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OIL AND AGRICULTURE IN THE ECONOMIC DEVELOPMENT OF TRINIDAD AND TOBAGO: COMPETITION OR SYMBIOSIS?

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Introduction

One of the most popular and time-honoured definitions of Economics holds it to be the science which studies the allocation of scarce resources, which have alternative uses, for the production and distribution of commodities satisfying human wants. This conception of available resources is well captured in the construction of production-possibility frontiers in which a given quantum of available resources can be allocated in various ways between industries with different resultant product-mixes. It is the largely unconscious influence of this view of the basic economic problem emphasizing scarcity of resources which later gives rise to the assumption that a major feature of the relationship between industries is the competition for resources between such industries.

The Economics of scarce resources based on the (usually implicit) assumptions of full employment of resources and the technological capability to harness and combine them as desired, is most appropriate to the *developed economies*. It is there indeed that this type of analysis originates. In the *under-developed, dependent economies* and in a situation where the international migration of many factors (e.g., labour and capital) can occur, the critical problem in many cases, is that of tapping available resources and developing the technical capability to combine them, many of which are unemployed and/or under-employed. This problem then, may chronologically and conceptually pre-date the problem of choice under conditions of resource scarcity. It should become clear then when the relationship between oil and agriculture in Trinidad and Tobago is analysed whether or not there is little competition for resources in the traditional sense and also whether the relationship between these two industries can fruitfully be viewed in these terms.

In a situation in which unemployment is variously rated as between 15 to 20 per cent of the labour force, and under-employment another 15 per cent, and where, moreover, both the oil industry and the major sub-sectors of agriculture have been progressively displacing rather than absorbing labour, there is no real competition for labour.

In the case of land resources, there again appears to be no reason to perceive of a competition for this resource. While in 1970 about 31 per cent of the land area was under oil lease, not all of this was actually taken up by oil operations, and in any event these lands are not in general prime agricultural land. Only isolated occasions can be found of oil production displacing agricultural production. In addition, the further development of the oil industry seems destined to be concentrated in the marine areas, thereby obviating the possibility of future competition for land resources.

The organisation of the oil industry under the aegis of the petroleum multinationals has meant that there has been to date little competition for capital in the traditional sense. The industry is not tied into any local capital market and cannot really be viewed as presenting competing claims for the economy's savings. Investment in the industry has been guided largely by the needs and desires of the multinational corporations involved, and financed from *owned resources and reserves* of the Trinidad subsidiaries or by borrowing from abroad.¹ However, the species of participation agreements with the multinationals into which the government is now blundering may very soon come to precipitate an indirect competition for capital funds between the oil industry and the needs of agriculture and other sectors.

When we turn to resources such as technology (e.g. in terms of skilled research personnel) and management (entrepreneurship) there is also little competition for these resources. The oil industry is based firmly on imported technology and is managed from abroad. It is not in the local market for either of these resources.

It would seem to be clear then, that the relationship between Trinidad's oil and its agriculture cannot be simply analysed as a competition for resources - not even in the case of such supposedly scarce resources as capital, technology, and management. This relationship must be sought along other lines.

The approach adopted here, focuses on the symbiotic association that should exist between the two industries in order that they might make their particular contributions to the ultimate goal - the balanced development of the Trinidad economy in the best interests of the Caribbean people. This approach is predicated on two fundamental postulates. Firstly, it is emphasized that an important imperative in the development of the economy is the reorganisation and rationalisation of the existing agricultural sector (along lines to be outlined). This would appear to entail the displacement of even more labour from agriculture and also requires considerable sums of capital. Secondly, the oil industry, based as it is on the country's most lucrative known natural resource and characterized by advanced technology, substantial profitability, a capacity to generate numerous spin-off industries, and good growth prospects, can and must play the role in the economy of a dynamic leading sector. The adequate performance of such a role will provide the opportunity that agriculture needs in order to properly perform its assigned role.

¹Data is available for four recent years. In 1966 and 1967, 87.5% and 94.3% respectively of total investment in the oil industry was financed from *owned resources and reserves*. The remainder was financed by borrowing. Of the borrowed funds, 88.3% in 1966 and 91% in 1967 came from abroad. In 1969 and 1970, *owned resources and reserves* accounted for 60.3% and 63.5% of total investment respectively. Of the remainder which was financed by borrowing, 97.4% in 1969 and 88.5% in 1970 came from abroad. (See (1, pp.221-4).

It will be seen that the failure of the oil industry to function as a dynamic leading sector lies directly in its method of organisation and the policies adopted towards it, and that this failure has generated failure in the agricultural sector as well.

Organisational Needs of Agriculture

The present organization of agriculture in the Trinidad economy, despite weak and fitful attempts at diversification, remains a largely intact inheritance of the inefficient, irrational, mis-organised system of colonial agriculture, unstably centered on the plantation production of export crops for which the economy was presumably *best suited* - particularly sugar. The foreign exchange derived from this system was then used for the import of the range of food items needed in the economy. This approach may be contrasted with an agriculture oriented primarily towards satisfying domestic consumption as far as technologically possible, with exports being a residual consideration.

Whatever, the dubious notions of comparative advantage which presumably underlay such a system, any rationale for it has been steadily eroded over the years on account of the shift in relative price ratios between the main products of domestic agriculture and the main imported agricultural products (e.g. meats) due to differential rates of price change. This can be seen in the ills besetting both the export sector and the food import sector. Thus the sugar industry has been beset by a persistent multitude of woes - low productivity, relatively low (though stable) prices, and a continuing series of intractable labour problems due, in the final analysis, to the basic fact that the industry cannot provide a decent living for its employees, given current prices, costs and production technology. The fundamental problems affecting sugar can be found in the other areas of export agriculture, to a less publicized but no less serious extent.

The sector's lack of viability cannot be overcome without rationalization and mechanization. The implementation of the necessary policy will however entail two basic consequences - the displacement of considerable amounts of labour, and the necessity (at least in the short run) for large infusions of capital.

When the food import sector is examined, certain salient facts stand out. There has been persistent inflation in the prices for imported agricultural products and the size of the food trade deficits have steadily increased. Between 1968 and 1972 the deficits increased as follows: 1968 - \$12.3m.; 1969 - \$28.2m.; 1970 - \$24.4m.; 1971 - \$36.7m.; and 1972 - \$38.4m.

Furthermore, reliance on food imports has meant being subject in recent years to continued instability in the availability of supplies with various shortages occurring, and this instability and the occurrence of shortages have been aggravated by Trinidad's weak bargaining position as a marginal market.

The future does not appear to promise much relief as the prospects hold for continued and indeed increased inflation in the prices of many farm products. In addition to the energy crisis and the consequent stimulus to worldwide inflation, it must be taken into account that the projected pressure of population on food resources will induce, if not famine

and widespread shortages, sharply higher prices at the very least.¹

The rise in agricultural prices, peculiarly enough, is liable to be *asymmetric* in that the prices of importables, e.g. livestock products, are likely to rise much faster and more than the prices of the traditional exportables, e.g. sugar. This is simply because of the way in which the international marketing of the various products is organised, with the developed countries being able to dominate and manipulate the various quota systems and commodity agreements for the current agricultural exportables to their own price advantage. No better illustrations can perhaps be afforded than the recent meagre price increase wrung from the British for West Indian sugar (£83 per ton when the world market price was £250 per ton) and also the soaring inflation in the prices of importable meats and foodgrains in recent months.

As a result of these considerations it can be seen that the fundamental rethinking of agricultural policy is a matter of considerable urgency. The first need appears to be for a revamping of agriculture to emphasize the limited production of a range of products for the domestic market as opposed to the current emphasis on export agriculture of sugar and tree crops. From the range of new products, new and more profitable export lines can be developed.

Emphasis in the new agriculture must be placed on the production of meat (cattle, pigs and poultry) and dairy; exotic fruits; expanded vegetable production; and very importantly, the secondary food processing industries. Considerable investment in storage, distribution, and marketing would also be required. Also, the production of animal feed, corn, soybeans, root crops (for pigfeed) in addition to the possible use of molasses and comfith, would require attention.

This rationalization of agriculture would involve mechanisation, and the release of much of the lands under sugar for import-substituting and new export lines, including cattle rearing and the growing of animal feed. Also, much labour would be displaced which the ancillary industries will not completely absorb and, in addition, considerable amounts of capital will be required. This is where the oil industry has its part to play. Together with its spin-offs (petro-chemicals and the processing industries based on petro-chemicals) the oil industry possesses the potential for absorbing the displaced labour as well as mopping up current unemployment, and generating the capital surplus needed for development in agriculture and other areas of the economy. For the oil industry to do this, it must function as a dynamic leading sector.

Role and Performance of the Oil Industry

From the point of view of evaluating the role played by an industry in an underdeveloped country, it is necessary, if the answer to the question *What has the industry contributed?* is not to be misleading, that the prior question be asked *What can the industry properly be expected to contribute?*

¹The current world population of 3.5 billion is expected to double in 35 years.

An industry which functions as a dynamic leading sector in an underdeveloped economy ideally possesses the following characteristics:

- (i) Its size in total output is statistically significant. Analysis of the size of output should not simultaneously ignore or overlook the important question of the composition of such output. Furthermore, where the industry is foreign-owned/controlled, analysis of the size of gross product must be complemented by a consideration of the share of that product which in fact accrues to the local economy. This imposes the consideration of the division of value added in the industry between local and foreign factors, and relatedly, the distribution of total outlays on expenditures between local and foreign sources of supply.¹ The whole question of leakages becomes critical where there is foreign ownership or control.
- (ii) It can be expected, almost by definition, to be growing faster than the rest of the economy.
- (iii) For the first two criteria to have much meaning, a third and most important criterion must hold, i.e. the industry must be structurally related to the economy in significant ways so that its effects are transmitted within the economy. Such a structural relationship arises in several ways:
 - (a) through the existence of forward and backward linkages;
 - (b) through its provision of factor shares (wages, profits and rents) - in the case of the oil industry and contribution to government revenues is relevant here as this is comprised mainly of rents (royalties) and the portion of profits taken as corporation tax;
 - (c) through its role in providing foreign exchange for use in other sectors of the economy;
 - (d) through its role in the effective utilization of the country's resources - this involves the question of employment provided on the one hand and the impact of the industry on the environment on the other;
 - (e) the implication of technological dynamism and raises the issue of the transfer of technology (e.g. through the movement of skilled research personnel into other sectors); and
 - (f) through the industry's institutional links with the rest of the economy (e.g. through the financial markets) with the resulting transmission of the effects of the industry's expansion (or contraction) to the rest of the economy via the capital markets, changes in interest rates, etc.

The question can now be posed *"How has the Trinidad oil industry functioned in terms of this checklist of variables deemed important?"* This question will now be answered by briefly summarizing the major features of the oil industry's post-war performance (1, ch.10-12).

¹The relationship between value added and expenditure can be arrived at by considering total expenditure by the industry in a given time period as the sum of value added plus current payments for intermediate goods plus current expenditure on gross capital formation.

- (i) The industry's contribution to domestic product has certainly been statistically significant. Over the 1950's the oil industry's output averaged around 30 per cent of G.D.P. at market prices while in the 1961-1968 period it accounted for about 20 per cent. The composition of output in the important refining sector has however been adverse, concentrated as it is in low valued residual fuel oil (amounting to 59 per cent of refinery output in the 1967-72 period for example), rather than in the high-valued *light ends*. In addition leakages from both the value added and the expenditure stream has been heavy. Half of all outlays in the 1951-68 period were made abroad. In addition, local outlays fall mainly into the categories of wages and government revenue. The division of the important value added attributable to the industry turns out to have been consistently weighted in the companies' favour. Thus between 1951-60, 52 per cent of value added accrued to factors abroad mainly in the form of net profits and depreciation allowances - generally the prime source of investible funds in any industry. For the 1961-68 period, the percentage of value added accruing abroad rose to 59 per cent.
- (ii) The industry has not fulfilled the second criterion of a dynamic leading sector - i.e. that it grows faster than the rest of the economy. In the 1952-61 period when the industry registered its highest average growth rate (12.5 per cent per annum) the economy grew at about 12 per cent with other sectors experiencing similar high growth rates. In the 1960's (1962-68) when G.D.P. and G.N.P. measured in market prices were growing annually at an average of 7.6 per cent and National Income by 8.3 per cent, the oil industry only mustered an average growth rate of 3.7 per cent.
- (iii) The most significant area of relationship between the industry and the rest of the economy arises from its provision of factor shares - in this case, wages and government revenues. It must be noted however that though the industry's contribution to total revenues has been significant (37.5 per cent in 1952-61, 24.5 per cent in 1962-70 with the prospect of providing almost 50 per cent currently) Trinidad has since the mid-sixties averaged less revenue per barrel than any major oil producing country.

Linkages between the industry and the rest of the economy have been weak. Forward linkages consist of the 2½-3m. barrels per year of refined products which are consumed locally, and the use of some natural gas in fertilizer manufacture and in electricity generation. The really important forward linkages have not been developed - i.e. the setting up of intermediate petrochemical industries and the secondary manufacturing industries based on these intermediates. Backward linkages have also been small in view of the capital-intensity of the industry and the absence of a capital - goods producing sector in the economy.

To adequately assess the industry's contribution of foreign exchange,

two concepts are developed - that of the *net foreign exchange provided* and *net foreign exchange provided as a percentage of foreign exchange used elsewhere in the economy* (1, pp.298-307).

To calculate net foreign exchange provided the balance of payments is recast into the format of a *funds* statement - i.e. in terms of the sources and uses of foreign exchange, since an industry both provides and uses foreign exchange. The available data only permits the calculation to be made for four years 1964-67, a period in which the petroleum industry provided 60.5 per cent of adjusted exports, i.e. exports adjusted to excluded oil trade under the processing agreement (u.p.a.).¹ While oil provided gross foreign exchange (i.e. value of exports plus capital inflows plus processing fees) which averaged \$364.3m. (TT), net foreign exchange (which allows for outflows, imports etc.) averaged about 40 per cent gross foreign exchange (\$148.1m. (TT)). Thus leakages from the foreign exchange stream appear to be quite substantial.

The *net foreign exchange provided* when calculated as a percentage of the total foreign exchange used in the economy averaged something in the order of 25 per cent. When the size of the industry's statistical contribution to exports is compared with the actual quantum of foreign exchange provided, it seems fair to conclude that the industry's performance in providing foreign exchange for other sectors of the economy has been disappointing.

When we turn to the industry's contribution to the effective utilization of the society's resources, its record here turns out to be particularly weak. Employment has been small and declining. From 14,400 or 4.2 per cent of the labour force in 1965, employment in the industry had declined to 10,556 or 2.9 per cent of the labour force by 1970, and the shedding of labour continues. In addition its environmental record has been unambiguously poor with massive air and water pollution taking place unchecked. Finally the industry has no organic links with economic institutions in the country such as the capital markets.

The conclusion then is that while the industry has undoubtedly contributed certain benefits (wages, government revenues, some foreign exchange etc.), and while the country as a result has been better off than it would have been in the total absence of the industry, the industry has in fact failed to function as a dynamic leading sector and its contribution has been much less than it could have been under alternative organizational forms.

The Failure of the Industry

The reasons for the industry's failure would require considerable space to analyse in depth. As such these reasons are only briefly outlined herein.

¹ Oil u.p.a. has no foreign exchange impact on the balance of payments despite the assignation of value figures for such exports and imports. Oil u.p.a. is processed for a fee which is what accrues to the refinery. It is thus not correct to add the value assigned to products expected u.p.a. to domestic exports and similarly for imports.

The fundamental reasons for the failure of the oil industry are two fold:

- (i) the fact that the organization of the industry has been by the international petroleum companies in their own interests; and
- (ii) the policies pursued, not only permitted but encouraged the development of the industry along lines inimical to the proper performance of its role.

Thus the companies have not been interested in creating the forward linkages critical to the development of the economy. This dis-interest sprang in every case from a rational view by the company of its particular interest. Texaco, for example, views Trinidad as a refining center, has little interest in Trinidad's crude production and none in developing petrochemical and derivative industries in Trinidad. From the company's point of view this can more profitably be done elsewhere. The case for Shell is similar. Amoco views Trinidad as a source of crude given its crude-short condition. With a surplus of refining capacity abroad and well developed chemical industries in North America, it has not been interested in creating the linkages in Trinidad that are desirable for economic development.

Again the large leakages from the expenditure, value added and gross foreign exchange streams are a direct function of the foreign-owned nature of the industry, and particularly invidious is the fact that the components of value added which flow abroad are the prime sources of investment funds - i.e. profits and depreciation allowances.

The operation of the multinationals has also negatively affected the performance of the industry and its lucrativeness through the choice of output mix in the refining industry, the processing agreements under which refining is done, and the extensive price discrimination against products made from indigenous as opposed to foreign crude.¹

The multinationals have been able to function in this manner as a direct effect of a developmental policy based on the one hand on the Lewis strategy elsewhere dubbed *Industrialization by Invitation* (a strategy which thoroughly fails to understand the nature and effects of the operation of direct foreign investment in underdeveloped economies), and on the other hand on a perception of the industry as being complex, risky and with a producing sector that was only marginally profitable so that the continued operations of the multinationals on their terms was indispensable to the viability of the industry. This point of view turns out on examination to be riddled with fallacies and based on a failure to distinguish the economics of the country from the economics of the corporation.

The Role of the Manufacturing Sector

The failure to organise the oil industry in the national interest

¹Such products were, for many years, frequently exported at lower prices than the prices quoted for the same products made from crude imported under the processing agreement. See (1, pp.210-214).

has been indirectly responsible for many of the problems and failures experienced in agriculture and other areas of the economy over the last two decades.

The logical forward linkages for the industry would seem to lie in three areas - textiles, plastics and fertilizers. There are a host of secondary industries to be built on these three pillars. The production of petrochemicals alone cannot provide for significant absorption of labour. It is in the manufacturing industries based on the petrochemicals that we must look for the solution to the general unemployment problem and the problem of the absorption of surplus labour, released from a rationalized agriculture.

It might be objected that the development of the petrochemical industry is difficult due to the pronounced economies of scale that are a feature of many areas of the industry, its high capital requirements and advanced technology. In fact however, the technology for basic plastics, textiles and fertilizers has been standardized to a considerable extent and can be bought (as the Japanese have done). The capital requirements can be provided by the basic oil industry, the economies of scale problem can be vitiated by:

- (i) competitive, efficient production which is capable of breaking into export markets; and
- (ii) by the most significant feature of the three derivative industries mentioned, i.e. the ability to spawn a multitude of spin-off industries collectively capable of utilizing the output of the petrochemical sub-sector.

The failure to move in this direction has meant the failure to solve the unemployment problem, and the consequent inability to mechanize and rationalize agriculture. Similarly, the leakages that occur under the present form of organization have deprived the economy of the capital surplus critical to development in agriculture and elsewhere in the economy.

Again, the industry's poor export and foreign exchange performance has had several negative effects. There has been a consistent current account deficit on the balance of payments which analysis reveals to spring from two causes:

- (i) the slow grants of exports; and
- (ii) the huge capital outflows on the balance of payments. (The problem is not related to the growth of imports which turns out to have been primarily related to the developmental effort.)

The failure of the oil industry to provide sufficient foreign exchange has meant that the deficits have been covered by foreign borrowing and by capital inflows on direct investment which have the effect of putting a frightening amount of power over the economy into foreign hands. Also the insufficiency of foreign exchange to finance needed imports has led to attempts to hold down imports by protectionism plus some poorly-conceived import-substitution attempts. The major result has been not to rectify the balance of payments but to stimulate serious inflation and price-gouging of the consumers by protected local *screw-driver* manufacturers.

Conclusion

In conclusion, it seems clear that successful agricultural development in the future is likely to be very much dependent on the reorganization and rationalization of the oil industry of the country.

It might be mentioned also that the analysis of the relationship between oil and agriculture conducted here has wider implications than just for Trinidad and Tobago. It can readily be extended into a strategy for achieving growth and structural transformation on a regional basis. Rather than the loose talk about the rationalization of the national agricultural sectors each considered in isolation, what emerges here is a re-emphasis on the importance of integrating policy towards the lucrative mineral resource industries with the strategy for rationalising agriculture regionally along the lines set out in this paper.

Reference

1. Farrell, T. "The Multinational Corporations, the Petroleum Industry and Economic Development in Trinidad and Tobago". (Ph.D. dissertation, Cornell University, Ithaca, N.Y. 1974).