

DISCUSSION PAPER

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OIL WINDFALLS IN A SMALL PARLIAMENTARY DEMOCRACY:
THEIR IMPACT ON TRINIDAD AND TOBAGO

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OIL WINDFALLS IN A SMALL PARLIAMENTARY DEMOCRACY:
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ABSTRACT

In common with other oil exporters Trinidad and Tobago reaped large windfall gains after 1973. Their use was heavily influenced by its distinctive political economy, and resulted in substantial weakening of its nonoil traded sectors (the "Dutch disease"). Attempts to diversify through gas-based industrialisation are not likely to replace shrinking oil income. This paper traces the relationship from political objectives to use of oil windfalls and the effects on the nonoil economy.

I. INTRODUCTION

In common with other oil exporting countries Trinidad and Tobago reaped unprecedented windfall gains in 1973-74 and again in 1979-80. This paper analyses the use made of its windfalls, and the consequences for its nonoil economy. How did the objectives of its government influence the allocation of oil income? Has Trinidad been able to avoid the "Dutch Disease" (Corden and Neary, 1982) of increased oil dependence and shrinking nonoil tradeables? What has been the long-term value of its windfall gains?

Relative to other oil-exporting developing countries used as comparators in Gelb (1984)--Algeria, Ecuador, Indonesia, Iran, Nigeria, and Venezuela--Trinidad and Tobago has some distinctive features. It is small, with a slow-growing population of only 1.1 million. Although its 1974 GNP/head was slightly exceeded by Venezuela, its 1982 GNP/head, at US\$6840, placed it at the top of the middle income developing country range. Public administration is generally effective. The political system was democratic, and unlike Venezuela (the only comparator also to have an elected government throughout the period) it was modelled on the Westminster parliamentary system and thus was less prone to experience diverging objectives between executive and legislature. Finally, prior to the first windfall the country had undergone a period of austerity due to the gradual decline in oil output from established fields. The new offshore finds developed at the start of the 1970's were also limited. This raised public awareness of the need to proceed with caution in the use of income from the country's finite oil resources. Except for the question of size, in relation to comparator countries, these features favoured the ability to make good use of the windfalls. Trinidad and Tobago therefore began with a number of advantages.

Section II outlines the "initial conditions" of the political system and the economy before the first oil shock. These were to be of great importance in setting public priorities and so determining the allocation of windfalls after 1973. The main priorities before the first boom were: (i) industrialization and growth; (ii) extending national control over production and (iii) assisting poorer sections of society. Oil income and gas discoveries were to add; (iv) diversification into gas-based industry.

Section III describes the response to the first oil boom, 1974-78. Although it was cautious, policies initiated during this period, notably (i) the trend towards state ownership, (ii) increasing subsidies to consumers and to failing firms and (iii) promoting gas-based industrial development were to carry through into the period of the second oil boom when their impact became major. The period of the second boom, 1979-81, is analysed in Section IV.

Trinidad's gas-based industrialisation strategy is evaluated in Section V, because of its crucial importance in preparing for the post-oil era. Conclusions follow in Section VI.

II. TRINIDAD AND TOBAGO BEFORE THE FIRST BOOM

2a. Political Structure

Trinidad and Tobago emerged into a parliamentary democracy after World War II. Its two-party structure reflected an underlying ethnic cleavage. In 1970 Blacks constituted 43 percent of the population, and East Indians 40 percent. Fourteen percent were mixed. The island's more upwardly mobile Black population was strongly represented in government and predominant in industry. The East Indian population, descendants of indentured laborers

was poorer and largely rural: Black et. al., 1976. The People's National Movement (PNM) which has remained in power since 1956 was led by Dr. Eric Williams until 1981; thereafter it was led by Dr. George Chambers. Its constituents have been mainly black. The Democratic Labour Party (DPL), the leading opposition, drew most of its support from the poorer and more radical Indians 1/

Influenced by the views of Lewis, 1950, in 1956 the PNM set its first goal as industrialisation, with heavy initial reliance on foreign capital, technology, and management. The stress Lewis, 1972, placed on competitive labor-intensive exports was not emphasised. The DPL attacked the government for alleged corruption and for depending too much on "exploitative foreign capital" but because it represented an unwieldy coalition of rural East Indians, urban poor and a small European elite, it never coalesced. The DPL's weakness allowed the PNM to emerge as a strong unitary government largely free of competition within its ranks. This was to be important in keeping public expenditures more disciplined than those of most other oil exporting governments.

Early in 1970 street demonstrations and a mutiny in the army gave voice to widespread dissatisfaction with growing economic problems caused by declining oil revenues. The PNM recognized that discontent was sufficient to mount a credible challenge to its power. It reluctantly undertook a populist course focused around three main goals:

1/ Renwich, 1983. Lowenthal, 1972, defines the social structure as "cultural pluralism" in which groups interact for economic purposes but adhere to religious or ethnic groupings in social matters.

- o to extend public ownership,
- o to redistribute income more equitably, and
- o to accelerate industrial diversification out of oil.

2b. Economic Structure

Oil Sector. Oil was discovered in 1857 and in 1913 Shell became Trinidad's first producer. By the 1950's British Petroleum, Royal Dutch Shell and Texaco operated oil refineries, augmenting domestic crude with imports from Venezuela. By the early 1970s petroleum extracting and refining accounted for almost three quarters of exports, one fifth of government revenue and 20 percent of GDP.

From the late 1960s oil production and refined exports had begun to drop. Public spending was cut from 23 to 20 percent of GDP and a modest budget deficit of 4.7 percent of GDP financed half through overseas borrowing and half from domestic sources. Between 1970 and 1973, GDP growth slowed to 3.6 percent (4.5 percent for non-mining GDP) from almost 5.5 percent over the preceding 15 years while inflation rose from an average of 2.5 percent in the 1960s to over 10 percent in the early 1970s.

Even before the disturbances of 1970 the government had taken a small step towards nationalising the oil industry, buying British Petroleum's refinery and field facilities: Sandoval 1983. Marine exploration during 1969 and 1971 revealed substantial new estimates of recoverable oil and gas. Oil production rose from a low of 129,000 barrels per day (bpd) in 1971 to 191,000 bpd in 1973, exceeding the previous peak in 1969. Although oil reserves were estimated at only about 10 years output, these finds reduced the immediate pressure for politically difficult structural change.

Nonoil Sectors. At the start of the 1970's manufacturing, though heavily protected by a "negative list" of prohibited imports and other measures (which in many cases doubled prices relative to imports) accounted for only 22.0 percent of non-mining GDP. Agriculture, dominated by sugar, accounted for only another 5.8 percent. There was little tourist trade. The economy was therefore heavily oil-dependent--nonoil tradeables, agriculture and manufacturing, accounted for only 27.8 percent of nonmining GDP as against a Chenery-Syrquin "norm" of 42 percent for countries at comparable levels of income per head. 1/

An uneven income distribution reflected pronounced dualism of the economy between high-technology oil and manufacturing sectors and low-skill agriculture. In 1973 agriculture generated one sixteenth of the value added per worker in oil refining and one fifth of that in chemicals. Agriculture too was dualistic; value added per worker in sugar was almost four times that in the rest of the sector. Reflecting these disparities, the elite segment of oil workers, less than four percent of the country's labor force, earned US\$5,000 a year compared with US\$750 for all other workers and US\$325 for agricultural workers: Black et. al. 1976. Uneven income distribution was accentuated by high and rising unemployment which topped 14 percent in the early 1970s. In the economy as a whole, seventy percent of the labor force was unionised.

1/ Norm estimates are based on Chenery and Syrquin (1975), taking nonmining GDP/head as the indicator of income/head.

III. THE FIRST OIL SHOCK, 1974 - 1978

3a. The Size of the Windfall

As shown in Figure 1 Trinidad and Tobago experienced an unusually large windfall over 1974-78 relative to other capital-importing exporters--39 percent of non-mining GDP--because new oil fields began to come on stream in substantial quantities just as the embargo of 1973 caused the worldwide price of oil to quadruple.^{1/} Corporate and other taxes (Trinidad does not follow the common OPEC system) were rapidly adjusted to syphon off five sixths of increased revenues. Oil taxes jumped from one fifth of government revenues before the boom to 60 percent in 1974-78: see Figure 2.

3b. Uses of the Windfall

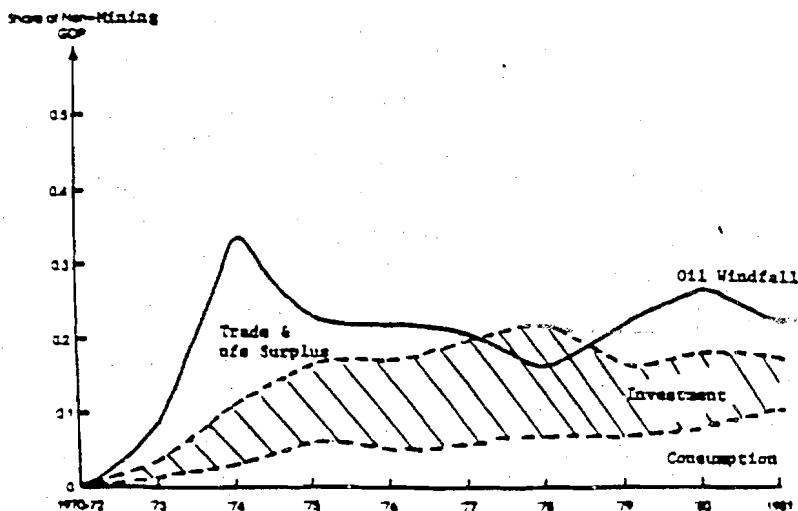
Fiscal policy was initially very cautious relative to that of other oil exporters. The country had just emerged from a period of austerity; unlike Ecuador and Venezuela (Karl, 1982; Marshall-Silva, 1984), strong, unified government reduced intra-public-sector competition for revenues; unlike Nigeria (Bienen, 1984) there were no strong regional interest groups. To limit dependence on oil revenues, the progressive nonoil tax system was kept in place though tax brackets were inflation-adjusted. Oil revenue exceeded recurrent spending by 40 percent; see Figure 2. Existing public

1/ The windfall and its uses are estimated relative to a hypothetical projection involving (a) relative price deflators constant at their average 1970-72 level, (b) a constant ratio of real mining output to nonmining GDP, (c) a constant ratio of total absorption to output and (d) consumption and investment changing their share of absorption in line with the Chenery-Syrquin, 1975 norms. For more detail see Gelb, 1984.

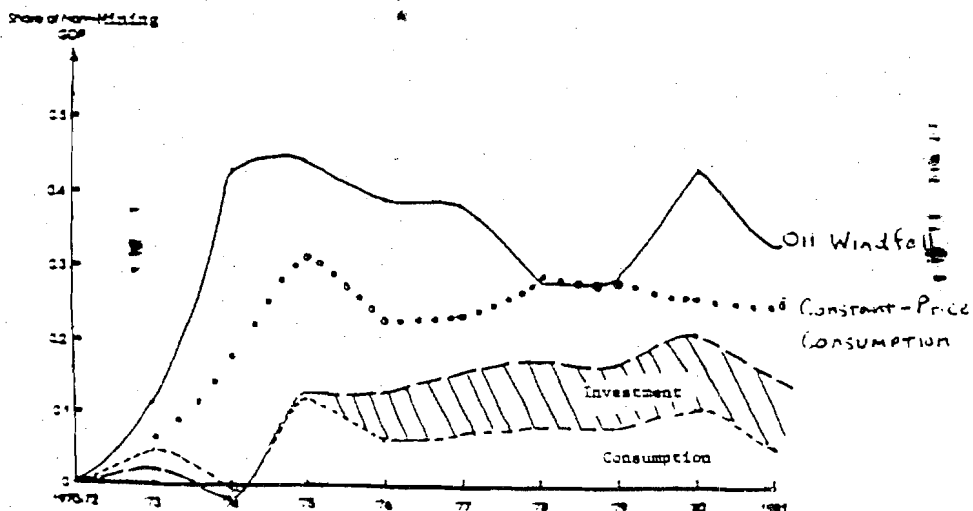
Figure 1

The Oil Windfall and its Use: 1973-81

(Unweighted Average: Algeria, Ecuador, Indonesia, Nigeria, Trinidad and Tobago and Venezuela)

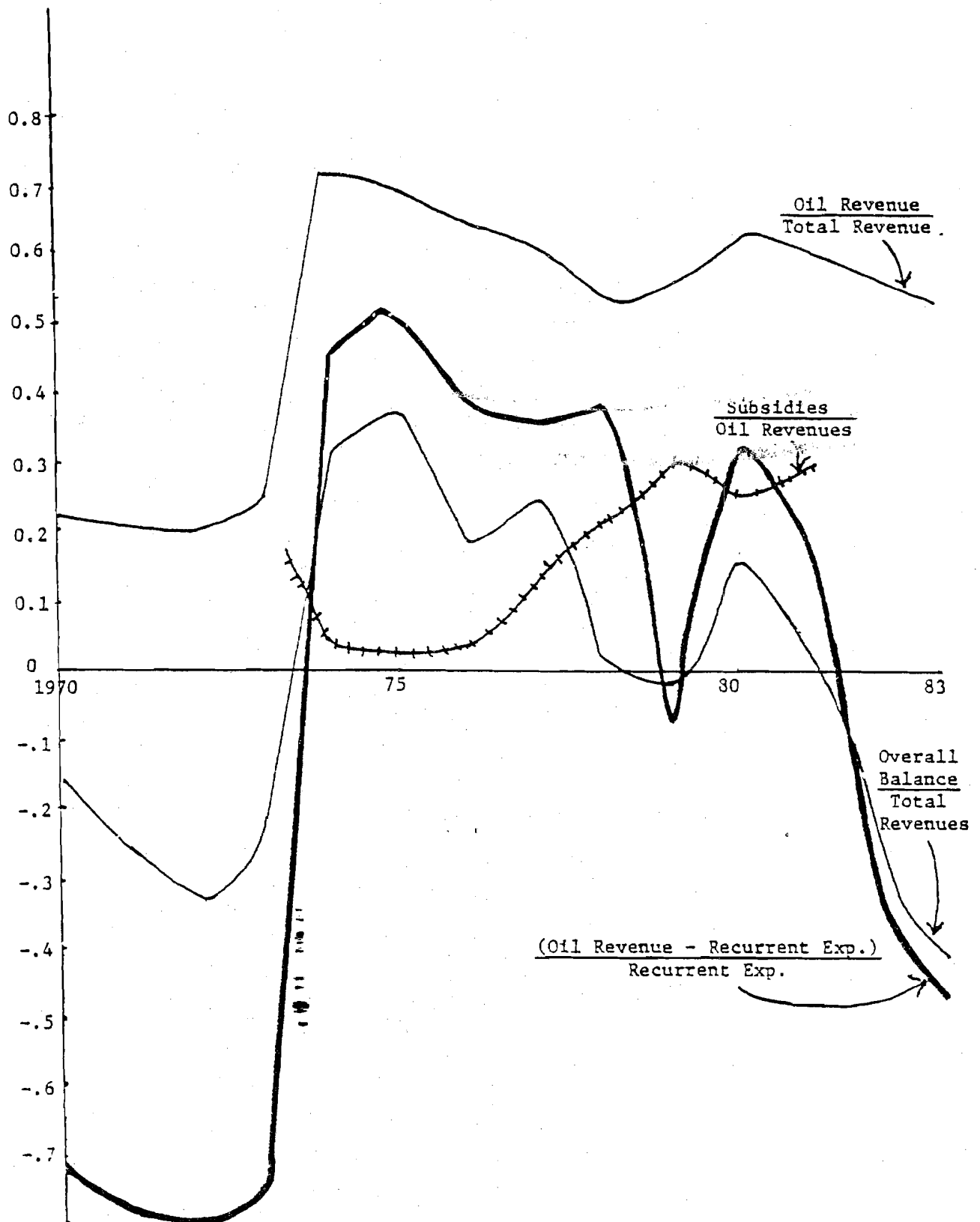


Trinidad and Tobago



Trinidad and Tobago:

Fiscal Evolution



programs were not scaled up as in certain other exporting countries. Nor did the government redraft its new fourth five-year plan for 1974-78, now obsolete. A nation-wide debate on how to deploy the new wealth lasted into 1976, so that in 1974-78 almost half the windfall was invested abroad in Special Funds for Long-Term Development.

Relative to non-mining GDP, total absorption had been high in 1970-72 because foreign-financed investment to tap the new offshore finds had permitted a current deficit averaging 14.5 percent of nonmining GDP. Absorption rose further after 1975 as spending from the windfall accelerated, as shown in Figure 1. Over 1974-78 extra revenues were used as follows:

- (1) 70 percent was saved abroad, transforming current deficits into surpluses which averaged 10 percent of 1976 nonmining GDP over 1974-78.
- (2) 12 percent was invested domestically
- (3) 18 percent was consumed.

As shown in Figure 1, relative to other exporters savings abroad was extremely large, and domestic investment was initially modest. Consumption out of windfall gains was fairly high after 1975.

(1) Savings abroad. By 1978 international reserves reached US\$1.8 billion, up from US\$47 million in 1973. Reserves were used to establish a high international credit rating; loans of US\$157 million and US\$112 million were negotiated in 1977 and 1978. Strict capital controls limited outflows; medium and long term debt was US\$417 million at the end of 1978.

(2) Domestic investment. The largest allocations were for: (a) economic and social infrastructure, (b) gas-based industrialization, and (c) nationalizing and "saving" existing industries. Only half of the TTS4 billion

earmarked "Funds for Long-Term Development" had been spent by the close of 1978. Of the funds actually used, approximately half went into economic infrastructure--transportation, power, and water and one fifth went to social infrastructure--education and housing. Infrastructural investment was seen as labor using and aimed to eliminate an infrastructural backlog accumulated in the late 1960s.

Instead of accepting AMOCO's proposal to export liquified natural gas (LNG) to the United States, in 1975 the government created a task force to plan gas-based industrialization. It experimented with different forms of ownership, refusing joint ownership proposed by the multinationals when it bought out their oil refineries but accepting this in two fertilizer plants, taking a 51 percent equity stake. Foreign partners were responsible for technology, management, and marketing. Attempts to negotiate other joint ventures collapsed because the desire to spend oil revenues led the government to downplay risk more than private partners. In 1976 it planned a joint steel venture where the state would own 67 percent and Hoesch-Estel, Kawasaki and Mitsui the balance. Later in 1976 government cancelled the agreement on the grounds that (i) terms offered by the private investors were poor, (ii) their demands for fiscal incentives were unreasonable and (iii) their sales strategy excluded North American markets. The state went ahead on its own, relying on four international companies to develop the plant on contract despite warnings of market access problems and of a low rate of return. By the end of 1978 TTS240 million had been spent on the project. Impatient with slow progress, in 1977 the government also abandoned plans to build a gas-based aluminum smelter with Guyana and Jamaica. Another partner, National Southwire, committed to only 10 percent of the equity and began feasibility studies.

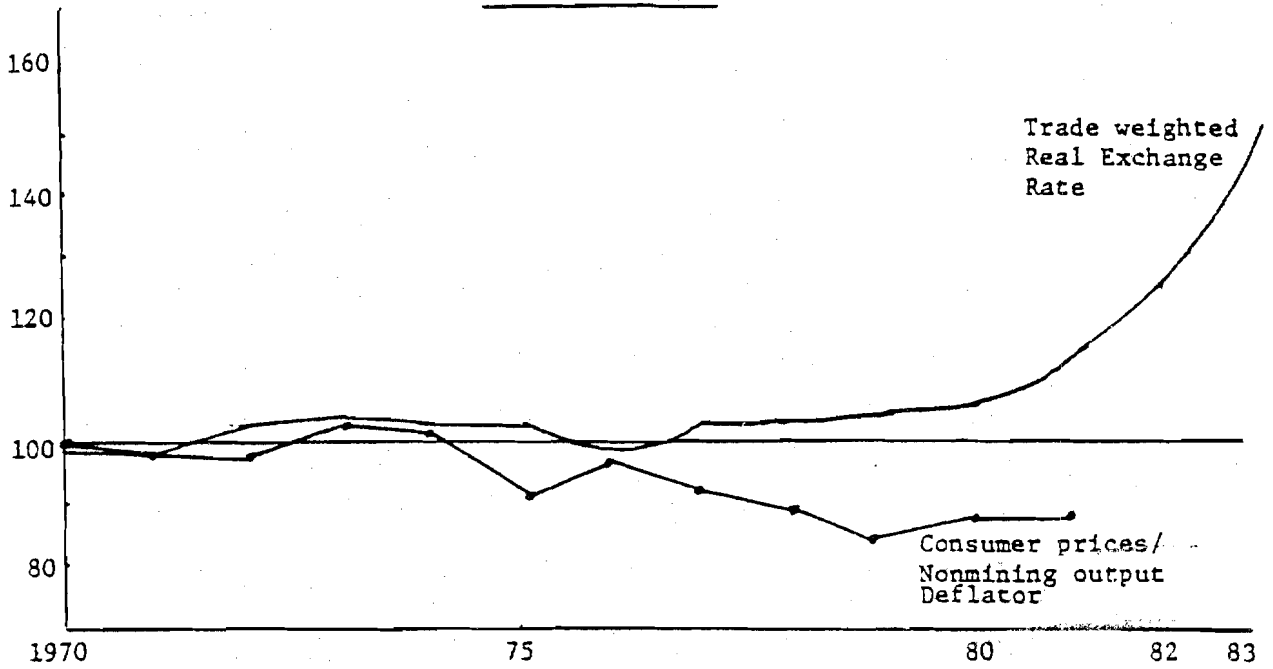
However, the goal of creating new industries was largely sidetracked into taking over declining industries to maintain jobs. In 1974--78 TT\$1.67 billion (one year's oil revenues) was spent in acquiring 40 companies including the purchase of remaining control in the large Caroni sugar refinery (government had acquired a majority share in 1969), and a TT\$93.6 million buy-out of Royal Dutch Shell's refinery (renamed the Trintoc refinery), the second largest in the country. This move was popular, especially with the militant oil workers' union which saw it as a step towards nationalizing the larger Texaco refinery.

(3) Domestic Consumption. Rising subsidies for food, fuel and utilities absorbed TT\$760 million in 1974--78. Oil prices were held to half international levels; utility companies began to run large operating deficits having been unable to raise rates since the end of the 1960s and in one case 1937. Consumer prices therefore rose less rapidly than other prices; see Figure 3, and deflated consumption (as measured in national accounts) rose sharply relative to nominal consumption, as shown in Figure 1. By 1978 subsidies were estimated to account for more than 7 percent of GDP and recorded fiscal subsidies accounted for 22 percent of oil revenues: see Figure 2.

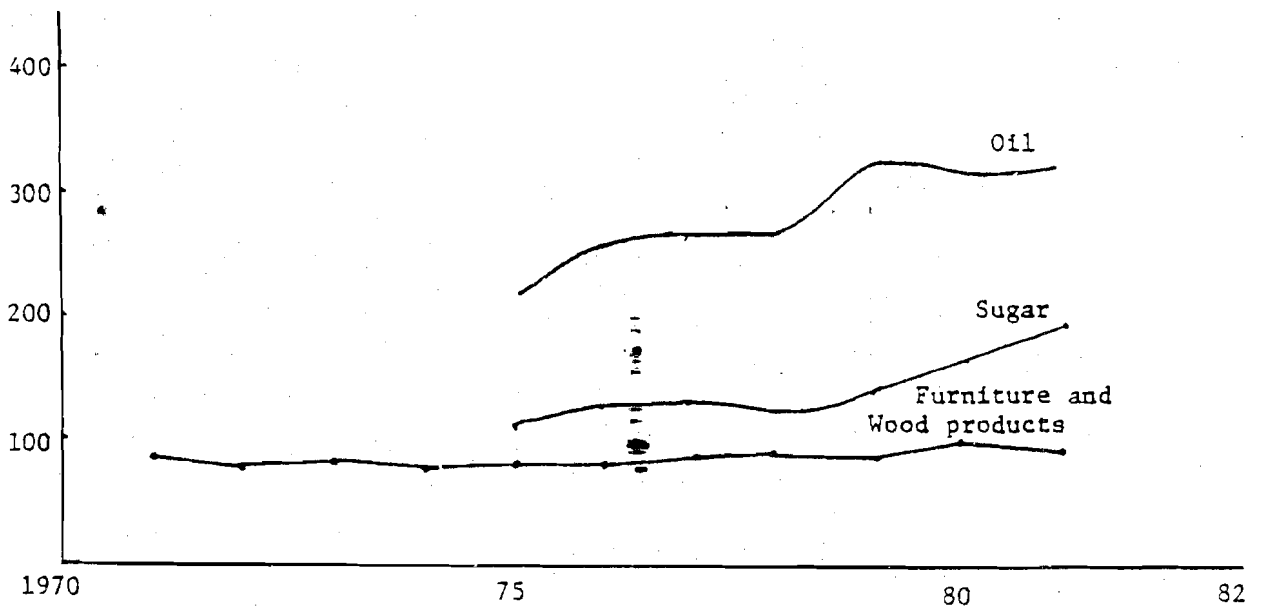
Labor was also subsidised directly. The state public works program (DEWD) provided 10,000 jobs, employing 2.5 percent of the total workforce at wages far above those prevailing in agriculture. Overall public sector employment expanded from 86,000 to 158,000--from less than a quarter to more than a third of the national total.

Trinidad and Tobago:
Relative Prices and Wages

Relative Prices

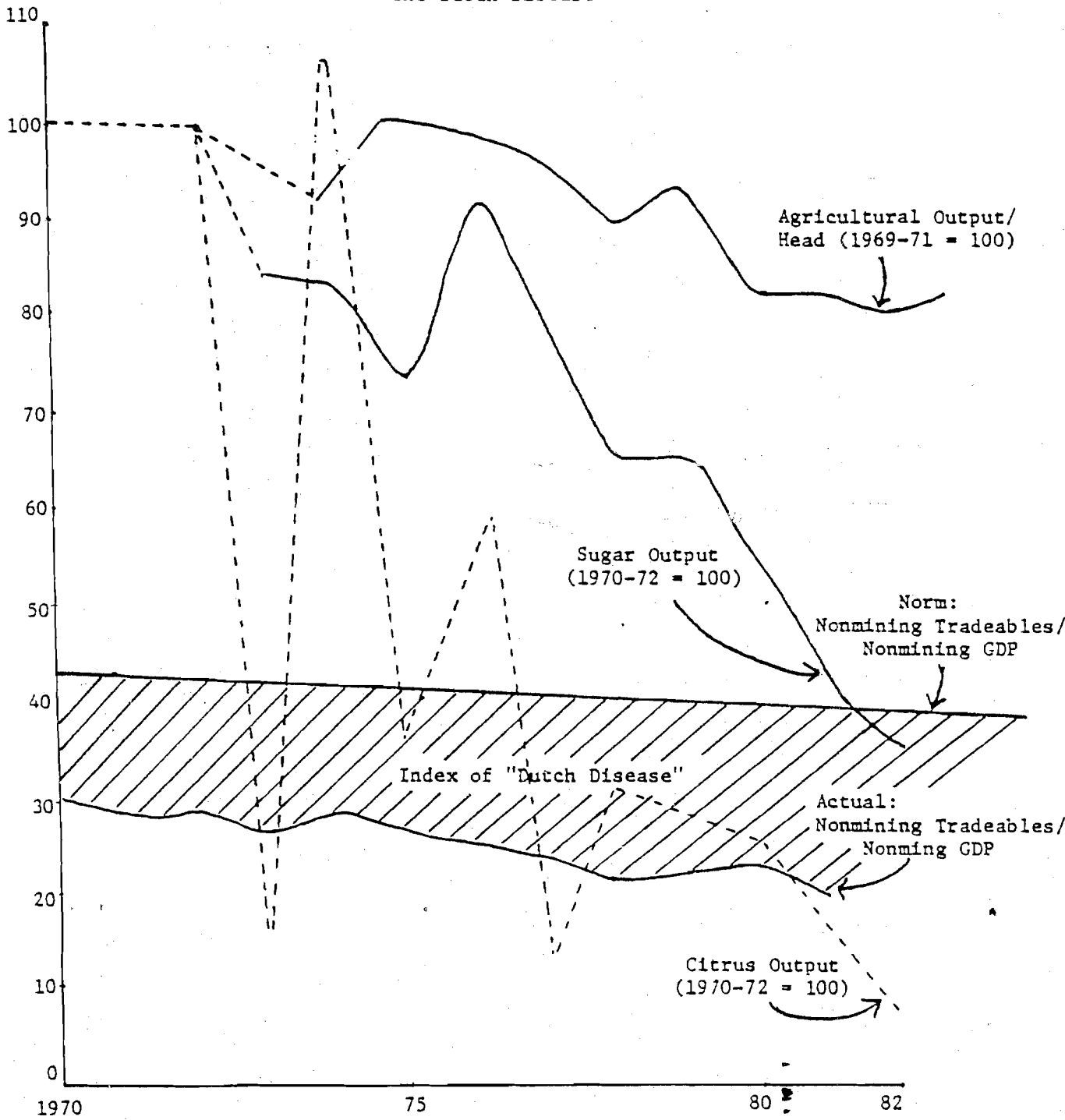


Real Wage Trends



Structural Change in Trinidad's Economy:

"The Dutch Disease"



3c. Results Over 1974-78

Because of the cautious response the main consequences of the policies initiated during the first shock were not to appear until later. Although a large reserve cushion had been built up, and interest payments on foreign assets were to mount to \$100million in 1978, recurrent expenditures had begun to rise (there were small fiscal and current balance deficits in 1979). Investment in declining industries diverted revenues into subsidizing losses; in the case of the sugar industry, government had to cover operating losses of TT\$247 million in 1977-78.

Management difficulties compounded the politically expedient use of much of the windfall to make it impossible to reverse a growing structural shift in favor of nontradeables shown as the "Dutch Disease" indicator in Figure 4. Programs to expand domestic food production were poorly conceived. Despite a plentiful supply of land, inappropriate sites and farmers were chosen for new rural projects (Pollard, 1981). Only a quarter of the outlays for food subsidies went to producer incentives. Price controls squeezed profit margins and food imports rose sharply from TT\$161 million in 1973 to TT\$458 million in 1978. The decline of the export sector, notably sugar, is dealt with in Section IV.

Manufacturing continued to be oriented to the domestic market, whose small size inhibited economies of scale, competition and vertical linkages: Two thirds consisted of final assembly of imported products, notably car kits and food processing, with low added value. Import controls reduced competitive pressure to produce quality products (Sandoval 1983, Wright 1981). Refinery activity fell by 40 percent. Venezuela, which had supplied two thirds of Trinidad and Tobago's crude, cut back output and internalized

its refining while legislation in the United States increasingly favored domestic refineries. In constant 1970 dollars the mining sector's share in total GDP declined to only 7.0 percent; Trinidad was steadily increasing its dependence on an oil sector contracting in relative terms.

Inflation was quite moderate due to price controls and the openness of the economy: the boom caused a jump to 22 per cent in 1974 which fell to 17 percent then to around 10 per cent. Trinidad and Tobago had devalued by 22 percent against the weak US Dollar in 1975-77. Thereafter, it maintained a fixed parity of TT\$2.40 = US\$1.00. The trade-weighted real effective exchange rate appreciated only 5 percent by 1978 relative to its 1970-72 level as shown in Figure 3.

Between 1975 and 1978 employment increased by 4.7 percent, and unemployment decreased from 15.2 percent at the start of the boom to just over 12 percent. But this was due to the government-subsidized work programs and public sector employment mentioned above; private sector employment was actually dropping.

The high growth rate of non-mining output -- 7.0 percent during 1974-78--was therefore based on activities that did not need to compete with efficient world producers. As may be inferred from Figure 4, by 1978 construction and services accounted for 79 percent of non-mining GDP. For a country at Trinidad and Tobago's income/head these sectors would normally account for 40 percent of nonmining GDP. Nonoil exports contracted by 30 percent in dollar terms during 1974-78. In terms of both sectoral output and trade Trinidad and Tobago was steadily increasing its dependence on oil.

By 1978 concern was rising that the oil sector might not be able to sustain current levels of investment and consumption. At current production

rates the remaining oil reserves of 700 million barrels would be sufficient for only nine years. Production was expected to fall by one quarter, to 167,000 bpd by 1983, implying a revenue drop of TT\$0.5 billion a year. The Bobb Committee on public expenditure forecast nominal revenue growth of no more than six to seven percent a year through 1983, compared with 54 percent a year during the boom (Bobb, 1978). It projected that welfare programs alone would absorb a quarter of current revenues or 12 percent of non-mining GDP. Thus, by 1978 government was aware of its looming economic problems, and unlike some other oil-exporting nations it planned to meet them. But new natural gas finds in 1978 — an estimated 7.3 trillion cubic feet in proven reserves and 17 trillion cubic feet in recoverable reserves -- were considered sufficient to permit both LNG and industrial uses: Nierling, 1981. They reduced the urgency of politically difficult change and promised to offset the projected decline in oil revenues.

IV. THE SECOND OIL SHOCK: 1979-1981

4a. The Second Windfall and its Use.

The second windfall--34.7 percent of nonmining GDP over 1979-81--was more abrupt than the first and was to be halved over 1982-84. Absorption patterns from the first oil boom accelerated their momentum. Approximately one quarter of the second windfall went to domestic investment and one quarter to consumption; slightly less than one half was saved abroad; see Figure 1. This improved the resource balance from base period levels, resulting in a current account surplus which averaged 5.0 percent of 1980 nonmining GDP. By the end of 1981 reserves were US\$3.3 billion and medium and long-term debt was

US\$670 million. However, after 1982 unsustainable demands for revenues to finance investment, public consumption, subsidies and transfers threatened to eliminate the large international surplus accumulated since 1973. In 1982-83 fiscal deficits equalled 67 percent of oil revenues, current deficits totalled US\$1.9 billion and reserves fell to US\$2.1 billion.

Three chronic problems--(i) investment quality, (ii) consumption levels, and (iii) non-mining economic structure--emerged during the second oil shock. Each resulted in greater dependence on the shrinking oil sector (Dutch Disease) and made the gas-based industries described in more detail in Section V more strategic.

4b. Investment: The Over-extension of State Ownership

Public investment accelerated sharply during 1979-81 putting Trinidad and Tobago more in line with the public investment intensity of other capital-scarce, oil-exporting countries. As shown in Figure 1, nominal domestic investment rose relative to nonmining output by 9.3 percentage points relative to its base period value. Forty-three percent of government expenditures during the second boom went to capital outlays (up from 43 percent in the first). Few projects were rigorously appraised or comparatively evaluated and interactions were not adequately addressed. For example, the large volume of public construction boosted unit costs of social infrastructure and caused delays that critically affected the viability of the steel and fertilizer projects.

Compared to the first boom, there was a change in the proportion of funds allocated to (1) acquiring existing firms, (2) new construction and (3) making loans and advances to existing firms. Outlays for acquisitions shrank

to a small fraction of total public investment as loans and advances grew from approximately one quarter to one half of total outlays. This was partly to meet the start-up requirements of the largest capital projects and partly to cope with increasing cash-flow problems of state-owned enterprises.

Severe difficulties developed in the state airline (BWIA) and three large acquisitions from the first boom, sugar (Caroni), cement (Trinidad Cement) and oil refining (Trintoc). BWIA required TT\$30 million in government loans from 1979 to 1981 to cover losses. Sugar production dropped from 143,000 tons in 1979 to 93,000 in 1981; in 1979-81 production averaged half Caroni's installed capacity and losses totalled TT\$450 million. Trinidad Cement's output dropped to less than half capacity by 1981 and could meet only one third of domestic demand. The 22-year-old plant used twice the energy of an efficient dry-process plant and had one quarter the labor productivity. Its average production costs were almost twice those of a typical North African gas-based cement plant and 50 percent of a typical European plant despite far lower energy charges. The cement subsidy rose steadily to TT\$53 million by 1981. The government rejected the previous owners' proposal to close the facility and replace it with a new one, planning instead to refurbish the plant and construct a second one. As demand weakened the Trintoc refinery had a small loss in 1980 and a TT\$114 million loss in 1981. The government faced the dilemma of losing 1000 jobs by closing it or investing more than US\$400 million in upgrading it to produce lighter products. It would then be a rival to the larger, failing, Texaco refinery which employed 4000, and increase pressure for nationalisation. These losses over 1979-81 represented the equivalent of 30 percent of 1979 oil revenues.

The new gas-based industries discussed at greater length below required greater capital infusions than had been expected. The ISCOTT DRI/steel plant and the Fertrin ammonia plant experienced significant construction delays and start-up difficulties. Meanwhile, construction of a urea factory and a methanol facility began in 1981; by then their markets were turning down in the face of international recession.

4c. Subsidised Consumption: An Unsustainable Momentum

Deflated consumption increased by 27 percent of non-mining output, relative to the base period before the windfalls as shown by the dotted line in Figure 1. So measured, it accounted for much of the second windfall. Despite controls, inflation rose to 14.7 percent in 1979, 17.5 percent in 1980 and 14.2 percent in 1981. This was a sharp jump from the plateau of 11 percent in 1976-78.

Subsidies for gasoline, cement, food, and public utilities rose from TTS264 million in 1978 (3 percent of GDP) to TTS860 million in 1981 (5 percent of GDP). Using a wider definition the new prime minister estimated subsidies at TTS1.3 billion in 1981 (Chambers, 1982). This represented one third of oil revenues: see Figure 3. In 1982 gasoline sold for US\$0.52 an imperial gallon while the ex-refinery cost was twice that and the pump cost was US\$1.64 (Minister of State Enterprises 1982). With little incentive to economize, gasoline sales increased from 0.75 million barrels in 1972 to 2.7 million in 1981.

4d. The "Dutch Disease: Weakening of Non-oil Tradeables

Real output of the mining sector at 1970 prices fell by 4 percent during the second oil boom; that of agriculture by 10 percent and that of manufacturing by 5 percent. The share of nonmining tradeables in nonmining GDP slipped further behind its Chenery-Syrquin norm, as shown in Figure 4; that of agriculture fell to 3.3 percent and that of manufacturing (including refining) to 17.7 percent. The divergence between Trinidad's sectoral output pattern and its norm was greater than that of any of the above comparator countries: Gelb, 1984. Industrial production faltered as high domestic inflation plus the link with the appreciating U.S. dollar eroded competitiveness and appreciated the real exchange rate to 124 by 1981 (from the 1970-72 base of 100). Several large manufacturing firms went out of business in 1981 (Central Bank, 1981).

Wage trends and labor subsidies were important contributors to the decline of nonoil tradeables. The special works program (DEWD) spent an estimated TT\$110 million in employing 50,000 people in 1980 (about 10,000 people at any given time in that year). Work was light (two hours a day) and wages were high at TT\$20 an hour. This attracted workers particularly from agriculture: IADB, 1983. There is little evidence that DEWD's work was well-conceived or that it made a significant supply-side contribution to output. Wage increases were increasingly divorced from productivity and the ability of employers to pay. The Industrial Court lacked competence to determine the financial viability of settlements, so that wage agreements outstripped productivity. In 1977-81 industrial labor productivity excluding oil and sugar grew by approximately 2.4 percent as real wages rose by 5 percent a year.

Over the same period productivity decreased 10 percent a year in sugar, 4.3 percent in oil refining, and 2.1 percent in chemicals.

The public sector wage bill was TT\$3.1 billion in 1982, almost twice that of 1981 and four times that of 1978, though revenues had been projected to drop and a deficit of TT\$3.3 billion (almost 14 percent of GDP) was forecast. The fiscal deficit averaged 67 percent of oil revenues in 1982-83. Across the economy, 1983 pay negotiations were heavily influenced by the inflationary spurt from the second oil boom. Three-year settlements called for a minimum of 42 percent increase in two oil companies; for 50 percent in the Water and Sewerage Authority; for 65 percent in the Public Telephone company; for 62-80 percent for government salaries and for 94 percent in the sugar industry (Central Bank, 1982). The trend of increasing real wages, particularly in sugar, is shown in Figure 2, as is the real exchange rate which appreciated further, to an average of 150 in 1982-83.

The Collapse of Agriculture. Even before the state began to acquire sugar operations, strong unions had captured much of the benefits from economies of scale in the large, foreign-owned plantations. The resulting low profitability discouraged further investment: Auty, 1976. In 1970 and 1975 Tate and Lyle, which was responsible for nine tenths of Trinidad's sugar capacity, withdrew and sugar became state-owned. This eliminated the threat of closure and high profits in the 1974-75 sugar boom made the unions more demanding. When the government completed purchase it conceded a 100 percent pay rise to sugar workers who had forced severe strikes when the it acquired majority ownership in 1970.

From the time of the first oil boom sugar production had fallen increasingly short of the industry's 220,000-ton capacity. By 1979 it had fallen to two thirds and by 1981 to one third of capacity: see Figure 4. At the same time real wage rates rose by 80 percent between 1975 and 1981. In 1979 consultants estimated the cost of sugar production in Trinidad and Tobago at US\$445 a ton compared to US\$240 in Australia (Landell Mills 1979). But that study used unduly favorable assumptions; the actual cost of production was about \$800 a ton. By the early 1980s yields had fallen to 3.7 tons of sugar per hectare, one third of yields in Australia and one half the level of two decades earlier in Trinidad and Tobago. By 1983, Caroni sugar was receiving an estimated TT\$300 million a year in subsidies (9 percent of oil revenues) while its average costs were five times those of a reasonably efficient producer. Rationalisation was politically difficult because most of the 20,000 workers directly and indirectly dependent on sugar were Indian. Other export crops, notably citrus, also declined substantially during the oil booms.

Imports increased their share of domestic food supplies from 70 percent to 90 percent over 1976-80 (Ministry of Agriculture 1983). The government had planned to shift resources from export to domestic crop production, but more than a decade after that decision, 70 percent of the arable land remained in export crop production and the poorly performing export sector received most of the subsidized farm inputs. In 1983 Trinidad and Tobago produced one fifth of its rice needs from farms that averaged 0.5 hectares, yielded about 2 tons per hectare and took only one crop annually. In that year the domestic selling price for rice was US\$417 a ton; the subsidized price guaranteed to farmers was US\$825 which was said to be

insufficient to cover costs (Agricultural Statistics Office 1983). In contrast, mechanised rice farms in Suriname could provide income over US\$6000 per hectare at internationally competitive prices in about 25 mandays (one third the labor required in Trinidad and Tobago) and at lower unit labor costs.

Reversing Oil Dependence By 1981 proven recoverable oil reserves were estimated at 600 million barrels or ten-years supply, and oil prices were falling. As late as the middle of 1981 gas-based industries were projected to yield enough revenue to offset the decline in oil until LNG exports and the downstream industries could be developed in the late 1980s (Rampersad 1981b). At 1983 levels of production, proven gas reserves represented 54-years' supply and probable reserves could extend this to 70 years. The proposed large LNG export project had a lead time of five to six years, so that much depended on the performance of the first round of Point Lisas gas-based projects coming on stream.

V. GAS-BASED INDUSTRIALIZATION

5.1. The Appeal of Gas-Based Industrialization

The first PNM government encouraged capital-intensive export projects while protecting import-substituting industry. The first gas-based factory built in the late 1950s near Point Lisas produced fertilizer for export. In 1966 the Point Lisas Industrial Development Corporation was formed to promote gas-based industry but major development did not come until the first oil boom.

In 1974 the governments of Trinidad and Tobago, Jamaica, and Guyana agreed to conduct feasibility studies of a jointly-owned smelter at Point Lisas. AMOCO had put forth an alternative proposal for an LNG plant that would have absorbed the greater part of gas reserves while yielding US\$15 million in tax revenues—less than one quarter of oil revenues at the time (Ministry of Petroleum 1971). The AMOCO proposal was rejected in favor of gas-based industry, but there is no evidence that the alternatives were systematically compared. Though the government did envisage 50 labor-intensive downstream processing plants, capital-intensive heavy industry was to dominate the first decade of Point Lisas's development.

Gas-based projects were justified on the grounds that they could (i) attract outside financing at favorable interest rates (leaving oil revenues for other uses: government financed only one third of the average venture), (ii) generate net foreign exchange earnings and (iii) provide substantial revenues through taxes and returns on state equity. Though they promised few permanent jobs, construction employment, the labor demands of the projected downstream factories and the permanent pool of skilled nationals to be generated by the projects were considered as benefits (NEC 1981). But also important was a strong nationalist appeal in the prospect of leaping from a plantation economy to a technologically sophisticated state. Because of this, the government ignored the main disadvantages of gas-based industrialization: (i) it projected the problems of a mineral economy into enclave industrial diversification, (ii) it postponed reform in the nonhydrocarbon sectors and (iii) it depended on volatile external markets.

In 1975 the government concluded agreements with W.A. Grace to build a large ammonia plant and with three steel firms to construct a DRI/steel

unit. In 1976 it agreed to a joint Amoco fertilizer plant. Later it explored proposals for an aluminum smelter with National Southwire, an LNG terminal with Tenneco and Midcon, a urea plant with Agrico-Chemicals and a methanol facility with Borden. Not all schemes were implemented before the second oil boom was punctured.

Gas-based projects are highly capital-intensive. This raises pressure for premature entry when inflation is expected to be high and real interest rates low, as over the mid-1970's. A typical venture such as the methanol plant might have a three year construction period and be two thirds loan financed. Repayment would be over 8 years during which time the plant would be depreciated. Thereafter government would own the plant, which could be expected to last for another 10-20 years and would be able to undercut new plants built at higher prices and facing large capital charges.

5.2 Problems of Entry: the Case of Steel.

In 1977, after withdrawing from the planned joint steel venture the government began its own venture through ISCOTT. It called for a plant with 750,000 tons of billet and a 450,000 ton DRI unit with a scrap complement. But anticipations of scrap shortages prompted the addition of a second DRI unit, adding 25 percent to costs and unbalancing the production chain. The second DRI unit and a construction-cost overrun of 30 percent resulted in a final capital cost of ~~US\$~~US\$500 million, requiring substantial new financing at high interest rates.

Since the domestic market was only 60,000 tons, two third of production was targeted to the southeastern United States where efficient mini-mills are among the most competitive in the world (Barnett and Schorsch

1983). ISCOTT's unit costs assuming full capacity for the first DRI unit and 80 percent capacity for the billet plant were US\$ 410/tonne compared to US\$ 270/tonne for the minimills. A marketing survey had warned that ISCOTT would need to undercut its U.S. competitors by 15 percent, but a successful 1982 anti-dumping suit imposed a 14 percent penalty on ISCOTT (Chambers 1984). This left the plant with totally inadequate markets and annual capital charges of more than US\$100 million. The worst-case projection for ISCOTT quickly became overly optimistic; cumulative losses to April 1982 were almost TT\$400 million, equal to one fifth of 1979 oil revenue (Caribbean Contact 1982). In 1983 the government was reported to be considering mothballing the plant.

The unexpectedly severe world recession that began in 1981 invalidated real interest rate, relative price and demand projections. As late as 1980 the OECD was forecasting that global steel consumption would almost double to 1400 million tons by the year 2000. More recent projections indicate a rise of only 20 percent, to 900 million tons, with almost all the reduction from industrial countries (Barnett and Schorsch 1983). Marginal, export-oriented new plants such as ISCOTT's were the most seriously affected.

Trinidad and Tobago would have had a second crippling investment had it proceeded with plans for a 150,000-ton aluminum smelter. Ironically the principal reason for abandoning the project was the government's impatience with the lack of progress in entering the industry in time to capture the widely-anticipated boom in aluminum prices. By 1980 the government was close to agreement on a joint venture with National Southwire for a US\$500 million smelter to start up in 1984. It required an estimated metal price of US\$0.92 a pound in 1982 dollars, but in 1982 the price of aluminum collapsed to US\$0.43 a pound and excess capacity may persist into the 1980s (Vais

1982). The prudent decision not to proceed suggests an important role for private equity partners in heightening the sensitivity of state corporations to risk.

5.3 Ranking the Options: Comparative Returns from Gas-Based Industry

Table 1 compares the seven gas-based projects built, under construction, or proposed for Point Lisas by the end of the second oil boom. All costs are based on industry estimates of the operating characteristics of the Point Lisas plants. These costs are expressed in 1982 US dollars; they total four and a half the 1980 oil windfall. Estimates assume that the projects operate at designed capacity.

In columns A and B the netbacks on gas inputs for each project are calculated by assuming a 20 percent pre-tax accounting rate of return on equity and, respectively, 1982 and "long run" prices of output.^{1/} The costs of gas extraction and gathering must still be deducted in order to arrive at an estimate of the residual rent on gas. The estimates of Table 1 should be used mainly for comparison. They show that the proposed LNG plant promises the highest netback on gas followed by methanol and ammonia plants. At 1982 prices the other products, notably metals, do not yield a positive netback. At long-run prices netbacks excluding LNG average US\$1.15 per MCF, are lowest for the metals and negative for steel. The proposed LNG scheme is discussed below.

^{1/} The method of comparison here builds on a 1975 study of gas-based industry in the Persian/Arabian Gulf (Stauffer 1975).

Table 1: Actual and Potential Gas Netbacks for Gas-Based Industry
in Trinidad and Tobago, 1982

	Gas Input (MCF/Ton)	Investment ¹ (\$/MCF/yr)	Gas Netback (1982 US\$/MCF) ²	
			A. 1982 Prices	B. Long Run Prices
Major Metals				
DRI	12.5	12.68	(0.41)	0.07
Steel	19.9	26.98	(3.61)	(0.85)
Aluminum ³	128.0	16.24	(6.25)	1.30
Chemicals				
Ammonia	33.0	13.37	0.90	1.76
Urea	23.8	1.47	(1.98)	2.76
Methanol	29.3	14.09	0.85	1.87
Gas Export				
LNG ³	59.0	8.69	2.11	3.51

Source: Auty (1983)

- Note: 1. Total investment divided by total MCF consumed per annum.
2. Gas netback = residual payment to gas at wellhead after deducting 20% pretax return on equity and all other costs exclusive of gas input.

Price assumptions:

	(US\$/Ton)	
	1982 Prices	Long Run Prices
DRI	100	130
Steel	275	330
Aluminum	1102	1989
Ammonia	130	231
Urea	130	231
Methanol	240	270
Gas	4.5/MCF	5.9/MCF

3 Proposed projects

Natural gas production and gathering costs vary greatly by field and scale. For large Middle Eastern and North African fields they may be US\$0.25 per MCF. For Trinidad and Tobago these costs are more difficult to determine because of geological differences between gas fields and variations in the timing of sunk investments. In 1982 dollars, gas from Trinidad and Tobago's southeast coastal field cost less than US\$0.60 per MCF; estimates for the costlier north coast fields in deeper waters and in more dispersed reservoirs range up to US\$3.00 per MCF. Clearly much of Trinidad and Tobago's gas is high cost. At 1982 prices, only the LNG project shows a significant positive rent. In units of heat value, return on gas even at long-run prices is very low relative to oil.

Despite reservations about gas-based industrialization, Turner and Beade, 1979 argued in its favour. They pointed to externalities of such projects in triggering more broadly based industrialization and expansion of domestic skills. Stauffer, 1975 considered the case for gas-based industrialization strongest where—as in Trinidad and Tobago—oil reserves were small and gas mostly non-associated. But even at long-run prices, the gas-based industries built or under construction in Trinidad and Tobago are unlikely to contribute more than 20 percent of the country's total 1982 exports and will yield little natural rent on gas. The proposed LNG project has therefore assumed critical importance as the best prospect for alleviating overdependence on the shrinking oil sector.

Whereas Amoco's proposal was costed at US\$275 million in 1971 dollars the Tenneco/Midcon proposal made in the late 1970s was costed at US\$2.5 billion in 1988 dollars, the target year for start-up. After allowing for inflation, the difference in size between the two projects and a reported cost

underestimate in the 1971 scheme, the costs are comparable: NEC, 1979. While ISCOTT involved a total capital investment equal to less than 10 percent of Trinidad and Tobago's 1982 GDP the cost of the LNG proposal may be about 80 percent of that figure. Although a series of obstacles have delayed action the scheme is the only one capable of exploiting north coast gas fields by moderating their high costs in a 50/50 mix with lower-cost gas from the southeast coast. The average gas cost at the wellhead would then be about US\$2.25 per MCF, not far above the netback from 1982 LNG prices in Table 1. Under long-term marketing conditions the scheme would also generate twice the cash flow of the other gas-based projects and stable LNG contracts would be a buffer against more cyclical exports. But only if the price of LNG is above that assumed for the estimates in Table 1, or if costs of extraction are lower, would any true rent accrue to the government. The prices compare to the \$4.50 border price for Mexican and Canadian gas in 1982, the \$2.80-\$3.40 range for new wells in the United States and \$7.30 for deep gas in the United States. The main role of LNG is therefore to enable government to obtain a possibly high, though risky, return on domestic investments; only an LNG project using gas from the older, cheaper, fields would have generated a large rent component.^{1/}

^{1/} The estimated costs of gas exploration and gas gathering differ by a ratio of about 10 to 1. Much of the discrepancy lies in the uncertainty of exploring and gathering and in the more scattered fields to be prospected in the later proposal. These fields also lie in deeper water than the first generation of gas fields.

VI. CONCLUSION.

The experience of Trinidad and Tobago over the last decade illustrates the political and economic obstacles to avoiding increased dependence on natural resource rents. Despite initially cautious fiscal policy, the political need to distribute rent widely across the economy led to the rapid growth of subsidies to consumers, labor and failing firms. This use of the windfall was especially pronounced relative to that of comparator countries, because of Trinidad's democratic political system and the vulnerability felt by the government to organized protest after 1970. While real consumption benefited from subsidies and price controls, these, together with wage increases, real appreciation and the extension of public ownership undermined agriculture and manufacturing, the sectors producing nonhydrocarbon tradeables. Windfalls financed the postponement of fundamental change needed to arrest agricultural decline and improve manufacturing's competitiveness. Over 1972-81 contraction in the share of nonmining tradeables in nonmining GDP relative to its norm was the greatest in the sample of comparator countries.

Thus, although Trinidad and Tobago ended the second oil boom with \$US2.6 billion in net assets abroad its economy was far more oil-dependent than ever before, as revealed by the magnitude of fiscal and current account deficits in 1982-83. Its attempts to diversify had emphasised gas-based industry, the returns on much of which, especially steel, promised to be low. Eagerness to spend oil revenues led the government to downplay the risk involved in such large projects and to "go it alone" which compounded marketing problems when demand forecasts proved to be overoptimistic because it had no downstream foreign partners. Gas-based industry has pre-empted

cheaper gas from LNG--the one project which could have yielded appreciable rent, to supplement that from oil.

Relative to other oil countries Trinidad's experience over the oil booms has had some positive features. Its citizens have reaped large consumption gains and it ended with a sufficient reserve cushion to adjust smoothly to falling oil revenues. The danger over the next few years is that political considerations will so slow the adjustment process that the country enters into crisis as have three of its five comparators, Ecuador, Nigeria and Venezuela.

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