversely affect the LDCs opportunity in exporting their raw materials.

3.2. Energy and the Oilless LDCs

There is no doubt that the oilless LDCs are worst hit and hurt by the energy crunch. In a global recession, the rich industrial countries' demand for raw materials and consumer goods from these non-OPEC LDCs will decline. The higher prices of oil, the worse is the global recession. The worse is the global recession, the less the export revenue of these oilless LDCs.³ With a declining export revenue and rising petrobills and a mounting difficulty in servicing foreign debts, some of these countries have already run into problems of borrowing more money from the private banks in the U.S. in paying their oil bills. Without fuel, the level of production has to be curtailed. Many development projects have to be shelved. The economic development of oilless LDCs is stunted.

Being fully aware of the difficulties encountered by oilless LDCs, OPEC shows its sympathy and support by establishing many multilateral aid programs through organizations such as the Saudi Development Fund, the Kuwait Fund for Arab Economic Development, the Arab Fund for

Economic and Social Development, the Islamic Development Bank, the Arab Bank for Economic Development in Africa, and the Bx Abu Dhabi Fund for Economic and Social Development.² According to Mohammed Abu al Khail, the Minister of Finance and National Economy of Saudi Arabia, a sizable portion of the oil surpluses has been channeled through these organizations in the form of official grants and loans. Precise information is hard to find. It is estimated to be about \$7 billion annually in the 1974-1978 period.¹ Despite this generous gesture of OPEC, the problems of economic development of oilless LDCs are not resolved. Most of them reported huge trade deficits and a high rate of unemployment due to the high price of oil. Many economists consider devising workable financing schemes to assist the LDCs one of the most urgent tasks confronting us today (Constantine Michalopoulos, 1975).¹² & ¹⁴

3.3. Energy and OPEC

According to one of the official sources of OPEC, there has been a rapid acceleration in expenditures on economic development since the beginning of the mounting oil surpluses resulted from the 1973 price hike.¹ The governments have taken the initiative to build the domestic infrastructure and to undertake major programs for social improvements. As a result of these efforts, the non-oil sectors in the OPEC countries achieved more than 10 percent growth in the 1974-1978 period. Such a rosy report deserves a careful scrutiny from the viewpoint of economic theory and empirical evidences. For this purpose, a general structure theory of economic development is formulated.

Being aware of the problem of growth without development, economists such as Colin Clark have come forth with the hypothesis that economic growth is positively correlated with the change of the output from an economy from primary products to secondary products and from secondary products to tertiary products. Such structural transformations caused by economic development dominate the thinking of most economists who work international economic organizations. They especially pay attention to the structural changes of an economy as manifested in:

- (1) output composition;
- (2) pattern of trade;
- (3) direction of trade; and
- (4) pattern of income distribution.

However, they do not deal with the dynamics of how these changes are to come about or the obstacles in the way of such a transformation.

Economic development is the transformation of the primitive structures into rationalized and well-integrated economies of scale capable of producing and distributing more. This transformation process is complex and multi-dimensional. It involves major changes in social, political and economic institutions. This points out the fact that using changes in output composition and the pattern of trade in measuring economic development is insufficient and superficial. Furthermore, such measures fail to point out the motivating forces of structural changes.* For these reasons, a more general and relevant structural theory of economic development has to be formulated to understand the problems of economic development confronting the Third World countries today.

Generally speaking, we see the process of economic development as the success of a government in applying the positive forces of economic growth in overpowering the negative forces of a feudalistic primitive economy. The negative forces of a primitive economy can be measured in:

- (1) political instability as indicated by the extent of capital flight and brain drain, political repression, and military expenditures needed to maintain the political status quo.
- (2) economic backwardness as indicated by the dominance of primitive methods of production and distribution. The traditional structuralists' measures such as the output composition, the pattern of trade and the rate of capital formation are good enough in showing the low productivity of a less developed economy.
- (3) social barriers to economic development such as omnipotent bureaucracy, polynormativism, softness of state and the lack of incentive to innovate as indicated by the high percentage of patents owned by foreigners in the less developed countries; and

- (4) the general low quality of life as indicated by high infant mortality and high illiteracy rates and poor public health and sanitation systems.

3.4. Indicators of Economic Development

A set of industrialization indicators is formulated to show the efforts of economic development made by the less developed countries. A set of dependency indicators is constructed to show the weak areas of the developing economies. A composite economic development indicator is computed to see the net effect of economic development and the impact of various development programs. The result of the composite economic development indicator shows it to be positively correlated with the physical quality of life.

The empirical findings on OPEC based on our general structural theory of economic development, are not as rosy and impressive. All the industrialization indicators that we have data on point at the slow rate of structural change of the primitive nature of the OPEC economies. According to our computations, the overall aggregate industrialization indicators of OPEC nations for 1976 are as follows:

$$I_1 = \frac{K}{GNP} = .3321$$

$$I_2 = \frac{H}{GNP} = .011$$

$$I_3 = \frac{Ed}{GNP} = .041$$

where K represents capital formation or the annual difference in the amount of fixed capital; H represents health expenditures as a percentage of gross national product; and Ed represents education expenditures as a percentage of the gross national product.

The dependence indicator as measured by military expenditures/GNP ratio is:

$$D_1 = \frac{Milex}{GNP} = 7.9$$

The composite economic development index is obtained by:

$$E = I_1 + I_2 + I_3 - D_1$$

$$E = .3321 + .011 + .041 - 7.9 = 7.5159$$

*For a thorough discussion of the obstacles of economic development, see Chang and Weinstein.⁴

According to our composite economic development index, there was a sign of leaping backwards in 1976. This was caused by little expenditures on health, education and capital formation that build infrastructures for economic development as well as by too much military expenditures which may be a reflection of dependence and/or political instability. This can well explain the political unrest in countries like Iran despite their high earnings from oil exports.

As a contrast, let us look at the average structural development indicators of the industrial countries:

$$I_1 = \frac{\text{Capital formation}}{\text{GNP}} = .2909$$

$$I_2 = \frac{H}{\text{GNP}} = 2.8$$

$$I_3 = \frac{E}{\text{GNP}} = 5.8$$

The dependency indicator of the developed countries is:

$$D_1 = \frac{\text{Milex}}{\text{GNP}} = 5.6$$

The composite economic development indicator of the developed countries is:

$$\begin{aligned} E &= I_1 + I_2 + I_3 - D_1 \\ E &= .2909 + 2.8 + 5.8 - 5.6 \\ &= 8.8909 - 5.6 \\ &= +3.2909 \end{aligned}$$

The developed countries achieved positive growth due to heavy expenditures on capital formation, education and health while the military expenditures were relatively small.

We admit the inadequacy of data and the need for further research on the construction of a comprehensive multidimensional measure of economic development. Nevertheless, our empirical findings justify the solid theoretical foundation of our development indicators for economic analysis and formulation of development policy.

4. CONCLUSION

At the first glance, the energy crisis seems to benefit the OPEC countries at the expense of the Western industrial powers and the oil-less LDCs. With the assistance of a more

general and relevant structural theory of economic development and a more comprehensive multidimensional indicator of industrialization, the over-all development efforts of the OPEC countries have in fact been adversely affected by the energy crisis for the following reasons:

- (1) increasing military expenditures;^{8 & 20}
- (2) comparatively lower rate of increase in expenditures in education, health and other social improvements;
- (3) high prices paid for technology and capital imports; and
- (4) intensified capital flight from the OPEC countries.¹³

It is high time for political leaders and economic planners to reevaluate their oil pricing policies and their economic development strategies. Realizing that they are not benefiting from the policies that they have been pursuing, they probably would seriously consider the policy measures that would promote:

- (1) a fair and free economic exchange between oil producers and consumers; and
- (2) an equitable economic growth and development for all nations over the world.

In essence, this is the policy of free trade that most economists since Adam Smith have always advocated.

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BIOGRAPHY

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